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Культурно-историческая концепция  
и деятельностный подход: социальные  
и образовательные практики

Cultural-Historical Theory and Activity  
Approach: Social and Educational Practices

культурно-историческая  
ПСИХОЛОГИЯ

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МОСКОВСКИЙ ГОСУДАРСТВЕННЫЙ  
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# Культурно-историческая психология

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Культурно-историческая концепция и деятельностный подход:  
социальные и образовательные практики

Тематические редакторы: В.В. Рубцов, К. Плакитси

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# Cultural-Historical Psychology

2021. Vol. 17, no. 2

Cultural-Historical Theory and Activity Approach: Social and Educational Practices

Guest Editors: V.V. Rubtsov, K. Plakitsi

Московский государственный психолого-педагогический университет

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## Editors' Foreword

The special issue of the Journal “Cultural-Historical Theory and Activity Approach: Social and Educational Practices” was prepared jointly by Moscow State University of Psychology and Education and the International Society for Cultural-Historical Activity Research to coincide with the forthcoming 6th ISCAR Congress 2021 in Brazil. Due to the pandemic the Congress is to be held on-line and thus many of us will miss the opportunity of face-to-face discussions. To create more space for exchanging ideas and encouraging a cross-disciplinary dialogue we decided to prepare two special volumes, one of which is released in the lead up to the Congress.

The first volume of the special issue includes three sections. Section “Discovering Vygotsky: New Pages in CHT” invites the readers to reflect upon the legacy of the founder of the Cultural-Historical Theory in the light of the recent archival findings and contemporary challenges. Two manuscripts by L.S. Vygotsky are published on the pages of the issue for the first time. They are published in Russian, and we hope to complete the challenging task of their accurate translation into English in the near future. The articles of the section suggest possible readings of L.S. Vygotsky’s works and invite to a discussion of Vygotsky’s legacy and its significance for contemporary psychology.

Section “Learning Interactions: Constructing of Developing Environments” focuses on various approaches to applying Cultural-Historical Theory and Activity Approach in educational settings all over the world.

Section “Innovative Practices: Learning, Development, Upbringing” highlights innovative contemporary practices in different fields, including those, which emerge in the new social situation, largely influenced by the pandemic of COVID-19.

We hope that the current volume would provide much food for thought and become a starting point for discussions that will continue in the framework of the Congress.

This volume is dedicated to the memory of Pentti Hakkarainen, an outstanding developmental and educational psychologist, specialist in children’s play and creator of play worlds, who largely contributed to the dissemination of the Cultural-Historical Theory in the world.

*Prof. Vitaly Rubtsov, President of MSUPE*  
*Prof. Katerina Plakitsi, ISCAR President*

## DISCOVERING VYGOTSKY: NEW PAGES IN CHT

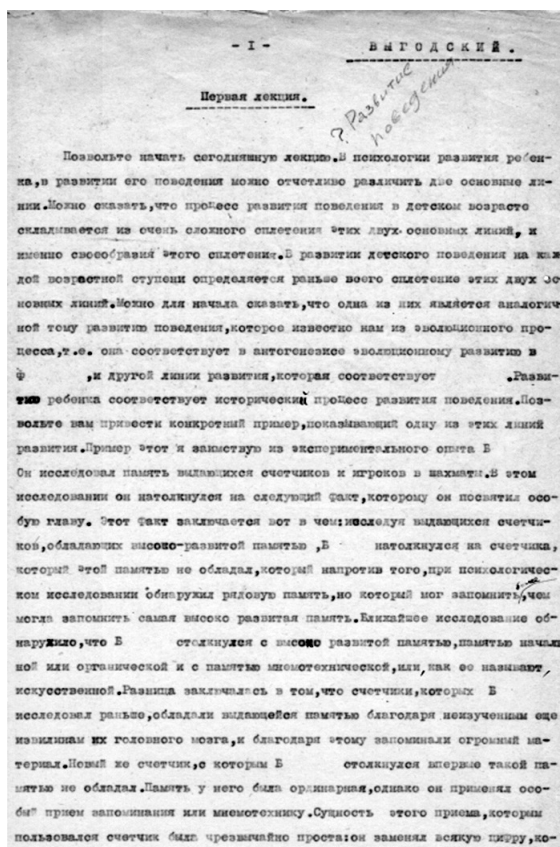
### ОТКРЫВАЯ ВЬГОТСКОГО: НОВЫЕ СТРАНИЦЫ В КУЛЬТУРНО-ИСТОРИЧЕСКОЙ ПСИХОЛОГИИ

#### Foreword to the Publication

The archival transcripts of four lectures by L.S. Vygotsky are published in this and the next issue of *Cultural-Historical Psychology*. Vygotsky read them in 1930 at the Krupskaya Academy of Communist Education. The lectures cover the following topics:

1. Two lines of psychological development.
2. Research methods in child psychology.
3. The phenotypic and the genotypic in psychological processes.
4. The structure and functions of cultural operations in a child.

The titles of the first three lectures are suggested by the editors, since only their ordinal numbers are indicated in the transcripts. The fourth lecture was entitled by Vygotsky himself. This is the only lecture that lists the date of its delivery — November 30, 1928. It is highly likely that the first three lectures were given in November or at least in the fall of the same year, as well.



The First Page of Vygotsky's Starting Lecture

**For citation:** Vygotsky L.S. Lectures on the Psychology of Development. *Kul'turno-istoricheskaya psikhologiya = Cultural-Historical Psychology*, 2021. Vol. 17, no. 2, p. 5–22. DOI: <https://doi.org/10.17759/chp.2021170201>

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At that time, cultural-historical theory was just entering its maturity phase, but it had already yielded valuable theoretical and experimental results. It was based on the “instrumental method”. As applied to pedology, principles of this method were outlined in seven theses that were also published in 1928 (Vygotsky L.S. The instrumental method in pedology. In A.B. Zalkind (Ed.), *Main methods of pedology in USSR* (pp. 158–159). Moscow, 1928). The principal advantage of the instrumental method is that it allows us to study the mind and behavior by “objective means” due to the discovery of the instrumental function of “cultural signs”, Vygotsky argues in his theses.

The institution where Vygotsky gave his lectures is itself worthy of introduction. The Krupskaya Academy of Communist Education (AKV) trained higher pedagogical staff for a new society. It was founded in 1923 on the basis of the Academy of Social Education, led by the noted psychologist, educator, philosopher and school reformer P.P. Blonsky. Later he moved to work at the AKV. The instructors combined teaching with research, in which they welcomed even early-stage students. Pedological studies constituted the dominant framework for that work. There were three relevant departments in the AKV: Preschool Age Pedology, School Age Pedology and Adolescent Pedology. They were headed, respectively, by three leaders of Soviet pedology — S.S. Molozhavy, P.P. Blonsky and A.B. Zalkind.

Along with these departments, A.R. Luria created and led a psychological laboratory. His laboratory included L.S. Vygotsky, A.N. Leontiev, A.V. Zaporozhets, L.I. Bozhovich, L.S. Slavina, N.G. Morozova, R.E. Levina. “Three and five — that’s the whole eight,” as the psychologists of Vygotsky’s circle used to say. The legendary leading troika (Vygotsky, Luria, Leontiev) and the pyaterka (Zaporozhets, Bozhovich, Slavina, Morozova, Levina) — all worked in this laboratory until it was disbanded in 1931.

The laboratory work is documented in a number of publications that have long since become rarities, and some papers have been lost altogether. The AKV published a series of “Proceedings of the Psychological Laboratory”, edited by A.V. Luria. Its first issue was titled *Speech and Intelligence in Child Development: An Experimental Study of Speech Reactions of a Child* (1927). In 1930, A.R. Luria published a collection of unique studies by the laboratory staff, entitled *Speech and Intelligence of the Rural, Urban, and Neglected Child: An Experimental Study*. The development of “higher mental functions” is explored not only in a wide variety of socio-cultural conditions, but also at the moment of a drastic historical change. The Preface to Vygotsky’s and A.R. Luria’s classic book *Studies in the History of Behaviour* concludes with the words: “The experiments underlying our essay on child behavior were conducted by us and our colleagues in the Laboratory of Psychology at the Academy of Communist Education” (Vygotsky L.S., Luria A.R. *Studies on the history of behavior: ape, primitive, and child*. Moscow, Leningrad: Gosizdat, 1930, p. 6).

It cannot be overlooked that Vygotsky’s famous lecture “The Instrumental Method in Psychology” (1930) was presented at the AKV.

So, the AKV became a place where Vygotsky’s circle united, an outpost of “Vygotskianism” in Moscow. The results of the latest research by Vygotsky, Luria, and their associates were broadcast to the student audience directly.

Vygotsky’s four lectures, which are offered to the reader, allow us to judge the high level of scientific teaching in a pedagogical university. The lecturer unfolds the most complicated issues and psychology that was new for its time, while the exposition remains clear and understandable. These issues have not lost their relevance, but are discussed in national and international developmental psychology today. In what sense do the principle of historicism and developmental approach coincide? What is the nature of a *specifically human (cultural) type of development*? How does the transition to it occur? What are the conditions, mechanisms and means of *mastering the human form of life* in the world of culture? What method should be used to study this process and how should we turn this method into a pedagogical tool? How is the line of organic growth linked with the line of cultural development in a child?

Here is a (far from complete) list of classical, but still open questions of cultural-historical psychology, which Vygotsky raises in his lectures. In general, Vygotsky’s answers to them are known to the reader. But the lectures sometimes provide a new and highly heuristic argument for his answers, making the content of these lectures a subject of more than purely historical interest.

*V.T. Kudryavtsev,  
A.D. Maidansky*

# ЛЕКЦИИ ПО ПСИХОЛОГИИ РАЗВИТИЯ<sup>1</sup>

Л.С. Выготский

## Первая лекция.

### Две линии психологического развития

Позвольте начать сегодняшнюю лекцию. В психологии развития ребенка, в развитии его поведения можно отчетливо различить две основные линии. Можно сказать, что процесс развития поведения в детском возрасте складывается из очень сложного сплетения этих двух основных линий, и именно своеобразия этого сплетения. В развитии детского поведения на каждой возрастной ступени определяется раньше всего сплетение этих двух основных линий. Можно для начала сказать, что одна из них является аналогичной тому развитию поведения, которое известно нам из эволюционного процесса, т.е. она соответствует в онтогенезе эволюционному развитию в ф[илогенезе]<sup>2</sup>, и другой линии развития, которая соответствует [развитию культуры]<sup>3</sup>. Развитию ребенка соответствует исторический процесс развития поведения.

Позвольте привести вам конкретный пример, показывающий одну из этих линий развития. Пример этот я заимствую из экспериментального опыта Б.<sup>4</sup> Он исследовал память выдающихся счетчиков и игроков в шахматы. В этом исследовании он натолкнулся на следующий факт, которому он посвятил особую главу. Этот факт заключается вот в чем: исследуя выдающихся счетчиков, обладающих высоко развитой памятью, Б. натолкнулся на счетчика, который этой памятью не обладал, который, напротив того, при психологическом исследовании обнаружил рядовую память, но мог запомнить более, чем могла запомнить самая высоко развитая память. Ближайшее исследование обнаружило, что Б. столкнулся с высоко развитой памятью, памятью начальной, или органической, и с памятью мнемотехнической, или, как ее называют, искусственной. Разница заключалась в том, что счетчики, которых Б. исследовал раньше, обладали выдающейся памятью благодаря неизученным еще извилинам их головного мозга, и благодаря тому запоминали огромный материал. Но

вый же счетчик, с которым Б. столкнулся впервые, такой памятью не обладал. Память у него была ординарная, однако он применял особый прием запоминания, или мнемотехнику. Сущность этого приема, которым пользовался счетчик, была чрезвычайно проста: он заменял всякую цифру, которую нужно было запомнить, соответствующей буквой из алфавита, затем составлял слова, из слов составлял фразы, из фраз составлял роман и запоминал этот роман. Когда надо было воспроизвести цифровой ряд, состоявший из нескольких сот цифр, он воспроизводил роман, разлагал его на фразы, затем на слова, и таким образом воспроизводил весь цифровой ряд, какой было нужно.

В этом эксперименте столкнулись две основные линии развития. С одной стороны, мы имеем запоминание, основанное на удержании следов от внешних впечатлений, от внешних раздражений, т.е., иначе говоря, память, развитая в собственном смысле этого слова. В другом случае память, не будучи развитой выше средней нормы, функционирует как экстраординарная потому, что этот счетчик развил и усовершенствовал не память, но развил функции памяти.

Если мы обратимся от этого случая с необыкновенно развитой памятью к случаю обыкновенному, то мы увидим, что в развитии каждого ребенка мы сталкиваемся с этими двумя линиями развития памяти и не только памяти, но и всех вообще психологических функций и психологических процессов ребенка. Если мы говорим, что ребенок старшего возраста запоминает больше, чем ребенок младшего возраста, то происходит [это] по двум причинам: во-первых, потому что развивается и совершенствуется сама органическая основная память ребенка, потому что окрепла та органическая основа, которая образует фундамент всех функций памяти. Но это может произойти по другим причинам. Ребенок может на

<sup>1</sup> Публикация подготовлена за счет гранта Российского научного фонда (проект № 20-18-00028). Подготовка текста к изданию и комментарии В.Т. Кудрявцева и А.Д. Майданского.

© О.Г. Кравцов.

<sup>2</sup> В стенограмме после буквы «ф» — пропуск. Видимо, стенографистка не расслышала термин.

<sup>3</sup> В этом месте оставлен пропуск. Ниже говорится о «линии культурного развития».

<sup>4</sup> Бениамин Маркович Блюменфельд, шахматный мастер, автор двух брошюр и кандидатской диссертации «Проблемы наглядно-действенного мышления на базе шахматного материала» (1945). Выготский читал совместно с Блюменфельдом лекцию о психологии шахматной игры в Московском доме ученых 30 марта 1932 г.



высшей ступени научиться запоминать не потому, что усовершенствовалась органическая основа его памяти, а потому, что развился и усовершенствовался самый прием запоминания ребенка.

Когда мы сравниваем ребенка нормального и ненормального, ребенка нормального и ребенка умственно отсталого, то и здесь оказывается, что один ребенок запоминает лучше, а другой ребенок хуже не только потому, что сама органическая основная память оказывается хуже или ниже, но иногда и потому что соответствующие приемы памяти или запоминания оказываются у него недостаточными развитыми.

Для того, чтобы уяснить с наибольшей ясностью, или, вернее, с наибольшей чистотой, обе эти линии развития, следует взять каждую из этих линий в отдельности. Я уже говорил, что в ф[илогенезисе] эти линии встречаются не в сплетенном виде, а порознь. Позвольте остановиться на второй из них, так как эта вторая линия развития оказывается наиболее трудной и сложной при уяснении.

Когда мы сравниваем память примитивного человека с памятью человека культурного, мы устанавливаем и на основании простого наблюдения, и на основании экспериментального исследования два основных факта, инстинкта основной материи, в отношении которой память примитивного человека отличается от нашей памяти. Если сравнить человека некультурного, примитивного с человеком культурным, то перевес в памяти окажется часто на стороне некультурного человека. Вы знаете рассказы о замечательных способностях в этом отношении примитивного человека, об умении примитивного человека по мельчайшим следам восстанавливать сложную картину происшедших событий, угадывать по следам на снегу какого рода животные там были, сколько было самцов и самок, как происходила борьба, кто победил в этой борьбе, и все на основании ничтожных следов, которые нам не сказали бы ничего. Вы знаете и рассказы, которые подтвердили эксперименты, об огромной топографической памяти человека, рассказы о том, как примитивному человеку достаточно один раз пройти по чрезвычайно сложной и запутанной дороге, чтобы сохранить в памяти эту дорогу и уметь ее воспроизвести.

Иначе говоря, подвергнутый экспериментальному исследованию примитивный человек не только не обладает более низкоразвитой памятью по сравнению с культурным человеком, но, наоборот, его память развита более высоко, чем наша память. Вы знаете, что современного примитивного человека никак нельзя рассматривать как человека доисторического, и только с натяжкой, только условно с большой дозой относительности мы можем рассматривать современных примитивных людей, как, скажем, негритянские племена Центральной Африки, — мы их можем только условно рассматривать как предста-

вителей человеческого поведения, не разделивших культурного или исторического развития, которое проделали мы. Оказывается, что эти люди, стоящие на более низкой ступени развития, чем мы, обладают естественной памятью, более превосходной, чем наша. Иначе говоря, при сравнении оказывается, что развитие памяти от примитивного человека к культурному идет отнюдь не по линии возрастания, а по линии упадка.

Наряду с этим случаем отмечаем второй момент, который отличает примитивного человека от человека культурного. Он заключается вот в чем: примитивный человек, с одной стороны, действительно обладает памятью гораздо более совершенной, чем наша, а с другой стороны, примитивный человек не в состоянии запомнить такой простой вещи, какую в состоянии запомнить наш школьник. Если бы вы предложили примитивному человеку запомнить тот простой материал, которым овладевает наш школьник во второй группе первой ступени<sup>5</sup>, этот материал оказался бы не по силам для запоминания примитивному человеку. Иначе говоря, наряду с превосходством, которым обладает естественная память примитивного человека, мы замечаем значительно более низкую степень функционирования памяти другого характера. И это своеобразное сочетание обоих моментов в памяти примитивного человека — которая с одной стороны превосходит нашу, а с другой стороны уступает ей, — указывает на то, в чем заключается линия исторического развития памяти и поведения вообще. Она заключается не в том, что совершенствуется и развивается органическая основная память, а в том, что изменяется самый способ памяти. Человек обращается к внешним знакам для того, чтобы запомнить. Человек от памяти непосредственной переходит к запоминанию с помощью искусственных знаков.

Позвольте привести простой пример из жизни примитивного народа. Пример этот я заимствую из жизни народности, стоящей на чрезвычайно низкой ступени развития, живущей в Центральной Африке. У ее царьков существует следующий обычай. У них существуют особые чиновники, задачей которых является запоминать приказы, распоряжения, известные даты, служить живой летописью. Эти чиновники способны прослушать более 30-ти длинных приказов и распоряжений, способны воспроизвести их слово в слово, раз запечатлевши их в своей памяти. У некоторых народов, стоящих на более высокой ступени развития, те же самые функции запоминания приказов, ведение государственных летописей исполняется уже совершенно другим способом.

В наиболее чистом виде эта вторая способность у народов древней культуры отражается в П[еру]<sup>6</sup>, у которых существовали особые офицеры или чиновники, на обязанности которых лежало вести так

<sup>5</sup> Т.е. на третьем-четвертом году начальной школы.

<sup>6</sup> В стенограмме после буквы «П» — пропуск.

называемую квипу, особые веревочные записки, на которых запечатлевают особые события. Эти записки состоят из нескольких веревок часто различного цвета. Отдельный цвет означает отдельный предмет: желтая веревка означает золото, белая — серебро, зеленая — зерно и т.д. Затем на этих веревках делаются узлы, причем сама форма и характер этих узлов означают нечто различное. Просто узел означает одно, два узла друг против друга означают войну или мир, в зависимости от формы узла<sup>7</sup>. Здесь впервые человек, стоящий на примитивной ступени развития, создает в помощь своей памяти особые приемы запоминания, аналогичных которым мы не можем найти ни у кого из животных. Основа этих приемов заключается в том, что человек не довольствуясь своей естественной памятью или будучи поставлен перед задачей, которая превышает результат его естественной памяти, приходит к созданию искусственной памяти, или внешних знаков, при помощи которых он запоминает то или другое.

Вы знаете, что отдельным представителем этого узлового письма является с одной стороны наше письмо, которое играет такую роль в культурной жизни человечества и является в настоящее время основной формой памяти культурного человечества. Поскольку все знания, весь накопленный исторический опыт одного поколения передается другому не столько в силу биологического наследства, сколько в силу исторического развития на основании письменности, постольку с момента [изобретения] письменности и отсчитывается начало цивилизации человечества. Письменность создает основу для систематической передачи исторического опыта от одного поколения к другому. Это одна линия, по которой пошло развитие.

Другая линия развития — это то, что мы имеем сейчас в виде отдельных остатков этих приемов, когда мы завязываем узелок для того, чтобы не забыть чего-нибудь. Эта операция, которая заключается в том, что человек создает внешний знак для того, чтобы запомнить там, где он не надеется на свою память, оказывается для него менее выгодной или неудобной и может служить для нас представителем образования тех форм поведения, которые вызываются в процессе развития. Поэтому вторую линию мы будем называть линией культурного развития в поведении ребенка.

Чрезвычайно интересный факт, интересное наблюдение в этой области принадлежит Кёлеру, известному исследователю употребления орудий у обезьян. Кёлер установил, что обезьяны употребляют орудия в самом простом и примитивном смысле этого слова. Но они не способны составить или изготовить простейшее орудие. Кёлер задался исследовательской целью обнаружить у обезьян простейшую форму запоминания. Опыт произошел из простой игры. Обезьяны очень охотно употребляли в игре

все предметы, которые валялись на станции, где они жили. На станцию, где жили эти обезьяны, была привезена белая глина. Обезьяны стали лизать ее, пробовать на вкус. Когда глина оказалась несъедобной, они стали вытирать язык о доски, стены, балки и скоро заметили, что все эти предметы выкрашены в белый цвет. Из этого у обезьян выросла чрезвычайно интересная игра.

Они сначала для того, чтобы рисовать языком, все лизали белую глину, затем мазали пятна и по лосы на подвернувшиеся предметы, которые были около них. Скоро самые умные из обезьян догадались заменить язык настоящей кистью. Тогда у обезьян развилось примитивное рисование. В настоящий момент <...><sup>8</sup>.

... И затем раскрашивали цветными пятнами все, даже свое тело. Несмотря на то, что такое примитивное рисование у обезьян развилось естественным путем, Кёлеру ни разу не удалось наблюдать — несмотря на то, что он ставил обезьян тогда, когда это было нужно, в известные условия, — даже намек на то, как они создают для себя внешние знаки. Обезьяны, которые чрезвычайно легко сами создавали эти знаки, ни одного раза не сумели использовать эти знаки даже в тех случаях, когда знак они оставляли на том месте, которое им нужно было запомнить.

На основании этих наблюдений Кёлер приходит к выводу, что если у обезьян мы находим форму употребления орудий, то даже у человекообразных обезьян мы не находим и случайных намеков на развитие знаков, тех искусственных стимулов, которые создает человек в помощь к своим психологическим операциям; и, следовательно, развитие этих вспомогательных средств нашего поведения является всецело продуктом исторического развития человека.

И в самом деле, история, т.е. наблюдения над примитивным человеком, а особенно над народами, стоящими на различных ступенях примитивной культуры, показывает, что развитие от более низкой ступени культуры к более высокой ступени происходит в зависимости от совершенствования этих внешних средств поведения. Развитие заключается не в том, что сам по себе процесс поведения, сама по себе функция памяти, внимания, функция мышления сама по себе у народов стоящих на более высококультурной ступени превосходит соответствующие функции у народов стоящих на более низкой ступени развития. Развиваются и совершенствуются вспомогательные средства, вспомогательные стимулы, которые создаются в помощь поведению.

Следующий вывод мне кажется совершенно ясным. Здесь сказано, что вместо обоих выходов к этому новому способу поведения, т.е. созданию вспомогательных средств поведения, происходит резкое изменение самого типа развития нашего поведения, или здесь происходит развитие по двум линиям, о

<sup>7</sup> Традиция «делать узелки на память» существует в разных культурах, а соответствующее выражение — в разных языках.

<sup>8</sup> Пропущено около трех строк.

которых я говорил раньше. Здесь самое простое сравнение с другими формами поведения человека очень ясно, заметно показано.

В чем здесь разница, в чем здесь различие одной и другой линий поведения? Такого же рода изменения в развитии человека произошли и тогда, когда основная форма его приспособления к природе сделалась другой, т.е. когда человек от непосредственного приспособления к природе перешел к приспособлению к труду, к приспособлению [с помощью] ряда орудий, которые составил примитивный человек. Вы знаете, что если мы будем исследовать развитие человека от примитивного состояния и до современного состояния, то оказывается, что самый тип человека изменился сравнительно незначительно. Принял другие совершенно формы именно рост искусственных органов. Рост орудий явился уже основой роста производительных сил человечества и изменил самый тип биологии человека.

Нечто подобное происходит и в отношении психологического развития в исторический период — нечто подобное потому, что мы имеем в тех операциях, о которых я уже говорил, некоторую аналогию, нечто подобное с развитием и употреблением орудий во внешней деятельности человека. В самом деле, самой характерной особенностью трудовой операции, которая основана на употреблении орудия, самой основной ее особенностью является то, что между человеком, как действующим субъектом, и между предметом или объектом, на которые он действует, выдвигается постороннее тело, являющееся орудием, являющееся проводником [воздействия] от человека на соответствующий объект.

Нечто подобное имеется в операции поведения, потому что и там между человеком и между тем объектом, на который направлена психологическая операция, выдвигается звено, промежуточное звено в виде вспомогательного стимула или средства поведения. Представьте себе самую простую операцию, о которой я говорил в начале. Представьте себе, что человек впервые дошел до того, что завязал узелок, чтобы запомнить нечто ему нужное. В этом случае человек уже между собой и между тем объектом, который нужно было запомнить — скажем, цифровым фактом — выдвигает искусственный вспомогательный знак-узелок, который сам по себе никакого отношения к этой операции не имеет, единственным назначением которого является служить средством для такого запоминания. Для того, чтобы идти дальше, нужно выяснить какого рода изменение происходит при этом в развитии поведения, когда оно

принимает такую форму, опирающуюся на внешний знак или средство.

Если мы проанализируем или разложим на составные части такие психологические операции, такие формы поведения, которые опираются на внешний знак, то какую бы операцию мы ни разлагали, мы должны прийти именно к тому выводу, что при этом развитии, при этом переходе к одной форме от другой не создается никакой новой психологической операции. Здесь мы имеем те же самые элементы основного процесса поведения, из которого складывается вообще наше поведение в целом. Следовательно, рассматривая со стороны элементов такие психологические операции, мы не обнаружим в их составе ничего другого кроме тех же самых условных рефлексов, которые мы можем наблюдать у животных в достаточно чистом виде. Однако наряду с этим обнаруживается, что комбинация опирается на совершенно заново созданные образования, благодаря тем вспомогательным средствам, которые здесь получают. Я попробую при помощи самой простой схемы пояснить отношение, которое здесь создается.

<Чертеж I><sup>9</sup>

Очень часто бывает выгоднее ехать окольным путем, хотя бы и более длинным, чем ехать прямым путем, хотя бы и более коротким, и выгода эта заключается в том, что первый путь зависит от условий, которые нам не подчинены. Второй путь, благодаря тому, что он искусственно создан нами, благодаря искусственно введенному стимулу, является путем всецело подчиненным нашей власти.

Второе пояснение я хотел сделать к тому, что я уже говорил в первом пояснении: очень часто в нашем курсе придется ссылаться на психологию примитивного человека, на историческое развитие поведения в филогенезисе, и нам надо сначала договориться совершенно ясно, с какой целью, с какими методологическими целями мы это будем делать.

Обычное недоразумение, которое может здесь возникнуть, заключается в том, что ссылки на историческое развитие человека, ссылки на психологию примитивного человека делаются очень часто для [обоснования] б[ио]генетического<sup>10</sup> параллелизма делаются для того, чтобы показать: вот ребенок, поведение которого есть капитал того, что однажды уже пережило в развитии поведения человечество<sup>11</sup>. Когда мы будем делать ссылки или экскурсы в область развития примитивного человека, мы будем это делать из других оснований, не по этому поводу. Мы вовсе не предполагаем, что развитие поведения человека до какой-нибудь степени является парал-

<sup>9</sup> По понятным причинам, в стенографическом тексте отсутствует.

<sup>10</sup> В стенограмме после буквы «б» — пропуск.

<sup>11</sup> «Наша точка зрения на отношения, существующие между различными линиями в развитии поведения, является в известном смысле противоположной той, какую развивают теории биогенетического параллелизма. На вопрос об отношении, которое существует между онто- и филогенезом, эти теории отвечают, что один процесс более или менее полно повторяет другой, восстанавливает его...» (Выготский Л.С., Лурия А.Р. Очерки по истории поведения: Обезьяна. Примитив. Ребенок. М.-Л.: Государственное издательство, 1930. С. 20).

Л.С. Выготскому принадлежит авторство статьи «Биогенетический закон» в первом издании «Большой советской энциклопедии». См.: Выготский Л.С. Биогенетический закон // Большая советская энциклопедия. М.: Акционерное общество «Советская энциклопедия», 1928. Т. 6. С. 275–280.

дельным истории развития человечества. Наоборот, когда мы с вами коснемся наиболее важных частей нашего курса, то мы увидим до какой степени не параллельными являются развитие ребенка и развитие человечества. Если же мы все же из методологических соображений несколько раз будем делать экскурсии в область развития примитивного человека, мы будем делать это по совсем другим соображениям, именно вот по каким: мы полагаем, что в истории развития примитивного человека в наиболее чистом виде встречаются способы того развития, которое заключается в совершении приемов поведения без органического изменения их основы. [Что] уже и здесь выражается с наибольшей ясностью. А для того, чтобы представить, как развивается тот или иной прием поведения ребенка, мы раньше хотим с наибольшей ясностью представить себе, в чем заключается это развитие. Это мы и находим в развитии примитивного человека.

Пример. Когда мы, толкуя поведение ребенка, обращаемся к опыту над условными рефлексам собак, мы не полагаем, что поведение ребенка повторяет, воспроизводит, является параллельным поведению собаки, [но делаем это] потому, что в экспериментальном опыте с собакой мы находим в наибольшей чистоте выражение явления и закона общего поведения, которое в соответствующей новой, конкретной обстановке встречается затем у ребенка. С таким же методологическим правом, каким мы ссылаемся на эксперимент с условным рефлексом собаки, мы будем ссылаться и на опыт, и на наблюдение над примитивным человеком для того, чтобы эту линию проследить в детском развитии, и для того, чтобы перейти к третьей осознанной задаче нашего курса — показать сплетения обеих линий.

Вы, таким образом, видите, что источником нашего анализа будут две различимые области знания, на которые опирается психология. С одной стороны, мы должны будем всякий высший процесс поведения разложить вот так, как это показано на данном треугольнике<sup>12</sup> изучить его состав со всех данных точек зрения.

Учение о свободном условном рефлексе<sup>13</sup> мы должны будем показать в разрезе арифметического развития памяти, памяти ребенка, в разрезе тех основных механизмов и их действий, которые вам уже знакомы из физиологии высшей нервной деятельности. Эта задача не ограничивает нас. Надо показать каковы ближайшие факторы, которые определяют, что этот процесс именно в такой комбинации, именно в такой структуре заимствовал ребенок на данной ступени развития; где и каким образом ребенок ус-

воил этот способ поведения, этот способ мышления, эти приемы, благодаря каким собственным процессам развития мозговой коры эти приемы стали ребенку доступными на этой ступени развития. Благодаря этим внешним влияниям складывается сложная и единственная цель разнообразных и разнovidных процессов.

Таким образом, перед исследователем, излагающим систему детской психологии стоят всегда две задачи, даже, вернее, три основных задачи. Мы должны процесс поведения ребенка рассмотреть в трех основных планах.

Во-первых, в плане анализа, т.е. в плане, как мы говорили, рефлексивном, т.е. в плане вскрывания этого сложного процесса, потому что самый сложный процесс состоит, в конечном счете, если его разложить, из процессов элементарных.

Другая задача будет заключаться в выяснении структуры и функции этого поведения, разложении этих сложных приемов поведения на их составные части. Ознакомившись с элементарными процессами нервов, которые лежат в их основе, мы должны выяснить, есть ли род единства в этих равных процессах. Каково исполнение этих сложных приемов поведения в отношении приспособления ребенка к окружающей среде? С целью выяснить и вскрыть соотношение частей, функций, т.е. связать их и значит выполнить задание по отношению к поведению в целом. В этом будет заключаться вторая задача нашего исследования.

Третья будет заключаться в том, чтобы проследить анализ и структуру этого процесса. Проследить, к чему [ведет] то сложное сплетение [онтогенетической] и других линий, которые, как я говорил, образуют основу развития поведения в детском возрасте. В педологии, благодаря такому рассмотрению вопроса, получается понятие того, что некоторые авторы называют понятием культурного возраста ребенка.

Вы знаете, что мы называем [культурным]<sup>14</sup> возрастом ребенка в отличие от хронологического возраста. В разных фазах развития, которого достигает ребенок, мы говорим о физиологическом возрасте, о костном возрасте — так точно и в этом случае мы вправе отличать его культурно-психологический возраст. Под этим культурно-психологическим возрастом мы будем разуметь следующее: как мы установили, костным возрастом ребенка называется та фаза в отвердении костей, которая происходит у ребенка. Затем по костям можно определить на какой стадии находится костное развитие ребенка.

<sup>12</sup> Треугольник изображает отношение культурных («инструментальных») и естественных процессов развития психики. См.: *Выготский Л.С.* Инструментальный метод в психологии // Соч. Т. 1. М.: Педагогика, 1982. С. 104; Он же. История развития высших психических функций Соч. Т. 3. М.: Педагогика, 1982. С. 111; Он же. Проблема культурного развития ребенка (1928) // Вестник Московского университета. Сер. 14, Психология. 1991. № 4.

<sup>13</sup> В работах Выготского выражение «свободный рефлекс» не встречается — очевидно, речь идет о «рефлексе», сформировавшемся в ходе культурного развития. По Выготскому, «культурный» означает «произвольный», а произвольность является необходимой характеристикой свободного действия.

<sup>14</sup> В стенограмме здесь оставлено место для одного слова.



Например ребенку 12 лет, но его костный возраст отстаёт или опережает на два года его паспортный возраст. Применяя те же способы исследования, мы определяем культурно-психологический возраст ребенка. Мы устанавливаем какие фазы, какие стадии происходят в приемах поведения, поднимаясь от примитивных форм к сложным культурным формам.

Когда мы установим эти фазы, мы попробуем установить какие фазы этого культурного развития в каком возрасте проделал наш ребенок и установить соотношение между паспортным возрастом ребенка и фазой его культурного развития; попробуем измерить, отстаёт или движется вперед ребенок в культурном своем развитии по сравнению с паспортным возрастом.

Иначе говоря, мы приобретаем четыре плана исследования, или четыре задачи встают перед каждой главой нашего курса. Приравнивая к возрастной шкале процесса культурного развития ребенка и основным приемом намечания основной схемы, мы должны определить или выяснить культурно-психологический возраст ребенка.

В заключение мне хотелось бы остановиться еще на одном вопросе, связать его с общими положениями, которые я развиваю: это — вопрос своеобразия культурного развития нормального и ненормального ребенка. Я хочу кратко поставить сравнительный способ развития культурного и ненормального ребенка. Поэтому несколько слов я позволю себе сейчас сказать.

Первый вопрос, который встает перед нами, заключается вот в чем: может показаться, что в культурном развитии разницы не должно быть, разница должна быть в биологическом развитии ребенка. Представьте себе, что мы имеем дело с умственно отсталым ребенком, у которого задержана в своем развитии кора головного мозга. Его естественные функции будут развиваться с задержкой. Это совершенно понятно. Но можно ли предполагать, что его культурное развитие будет отставать? Ведь культурное развитие поведения опирается, главным образом, на внешние средства поведения. А эти внешние средства поведения по своей природе являются социальными, они не возникают внутри организма, а даются человеку окружающей его социальной культурной средой.

Мы установили, как общее предположение, от которого мы отправляемся, что культурное развитие поведения является функцией от социально-культурного опыта ребенка, и может показаться, что если умственно отсталый ребенок живет в такой социальной среде, которая ему предлагает те же самые средства поведения, что она предоставляет нормальному ребенку, то его умственное развитие не должно отличаться от нормального ребенка.

И в самом деле, с одной стороны это возражение оказывается сильным. Мы знаем, что, действи-

тельно, умственная отсталость имеет аналогичную картину или, до некоторой степени, оказывается сходной с детской примитивностью. Если вы возьмете ребенка, который жил в некультурной среде, или который, благодаря каким-нибудь случайным обстоятельствам не мог развиваться в среде культурной или нормальной, то, хотя такой ребенок и является совершенно нормальным по своему органическому строению, тем не менее его культурное развитие окажется задержанным благодаря внешним причинам. Такой ребенок называется ребенком примитивным, потому что он в своем поведении стоит на низкой культурной ступени развития. И вот, самое важное это то, что такой примитивный ребенок с внешнего вида будет походить на ребенка умственно отсталого, он не будет способен к логическому размышлению, как не способен и умственно отсталый ребенок в том возрасте, когда нормальный ребенок овладевает этим. Во внешних проявлениях этого ребенка, который недоразвит вследствие того, что он жил в некультурной среде, внешнее сходство будет с отсталым ребенком, и здесь заключается самое сложное и важное, что мы знаем о развитии нормального ребенка сейчас. Это сходство примитивного ребенка с ненормальным ребенком. Достаточно примитивного ребенка поместить в культурную среду для того, чтобы это сходство исчезло. Ребенок примитивный проделает культурное развитие, то, которое он не проделал в свое время.

Что же касается умственно отсталого ребенка, то если вы его поместите в соответствующую культурную среду, если он даже и проделает культурное развитие, он все же окажется умственно отсталым ребенком. Но сам факт, что недоразвитость вследствие внешних условий и недоразвитость вследствие внутренних условий, может быть установлена испытанием коры головного мозга, — этот факт оказывается чрезвычайно важным. Он показывает, что высшие психологические функции, логическое мышление, высшие формы внимания, высшие формы запоминания развиваются не иначе, как на основании культурного развития. И если этот социально-культурный опыт оказывается недоступным для ребенка, неразвитого по внешним причинам или по внутренним причинам, потому, что его мозг недостаточно силен для того, чтобы справиться с этим, то ребенок, в развитии высшего процесса его поведения, окажется недоразвитым.

Вы знаете, вероятно, что в детской психологии еще по предложению Штерна был принят основной принцип в развитии ребенка, который применяется и к культурному развитию ребенка. Это тот принцип, который Штерн называет [«принципом конвергенции»]<sup>15</sup>. Принцип скрещивания, или пересечения, внутренних процессов развития и внешних условий, в которых происходит это развитие.

<sup>15</sup> В этом месте в стенограмме пропуск. Далее ошибочно записано «принцип сокращения» (вместо «скрещивания»). См.: *Выготский Л.С. Соч. Т. 3. С. 298.*

Вы знаете, что теория условных рефлексов как нельзя лучше поддерживает этот принцип [конвергенции]<sup>16</sup> и его приложения к истории детского развития. Ведь для условного рефлекса вытекает здесь пересечение, с одной стороны, внутренней инстинктивной направленности реакций и, с другой стороны, тех условий, где эти реакции функционируют. Если применить такую психологию, то мы увидим, что между развитием культурным и развитием естественным у нормального ребенка существует контакт, т.е. это два процесса, которые, благодаря практике человеческого воспитания, приноровились друг к другу.

Ребенок на определенной ступени развития овладевает речью, на другой ступени развития овладевает счетом, на третьей ступени развития — отвлеченным счетом и т.д. В противоположность этому у ненормального ребенка происходит разрыв между его культурным и естественным развитием, т.е. расхождение там, где мы ожидали бы схождения. Благодаря задержке в развитии мысли, благодаря различным изменениям в коре головного мозга у этого ребенка не происходит нужного пересечения внешних влияний, внешних способов, приемов поведения с внутренними данными, и благодаря этому нарушается [конвергенция]<sup>17</sup>.

Вы представьте себе до какой степени получается интересная и поучительная картина, когда мы сравниваем культурное развитие нормального и ненормального ребенка. Мы могли бы как бы экспериментально сравнить на двух процессах условия строения этих двух линий. Вот почему метод сравнения нормального и ненормального ребенка будет в нашей лекции занимать такое место.

Вот простой пример: как трудно наблюдать и анализировать процесс речевого развития нормального ребенка, именно благодаря тому, что он совершается стихийно, незаметно, ребенок вырастает в речь окружающих его людей. Изменение совершается незаметно в мельчайшей структуре свойств,

которые возникают у ребенка, в росте объективных элементов за счет субъективных элементов и т.д. А наблюдение над развитием речи глухонемых и, особенно, слепоглухонемых представляет как бы микроскопе, т.е. в увеличенном в много раз виде, те процессы, которые незаметно для нас совершаются у нормального ребенка<sup>18</sup>, именно благодаря тому, что у ребенка получается сплетение двух линий, а у слепых [они расходятся]<sup>19</sup>.

Исследование ненормального ребенка и практика его воспитания давно уже выработали искусственные вспомогательные средства для культурного развития такого ребенка. В то время как нормальный ребенок овладевает теми средствами поведения, которыми пользуются взрослые люди, умственно отсталый ребенок не в состоянии воспользоваться этими средствами. Для него приходится создавать особые вспомогательные средства, и в создании таких особых средств мы опытным путем можем наблюдать [конвергенцию]<sup>20</sup>. Для глухих, отсталых детей обычно применяется такой способ, который исходит из операции завязывания узелка. Имбецилы не различают цветов и обычно к ним применяется такой метод: между названием цвета и этим цветом вдвигается какой-нибудь предмет. Например, имбецилов учат так: “желтое” — апельсин — желтая материя. Таким образом, если вы спросите, что это, он ответит — апельсин. Он между названием цвета “желтый” и впечатлением, стимулом, который производит на него впечатление желтого, вдвигает это вспомогательное средство, которое для нормального ребенка оказывается ненужным. Благодаря этим искусственным вспомогательным средствам, благодаря этим мосткам, которые приходится прокладывать у умственно отсталого ребенка между одной и другими линиями его развития, самый процесс сплетения или конв[ергенции]<sup>21</sup>, становится наиболее отчетливым, наиболее ясным и потому наиболее удобным для изучения.

На этом я заканчиваю свою лекцию.

<sup>16</sup> В этом месте в стенограмме пропуск.

<sup>17</sup> В этом месте в стенограмме пропуск.

<sup>18</sup> Вот причина, почему Выготский выразил желание заниматься ими, отвечая на анкету Наркомпроса. Спустя много лет, обсуждая результаты “Загорского эксперимента”, где создавались условия для формирования психики слепоглухонемых детей по системе И.А. Соколянского — А.И. Мещерякова, Э.В. Ильенков напишет в письме к А.В. Суворову, одному из участников этого эксперимента: «Я понимаю, что слепоглухонемота не создает ни одной, пусть самой микроскопической, проблемы, которая не была бы всеобщей проблемой. Слепоглухонемота лишь обостряет их — больше она не делает ничего» (Цит. по: Суворов А.В. Проблема формирования воображения у слепоглухонемых детей // Вопросы Психологии. 1983. № 3). То, что Выготский уподоблял «микроскопу», Ильенков называл «лупой времени» (Ильенков Э.В. Психика человека под «лупой времени» // Природа. 1970. № 1).

<sup>19</sup> Здесь в стенограмме конец страницы, предложение не закончено.

<sup>20</sup> В этом месте в стенограмме пропуск.

<sup>21</sup> Слово не окончено, оставлен пробел.

# ЛЕКЦИИ ПО ПСИХОЛОГИИ РАЗВИТИЯ<sup>1</sup>

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## Вторая лекция. Методы исследования в детской психологии

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Сегодня мы остановимся на вопросе о методах исследования.

Своеобразие того процесса развития, которое наблюдает исследование в детском возрасте в отношении поведения, требует своеобразия методов и способов исследования. А, в свою очередь, знание этого своеобразия методов и способов исследования, знание их обоснования принципиально являются необходимым условием того, чтобы правильно потом разбираться во всяких главах детской психологии. Потому что те факты, с которыми мы будем встречаться, то обобщение, которое мы будем производить, те законы, которые на основании этих обобщений мы будем устанавливать, — весь этот фактический материал, фактическое содержание каждой главы будет определено тем методом, тем способом, при помощи которого эти факты добыты, при помощи которого они обобщены и выведены в некоторые заключения. Поэтому опираться по-настоящему на метод, понять его отношение к другому методу, установить его сильные и слабые стороны, понять его принципиальное обоснование и выработать к нему то или иное отношение — это значит выработать в известной мере правильный и научный подход ко всему дальнейшему курсу детской психологии, излагаемому в таком аспекте, какой мы сейчас употребляем.

Таким образом, в самых общих словах, можно, возвращаясь к тому, что мы говорили в прошлый раз, сказать так: своеобразие поведения в детском возрасте мы видели раньше всего в том, что его развитие идет по двум различным линиям. Причем развитие идет по линии органического роста и созревания и по линии исторического развития. Это своеобразие требует умения установить отношение той и другой линии развития в каждом возрасте и определить то своеобразное сплетение обеих этих линий, которые характерны для данного возраста. Один род сплетения будет характерен для дошкольного [возраста], и даже еще более детально деление внутри каждого из этих возрастов. Говоря в самых общих словах, мы должны говорить о двух группах методов, которыми пользуется детская психология.

Первая группа методов — на ней надо остановиться. Остановка потребуется постольку, поскольку она обща со всеми теми методами, которые применяются в психологии вообще. Это та группа методов, т.е. способов исследования психологических явлений и фактов, которая исследует поведение в его более простом и естественном виде. Предметом этого исследования поведения, как известно, являются органические функции.

Все эти методы — с некоторым скорее техническим назначением, чем принципиальным, — применяются и в детской психологии. Таким образом, эта группа методов ничего специфического, ничего своеобразного для детской психологии не представляет.

Остается другая группа методов, которую и нужно охарактеризовать в собственном смысле этого слова и, самое важное, отношение которой нам надо выяснить и установить по сравнению с той первой группой методов. Эта вторая группа методов направлена на исследование, на выведение второй линии в детском возрасте и на установку ее наивозможнейшего своеобразия. В самых общих словах можно сказать, что эта вторая группа методов характеризуется как группа методов исторических, в отличие от методов органических, направленных на исследование первой линии развития поведения, на раскрытие ее содержания.

Для того, чтобы они были ясней понятны, позвольте мне привести конкретное описание той системы практики способов исследования, которая лежит в основе этой группы методов. Своеобразие этой психологической методики можно лучше всего охарактеризовать, если сравнить ее, если выяснить ее отношение к традиционным психологическим методам. Вы знаете, что традиционная психологическая методика разрабатывает сейчас с чрезвычайной тщательностью в основном свою схему. Она сводит группу различных способов, употребляемых методом приемов, к одной основной схеме. Эта схема, такая организация поведения испытуемого или такая точка зрения на поведение, скажем, в течение длинного отрезка времени, — такая схема, которая опирается на основное понятие «стимул—реакция».

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Если вы возьмете психологической эксперимент в самых различных школах и направлениях, психологический эксперимент нашего времени, то вы увидите, что везде и всюду у самых различных методологов, в зависимости от школы, от проблемы, основой этого психологического эксперимента будет эта схема. Дается известный ряд стимулов всегда различается известный ряд реакций испытуемых. Иногда это дело усложняется тем, что этот первый даваемый ряд стимулов требует со стороны испытуемого не простой реакции, а какого-нибудь сложного действия, сложного соединения реакций, которое я предлагаю назвать «операциями». Таким образом, очень часто в психологическом эксперименте вы имеете ту же самую схему, только усложненную: дается не один стимул, а некоторое количество этих стимулов в известной группе, в известной структуре. Со стороны испытуемого требуется не просто однозначная реакция, а требуется ряд реакций, которые можно назвать «операцией». Но основной принцип этой методики, т.е. исследования отношений между стимулом и реакцией, этот основной принцип остается неизменным во всех методах психологии, и он является, несомненно, таким прочным завоеванием материальной, естественнонаучной экспериментальной психологии, такой прочной основой, которая с полным правом может быть названа самым элементарным объективным методом.

Это основной фундамент знания, который имеет эта методика исследования. Отсюда совершенно ясно, что та новая группа методов, которая специфична и характерна для детской психологии, она не может отрицать этой основной схемы, она должна опираться на эту схему, поскольку она имеет общее значение и, следовательно, новой группе методов мы должны найти раньше всего место внутри этой схемы.

Действительно, та новая группа методов, которой располагает детская психология, мы видим, что как она ни различна от своеобразия проблемы, она так или иначе опирается на эту основную схему «стимул—реакция». Однако, внутри этой схемы она производит новое существенное разграничение, новое разделение понятий, которое называется раздражением<sup>2</sup> этой схемы в каком-то своеобразном направлении. Та методика, которая получается в результате того, что мы внутри этой схемы производим разграничение, может быть с полным правом названа функциональным методом двойной стимуляции.

Первым ее отличием будет то, что вместо одного ряда стимулов, при помощи которого мы организуем поведение испытуемого или наблюдаемого нами ребенка, вместо того чтобы выяснить поведение человека или ребенка в зависимости от отношения ряда стимулов, мы организуем — или этот метод организует — поведение ребенка при помощи изменяющегося ряда стимулов. Иначе говоря, они хотят сразу взять в поле зрения своего исследования более сложную за-

висимость, сокращения<sup>3</sup> между стимулом и реакцией. Они сразу берут вместо одного ряда стимулов и соответствующего им ряда реакций второй ряд таких стимулов, которые не стоят механически рядом друг с другом, а такой второй ряд стимулов, на которых каждая группа функционирует своеобразно по отношению к поведению, выполняет различные функции по отношению к поведению в целом.

Это что значит? Я думаю, для вас совершенно ясно, что не все стимулы одинаковы, не все стимулы определяют наше поведение одинаковыми способами, одинаковым образом. В основном они все определяют одинаково в том смысле, что все имеют нервный путь, условную рефлекторную дугу, но вместе с тем они могут определить наше поведение по-разному.

В сфере внешних операций, в сфере поведения внутри типичен такой пример: два стимула могут являться функционально единичными. Келлер перенес на детей проблему исследования употребления орудий. Вы знаете, в чем заключается эта методика. Она состоит в том, что кроме основного раздражителя, долженствующего вызвать реакцию, кроме него имеется наличие ряда предметов такого стимула, который непосредственно к данной ситуации не имеет отношения. И способ исследования, примененный Келлером к обезьянам и детям, заключается в том, чтобы [выяснить], в какой мере, в известных обстоятельствах — именно при тех обстоятельствах, когда прямая реакция оказывается невозможной, когда стимул, долженствующий вызвать соответствующую реакцию, оказывается недоступным для животного, — оно выходит к реакции, но обходным путем. Таким образом, животное или ребенок привлекает этот второй ряд стимулов; привлекается вспомогательное средство орудия для того, чтобы основная операция могла быть выполнена.

Практику схемы келлеровского опыта вы знаете. Животное вводится в клетку. Перед решеткой лежит банан или апельсин. Обыкновенная, условная реакция — животное протягивает руку и хватает банан и апельсин. Если животное находит этот плод слишком далеким, чтобы достать его просто рукой, тогда прямая реакция руки, условный рефлекс отказывается служить, не выполняет функции приспособления. И тогда животное — высшее, животное человекообразное — привлекает целый ряд отдельных стимулов, которые могут быть использованы в этой ситуации, скажем, палку в качестве орудия, вытягивая это орудие между собой и целью. Этот стимул приобретает функциональное значение в известной ситуации, иначе говоря, начинает выполнять сложные функции, и задача приспособления разрешается окольным, обходным путем при помощи второго ряда стимулов.

Нечто подобное имеем мы в том методе, о котором идет сейчас речь. Вся разница в том, что эта задача

<sup>2</sup> Так в тексте.

<sup>3</sup> Так в тексте. Возможно, «соотношения».



приспособления требует в данном случае не изменения внешних обстоятельств, решающихся самим животным, а изменения своего собственного поведения.

Вот пример, тот, которым я пользовался прошлый раз у Кёлера обезьяны рисовали языком и кистью различные цвета<sup>4</sup>. Кёлер ставил их в такую ситуацию, в такие положения, когда для того, чтобы справиться с требованиями, предъявляемыми ситуацией, для того, чтобы осуществить приспособление, животное должно было бы свои собственные мазки, цвета развить в условный стимул, и эта операция оказалась для животного [невозможной]<sup>5</sup>. Иначе дело обстоит с ребенком. Он даже на ранней стадии своего развития оказывается способным [выполнить эту операцию]<sup>6</sup>.

Поведение испытуемого или поведение наблюдаемого ребенка организуется при помощи второго ряда стимулов, причем один ряд стимулов играет роль объекта, на который направлена та или иная реакция. Другой ряд стимулов играет роль средства, при помощи которого эта операция осуществляется. Таким образом, каждый из двух рядов стимулов определяет поведение по-разному, выполняя по отношению к поведению функциональную роль, или еще иначе можно сказать, выводится более сложная двойная зависимость нашего поведения от внутренних стимулов. Мы различаем стимул объекта и стимул средства. Вот основное содержание метода функционального [двойной стимуляции].

Часть из вас знает этот простой пример. Как производится эксперимент или исследование, запоминание в традиционном психологическом методе? Дается ряд слов или картинок, какой-то ряд стимулов, затем ребенку предлагается производить сложные операции: прочитывать, повторять их, воспроизводить их, реагировать одним слогом на другой, давать показания, как он их запомнил. Сущностью метода, признаваемого этим традиционным экспериментом, в области памяти будет то, что данный ряд стимулов вызовет ряд зависимых от этого стимула реакций. В распоряжении экспериментатора имеется, как средство анализа, ряд объективных стимулов, которые он вводит и заменяет по своему усмотрению рядом реакций, которые он получает. Первый ряд находится в распоряжении экспериментатора, другой ряд производит испытуемый. Сопоставляя то и другое, экспериментатор получает определенный ответ на поставленный вопрос.

[Проводя] тот же самый эксперимент с запоминанием, я хочу проследить его историческое развитие, т.е. сложное развитие приемов запоминания.

Мы даем испытуемому ряд стимулов, которые являются объектами этой операции запоминания, ряд слов, ряд картин, ряд слогов, которые он должен запомнить, и ряд средств — скажем, картинок, при помощи которых он должен запомнить. Исследуются

те же самые реакции испытуемого, но только в более сложном образовании, в более сложной операции, в более сложной зависимости. Для вас должно быть ясно здесь, что исследование самой операции более сложного порядка, в сущности, сводится к ряду представлений или обращению ее в простую операцию, строящуюся путем «стимул—реакция». Таким образом самое первое, что бросается в глаза, — это сравнение двойной стимуляции с обычными методами <...><sup>7</sup> стимула. Здесь мы имеем в виду не нарушение схемы, не отказ от схемы «стимул—реакция», а изучение более сложной зависимости внутри этой же самой схемы. Это признак двойной стимуляции. Различная функциональная роль каждого из рядов стимулов заключается в том, что ряд стимулов определяет наше поведение в качестве средств выполнения этой операции. Вот то общее, то основное, что соответствует нашему представлению о типе исторического развития поведения и что, мы видим, лежит в каждом конкретном приеме исследования, с которым мы будем иметь дело в течение всего нашего курса.

Позвольте теперь остановиться на раскрытии научного содержания, принципиального основания такой методики. Первое и основное принципиальное соображение, которое входит в каждую главу нашего изучения, когда начинаем думать об обосновании этого метода, заключается вот в чем. Всякий метод, всякий способ исследования предполагает раньше всего соответствующие своеобразия того явления, которое подвергается изучению.

Если верно то, что я пытался изложить в прошлый раз, говоря об исследовании в психологии, то есть исследовании того, как развивается поведение в исторический период человечества, если верно то, что сущность исторического развития поведения заключается в переходе от непосредственной реакции биологического типа, то есть реакции, которая в качестве средств своего осуществления привлекает средства, созданные культурным соотношением, то легко видеть, что метод, построенный сообразно этому <...> исторический тип.

Проще говоря, развитие второй линии, как мы условно говорили, заключается в том, что непосредственная реакция переходит в опосредствованную, то метод и должен развивать то средство, которое здесь вдвигается [между стимулом объекта и реакцией]. Соответственно этой методике, это соображение самое простое и вытекающее из того определения, которым мы пользовались. Позвольте перейти к более сложному исследованию самого метода.

Первое, что нас интересует сейчас в психологии, — это объективность всякого метода. Вопрос этот сейчас в экспериментальной методике, особенно <...> методике ребенка, стоит необыкновенно и остро и сложно. Я позволю себе форму несколько

<sup>4</sup> См. предшествующую лекцию.

<sup>5</sup> В этом месте в стенограмме пропуск.

<sup>6</sup> Абзац не закончен.

<sup>7</sup> Небольшой пропуск в стенограмме.

упростить, но несколько вспомогательных соображений потребуется для того, чтобы нашу точку зрения в этом вопросе выяснить. Немецкие исследователи сейчас, принадлежащие к самым различным психологическим школам, предлагают разделить психологический эксперимент с ребенком в детской психологии на две основные группы, причем обе эти группы называют по-разному.

Так, Бинэ предлагает разделить на функциональный эксперимент и диагностический<sup>8</sup>, или показывающий, представляющий эксперимент. Обе эти формы эксперимента он действительно развил в эксперимент практический, представил два закона развития глубоко различных типов психологического эксперимента. В эксперименте функциональном, как во всяком естественнонаучном эксперименте, предлагается такое исследование [и] наблюдение явлений, которое приводит к познанию функциональному, и от этого познания <...> и зависит обусловленность данных явлений.

Совершенно другая задача стоит перед нами. Это — эксперимент, показывающий такую задачу: взять известное состояние с наибольшей ясностью и отчетливостью, а затем это состояние с наибольшей ясностью так, как оно происходит на самом деле, в равной ясности, <...> самонаблюдения или в термине внутреннего поведения, если это будет связано с поведением внутренним.

Левин принадлежит к группе психологов второго типа экспериментальной психологии, называемой феноменологией. Эксперимент, который направлен на объяснение известных явлений, не вдаваясь в их анализ кон[диционально]-ген[етический]<sup>9</sup>, задачей которого является концепция, т.е. условие, при котором практика того или иного действия и происхождение данных условий при данных явлениях, и, наконец, Л[евин]<sup>10</sup>, другой представитель этой психологии, предлагает давать каждому эксперименту различные две стороны. Ф[еноменологическое] строение поведения непосредственно объясняется тем, что происходит в функциональном эксперименте или функциональном строении, происходящим от ряда причин, с которыми данное явление находится в сложных отношениях. И, наконец, Л[евин] сравнивает приемы, говоря, что речь идет о генезисе естественного научного эксперимента.

Основными являются методы, о которых мы говорили; сейчас они характеризуются раньше всего своим объективным характером, раньше всего тем, что они представляют собой длительное развитие дальнейшего применения в детской психологии объектив-

ных методов исследования, т.е. к[ондиционально]-г[енетических]<sup>11</sup> приемов эксперимента. Каждому ясно здесь само название, оно ставит своей целью описать непосредственно происходящие внутренние процессы, переживаемые ребенком во всем их своеобразии; их задача не столько проникнуть этим путем во внутренний мир ребенка, сколько разобраться в тех условиях, при которых возникает тот или иной тип поведения.

При этом Л[евин] указывает на одно соображение, которое и мне представляется соображением весьма важным. Это соображения, которые естественными и другими науками были давным-давно усвоены, соображения, на основании которых ряд естественных наук давным-давно выбросил феноменологический эксперимент из своей практики совершенно и свел его к суженной роли.

Два человека, которые ф[енотипически] могут быть одинаковы, г[енотипически], т.е. по своему происхождению и различной обусловленности, могут представлять две вещи глубоко различные, и обычно два процесса, которые г[енотипически] являются одинаковыми, могут ф[енотипически], в зависимости от целого ряда допущенных условий, быть совершенно различными.

Л[евин] приводит пример: старая ботаника и новая ботаника, основанная на эволюционной теории. Старая ботаника говорила и поступала ф[енотипически]<sup>12</sup>. Если растения имели одинаковую форму листа, более или менее одинаковый цвет, все эти растения или цветы объединялись в одну общую группу. Ф[енотипически] ботаники были совершенно правы, но г[енотипически] были не правы, потому что целый ряд изучаемых ими явлений различных растений по своему развитию имеет одинаковые ф[енотипические] черты, обусловленные тем, что всякое растение до известной степени носит отпечаток той конкретной среды, где оно растет. Все растения, растущие на горе, имеют свои своеобразные черты. На основании этого ботаники объединяют растения г[енотипически], т.е. объединяют в одну группу такие растения, которые г[енотипически], т.е. по обусловленности и происхождению принадлежат к одной группе, и, учитывая их ф[енотипические] различия, они берут один и тот же вид растения и показывают, что его ф[енотипическое] различие происходит из тех конкретных условий, в которых жило одно и другое растение.

Конкретный пример вы знаете и часто употребляете в методе предметном. Пример с китом: ф[енотипически] кит — рыба, он живет в воде, он

<sup>8</sup> С высокой вероятностью пропущено слово «диагностический» (в частности, тест Бинэ—Симона для оценки развития интеллекта, Выготский не раз о нем писал). Ниже слово «диагностический» пропущено еще раз в другом контексте. Видимо, стенографистка не знала, как оно пишется.

<sup>9</sup> Стенографистка слышала слоги «кон» и «ген», оставив пробелы на месте недостающих частей слова. «Кондиционально-генетический анализ» — выражение К. Левина (см.: *Выготский Л.С. Соч. Т. 3. С. 97*).

<sup>10</sup> После инициала — короткий пропуск. Из дальнейшего очевидно, что это именно Курт Левин, а не какой-то «другой представитель».

<sup>11</sup> Записаны только начальные буквы «к» и «г».

<sup>12</sup> У К. Левина это положение звучит так: «Старая ботаника... распределяла растения в определенные группы по форме листьев, цветов и т.д., согласно их *фенотипическому* сходству...» (Цит. по: *Выготский Л.С. Основы дефектологии. СПб.: Лань, 2003. С. 106*).

имеет форму тела, напоминающую рыбу, и для ф[еноменологического] исследования не было никакого сомнения, что мы имеем дело с огромной рыбой, с некоторыми особенностями, но в целом стоящим ближе к рыбе, чем к оленю, тигру, и другим животным. Однако, г[енотипическое] исследование показывает, что несмотря на то, что ф[енотипическая] разница между китом и оленем действительно достигла огромных размеров, несмотря на это, кит стоит г[енотипически] от акулы дальше чем от оленя.

Иначе говоря, естественные науки давным-давно отказались от непосредственного ф[еноменологического] исследования и пришли к к[аузально]-д[инамическому]<sup>13</sup>.

Почему этот способ держится так долго в психологии? Сосредоточивая внимание на своеобразии переживания, на непосредственно данных субъективных процессах, пытаются рассматривать эти психические процессы, как явления духовные, совершенно отделенные от явлений органических и внутренних. Вот, собственно, те корни, восходящие глубоко к идеалистическому уровню философии, которыми обусловлено дальнейшее развитие ф[еноменологических] способов психологии.

Таким образом все то, что мы имеем на сегодня реально научного в детской психологии, базируется на этом втором типе — к[аузально]-д[инамическом], или, если вы хотите, к[ондиционально]-г[енетическим], или объективном, эксперименте.

Но вместе с этим, вы знаете, произошло существенное изменение во взглядах на применение экспериментов к ребенку вообще. Старая психология все более и более утверждает, что экспериментальный способ к ребенку малоприменим, а к ребенку малой [возрастной] ступени не применим вообще, потому что ребенок мало способен к самонаблюдению. Это момент, который будет чрезвычайно важен для выяснения одного пункта. Ребенок с очень большим трудом, особенно ребенок раннего возраста, может отдать отчет в тех внутренних операциях, которые он выполняет.

Ф[еноменологически] давали ребенку несложные процессы. Затем спрашивали. Ребенок давал ответ, но, когда его спрашивали, как получился этот ответ, то около девяноста процентов детей не могли дать правильного объяснения того процесса, которым они пришли к данному результату. Ф[еноменологически] дают ребенку несколько отсталому умножить пять на двенадцать. Ребенок говорит — 60, дает правильный ответ. «Как ты узнал, что это 60?». Ребенок не знает. «Я взял 10, еще 10, еще 10, еще 10, еще 10, еще 10, получил 60». Иногда дают произвольные показания: «Я взял 50 и прибавил 10». Иногда, умея выполнить операцию, он не может дать проследить свой внутренний процесс.

В ф[еноменологическом] эксперименте ребенок представляет собой в высшей степени неблагодарный материал, потому что перед нами только то, что мы можем наблюдать внешне, а доступ к его внутреннему миру оказывается прегражден. Единственным путем при таком эксперименте проникнуть во внутренний мир является предложенная концепция, предложенная на основании тех данных, которые мы имеем относительно переживаний взрослого человека и т.д. Только в психологии эксперимент сделался одним из основных способов объективного научного исследования поведения ребенка. Потому что вывод обусловленности и генезиса явления можно вскрыть только у ребенка — там, где ф[енотипическое] различие, имеющее то высокое развитие индивидуальности, не застыло, только [там], где непосредственный комплекс чрезвычайно просто поддается уловлению в самом эксперименте. И здесь важно [понять], где еще не сложились и не прошли своей долгой истории такие сложные образования, которые у нас сложились в результате длинного ряда исследований, которые глубоко изменились в психологии.

В чем же заключается объективный характер той методики исследования, о которой мы сейчас говорили и которой будем все время пользоваться? Главным образом, [исследуется] все то, что выносятся наружу, известные внутренние или сложные операции. Такие эксперименты, где мы исследуем какими-нибудь внешними действиями внешние операции, немецкие исследователи называют экспериментами связи, экспериментами над операцией. Самая характерная черта этой методики заключается в том, что всякие внутренние операции этого эксперимента строятся связанными с известными внешними операциями.

Пример исследования: мы исследуем образование понятий у ребенка. Для того, чтобы образовались понятия, как это известно из практики анализа, необходимо наличие двух условий. Необходимо, чтобы был ряд предметов, к которым относятся эти понятия, и чтобы были слова или средства языка, при помощи которого обрабатываются опыты этого понятия [и] собираются в известное значение слова.

Исследователи этого процесса всегда наталкивались на такую трудность: предмет, который действует на ребенка, на основании которого он вырабатывает понятия, — ясен; результат — образовались у ребенка понятия или не образовались — нам тоже ясен, потому что мы спрашиваем о нем у ребенка. А процесс, как он произошел, — неясно. Нам были известны начало и конец, а середина была неизвестна. Мы что-то дали ребенку, мы что-то получили от ребенка, но мы не знали, каким путем это образовалось, потому что этот ряд сложных процессов и операций связан главным образом с внутренним производством, которое непосредственно воспроизвести не может не только ребенок, но и взрослый.

<sup>13</sup> Пропущены два слова, стенографистка записала начальные буквы «к» и «д». Различие между феноменологическим и каузально-динамическим, или фенотипическим и кондиционально-генетическим, анализом провел Левин, на которого и ссылается Выготский. См.: Выготский Л.С. Соч. Т. 3. С. 97.

Потом, когда мы будем говорить о развитии речи, мы должны будем сказать, что там внутри приобретаются такие сокращения, <...> операции, там мы часто перескакиваем через такие цепи, которые мы не можем осознать и раскрыть с помощью речи. Что непосредственно развернуть свою внутреннюю речь, свое мышление, непосредственно развернуть его в речевой форме трудно.

Таким образом, что делали старые исследователи в области исследования поведения? Они исследовали готовую дисциплину понятий, а как они складывались — исследователям было непонятно. Как поступает новая методика? Она поступает иначе: она дает ребенку ряд стимулов, ряд условных слов, другой ряд стимулов и т.д. Являются два внешних ряда стимулов, которые определяют поведение ребенка. Перед ребенком ставятся известные задачи, которые требуют, чтобы ребенок применял слова в качестве средства для образования понятий, причем эта задача связывается с внешними операциями ребенка.

Эта задача формируется так: отбирается известная группа предметов, ребенок решает эти операции, двигая эти предметы, отбирая одни от других, переставляет их, но делает ошибки. Таким образом, мы говорим, что внешние операции связываются с внутренними операциями.

Если при этом могли бы сказать, что внутренние процессы образования понятия совпадают с внешним процессом оперирования объектами, когда это заставляет двигать ребенка различными фигурами и предметами, конечно это было бы наивно. Наивно было бы думать что это внешнее поведение ребенка, его ошибки в точности воспроизводят те внутренние процессы, которые происходят у ребенка, когда он вырабатывает понятия. Но здесь происходит вот что. Здесь происходит то, что можно показать следующим образным сравнением: представьте себе, что нам нужно проследить движение рыбы в глубине<sup>14</sup>. Представьте себе, мы погрузили рыбу в определенной точке. Затем поднимаем ее в другой точке, но мы хотим составить себе приблизительное понятие о том пути, который прошла рыба. Что это — путь прямой или зигзагообразный, лежащий в глубине или под поверхностью? Набросим на рыбу веревочную петлю и оставим в руках другой конец веревки. Он двигается потому, что он связан с рыбой. Было бы наивно думать, что по концу веревки можно составить понятие о пути, которым рыба идет, но ряд изменений конца веревки, которую мы держим в руках, соответствует движениям самой рыбы, связанной этой веревкой. Значит, мы имеем кроме точки погружения и точки выхода еще ряд изменений этого конца веревки, который, конечно, не воспроизводит всего, но который функционально соответствует тем движениям, ко-

торые рыба делала там. По этим изменениям мы не можем воспроизвести полностью всего внутреннего процесса, того как рыба шла под водой, но, пользуясь этим, можно определенно сказать, как глубоко она погружалась. Также, судя по веревке, мы можем сказать, сколько под водой она плыла. Многое останется неясным, конечно, будет ошибочно истолковано, но в основном принципиально будет чрезвычайно важно, и прежде всего для метода детского исследования. Здесь чрезвычайно важен переход к объективному исследованию внутренних процессов, которые при непосредственном ф[еноменологическом] исследовании [диагностированию] и не подлежат, и которые проверить обычным экспериментом над условным рефлексом невозможно.

Следующий момент, который является чрезвычайно важным для характеристики всех важнейших современных исследований в области детской психологии, — это то, что можно назвать историческим характером этого метода. Это группа методов исторически-г[енетических] в собственном смысле этого слова, группа методов, основным типом которых является следующее: они стремятся исследовать всякие процессы поведения, как результат известной истории, как известный исторический процесс, начавшийся в известном месте, идущий таким-то путем. Поведение взрослого человека полно таких форм, которые являются исторически образованными, т.е. которые нельзя понять, если не подойти к ним исторически.

Я вам дам простой пример, на который натолкнулся в исследовании психологии арифметических операций взрослого человека. Эти операции до такой степени автоматизированы, что <...><sup>15</sup>.

В результате дальнейшего исследования уже с точки зрения психологии, когда мы считаем, то у нас происходит при этом чисто механическое, автоматизированное оперирование с известным числовым рядом и, следовательно, получился сложный <...>. По выражению Т[орндайка], сложное образование, которое может быть понято, только если взять его историю<sup>16</sup>. Вот почему основным положением такого рода исследования может служить выражение Б[лонского]: история поведения, говорит он, может быть понята только как историческое поведение. И это не только образное слово, а глубокое изменение в методе, в зависимости от того, что в самую методику вносит исторический подход к исследуемому явлению.

Позвольте пояснить. Вы знаете, вероятно, что историзм, исторический аспект, рассматривающий какой-нибудь процесс в его исторически развернутом виде, является одним из основных научных требований диалектического метода. Этот историзм не только является признаком исследования в науках

<sup>14</sup> Пример из статьи: *Выготский Л.С.* Проблема культурного развития ребенка (1928) // Вестник Московского университета. Сер. 14, Психология. 1991. № 4. С. 58–77.

<sup>15</sup> Предложение не закончено. Можно предположить, что речь идет о том, о чем не раз писал Л.С. Выготский: у взрослого арифметическая операция выступает как частный случай алгебраической. Генетическое отношение между нижней и высшей операцией здесь оказывается перевернуто.

<sup>16</sup> См.: *Выготский Л.С.* Сочинения. Т. 3. С. 311.



общественных, где он является ключом, без которого нельзя действовать, но и в науке о природе. Вы знаете мысль, которую развивал во многих местах Энгельс, мысль, которая заключается в том, что естественно-научная теория в процессе своего дальнейшего развития должна руководиться в своем росте историей. Иначе говоря, если и те законы, которые мы воспринимаем как законы природы, то есть как законы, которые не изменяются исторически на наших глазах, — если эти законы взять в более длинный период времени, [то их также] следует понять не как существующий везде и всюду закон природы, а как закон исторический, т.е. закон, имеющий силу на определенной ступени развития материи, хотя бы и мертвой, и хотя бы эта ступень была значительно больше, чем какая-нибудь общая формация, в продолжение которой действуют известные общие законы.

Это положение Энгельса, которым я сейчас руководился, можно было бы с полным правом взять буквально в исследование детской психологии. Энгельс говорит, что функционирование законов природы превращается все более и более в исторический закон. Что это значит? Он показывает нам, что всякий закон природы, закон физический требует наличия определенных трудовых условий, которые являются с точки зрения сравнительной системы исторически образованными, как постепенная связь <...><sup>17</sup>.

Он говорит, что сама эта теория превращения, если она последовательно применяется ко всем явлениям в историческом изображении, происходящим в какой-нибудь системе от ее рождения до ее гибели, — эта теория превращения в истории на каждой ступени, на которой господствуют другие законы, видит другие формы проявления одних и тех же движений. Таким образом, абсолютным вообще, универсальным значением обладает лишь одно движение.

В применении к детской психологии, к той линии детской психологии, которой мы интересуемся, это может означать следующее: есть некоторые законы природы, естественнонаучные законы, которые управляют развитием поведения ребенка. Эти законы являются постоянными для данного биологического типа человека, эти биологические законы принимают своеобразную форму действий. Таким образом, на каждой ступени исторического развития действовали различные формы тех же самых общих законов, которые мы имели с самого начала.

Например, деятельность человеческой памяти во все не изменилась в смысле своих природных законов со времени доисторического человечества. Это более или менее общеизвестный факт. Во всяком случае экспериментальное исследование примитивного человека не обнаружило у него существенных отклонений в основных законах работы его памяти от работы культурного человека. Но формы запоминания у человека, который пользовался <...><sup>18</sup>, у человека, как древние китайцы или как дикари, о которых мы

говорили в прошлый раз, пользовался веревочными записями, или который у нас запоминает с помощью ряда вспомогательных средств, формы проявления этой памяти различны в зависимости от степени развития. Это является основой современной социальной психологии. Исторически развиваются средства поведения, и исторической задачей метода является изучение методов изменения поведения в зависимости от этих средств.

Ребенок, который научается нашему письму, и ребенок, который рождается в той среде, где он вообще ничего не может выучить, легко научается китайскому языку. Во всем этом один и тот же закон памяти, проявляющийся в одинаковых формах, или есть ряд специфических законов, которые определяют деятельность этих общих законов в зависимости от тех средств, которыми овладевает ребенок в той или иной среде. Вот основное положение, которое дает историческое изображение, как основа теоретического толкования. Поэтому если вы спросите современного исследователя, стоящего на этой точке зрения, что значит дать теорию детской памяти, он скажет: это значит, исходя из определенной биологической установки <...> методов условного рефлекса, закон, образующий связь в мозгу, — исходя из этого показать, как в этих обстоятельствах совершается развитие, в зависимости от исторических законов; на какой ступени детского развития изменяются и воспринимаются специфические формы различных функций детской памяти в зависимости от тех средств социального характера, от средств поведения, которыми овладевает ребенок. Ведь закон овладения один и тот же.

Я думаю, что ясно все-таки то, что это исследование есть исследование поведения раньше всего со стороны его социальной обусловленности. Ведь средства поведения тем и характеризуются, как орудия труда, что они суть результат социального, а не индивидуального опыта, и что они являются исторически выработанными человечеством в процессе постепенного роста человеческой культуры и человеческой техники на основании уклада известных общественных отношений.

Можем ли мы сказать, что в зависимости от изменений средств поведения изменяется наше мышление? Совершенно несомненно. Давно психология выдвинула положение: интеллект усложняется соответственно материальным условиям, иначе говоря, тем средствами, которыми распоряжается тот или иной ребенок.

Например, представьте себе, что ребенок, скажем, будет расти в какой-нибудь примитивной среде и овладеет не русским или каким-нибудь другим европейским языком, а языком какого-нибудь африканского племени. Изменится ли в зависимости от этого весь характер его мышления на каждой его ступени, а отсюда [разве] его мировоззрение будет развиваться не иначе, чем наше? Конечно. Следовательно в этом

<sup>17</sup> Оставлен пропуск длиной около полутора строк.

<sup>18</sup> В предыдущей лекции Выготский приводил в пример веревочные записки квиу у народа майя.

исследовании везде и всюду различается раньше всего развитие поведения постольку, поскольку оно обуславливается средствами поведения, т.е. образованиями, социальными по своему характеру.

Отсюда третье и последнее, характеризующее этот момент. Именно поскольку мы переживаем развитие высшей формы поведения в зависимости от средств поведения, постольку мы раскладываем материальную линию, объясняющую эти высшие процессы. Иначе говоря, экспериментальная детская психология старается проследить зависимость высших форм поведения, высших процессов поведения от двух основных данных: во-первых, как они образуются из низших, от физиологических функций. Это есть только одна сторона материального исследования в психологии. Другой стороной [является] стремление проследить, как это превращение низшего в высшее образуется или происходит под постоянным давлением тех средств поведения, которыми овладевает тот или иной ребенок, та или иная индивидуальность. Эти попытки поставить или показать, что высший процесс мышления, высший процесс внимания, памяти стоит в прямой зависимости от этих двух основных рядов — показать это и составляет задачу экспериментального исследования детской психологии. Это есть то, что Л[евин] называет <...><sup>19</sup> исследовать, как те две основные линии, которые не несут в себе каждая форму поведения на каждой данной ступени развития.

Наконец, последнее, это — отношения, которые характеризуют этот метод, определяющие этот метод по сравнению с методами естественнонаучной психологии, о которой я говорил раньше. Здесь дело обстоит чрезвычайно ясно и просто. Простота эта заключается вот в чем: как я старался показать, та группа методов, которая является с[пецифической] в детской психологии, эта группа методов не отрицает и не отказывается от основной схемы, но является сторонником дальнейшего ее усложнения, различая внутри этой основной схемы другую часть более сложных отношений между стимулом и реакцией, разделяя стимул на стимул объективный и стимул-средство.

Отсюда совершенно ясно, что говорит диалектический эксперимент. Усложняя форму поведения, условные рефлексы не уничтожаются и [не] отменяются внешней операцией, основу которой они составляют, а изменяются. То есть, что это значит? Они не перестают существовать, они переходят в какую-то новую сложную форму, которая обладает новыми чертами, вскрыть которые и составляет задачу науки.

Простой пример: мы знаем, что безусловный рефлекс или инстинкт переходят в процессе развития в условный рефлекс. Спрашивается, переходя в эту новую форму перестает существовать безусловный

рефлекс? Нет, он изменяется. Он действует на внутренний условный рефлекс, т.е. действует в новой форме <...> специфическая функция, специфическое отношение по отношению к поведению организма в целом. Или условные рефлексы, изменяясь в интеллектуальной операции, скажем, мышления, — уничтожаются? Конечно нет. Мышление, как я говорил, основываясь на исследовании арифметического мышления есть не что иное, как, по выражению Т[орндайка], <...><sup>20</sup>.

Представьте себе, что является самым характерным для мышления в арифметике. Это решение задачи. Если мы возьмем в арифметике операцию умножения или операцию деления, то это высшая реакция, а решение задачи является мышлением в собственном смысле этого слова. Поскольку ребенок не знает, как решить данную задачу, постольку он применяет к новым условиям те навыки, которые у него есть.

<...><sup>21</sup>.

Я дам аудитории задачу разделить 64 на 4. Одинаково мы ее все решим? Нет, не все одинаково. Мы проанализируем, кто как решил эту задачу. Что, они решили ее способом, которым другие не владеют? Нет, все владеют этим рядом деления и умножения. Следовательно, составление операции при решении задачи отделяется от простого деления и умножения. Составление ее в целом сводится к известному навыку. Так точно инстинкт или безусловный рефлекс изменяется или переходит в более сложную форму, переходя в условный рефлекс. Не уничтожается, а изменяется, переходя в новую форму. Решение задачи или, более обще говоря, мышление точно так же в объективном поведении, которое строится по типу стимул—реакция, не уничтожается, а изменяется, т.е. перерождается в новую форму. В этом культурная операция.

Иначе говоря, перед наукой возникает, как и всюду, перед всяким научным исследованием, две задачи: с одной стороны, показать составление известных высших операций из низших, показать, как решение задачи возникает из простых навыков, с другой стороны — как сообразно данному типу сочетаются эти навыки. После этого является способ поведения. Поэтому одно и то же явление, которое мы будем с вами изучать — скажем, такое запоминание при помощи картинок, — получит два изображения в зависимости от того, с какой точки зрения мы будем его рассматривать.

В запоминании при помощи картинок, если мы будем рассматривать с точки зрения р[еактологической (?)] естественнонаучной психологии, то здесь перед нами не одна реакция, а ряд реакций<sup>22</sup> Ребенку задается слово, на которое он должен реагировать тем, что он выбирает картинку, устанавливает связь между данной картинкой и словом. Ребенок откладывает картинку — целая система реакций. С точки зрения

<sup>19</sup> Пропущено около половины строки.

<sup>20</sup> Далее пропущены две строки.

<sup>21</sup> Пропущены три строки.

<sup>22</sup> Вероятно, имеется в виду концепция К.Н. Корнилова.

реакций эта операция будет сложной, целой сложной системой реакций. С точки зрения исторического развития это будет простейшим типом перехода простой реакции в сложную. Иначе говоря, то, что является сложным образованием, что идет по одному пути, то является исходной точкой, если идет по другому пути.

При анализе такой операции ребенка будет стоять две задачи: с одной стороны, раскрыть ее естественнонаучные корни, ее содержание, с другой стороны — описать исторически, по возможности проследить и подвести под какой-то общий закон эти высшие формы. Таким образом, если формулировать это, можно было бы сказать, что эта группа методов в детской психологии не только не отрицает естественнонаучных методов поведения, в особенности методов условных рефлексов, но и опирается на них. Она становится возможной только на основании этих методов постольку, поскольку она стремится проследить как те  $z \dots >^{23}$ , которые устанавливаются этим методом, как они генетически изменяются в развитии ребенка в зависимости от того, как ребенок овладевает теми или иными средствами поведения.

Итак, это фундамент или опора той методике, которая находится над ней. В самом общем виде можно дать такое предварительное определение: можно сказать, что эта методика или эта методика детской психологии есть способ исследования поведения и развития этого поведения, употребляемых в зависи-

мости от средств поведения и при помощи раскрытия функционального этих средств поведения, т.е. при помощи раскрытия того, как поведение строится, опираясь на эти средства.

Наконец, самое последнее, что я хотел сказать, — это то, что та группа методов, которую я сейчас старался охарактеризовать, является не только группой исторически объективной, но и сравнительной. По самому существу основным способом нашего рассмотрения будет все время сравнительный метод. Иначе говоря, поскольку задача прослеживания этих двух линий заключается в том, чтобы посмотреть, как изменяются на различных возрастных ступенях основные постоянные законы поведения ребенка, постольку мы должны выделить это постоянное, следовательно все эти законы. Основным методом и способом исследования становится сравнительный способ, сравнительный метод.

Еще раз хочу сказать: перед нами будут всегда три основных плана, в которых двигается эта методика, в которых она может быть применена. Первый — историческая психология, социальная психология, история развития поведения человечества. Второй — история развития ребенка. Третий — психология современная, результат культуры человека, в его высших операциях, с сопоставлением операций там и здесь. И еще, последнее: внутри детской психологии мы будем пользоваться сравнением нормального и ненормального ребенка.

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<sup>23</sup> Законы? Задатки?

# The “Revisionist Revolution” and Future Prospects of Vygotskian Studies

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This article provides critical analysis of A. Yasnitsky’s project of “Cultural-Historical Gestalt Psychology.” He uses this term to describe Vygotsky’s biggest discovery and the future of Vygotsky studies. Yasnitsky discards the activity approach to studying the human mind and reduces the social nature of personality to an “aspect” that did not receive serious elaboration in Vygotsky’s works. In the present article, it is argued that the prospect of the development of cultural-historical theory consists in elaborating on Vygotsky’s project of “height / acmeist psychology.” Its subject matter is “the reverse movement from consciousness to life,” as Vygotsky put it. The purpose of height psychology is to help humans master their affects by means of concepts. This science realizes “the motion toward freedom — toward a life guided by reason.”

**Keywords:** cultural-historical gestalt psychology, structure, perception, activity, consciousness, parallelism, height psychology, affect, concept.

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Great minds provide guidance for the movement of thought, and a historian of science should aim to disclose the heuristic potential of their writings. From this perspective, we aim to examine the recent “revisionist revolution” in Vygotsky studies, initiated by Anton Yasnitsky. Of course, we cannot avoid the question of inadequacy in reading the classic texts. Yet it is more important to understand *what future* the young Carbonari, with Yasnitsky at their head, are preparing for cultural-historical psychology.

## I

The program volume, *Revisionist Revolution in Vygotsky Studies*, was published in 2016. The cooperation between its editors, Anton Yasnitsky and René Van der Veer, appeared to be short-lived and it is obvious, judging from Van der Veer’s other writings and personal remarks, that their theoretical views diverged in many respects. Two chapters by Ekaterina Zavershneva, previously published in Russian, were falsified in a “revisionist” way when translated (for details, see [4]).

Now let us take a closer look at “a fairly new, not so familiar image of Vygotsky and his scientific legacy” [18, p. 93].

Vygotsky’s work during the “instrumental” period of the 1920s is described as “mechanistic and fairly reductionist.” In so doing, Yasnitsky does not discuss the idea of the social nature of the human mind, although Vygotsky’s cultural psychology began with the concept of personality as “the social in us.” However, in his next book *Vygotsky: An Intellectual Biography*<sup>1</sup> Yasnitsky himself devotes a couple pages to an “unexpected discovery” (the title of the section) of the social nature of the mind. Many thinkers before Vygotsky cherished the idea of the social and cultural origin of the human mind, Yasnitsky writes. “The social dimension of tools and instruments — so clear in the philosophical works of Marx and Engels — is somewhat obscure in Vygotsky’s “instrumental psychology” research. ... Vygotsky and his team never investigated in depth the social aspect of psychological functioning properly. Furthermore, there was no special terminology in Vygotsky’s conceptual toolkit of the 1920s that would account for the social dynamics of personal interaction” [15, pp. 70–71].

There are neither proofs, nor arguments for these statements in his book. Dozens of papers on the *social nature*

<sup>1</sup> At first, Van der Veer was announced as a co-author [18, p. 311].



(not simply an “aspect”) of the human mind in Vygotsky’s works have been written. Perhaps, they could help to elucidate what was “somewhat obscure,” but Yasnitsky did not see fit to take them into consideration.

In the 1930s Vygotsky’s thinking underwent a “major shift” that Yasnitsky ascribes to the beneficial influence of Gestalt psychology. He calls this period of Vygotsky’s work “holistic.” As a result, “cultural-historical Gestalt psychology” (CHGP) was born. The term was invented by Yasnitsky about ten years ago (see [12; 13]). Since then, he has repeatedly, in great detail, highlighted Vygotsky’s personal contacts with the Gestaltists. However, never has he examined *in concreto* the content of the CHGP — excluding general phrases about holism and a “Galileian mode of thinking.”

Recently two more revisionist volumes have been published [16; 17]. Also, Yasnitsky has announced a collection of his edited works entitled *Cultural-Historical Gestalt Psychology: Historical, Methodological and Theoretical Perspectives* (forthcoming in 2022). It seems a reader can expect to find out what CHGP is and how it works.

It is important to realize that everything Yasnitsky and his coauthors write about Vygotsky is not only a revision of the past, but also a *vector for developing* the theoretical program created by Vygotsky and his circle. In discussing the evolution of Vygotsky’s views, Yasnitsky attempts to address what is dead and what is alive in his legacy (in his heir’s humble opinion, of course). And we, too, in showing the inadequacy of his reading of Vygotsky, must offer an alternative way of developing cultural-historical psychology.

## II

The relationship between cultural-historical theory and Gestalt psychology is the first thing to be considered. Is it correct to say that the “Vygotsky–Luria circle’ continuously converged with the group of Gestalt psychologists, their students, and followers during the second half of the 1920s and, particularly, in the 1930s” [12, p. 64; 18, p. 208]?

In terms of personal contacts, awareness of new concepts and experiments of Gestalt psychologists — the answer is yes, definitely. Another question is whether there has been a *far-reaching convergence of research programs* that would allow one to detect the emergence of a hybrid called CHGP? Vygotsky’s recently published notebooks give us a quite clear answer to this second question. Here, we see the genius at work in his personal laboratory, at the cutting edge of science. He reflects on prospects, plans for the future, and provides a critical assessment of the traversed path.

The “instrumental” Vygotsky held an extremely high opinion of “structural psychology.” This is articulated clearly in his work printed in 1930. He asserted that Eu-

ropean psychology has split into two wings — objective and subjective, deterministic and teleological. The way out of this crisis was found “in the recognition of the structural unity of mental and physiological processes. ... Structural psychology rises to a higher requirement: to study the human personality as a whole, as a structure, and, above all, to study it in its structural correlation with the environment” [7, p. 116].

Even in that period Vygotsky saw two fundamental flaws in Gestalt psychology: (i) the ahistorical, “metaphysical” character of the concept of Gestalt, and (ii) the “utter neglect of a social factor in human psychology.” Nevertheless, structural research so far seems to him to have been a movement “in the same direction as the Marxist reform of psychology” [7, pp. 124–125].

Already by the autumn of 1930, his critical tone had turned much harsher. Then he claimed that “*Gestalttheorie* ignores the concrete person” [11, p. 141]. The structural unity of personality (isomorphism of mental and physiological processes) no longer satisfies him. Vygotsky is developing a doctrine of a deeper unity — *systemic*. “Systems are the key to the person” [11, p. 141].

A person emerges and develops in *cultural-historical* systems; his human way of life is determined “from above” — by society, namely, by his relationships with other people. In this sense, Vygotsky refers to his theory as “height psychology,” in contrast to Freudian “depth psychology,” studying the determination of mental life “from below.”

In 1931 Vygotsky wondered how to deal with Wolfgang Köhler’s laws presenting the historically evolved structures of perception as eternal. “Köhler — reject or demarcate while leaning on him? His regularities are pseudoregularities, i.e., what is historical is presented as eternal or as something that is lying in another plane” [11, p. 180]. As we can see, two variants of *divergence* are weighed: (i) complete rejection and (ii) adopting delimitation.

This note was made at the first internal conference on the results of Alexander Luria’s Uzbek expedition. They were interpreted as an experimental refutation of Köhler’s theory of perception. Gita Birenbaum, a student of Kurt Lewin, objected: “*Gestalt[theorie]* is not refuted.” (Yasnitsky and Eli Lamdan were braver: they claimed that the expedition fully confirmed the *Gestalttheorie* and refuted the hypothesis of cultural-historical conditioning of perceptual structures.)

The character of human perception is determined by the *concepts* that represent “the specifically human in the structures,” Vygotsky argues in his notebook entries. Knowledge of the nature of visible things frees vision from the bondage of the optical field. By this way biological affect is replaced by aesthetic reaction. “The determination<sup>2</sup> from above. Height psychology is a new type of movement, which I did not understand: from concept to perception” [11, p. 293]. This distinguishes between the *slavish* perception of an animal and the *free*

<sup>2</sup> In the English edition, *opredelenie* is translated as *definition*. But Vygotsky certainly means the *determination* of perception from the upper realm of culture to which any concept belongs.

perception of a man — the difference that Gestaltists do not see.

So, Vygotsky wanted to beat *Gestalttheorie* on its own ground — the psychology of perception. He intended to create a meaningful (*smyslovuiu*) theory of perception, revealing how the conceptual structure of consciousness determines perceptive process.

“We must overcome *Gestalttheorie* step by step and create in its place a psychology of man with the contrast between *Sinn* and *Gestalt* as the constant leitmotiv.

I must write *La perception humaine*<sup>3</sup> contra Köhler.

In what consist the slavery of animal perception and the freedom of man” [11, p. 408].

Would a knowledgeable and conscientious scholar pass off this “step by step overcoming” as the “continuous convergence” of cultural psychology with *Gestalttheorie*?

Vygotsky sharply criticizes the latter for a parallelist interpretation of the relationship between mental and corporeal phenomena. The attempt to solve the psychophysical problem through the “structural identity” of the processes in mind and body is “the first idea of parallelism” [11, p. 215]. Köhler, Koffka, Goldstein “again solve the problem within psychology in a parallelist spirit. ... This way the psychophysical problem becomes an empty abstraction *bereft of any content*” [11, p. 252].

Firstly, Vygotsky agreed with Karl Bühler’s assertion that “structural psychology is deeply related to Spinozism” [7, p. 118]. Two or three years later, while working on a book on emotions, he goes to great lengths to *detach* Spinoza from Gestalt psychology. “Spinoza is not a parallelist,” Vygotsky insists. “We might say that the *whole content* of *The Ethics* ... is the strongest — actually the only — refutation of parallelism.” [11, pp. 215–216].

Hence, the “holist” Vygotsky would regard the Cultural-Historical Gestalt Psychology, invented by Yasnitsky, as an eclectic mix of monism and parallelism. In Vygotsky’s eyes, eclecticism is the mortal sin of theoretical thought. “Like the two trees in the legend which were tied up in their tops and which tore apart the ancient knight, so any scientific system will be torn apart if it binds itself to two different trunks” [9, p. 328]. In these words CHGP can find its diagnosis, as well.

Vygotsky’s disagreement with Gestaltists grew year by year. While at first he regarded them as *collaborators* in overcoming the crisis of European psychology, by the end of his life he saw *Gestalttheorie* as the *main competitor* of cultural psychology, subjecting it to intense, multifaceted criticism. The critical downgrading of Gestalt psychology in Vygotsky’s work was traced in Chapter 8 of R. van der Veer and J. Valsiner’s monograph (it was ground-breaking for its time).

“By 1932–3, Vygotsky had started to consider Gestalt psychology a ‘naturalistic psychology’ that in its theoretical core did not differ from reflexology since it reduced meaning to structure. ... Thus, the great hopes of 1926 of Gestalt psychology freeing psychology ‘from

its biological imprisonment’ had failed, as Vygotsky perceived it” [6, p. 164].

Of course, this disagreement did not prevent Vygotsky from having a friendly dialogue with Lewin or from working closely with his students. Structural psychology remained for him the strongest magnet. Vygotsky by no means discarded its achievements, but seeks to reinterpret them in a cultural-historical spirit, “with the contrast between *Sinn* and *Gestalt* as the constant leitmotiv.”

Spinoza’s attitude towards Descartes is the same, for example. He relied on Descartes’ writings, used his notions and language, taught his *Principles of Philosophy* to a student and even demonstrated it *more geometrico*. Developing the strong points of Descartes’ teaching, Spinoza corrected his mistakes and filled the old terms with new meanings. In the Hegelian dialectic, this is called ‘sublation’ (*Aufhebung*). Vygotsky planned to *sublate* Gestalt theory, i.e., to reconsider it and “overcome step by step.” There is not the slightest doubt that he regarded Marxist historical psychology as a *higher and more powerful* program, capable of assimilating the discoveries of Freud, Köhler and Piaget.

### III

Yasnitsky attacks every point of cultural-historical psychology that prevents it from merging with Gestalt psychology. The notion of objective activity and the Activity Approach are especially repugnant to him. Hence his efforts to exclude Alexei Leontiev from the “Vygotsky–Luria circle.” It is interesting to follow how much effort Yasnitsky makes to deconstruct the “myth of the *troika da piaterka*” (the three and the five, in Russian). He avoids mentioning Vygotsky’s letter on April 15, 1929, where the scientist writes in black and white: “I had a feeling of enormous surprise when A.R. [Luria] in his time was the first to follow this road, and when A.N. [Leontiev] followed him, etc. Now the joy is added to my surprise, that by the detected signposts the big road is visible not to me alone, not to **the three of us** [*nam troim*], but to **another five persons**” [10, p. 13]. Anna Stetsenko and Igor Arieivitch [5, p. 229] draw attention to the fact that, in his letters to Leontiev, Vygotsky constantly says “we,” “our theory,” discusses their common “way” in science, etc.

Yasnitsky must have read Vygotsky’s letters; his erudition is beyond doubt. There are too many willful omissions, on the verge of scholarly cheating, in his works.

The revisionist operation of ‘subtracting’ Leontiev from the *troika* is coupled with a rejection of *contemporary* research in Cultural-Historical Activity Theory — by Michael Cole, James V. Wertsch, Harry Daniels et al.

Certainly, the *troika* was in no way monolithic. In 1931, Vygotsky and Leontiev diverged in their views on the course of development of cultural psychology. From Vygotsky’s notebooks, we are able to learn what exactly

<sup>3</sup> The article title [2].

displeased him in Leontiev's research program (see [11, pp. 247, 261–3, 275–6]).

The story of the schism is often reported as if Vygotsky had abandoned the 'instrumental' studies and engaged in the analysis of word meanings and inner experiences (*perezhivaniya*). This is the view held by Leontiev himself and shared by Yasnitsky, who only changed the assessment from minus to plus.

Meanwhile, the study of 'units' and systemic meaningful structure of consciousness was only a fragment of the planned "height psychology" building. Yasnitsky mistakenly believes that Vygotsky planned to crown his work with a "holistic" theory of consciousness à la the Gestaltist ones. The editors of *Vygotsky's Notebooks* make a similar mistake by claiming that his ultimate goal was "the theory of dynamic semantic systems and the psychology of experience (*perezhivanie*)" [11, p. xvii].

Consciousness is an *element of life*, acting as a mediator in the life process: "Consciousness determines life (its style) but itself develops from life and forms one of its aspects: *Ergo*, life determines life through consciousness" [11, p. 487]. "To change life is the main function of consciousness" [11, p. 221].

Vygotsky calls the doctrine of how consciousness changes life "height" or "acmeist" psychology. It is designed to teach each individual person to control himself and thereby help us to become free.

In acmeist psychology, the individual's mind and behavior are affected "from above" – from the heights of culture, consciousness, and reason, rather than "from below" – from the depths of unconsciousness or sensory fields. Higher psychological functions are determined by cultural values and concepts, not by instincts and passions. Here is all the difference between freedom and slavery of mental life.

Vygotsky's notebooks provide the only surviving outline of his intended book on the subject. Its structure is as follows: (i) knowledge and concepts, (ii) affects, (iii) freedom as "affect in the concept," (iv) a meaningful and systemic structure of consciousness, (v) height psychology [11, p. 224].

By nature, life is ruled by blind affects, or passions. Human consciousness is called upon to overcome the passions by means of concepts. This is the problem raised in *Ethics*, the earliest work on height psychology. "Spinoza's supreme idea ... *Knowledge changes life*. ... He all the time investigates the question as to how the *motion toward freedom really* takes place: *toward a life guided by reason* – and this is freedom. His central idea is the power of reason" [11, pp. 215–6]. "*The reverse movement from consciousness to life*. Spinoza" [11, p. 355].

Everything that is "height" in psychology completely escapes Yasnitsky's attention. He never once mentioned Spinoza's name in the *Revisionist Revolution* and even in the intellectual biography of Vygotsky! Much clearer to him are Stalin and Trotsky, their names are there at every turn. Naturally, Yasnitsky comprehends height

psychology with the help of the same Trotsky plus Nietzsche, who compared his own writings with "the air of the heights" [14, p. 15]. In fact, Nietzsche's apology of instincts is a *depth philosophy*, the direct antithesis of Vygotsky's height psychology.

It looks like the "intellectual biographer" had no idea what Vygotsky needed from Spinoza and why he devoted himself to the study of emotions at the "holistic" peak of his work, instead of creating CHGP. Yasnitsky simply ignores the work that Vygotsky called "the book of my life" and dedicated "to the blessed memory of my father." Unsurprisingly, since this book does not fit into the invented convergent project.

The "height" problem of the "motion toward freedom," or the "reverse movement from consciousness to life," is alien to Gestalt psychology. It had established the dependence of primary intellectual operations on the structure of the visual field, but had failed to notice how concept (and cultural thinking as a whole) alters the structure of perception, our natural 'optics.' For the purpose of experimental verification of this idea, Vygotsky sent Luria and Koffka on the Central Asian expedition.

Vygotsky believed that Leontiev was stuck at the initial stage of "direct movement from life to consciousness." Surely, consciousness emerges in the bosom of life, i.e., objective-practical activity, as a reflection and experience of life, but it acquires reality *sui generis* in the *word*. "The word duplicates consciousness," it turns consciousness into a "dialogue with oneself." "Consciousness without the word = activity [in Leontiev] and perception [in Köhler]" [11, p. 272].

Leontiev refused to follow Vygotsky to the heights of the consciousness developed by the word. He wished to continue studies on the primary stage, where consciousness arises from life. But this approach cuts off the way of understanding the *development* of the human mind, Vygotsky claims. "Development is ignored. Everything is moved to the beginning. But then everything [is moved] to the conception. The most important thing does not take place in the beginning, but in the end, for the end contains the beginning. The height viewpoint. [Leontiev] should not all the time work near the lower boundaries" [11, c. 247].

Vygotsky repeatedly quoted Marx's famous aphorism: "The anatomy of man is a key to the anatomy of the ape." What does this mean when applied to psychology? The nature of the human mind, its potential, is revealed in its plenitude *at the heights of culture*, and only from this Everest, can one see the whole picture of mental development. Hence the conclusion: the psychology of the *free man* is the key to prehistory of psychological development<sup>4</sup>.

The general plan of the work appears to Vygotsky as follows: (i) a study of the process of the emergence of consciousness from life, (ii) a study of the internal structure of consciousness, (iii) a study of the process of conscious mastery of life. Height psychology is a *theory of*

<sup>4</sup> Cf.: "Shakespeare's tragedy explains the enigmas of primitive art and not the other way around" [8, p. 319]. This is the formula for the "height viewpoint" in aesthetics.

*cultural liberation of the human mind* from the captivity of natural passions.

Vygotsky defines freedom as “the concept that has become an affect” [11, p. 374]. This transformation is precisely what height psychology studies. Behind every higher cultural emotion is a concept. The tie of concept and affect emerges tangibly and most clearly in arts. So, theatrical art teaches people to manage their own and other people’s emotions intelligently, of their own free volition. It gives us the experience of freedom.

It is worth stressing that both concept and affect are treated by Vygotsky as *forms of objective activity*, or, more precisely, as its opposite poles. Concept expresses the objective side of activity, its “object relatedness”; affect expresses the motivational side of activity, its reverse impact on the subject. Vygotsky’s “dynamogenic,” i.e., activity-oriented, understanding of affect appears to have been acquired through his study of Walter Cannon’s foundational work [1].

So, Vygotsky’s approach should not be contrasted *in abstracto* with Leontiev’s “activity approach” as Yasnitsky and the authors he refers to, Aaro Toomela and Ronald Miller, do. Leontiev is right to regard Vygotsky as the founder of activity theory in psychology<sup>5</sup>. But this is *another* theory of activity, considerably different from Leontiev’s one. Its “height” problematics – the relationship between concept and affect in human activity, the

issue of freedom as “the affect in the concept” – fell out of Leontiev’s field of vision.

## Conclusion

These days, Vygotsky studies are conducted in different directions. We can meet various hybrids with neo-behaviorism, social constructivism, enactivism, neo-Piagetian approaches, et al. Yasnitsky crosses Vygotsky and the Gestaltists. For my part, I believe that the arterial road of developing the cultural-historical theory is the resumption of the project of Spinozistic, acmeist psychology, initiated by Vygotsky. But his works certainly open up other promising avenues, too.

I pay tribute to the factual richness of Yasnitsky’s writings. He is well informed in his strictly specialized field and aware of the limits of his competence, keeping his distance from art and philosophy (with the exception of *der Fall Nietzsche*). But is it acceptable to remain silent about facts that are harmful to the cause of the revolution? Science is not politics and, normally, does not do that. I would add that Yasnitsky’s revision is fraught with unfortunate consequences for *contemporary* cultural-historical psychology as well. One can only hope that the damage so far is not too great and is quite fixable.

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<sup>5</sup> Already in his obituary to the Master, Leontiev noted that “L.S. Vygotsky’s treatment ... of the psyche as a human *activity* was the cornerstone of the entire scientific psychological theory that he developed” [3, p. 19].



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## «Ревизионистская революция» и перспективы исследований Выготского

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В статье проводится критический анализ проекта «культурно-исторической гештальтпсихологии», продвигаемого А. Ясницким. Этим термином он описывает главное открытие Выготского и будущее Vygotsky studies (исследований Выготского). Ясницкий отвергает деятельностный подход к исследованию психики и сводит социальную природу человеческой личности всего лишь к «аспекту», не получившему серьезной разработки в трудах Выготского. В этой статье доказывается, что перспектива развития культурно-исторической теории заключается в разработке проекта «вершинной/акмеистической психологии». Ее предмет — «обратное движение от сознания к жизни», по определению Выготского. Предназначение вершинной психологии состоит в том, чтобы помочь человеку овладеть своими аффектами при помощи понятий. Эта наука осуществляет «движение к свободе — к жизни по руководству разума».

**Ключевые слова:** культурно-историческая гештальтпсихология, структура, восприятие, деятельность, сознание, параллелизм, вершинная психология, аффект, понятие.

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# Bridging Concept and Activity: a Dialectical Synthesis Proposal

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This work is a theoretical discussion about concept formation in a cultural-historical perspective that articulates Vygotsky's system of concepts within Leontiev's structure of activity. This effort has led to a theoretical proposition that we call concept-activity, a dialectical unity formed by a concept and its genetic activities, i.e., the systematised activities in which concepts emerge directed to a purpose. Taking volition and conscious awareness as analytic categories, we initially relate scientific concepts with actions – concepts-action – and everyday concepts with operations – concepts-operation. The articulation of these elements drives the emergence of conceptual thinking as an activity, framed by the term concept-activity. In other words, while scientific concepts are related to actions because both arise from a conscious and voluntary dimension, everyday concepts are related to operations through a non-conscious and non-voluntary dimension. A discussion on how the concept-activity synthesises the movement between these two forms of conceptualisations and its implication to concept formation is provided.

**Keywords:** concept formation, Activity theory, volition, conscious awareness.

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## Introduction

This paper presents a discussion about the concept of concept from a cultural-historical activity theory perspective, considering mainly the works of Vygotsky and Leontiev. Even though these scholars are part of the same research tradition, their interests and analysis had different emphases. While the former focused on the higher mental functions formation through sign mediation, the second emphasised the influence of objective activity on mental activity development [3]. Our arguments are mainly grounded in both authors' primary references and establishes relationships between the notions of concept and activity in order to achieve a possible synthesis.

Concept and activity are both polysemic terms, which means that they assume different meanings depending on the academic tradition considered [2, 22]. For instance, the classical theory of concepts generally puts concepts as entities related to the categorization and definition of attributes that construct the sense of the objects for individuals [10]. Other approaches consider concepts as mental representations or abstract objects [23], informational units that can be processed [9] or dialogical generalizations [16]. However, only recently some attention

has been given to the notion that concepts are not just structures of subjects' internal psyche but are also shared manifestations of social practices [14].

The definition of activity is also multifaceted and has a common sense associated with task or practice, but acquires a specific meaning within Russian psychology, in which the term is connected to the development of the human consciousness. Dafermos [3] elucidates that two contending traditions were underpinning the use of the term in early twentieth-century Russian psychology. The first tradition was connected to the reflex theory of Pavlov and Sechenov and considered activity as the physiological activity of organisms. On the other hand, the second tradition was rooted in Hegel and Marx's philosophy and ascribed activity to the sense of human praxis or "the basic unit of concrete human life" [29, p. 2]. Despite these two meanings being referred by two different words in Russian literature, *aktivnost* and *deyatelnost*, both are translated as activity in English [31].

Many studies have discussed how concepts are formed in collective activity, and thus presenting a notion of concept that detaches it from a mere mental and individual elaboration [8, 11, 13]. For instance, Nersessian [24, 25] presents concepts as dynamic, social and

collective creations that take shape throughout historical processes of attempts to solve specific problems. This view poses a close relationship between the way concepts are formed and articulated, and the norms and commitments shared among participants in a given community. Similarly, Hutchins [14] admits that concepts in practice go beyond individuals' contributions, and Hjørland [12] points out that concepts cannot be understood in isolation and outside the interests and theories that motivate their construction. Engeström, Nummijoki and Sannino [6] note that complex concept formation is a fundamentally social and collective process, and it cannot be reduced to an individual dimension of cognition or behaviour. In any case, concepts are embedded in human activity; being products or instruments of it [8].

The works discussed above already suggest an interdependent relationship between concept and activity. Therefore, the contribution of our paper is to draw on a perspective in which concept and activity are framed as a dialectical unit. However, dialectical unity does not mean taking these terms as a unity of opposites or an identity, but as an indissoluble unity [4, 26]. We call this theoretical construct concept-activity. The argument of this paper is divided into four other sections besides this introduction. In the first and second sections, we introduce Vygotsky's ideas of concept and Leontiev's structure of activity. In the subsequent section, we relate these perspectives through two interconnected categories, namely volition (or will) and conscious awareness that play a relevant role in those psychological perspectives above.

While Vygotsky employs volition and conscious awareness to distinguish everyday concepts from scientific ones [5, 7]; these same categories appear in the Leontiev's framework when discussing the difference between actions and operations, the formation of motives and voluntary memory [28]. Here, we follow the understanding that conscious awareness "is an act of consciousness whose object is the activity of consciousness itself" [32, p. 190], whereas volition refers to the "human ability to deliberately influence mental processes, behaviour and external circumstances" [28, p. 3]. In this sense, to be conscious of something is directly related to the volitional processes of being aware of objective reflection.

### **Concept and conceptual system**

The development of concepts is a central topic in the Vygotskian research programme, and although most of this discussion is found in the collection known as *Thinking and Speech* [32], one can find more about it in other texts [33, 34]. In general terms, Vygotsky [32] argues against a classical notion of concept as an associative network and develops his theory pointing out that the thinking in concepts assigns a new quality to human psychology. For him, the higher mental functions — conceptual thinking, among them — are results of the internalization of sign operations as psychological tools. In his framework, the role sign mediation — mainly through language — underpins the concept formation process. "The concept is not possible without the word. Thinking in concepts is not possible in the absence of

verbal thinking." [32, p. 131]. In other words, the genesis of a concept is a twofold process that simultaneously couples intellectual with speech operations.

The key discussion is that concept formation is a long and continuous process once the mere presentation of a name does not mean the concept formation in its totality. It registers the beginning of a development that never ends, "when the child first learns a new word, the development of its meaning is not completed but has only begun." [32, p. 170]. In this development, there are mental operations coupled up with social interactions, mainly through language, that culminate in a particular word meaning, which then becomes the bearer of the concept. Vygotsky relates concept formation to the mental operations of abstraction and generalization:

"In its natural developed form, however, the concept presupposes more than the unification and generalization of the distinct concrete elements of experience. It presupposes the isolation and abstraction of separate elements, the ability to view these isolated, abstracted elements independently of the concrete and empirical connections in which they are given" [32, p. 156].

Vygotsky [32] also assigns certain synonymy to terms such as concept, meaning and generalization, treating them often as identities: "any concept is a generalization" (p. 224) or "generalization and word meaning are synonyms" (p. 244). We understand that Vygotsky uses these associations with two objectives: firstly, it would approximate the phenomenon of thought to the phenomenon of speech, being the word meaning "a unity of word and thought" (p. 244). Secondly, it would be to frame generalization as conceptual development. To build on this perspective, Vygotsky often calls upon the situation of a child elaborating the meaning of a word through the interaction with people around them. "By addressing the child in speech, adults determine the path along which the development of generalizations will move and where that development will lead, that is, they determine the resulting generalization" (p. 143). In other words, the ways in which concepts and word meanings are negotiated are determined by the interactions between the child and the people around them.

In the Vygotskian framework, concepts are not isolated but compose a system that maintains the characteristics of the developmental path of such concepts. For example, he explains that a conceptual system is nothing more than a system of relations between concepts, in which a concept is designated by means of other concepts. "Every concept arises already connected with all others and, having arisen, seemingly determines its place in a system of previously recognized concepts" [34, p. 48]. In more detail, he explains that:

"if a higher concept arises above the given concept, there must be several subordinate concepts that include it. Moreover, the relationships of these other subordinate concepts to the given concept must be defined by the system created by the higher concept. If this were not so, the higher concept would not be higher than the given concept. This higher concept presupposes both a hierarchical system and concepts subordinate and systematically related to the given concept. [...] Thus, at one and the same time, generalization implies the conscious awareness and the systematization of concepts" [32, p. 192].

With mention to higher and lower concepts, this hierarchical scheme is central in Vygotsky's theory for the differentiation of concepts into everyday and scientific concepts. Roughly, we understand that concepts that have their elaboration linked to the everyday experience (and discursive interactions around it) are called concepts of everyday genesis, or, simply, everyday concepts. Vygotsky [32] emphasizes that this process of elaboration is based on the "immediate encounter" that children have with "real things" but also based on the explanations given by the adults (p. 219). On the other hand, concepts formed within a systematized circle of instruction, usually beginning with a verbal definition, are called concepts of scientific genesis or scientific concepts. Then, the distinction into these two forms of concepts reflects the differences of their genetic paths, which, by their turn, are expressions of the kind of the activity that subjects are participating in.

Describing the underlying processes, Vygotsky says that everyday concepts are given from the object to the concept, while in the scientific case, the development follows an opposite direction, from the mediated relation, that is, from the concept, to the object. This differentiation becomes particularly clear when Vygotsky discusses the elaboration of the concepts of 'brother' and 'Archimedes' law' by a school-age child, the first as an example of everyday concept and the second as a scientific one:

"The child formulates Archimedes' law better than he formulates his definition of what a brother is. This obviously reflects the different developmental path that have led to the formation of these concepts. The child has learned the concept of 'Archimedes' law' differently than he has learned the concept of 'brother'. The child knew what a brother was, and passed through many stages in the development of this knowledge, before he learned to define the word 'brother' (if he ever had the occasion to learn this). The development of the concept, 'brother', did not begin with a teacher's explanation or with a scientific formulation. This concept is saturated with the child's own rich, personal experience. It had already passed through a significant part of its development course and had exhausted much of the purely empirical content it contains before the child encountered it in definition. Of course, this was not the case with the concept that underlies 'Archimedes' law'." [32, p. 178].

At this point, it is worth noting that we do not see everyday and scientific concepts as ontologically distinct, i.e., with different natures. Thus, the emphasis here is on the contexts and processes of concept formation, that is, the activities that imprint the genesis of concepts. In other words, although these two forms of conceptual development occur in different ways and under different conditions, the overall process remains unified.

Here, we propose a detailed examination of these conditions that affect the process of concept formation and their implications for the composition, structure and dynamics of the conceptual system. The aim is to

highlight the factors that differentiate the genesis of everyday concepts from scientific ones. Vygotsky [32] employs volition and conscious awareness to describe the underlying processes of everyday and scientific concepts formation. The point is to contrast volitional (voluntary) and conscious processes with non-volitional (involuntary or spontaneous) and non-conscious ones. By non-conscious, we mean lack of conscious awareness.

In this sense, the formation of everyday concepts is said to be non-volitional because the child "possesses them only when they are used spontaneously or automatically" (p. 205), and non-conscious because when a child uses everyday concepts, "he has a concept of the object and is consciously aware of the object that is represented in the concept. He is not, however, consciously aware of the concept itself." (p. 217). Contrarily, scientific concepts are apprehended in a volitional and conscious way, because in the school, the child learns to have "conscious awareness of what he does", that is "his capacity moves from an unconscious, automatic plane to a voluntary, intentional, and conscious plane" (p. 206). Therefore, learning in a systematized environment occurs under a context of voluntary control.

Considering the earlier examples, during the learning of the concept of 'brother', which occurs through successive generalizations from the object and the discursive interactions around it, the child has no conscious awareness and volition over the process. Conversely, when learning about 'Archimedes' law' in an environment of formal instruction, the child operates the process consciously and volitionally. Here, we do not mean that a child only elaborates everyday concepts when at home or scientific concepts when they are at school. Certainly, there are non-conscious and non-volitional learning at school and conscious and volitional learning at home. Still, in our understanding, this means that the concept of 'brother' will not always be considered an everyday concept, and that of 'Archimedes' law' a scientific concept. This distinction merely marks two different paths of the concept genetic process. The point to be noticed is that these two contexts of learning are characterized by different conditions and require different activities from the subjects, which will affect the ways concepts are elaborated.

In another of Vygotsky's writing [33], regrettably in Russian only, it presents the findings of a psychological test about the uses of some verbal logical connectives by children and a discussion is done in the light of volition and conscious awareness. For example, he finds that children have difficulty of using or interpreting the 'why' and 'though' connectives when they are required to do so on a conscious and volitional basis. He notes, however, that children are able to correctly use these same connectives spontaneously, that is, in a non-conscious and non-volitional way. In this case, he explains that "the child does not know how to voluntarily do what he or she involuntarily does many times" [33, p. 8]<sup>1</sup>.

<sup>1</sup> We are enormously grateful with Prof. Manolis Dafermos, who made the translations from the original citations in Russian to English: «что ребенок не умеет произвольно сделать то, что произвольно делает много раз».



Thus, a child who masters concepts in a non-conscious way can routinely employ them correctly but might struggle to define or explain them. This is one of the everyday concepts' features, "children who have already mastered these concepts and causal relationships unconsciously, have not yet mastered them consciously, that is voluntarily" [33, p. 9]<sup>2</sup>. Again, in the case of the concept of 'brother', the child uses it in discursive interactions within their family, but they might find difficulty in defining it as 'boy or man with the same parents as another person'. On the other hand, the formation of a scientific concept occurs in a volitional and conscious way, "the child easily uses it in response to the teacher's question, that is voluntarily" [33, p. 12]<sup>3</sup>.

Vygotsky also relates the impact of volition and conscious awareness on the conceptual system. He associates these categories in order to assign a systematicity within the system of concepts:

"Thus, spontaneity and a lack of conscious awareness of concepts, spontaneity and the extra-systemic nature of concepts, are synonymous. Correspondingly, nonspontaneous scientific concepts, because of what makes them nonspontaneous, will be characterized from the outset by conscious awareness. From the outset, they will be characterized by the presence of a system" [32, p. 236].

In this extract, Vygotsky indicates that everyday concepts are associated with a lack of systematicity, while scientific concepts are linked to a system. In our interpretation, the part of the system related to everyday concepts is more immediate, with fewer conscious mediations among them. On the other hand, the subsystem of scientific concepts is more consciously mediated, and therefore a more conscious system. That is to say, for example, when a child who learns the concept of 'Archimedes' law' consciously, they easily relate it to a whole conceptual network (water, density, volume, force) and use it with a certain level of conscious awareness and volition within this network. Although it is clear that the concept of 'brother' also belongs to a system and is linked to other concepts (son, father, mother, family), when a child uses it in everyday life, the relationships between these concepts are not conscious.

Finally, Vygotsky conventionally takes a vertical hierarchy within the conceptual system and explains the dynamics between everyday and scientific concepts. As we interpret it, everyday concepts would be in a less systematized part of the system and therefore subjects would operate with them less consciously. In turn, scientific concepts would be in a more systematized part of the system, leading to more conscious uses. In other words, the hierarchical levels between concepts are reflected in the levels of the subject's conscious awareness. Thus, for Vygotsky, everyday concepts develop towards scientific concepts, that is, through the use with more conscious awareness and volition, while scientific concepts would have an inverse movement. When scientific concepts are

incorporated into the everyday conceptual chains, they would lose specificity, gain generality, and become less conscious and voluntary.

Even though these two concept formation processes have different paths, they are "internally and profoundly connected with one another" [32, p. 219]. Given this complementary character, there is a dynamic relationship between these two conceptual processes that merge during the subjects' life when in activity. We shall return to this theme in the following sections.

### **Activity and the structure of the activity**

From the theoretical tradition Vygotsky initiated, a psychology research branch was derived under the name of Activity Theory, whose important developer was Alexei Leontiev. The main hypothesis of this perspective is that the structure of the internalized mental processes would be analogous to the structure of the activities carried out by the subjects. This thesis is usually depicted as a principle, which treats consciousness and activity as a unity [4].

The meaning of activity, even within Russian psychology, is not simple. One of the reasons for its complexity is that the notion of activity refers to a category of analysis that comprises the totality of human development, which is constituted by the cultural, social and historical dimensions of that process [1, 3]. However, it might be argued that the most consensual meaning refers to the Marxist perspective, in which the concepts of activity and labour are related: human being transforms the natural world while dialectically transforms themselves.

Leontiev [19] argues that the emergence of labour and the formation of society produced qualitative changes in human mental processes, the rise of "higher forms of psyche" (p. 58). In this context, collective activity is considered the proper human ontogenetic development, the process which endows human being with human nature. Leontiev calls this process appropriation – "the individual's reproduction of historically formed human capacities and functions" [20, p. 266], and therefore poses activity as the "activity of a member of a human society at a certain stage of development of labor" [19, p. 60].

In Leontiev's perspective, activity is the molar unit of analysis of human consciousness and life [20, 21]. Activity comprises the relationships between human beings and the world and orient the subject towards the world of objects; for this reason, it is said to be an object-oriented activity. In this sense, the notion of activity does not consider the practical processes in isolation, but it coordinates them with the psychological processes involved in achieving the activity's motive. Object and motive are key in the activity framework, in which the "consciously realized object" coincides with its motive [20, p. 62].

So, an activity is distinguished from another by its objects and motives. Each activity is directed to an object

<sup>2</sup> «что дети, которые уже овладели этими понятиями и причинными отношениями неосознанно, еще не овладели ими осознанно, то есть произвольно».

<sup>3</sup> «в школе то, что ребенок легко его употребляет в ответ на вопрос учителя, т. е. Произвольно».

that expresses, materially and ideally, the motive that is the activity source. For instance, in the collective hunting activity, the object is the animal prey which materialises the activity's motive of hunger and fulfils the need for feeding [20]. Taking another example from Leontiev's writings, in order to know whether the reading of a book can be considered an activity or not, one should analyse the needs of the subject and the conditions of this reading activity [19]. Such analysis will identify, for example, whether the subject is a student that is preparing themselves for one exam. In this case, the reading is not an activity as the motive that orients the subject to read the book is not its content but the need for having a good grade. Therefore, the activity is the preparation for the exam. Conversely, if the subject is reading the book for pleasure and entertainment, then it is considered an activity because it realises its motive — the need to acquire knowledge or simply a pastime. In other words, while in the former the object is the final grade, in the latter the object is the book content.

A second level in the activity's structure is identified as action, a coordinated and subordinated process to the overall activity level. As every activity is associated with a motive, every action also finds its aim in the realisation of a specific goal that is in the subject's conscious awareness [19]. Therefore, being at different levels, the action's goal cannot be misunderstood with the activity's motive. Going back to the latter example where a student is preparing themselves for an exam, the book reading is considered an action within the whole activity. Other actions could be reviewing the notes of the lessons attended, writing summaries and discussing with colleagues. To summarize, "human activity exists only in the form of an action or a chain of actions" [17, p. 24], i.e., each activity is constituted by the coordination of actions and their goals.

The third and final structural component is operation, which registers the conditions to the realisation of actions. Leontiev [20] defines operation as "the mode of performing an act", "the necessary content of any action but it is not identical with the latter" (p. 369). In general, an action is constituted by different operations, and one same operation can compose different actions. The operations are dependent on the concrete conditions imposed by the current situation. One of the main operations' characteristics is that the subject performs them in an automatic way, i.e., such subject does not have conscious awareness of them [21]. Taking the reading activity again, the muscular movements that support the book or control the eye are examples of operations.

To make clear the dynamics between actions and operations and illustrate the different levels of the subject's consciousness, Leontiev [21] gives us another example; a person driving a car. For a novice driver, the gear shifting has a conscious orientation in which this driver considers the car speed, the different strengths and pressures in each foot to release the clutch and push the accelerator, the hand movement on the gear and so on. As the novice driver is conscious of all those acts, the gear shifting is considered an action within the activity of driving a car. However, these actions become more and more routinized during the practice, leaving the conscious plane and are transformed into operations. Thus, all acts required to shift the gears are already at the operations level for an expert driver, and they are not in the

subject's conscious awareness. In this situation, the driver's activity is not more 'driving a car', but 'go to work', in which they perform conscious actions such as choosing the best route or how to overtake a slow car. In this situation, 'driving a car' has become an operation.

A relevant point here is that the activity's structure is a dynamics between actions and operations in which one can be converted into another and vice-versa. Leontiev [21] explains this process through the shifting of motives. For example, the activity's motive can be transformed into a goal, i.e., the activity can lose its main motive and be converted into an action. Alternatively, an action can become itself an activity whether its goal becomes independent and motivating the entire process [21].

The main feature of this dynamics is the subject's conscious awareness in relation to the motive and goals. An action is converted into operation when such action becomes a condition to perform another action; in this process, "what was the goal of the given action must be converted into a condition of the action required by the new aim" [20, p. 370]. More, the mechanism that underpins such conversion is grounded on the shift from volitional and conscious processes into involuntary ones (p. 375). Going back to the expert driver, even though they perform all the acts of shifting gears at the operations level, those acts can be brought to the conscious awareness when this driver experiences a new activity such as driving an automatic car or in left-hand traffic. Then, these operations momentarily become actions.

In this section, we have presented the activity structure and the features and dynamics of its components. In the next section, we draw a parallel between these two theories considered until this point.

### Concept-activity

The grounds for building this section are based on the thesis of the "common structure of human activity and individual consciousness" [21, p. 98]. In fact, both psychologists signalled for an understanding of concept that calls for the consideration of practical and objective life. For instance, when taking Vygotsky's later writings, there is a definition for concept that is seldom commented in the literature.

"A real concept is an image of an objective thing in its complexity. Only when we recognize the thing in all its connections and relations, only when this diversity is synthesized in a word, in an integral image through a multitude of determinations, do we develop a concept. According to the teaching of dialectical logic, a concept includes not only the general, but also the individual and particular" [34, p. 53].

While in his first writings, there is a tendency to deal with the concept formation as successive acts of abstraction and further generalizations, in this later work he argues in terms of "a complex system of mediating connections and relations disclosed in determinations of the concept" (p. 53). Thus, the result of those movements from the general to the particular is the rise of the concept as an objective reflection. He also replaces terms such as abstraction and generalization for "acts of thought" or "act of judgments" that, again, signal the focus on the objective reflection. Overall, a con-

cept is now understood as a process that accounts for the object's essence in all its complexity and diversity and in connection and relationship to the reality, which is a much closer view to the dialectical materialism.

Leontiev [18] also discusses concept formation in terms of word meaning and puts it as a result "of man's encounter with material reality in the process of his relating to it, i.e., in the process of practice." (p. 24). Here, it is also noticed the same effort to extend the concept of concept to include the dimension of concrete reality, or, in our terms, the concrete activity. Elsewhere, he says that meanings are a "materialized ideal form of the existence of the objective world, its properties, connections and relations revealed by aggregate social practice." [21, p. 16]. Again, there is a sense to frame concept under a perspective beyond a purely intellectual element and includes the practice.

Notwithstanding, we can further develop the association between the conceptual system and the activity structure more literally. From this perspective, everyday concepts would be for operations, and scientific concepts would be for actions. In this regard, we consider the categories of volition and conscious awareness as common attributes to both processes, concept formation and activity. In Vygotsky's words, "The problem of voluntary activity is directly dependent on the problem of conscious awareness of this activity." [33, p. 8]<sup>4</sup>.

Exploring the above correspondence, scientific concepts and actions present some similar features; both are in a higher level of a subject's conscious awareness, and both are employed in a volitional manner, i.e., oriented to a specific goal. This conjunction is identified as concept-action. Similarly, everyday concepts and operations comprise another unity, which the main features are the lower level of conscious awareness and non-volitional use. Here, the concept-operation is a condition to the concept-action.

In our proposal, the concept-activity makes explicit that both are products of the relationships between human beings and the world. Dialectically, concepts are given in/by activities, while activities are built around shared concepts. In other words, the concept-activity is not only the ideal-intellectual activity or nether the material-practical activity, but a unity, it is a momentary and transitory emergence of the synthesis between thinking-speech and consciousness-activity. Drawing on Vygotsky's Marxist perspective, Roth [27] agrees that thinking should not be theorized in itself, that is, divorced from the subjects' life, but also including what he calls "the chain of events *within which it arises of necessity*" (p. 17, emphasis in the original), outside from the mind. This is the concept-activity's spirit, the conjugation of concept and activity that emerges through the human praxis.

Finally, Zinchenko [35] draws a beautiful example of how language supports the production of images and actions that illustrate the concept-activity. He considers the activity of a mother feeding a child by giving her breast while gently saying sweet words. The emerging concept-activity from this co-created event relates satiety and hunger not only to the meaning of milk but also to the emotions, feel-

ings and actions that involve the entire process. Paraphrasing Zinchenko's words, we can say that the concept-activity is "literally absorbed with mother's milk", dialectically arising from the mother-child's lived experience (p. 71). This example might form a rich image for the description of the dialectical synthesis that we are proposing.

## Conclusion

In this paper, we have presented and discussed some aspects of Vygotsky's and Leontiev's works to propose a synthesis in the form of the concept-activity. Its direct implication is overcoming concept as something internal, subjective and mental, and activity as something external, objective and practical. Others have already tackled this problem of the separation between internal and external activity, however, the theoretical importance of our effort is twofold: first, it employs only primary sources of cultural-historical works, and second, the dialectical unity is explicitly based on the association of psychological structures regarding the categories of conscious awareness and volition.

We have argued about the essential and interconnected relationship between concept and activity as a unity that emerges through human praxis; that is, concepts constitute-and-are-constituted within activities. They are intrinsically connected and should not be considered separately or the same thing, but a unit. On the one hand, concepts detached from activities are crystallized and sterile entities that have lost their relations with the world. On the other hand, activities are impossible to be carried out without concepts, there is no way of an activity being collective and objectified without negotiating and sharing meanings. Therefore, we are pointing out that different practices develop different qualities on concepts embedded in them; those practices produce and express the formation of concepts with higher or lower levels of consciousness-volition. The mechanism behind this genetic route lies in the "generalizing activity of consciousness" [18, p. 26]. Apart from the theoretical and academic problem described on the lines above, when addressing the concept-activity we can deal with two other issues, schooling and human development.

This proposal sheds light also on the kind of generalizing activity of consciousness that happens at traditional teacher-centered schooling. Students are typically seated in rows in such a format, copying the content from the board or book and answering the teacher's closed questions. The ultimate goal is to reproduce such a definition in a future exam. As a result, the object of knowledge is attached to a verbal definition within a very narrow discursive practice. The concepts produced in this kind of activity "lose their attachment with the social practices in which they were born" [15, p. 527]. In this educational process, the generalizing activity of consciousness is limited, and there is no expansion towards other registers of conscious awareness and volition. To overcome this situation, educators might use the concept-activity as a tool for designing classroom activities that can promote different

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<sup>4</sup> «Проблема произвольной деятельности находится в непосредственной зависимости от проблемы осознания этой деятельности».



levels of students' conscious awareness and volition on their ownership of concepts. Moreover, a metacognitive approach on the concept-activity at school might foster students to reflect on the content and form that they are learning, consciously developing the psychological operations they are operating. Here, each student is viewed as a productive subject of concepts-in-school-activities.

We see the concept-activity unity points to an even broader construct based on the Spinozian dialectical principle that nothing can be separated from its relation to the world [27]. Stetsenko poses this principle as the entanglement of individual human beings and the world:

“This project posits that there is only one world—the world that people create through their activities—in which human beings come to be and to develop as well as get to deal with and to know about. [...] Therefore, knowledge and concepts (in whatever degree of generality and abstractness) do not exist as free floating constructions, in some realm that is separate from what indi-

vidual people do and enact—though always do so within collectivities and as social subjects. [...] Instead, they represent reifications, embodiments of communal social practices (as aptly shown by E.V. Ilyenkov and A.N. Leontiev) that come into being only when being again involved—further transformed and creatively developed—in activities carried out by concrete individuals through their unique contributions to social practices” [30, p. 85].

One might read this quote through the lenses of the concept-activity, in which it means the “embodiments of communal social practices that come into being only in activities carried out by concrete individuals” in a single unity. Finally, the concept-activity synthesis can be associated with the process of human development when the former is apprehended in its dialectical movement. In other words, the concept-activity movement in the subject's history is nothing else than their dialectic transformation, meaning the changing of the world and, in so doing, changing ourselves.

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## СВЯЗЫВАЮЩАЯ ПОНЯТИЕ И ДЕЯТЕЛЬНОСТЬ: ВАРИАНТ ДИАЛЕКТИЧЕСКОГО СИНТЕЗА

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В настоящей статье, которая носит дискуссионный характер, предпринята попытка рассмотреть проблему формирования понятий сквозь призму синтеза понятийного аппарата культурно-исторической теории Л.С. Выготского и системы понятий деятельностного подхода А.Н. Леонтьева. Идея связать одно с другим привела нас к теоретическому конструкту, который мы назвали понятие-деятельность (concept-activity): это диалектическое единство понятия и его генетической деятельности, т.е. систематизированных видов деятельности, в которых рождаются и обретают целенаправленность понятия. Используя категории воли и сознания, мы связываем научные понятия с действиями (понятия-действия), а житейские понятия — с операциями (понятия-операции). Объединение этих элементов позволяет рассматривать возникновение понятийного мышления как деятельность и обозначать это термином «понятие-деятельность». Иными словами, если научные понятия связаны с действиями, то, поскольку и те, и другие происходят из сознательного и произвольного, житейские понятия связаны с операциями, т.к. находятся в сфере не-сознательного и не-произвольного. В статье также обсуждается, каким образом категория понятия-деятельности обобщает переход между двумя формами понятий и какое значение это имеет применительно к формированию понятий.

**Ключевые слова:** формирование понятий, теория деятельности, произвольность, сознание.

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# One More Time on the Zone of Proximal Development

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The article presents an analysis of L.S. Vygotsky's concept of a zone of proximal development (ZPD); considers various ZPD definitions; provides a critical review of the most popular definition of ZPD as adopted from L.S. Vygotsky's 1935 work and used as basic by English-speaking authors. Taking into account the fact that L.S. Vygotsky's general methodological intention was to establish psychology as a practice and that his developmental theory as well as the ZPD concept development remained incomplete due to the known life circumstances, we analyze L.S. Vygotsky's writings that allow for another ZPD conceptualization, which differs from the one implied by the 1935 definition, so as to attempt at reconstructing the concept. In reviewing L.S. Vygotsky's assumptions regarding the learning-development relationship; ZPD; its relevance for diagnostic assessment and teaching; feasibility of extrapolating the ZPD concept onto different personality aspects, the authors identify substantive aspects of the ZPD concept that the "canonical" definition lacks. The article describes a multidimensional model of ZPD, which has taken shape within the Reflection-Activity Approach to assisting students with overcoming learning difficulties and which integrates Vygotsky's key ZPD-related ideas. E.G. Yudin's conceptualization of methodological functions of conceptual schemes is used to reconstruct the methodological status of the ZPD concept. The authors demonstrate that, since its inception, the ZPD concept has passed through the stages of an explanatory principle, a research subject, and a methodological tool for constructing new subjects of research and development.

**Keywords:** zone of proximal development, L.S. Vygotsky, multidimensional model of the zone of proximal development, Reflection-Activity Approach, counseling to facilitate overcoming of learning difficulties, subjectness position in education, methodological status of the concept.

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“What he would have had yet to get done is enormously greater than what he was able to get done. The value of what he was destined to accomplish and what remained unaccomplished is greater than the value of his achievements. This is what makes his death a true tragedy.”  
L.S. Vygotsky [3, p. 5]

## Idea of This Article

In recent decades, cultural-historical psychology has undoubtedly become one of the most influential theories of mental development globally, and Lev S. Vygotsky — its founder — has become a most frequently cited psychologist. References to cultural-historical psychology tend to be growing constantly, and the areas of its application tend to be expanding rapidly. A concept of the zone of proximal development (ZPD) is most widely used in various areas of psychological practice. The analysis of the rates of ZPD-related publications in various research databases revealed their continuous growth:

over the past 20 years, their number had increased from 10–20 to 70–90 per year in Web of Science; in the Russian Science Citation Index (RSCI), there was an even greater upsurge from 1–2 publications in 2002–2003 up to almost 500 in 2019 [33]. We will use a case of the ZPD methodological status evolution to attempt to answer some questions regarding the secret of relevance and popularity of Vygotsky's mental development concept without addressing the analysis of the cultural-historical concept in general. This is all the more important since the controversy over the interpretation of this concept and, as a matter of fact, over the cultural-historical theory itself, has not subsided yet [5]<sup>1</sup>.

<sup>1</sup> Some sources, for example, Wikipedia [...], attempt to discount Vygotsky's contribution to global psychology, explain his popularity by political reasons and “the cult of Vygotsky”, and explain a high demand for cultural-historical psychology by “the Vygotsky bubble”. A rebuttal of this perspective falls out of the scope of this article whose author considers himself a representative of the cultural-historical tradition and was taught by Vygotsky's disciples and associates. Over the last 25 years, he has been able to ascertain that ideas of the relationship between learning and development; interiorization, and the zone of proximal development are crucial for the practice of helping children overcome learning challenges [ 15; 16; 19; 47; 48; 48 etc].

This article has the following key objectives as related to the methodological analysis of the ZPD concept:

– To make an attempt to reconstruct the evolution of the ZPD methodological status throughout the last 88 years.

– To delineate most controversial points regarding the ZPD definition.

– To provide our own answer to a question regarding a feasible interpretation of ZPD,

– Using a multidimensional model of ZPD, to demonstrate the ZPD concept heuristic potential, which enables its use as a methodological tool for research subject and project design in various areas of practice and fields of psychology.

The author approaches the aforementioned issues from the perspective of a developer of a Reflection-Activity Approach (RAA) to providing developmental assistance to children helping them overcome learning challenges [17]. RAA relies on the basic foundations of cultural-historical psychology, and one of its central concepts is the concept of ZPD, which was introduced by Vygotsky and elaborated on notably in the works of Russian psychologists.

### **Brief Historical Background: This is Important to Remember**

L.S. Vygotsky's journey in psychology lasted only 10 years. In 1924, he started his psychological career tackling the issue which has remained urgent and largely unsolved until now, i.e. development of children with different deficits. Moreover he focused on creating conditions for these children's normal development, general and professional education [6]. This focus predetermined several directions, in which the psychology that Vygotsky started to develop evolved. First of all, the research question was practice-oriented ("What to do so that...") from the very beginning. Secondly, at least three fundamental questions of psychology arose from it: How can the development be understood? What is normal development? What is abnormal development? Throughout the decade that was to follow, Vygotsky centered his work around the search for answers to these questions, at least, as evidenced by his publications [28].

In 1927, feeling on the verge of death (having spent six months in hospital with a fatal diagnosis without any improvement and having been registered as a disabled person), Vygotsky wrote a fundamental methodological work – "Historical Meaning of the Crisis in Psychology" [8] – describing what psychology needed to and could be like. In this book, he formulated and provided a rationale for his key idea that *psychology needed to become a practice*. He had never referred to this work later; he had never made any attempts to have it published, and the psychological community found out about its existence only when the first volume of a six-volume edition of Vygotsky's selected works had come out in 1982. One cannot help thinking that – in anticipating his close and inevitable death – Vygotsky wanted to use his chance to write about *the point that was most important for him in*

*psychology*, – i.e. *facilitation of human development* and establishment of a scientific approach to creating conditions for human development rather than mere research into humans and their development. Later, when fate had allowed him another 7 years of a fruitful creative life, he created concepts that could be excellent "tools" for implementation of the idea of psychology as a practice. However psychology with its focus on academic theoretical objectives has failed to use these tools for many years. It may well be that seeing that the idea of psychology as a practice had not yet entered "the zone of proximal development" of psychology itself, on one of his final days, L.S. Vygotsky left the following note in his journal, "This is the last thing that I have done in psychology – and I will die atop, like Moses, looking at the Promised Land, never entering it" (14, p. 568).

In the early 1930s, he arrived at the idea of development as a process that occurred for a child in the course of mastering the humankind's cultural and historical experience as carried by an adult for him/her. This idea was embodied in his key work on the higher mental function development (1931). In this work, Vygotsky proposed the concept of interiorization as a mechanism of development. This concept does not only explain how development occurs, but also possesses a huge heuristic potential for psychological and educational practice. P.Y. Galperin realized this potential brilliantly in his method of the stage-by-stage formation of mental actions, which helped to convincingly show how mental actions (various mental processes) arose from the external object-oriented activity by means of interiorization [11].

Introduction of "the zone of proximal development" (ZPD) concept became crucial for elaboration of the cultural-historical theory of mental development. A comprehensive literature review carried out by G.L. Vygotskaya and T.M. Lifanova [6] makes it possible to even trace the date when L.S. Vygotsky formulated the ZPD concept for the first time rather than used this term as a metaphor. This happened on 03/23/1933 in his closing speech at a conference on diagnostic assessment, i.e. a little over a year before his death. Therefore, Vygotsky had extraordinarily little time (just over one year seems too short by historical standards) to demonstrate the ZPD concept potential for implementation of his idea of *psychology as a practice*. This time was hardly sufficient to follow the elaboration of the concept to its logical end. Not unsurprisingly, the debate on the ZPD definition has lasted until now and has flared up rather than subsided. Various views on the ZPD definition have been expressed [5]; the issue of correspondence between the concepts of ZPD and scaffolding (whether they are equivalent or not) have been discussed [30; 33]; attempts have been made to provide an expansive interpretation of ZPD and to prove feasibility of its extension to different areas of personal development [2; 16; 28; 35]; ZPD has been contrasted to the space of the child's capacity actualization [4]; attempts to apply it in contexts that go far beyond the scope of its initial application within the framework of the child intellectual development have been made and discussed [31; 38; 44; 49 etc.]

When identifying turning points in the evolution of the cultural-historical approach to understanding of child development mechanisms, it is worth highlighting another assumption, which stayed out of the focus throughout decades, although L.S. Vygotsky considered it “the most positive feature of this new theory” [9, p. 230]. This is the assumption that “a single step in learning can represent a hundred steps in development” [9, p. 230] which was formulated in “Thinking and Speech” as early as in 1934 although it was never found in any of his numerous notebooks, as E.Yu. Zavershneva (the main expert on Vygotsky’s archive) stated it. Drawing an analogy with Vygotsky’s epigraph to his book about the crisis in psychology (“The stone that the builders rejected has become the cornerstone”), we can say that the “hundred steps” assumption which researchers and practitioners had neglected for a long time proved to be the cornerstone for solving some of the seemingly unsolvable issues of child development. We will take a closer look at this point in the last part of this article when considering the ZPD multidimensional model [15; 46].

Based on the aforesaid, we can draw several important conclusions, which set the “mode” of treating Vygotsky’s cultural-historical psychology in general and the ZPD concept in particular as the core (epicenter) of the concept of development.

Firstly, accepting Vygotsky’s position designated in 1927 and representing the position of a scientist who pioneered establishment of the new psychology as a development facilitation practice, we consider theoretical ideas and concepts that he developed as *tools of this practice*, rather than scientific concepts that are designed to explain reality but do not necessarily have a heuristic potential for practice.

Secondly, taking into account that the basic concepts which grounded Vygotsky’s developmental framework appeared as late as during the last 2–3 years of his life, the cultural-historical theory should be viewed as fundamentally incomplete. That is, one needs to discriminate between different levels within Vygotsky’s theory, i.e. between its “zone of actual development”, which it had reached when its author was still alive, and its “zone of proximal development”, which can be used to make judgments on Vygotsky’s ideas that he had had no time to provide a complete rationale for and to follow to their logical end. An effort to analyze and to integrate these ideas into a whole enabled us to arrive at the ZPD multidimensional model [15; 46] as a feasible elaboration of Vygotsky’s ideas.

Thirdly, it is worth bearing in mind that since L.S. Vygotsky’s “Thinking and Speech” was translated into English in 1962, cultural-historical psychology has started developing along two relatively separate lines of the Soviet & Russian and “Western” cultural-historical psychology (let us put quotes around the word “Western” as today cultural-historical psychology is represented on all the five continents, and Vygotsky’s writings can be read in multiple languages rather than in Russian and English only). Analyzing the concept of ZPD and tracing its evolution, one needs to account for the existence

of these two lines and the differences between them since some works that are important for Russian psychologists have not yet been translated into English. Furthermore, the only ZPD definition that can be found in “Mind in Society” (1978) [46], the most frequently cited book on cultural-historical psychology in the West, was given by L.S. Vygotsky in a booklet for teachers published by his associates and disciples in 1935, i.e. after Vygotsky’s death. This definition lacks important meanings that have become a relevant starting point for the Russian ZPD research at the turn of the 20th – 21st centuries. N. Veresov [5] devoted several works to analyzing differences between the two conceptualizations of “ZPD” (Russian and Western), so we will not dwell on this issue here. Let us discuss the differences that are important for providing a rationale for the perspective of practicing psychologists relying on the Reflection-Activity Approach and the ZPD multidimensional model in their work [15; 16; 17; 18; 20; 22; 46; 47 etc.] and communicating this perspective to the reader.

### Issue of ZPD Definition

The definition of ZPD provided by L.S. Vygotsky (or his associates who prepared the booklet for publication in 1935) is most well-known both in Russia and other countries, which use “Mind in Society” [45] as their main reference. Let us give this definition. “... The child’s zone of proximal development is the distance between the actual developmental level as determined by independent problem solving and the level of potential development as determined through problem-solving under adult guidance, or in collaboration with more capable peers” [7, p. 42; 45, p. 86]. This definition is usually regarded as “classical”, i.e. expressing the core of the concept, its essential content, according to Vygotsky. Is it really so?

Firstly, we believe that definitions of this concept in other Vygotsky’s texts, e.g. as of 1933 and 1934 [9; 10], differ significantly from the classical one, and we analyzed these differences in detail earlier [15; 46]. In particular, L.S. Vygotsky used the word “distance” in no other writings, and in addition to the term “under adult guidance” he used phrases “with the adult’s help” and – which is of principal relevance for us – “in collaboration with an adult”. One has to admit that this makes a difference: in the first case, the adult-child relationship is the one between a leader and a subordinate, whereas in the second case, the relationship is cooperative. On the other hand, what does the word “distance” refer to? If it denotes a type of problem solved, then it is all about learning rather than development. If it refers to cognitive capacities, then how are they measured? There is nothing said about this in the definition itself.

Secondly, considering the context, we can see that Vygotsky prefaced this definition (in the original Russian text) with the words, “*Providing that we call ...*”<sup>2</sup> and then introduced the idea of the two developmental levels

<sup>2</sup> These words are absent in English version of the definition in “Mind in society”.



of actual and proximal development. By the level he understood nothing but “the child’s mental age” as determined by independent or adult-assisted problem solving. If a ten-year-old child solves problems at an eight-year-old’s level, his mental development level is 8 years old. If with the adult’s help the child deals with the problems up to a nine-year-old’s level, then this is precisely his/her level of proximal development, and the “distance” between the two levels is 1 year. If the child handles problems up to an eight-year-old’s level when dealing with them independently and up to a twelve-year-old’s level when being assisted by an adult, then the “distance” will grow to 4 years. Vygotsky suggested taking these differences into account when forming learning groups (classes) and organizing education. “The distance” is the difference between the two ages as determined (measured) by problems of a varying degree of difficulty. Does the abovementioned definition reflect what L.S. Vygotsky wrote in other texts on ZPD appropriately? Of course, it does not. His understanding as presented in other texts was much more subtle and richer in terms of both meaning and content. So, why did L.S. Vygotsky formulate this definition in this very way here?

To answer this question, one needs to consider the context in which L.S. introduced this “provisional” definition. The context was as follows. The booklet was written for teachers and pedologists who were used to determining the child’s developmental level judging by the child’s independent problem solving alone. However L.S. Vygotsky urged them not to finish the examination at that stage, but to start it from that point so as to identify the level of problems that the child could solve if assisted by the adult (in the definition he wrote “under adult guidance” while he mentioned “with the adult’s help” earlier). To substantiate the need for assessment of what the child was capable of doing in collaboration with others, he introduced a simple “working definition” to illustrate his main assumption about the relevance of diagnosing of what the child would be able to achieve in collaboration with the adult. Experts in cultural-historical psychology understand that this idea was grounded in the concept of development as a process of mastering the cultural-historical experience in the course of the child-adult joint activity (L.S. Vygotsky termed it “in collaboration”), and that the development of uniquely human higher mental functions occurred through interiorization. However it was important for teachers – given their “zone of proximal development” – to take a step towards understanding the point of assessing what independent problem solving the child was yet incapable of but already handled successfully in collaboration with them. This “working definition” suited this objective quite well. Therefore, we believe that one needs to treat this most famous and popular definition, which “Mind in Society” [45] had unfortunately almost canonized, as an exclusively working construct that Vygotsky had created to solve a specific practical problem, and namely,

communicating the importance of assessing not only the actual but also proximal level of development to teachers and psychologists since, if we agree with this viewpoint, “all the issues of pedology in both normal and special schools will look different” [7, p. 52] as Vygotsky clarified it himself<sup>3</sup>.

History tolerates no what-ifs so we cannot say what the ZPD definition would have been, had Vygotsky been able to work on it for at least a few more years. However even in this “highly sector-specific” text for teachers, L.S. Vygotsky mentioned the context that he found most relevant, i.e. the goal of promoting “the integral personality development”. Keeping in mind that in “Problems of Age” (the book that has not yet been translated into English) he wrote that the ZPD concept could be extended to other aspects of the personality, the ZPD definition under consideration ceases to be valid as hardly all personality aspects can be assessed by “the measure of age”. What should one do then? What definition should be used? Or is there no definition?

Drawing on the fact that Vygotsky had little time to develop and implement everything that he had planned, and that even despite 16 volumes written within 10 years, he wrote hardly everything that he could have written, it can be argued that an effort to understand what Vygotsky meant by the ZPD concept resembles arranging a puzzle of odds and ends of thoughts scattered around different texts, or the reconstruction of the whole from its fragments.

We made this effort in 2006 having been stimulated by “Problems of Age” editor’s note to L.S. Vygotsky’s words that the text would consider the diagnostic value of the ZPD concept, whereas “its educational value will be considered in one of the following chapters “. The editor’s note said, “L.S. Vygotsky had never written these chapters”. An attempt to imagine “what *else* Vygotsky had no time to write about” stimulated the author of this article to develop the ZPD multidimensional model described for the first time in an article of the same name [15; 46].

#### **Four Ideas by L.S. Vygotsky that 1935 Definition of ZPD Fails to Reflect**

Vygotsky’s texts contain a number of indications that he laid a greater emphasis on the concept of ZPD than the definition of 1935 represented. In particular, we can highlight at least four of these points. Firstly, he noted that the concept of ZPD could be extrapolated on to personality development in general. The second point is that the child’s development is dependent on the adult’s assistance. The third point is that ZPD has two boundaries rather than one: the first one separates ZPD from the zone of actual development (independent problem solving); and another one runs between ZPD and the zone where the child fails to interact with the adult with full awareness (L.S. Vygotsky put it as “thought-

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<sup>3</sup> L.S. Vygotsky’s idea of ZPD measurement got implemented as late as in 1976, when A.Y. Ivanova (daughter of S.Ya. Rubinstein who was L.S. Vygotsky’s student and B.W. Zeigarnik’s colleague) developed a standardized procedure for assessing ZPD [27].

fully”, i.e. not just “through imitation”), which we later termed it as “a zone of unattainable challenge” [15; 46]. The fourth point is L.S. Vygotsky’s famous statement, which he quoted in “Thinking and Speech” published in Russian in 1956 and translated into English in 1962, that it was not only that learning preceded development but, under certain conditions, a single step in learning could represent a hundred steps in development.

In the West, Vygotsky’s followers paid little attention to this his idea for a long time although he believed that it was “the most positive feature of this new theory” [9, p. 230] referring to the developmental theory obviously. At the same time, Russian psychologists attached greater importance to this assumption [26; 35], and V.P. Zinchenko [26] considered this idea to be a rationale for the assertion that the child development was fundamentally unlimited, which was embodied in the definition of the ZPD, but was not apparent. From a theorist’s perspective, L.S. Vygotsky’s idea is quite simple: within ZPD, in collaboration with adults, children can solve problems that they cannot solve independently; and tomorrow they will be able to autonomously handle problems that they solve in collaboration today. Therefore children’s capacities get continuously enhanced and progressive development unfolds when the adult creates proper conditions to this end. It is a practitioner’s business to determine and to be able to create these conditions. And the nature of these conditions, i.e. in which way adults need to build their interaction with children so as to create developmental conditions is of greatest interest from the practical perspective.

One of these conditions is the child’s subjectness position exercised when interacting (engaging in joint activity, cooperating) with an adult<sup>4</sup>.

### “Is it Under Guidance or In Collaboration?”

The definition given in the 1935 booklet, which was translated and published in “Mind in Society” [45], provided that within ZPD children were able to solve problems that they failed to solve independently under adult guidance or in collaboration with more capable peers. This text is a transcript of Vygotsky’s speech given in December 1933. The same text, just like some others [9; 10], includes such phrases as “in collaboration with the adult”, “with the adult’s help”. That is, L.S. Vygotsky used the expressions “under guidance”, “in collaboration”, “with the help of” as synonyms, or as indicating that the adult’s assistance could vary and be provided

from different perspectives. The definition given in 1935 (which included only the expression “under adult guidance”) lacks this point which is important to understand the way how the child-adult interaction is built within ZPD. Due to this, the term “collaboration” fades into insignificance losing its conceptual load. However it was this very term that many Russian psychologists adopted in the 1990s and that allowed to infer that when cooperating with an adult, a child became an agent of his/her learning and even an agent of self-development [14; 23; 38; 41; 47, etc.). In the second decade of the twentieth century, assessment of the child’s subjectness position<sup>5</sup> in learning has become a most important area of scientific research and practice. This is really crucial as the nature and the dynamics of developmental processes are largely determined by the way in which the child-adult relationship unfolds in the course of their educational interactions: either the child develops as an agent of activity meaning that he becomes an agent of self-development as well or the adult develops certain abilities in the child, and the child is subject to the adult’s educational, psychological, and other influences.

We have put the subtitle “Is it Under Guidance or In Collaboration?” in quotes not by chance as these are not alternatives: the adult can direct (guide) the interaction with the child and to be the child’s coworker simultaneously. Acting under adult guidance, the child can also manage their interaction adopting the position of a coworker, i.e. an agent of the activity, as well.

What is the difference between the developmental processes in education when the child is an agent of learning and self-development (within a collaborative relationship) and when the child fails to exercise the subjectness position subordinating his/her activity to the adult’s will (this relationship is an alternative to collaboration)? The effectiveness of training will depend on the teacher’s mastery, and higher mental functions will develop in both cases. However the collaborative relationship and the subjectness position arising from this relationship include a mechanism of self-development which explains the effect theoretically predicted by Vygotsky in the aforementioned formula of “A single step in learning can represent a hundred steps in development”. When studying, the child learns to solve problems that he/she is yet incapable of solving independently through the interaction with the adult. Then, by means of interiorization, the child becomes able to handle them autonomously. But where, *in what space*, then, do these hypothetical hundred steps occur? Non-obviousness of an answer to this question might explain an amazing fact that even a special book dedicated

<sup>4</sup> Here is what Vygotsky wrote in “Educational Psychology” (1926) about the teacher-student interaction, “The educational process must be based on the student’s individual activity, and the art of education should involve nothing more than guiding and monitoring this activity” ... (the English translation was adopted from Vygotsky, L.S. “*Educational Psychology*”, 1997, p. 48). “Until now the student has always stood on the teacher’s shoulders. He has looked upon everything through his teacher’s eyes and judged everything by the way his teacher thought. The time has come to place the student on his own two feet... The child must himself be made to walk and to fall, to suffer pain from injuries, and to decide what direction to follow. What is true as repaid walking, that it can be learned only on one’s own two feet, and only by one’s own tumbles, is equally applicable to all aspects of education” (adopted from [6, pp. 97–98]. The English translation was adopted from Vygotsky, L.S. “*Educational Psychology*”, 1997, p. 342).

<sup>5</sup> The concept subjectness position corresponds to the concept sense of agency in Western psychology. This concept was worked out in special study and includes two important components — activity and awareness [32], [33], [34].

to the analysis of “Thinking and Speech”, which includes a chapter on Vygotsky’s metaphors, lacks mention of this formula although “zone of proximal development” is used 47 times! [43].

### Searching for Space to Understand L.V. Vygotsky’s Formula

An upsurge of interest in cultural-historical psychology due to active penetration of psychology into practice (not exclusively in Education) at the end of the last century was accompanied by an increasing focus of various professionals (educators; psychologists; neuropsychologists; psychotherapists) on the concept of ZPD. Since the late 1990s, a special area of the ZPD research in Russian cultural-historical psychology has evolved and become popular, and namely, the search for other ZPD dimensions (in addition to an intellectual one) (let us recall Vygotsky’s idea that the concept of ZPD could be extrapolated on to personality development in general, “on to other aspects of the personality”). A number of Russian psychologists have focused their efforts on searching for areas of not only intellectual but also personal development of children in the course of their interaction with an adult within ZPD. E.E. Kravtsova [28] argued that the concept of ZPD referred primarily to personality development. N.L. Belopolskaya demonstrated an emotional dimension of ZPD in her works [2]. A study by L.F. Obukhova and I.A. Korepanova [36] focused on the meaning-making dimension of ZPD. G.A. Zukerman [40] suggested considering ZPD as a space of different developmental options depending on the type of assistance. An effort to integrate and synthesize these ideas by linking them to a practice of assisting children with overcoming learning difficulties by means of the Reflection-Activity Approach (an area of research and practice being developed within the framework of cultural-historical psychology) resulted in the development of the ZPD multidimensional model [15; 15; 29; 21; 46; 47; 49, etc.]. This model integrated the ideas that Vygotsky had expressed in relation to the concept of ZPD and its relevance for understanding of the learning-development relationship. These developments resulted in the establishment of a theoretical model of the ZPD [15; 46] and development of a specific method of analyzing cases of child assistance. This method helps to identify changes (steps) in the child’s development that accompany changes (steps) arising from the child’s learning with the adult’s assistance [19; 20; 21; 34; 47]. A presentation made by the author of this article at the 2006 conference provoked a heated debate among the ZPD section participants. However a post-conference article that summarized the content of each presentation quite extensively never mentioned that the ZPD multidimensional model had been presented [29]. The effort to convey the heuristic potential of the ZPD multidimensional model in a brief conference presentation seemed to have failed [16]. Further research and practice of applying the Reflection-Activity Approach to assist with overcoming learning difficulties showed that the multidimensional

model had both theoretical relevance being one of the hypothetical ZPD “frameworks” and could also serve as a tool to solve purely practical problems including those that seemed to be unmanageable.

### ZPD Multidimensional Model as Key Conceptual Tool of Reflection- Activity Approach to Overcoming Learning Difficulties

Before describing the ZPD multidimensional model itself, let us give a brief account of the Reflection-Activity Approach (RAA) to helping students overcome learning difficulties providing assistance that contributes to development [17].

The central idea of RAA consists in using learning difficulties as a resource for development, “The things that hinder us will help us!” What this process may look like?

First of all, challenges are an inevitable component of learning because the child attempts at doing something that he/she has not learnt yet. According to L.S. Vygotsky, education is arranged in such a way that “the child always has to bite more than he can chew” (Vygotsky’s literal translation would be “jump higher than one’s height”). Having faced difficulties, the child becomes aware of the boundary between what the child can already do independently and what he/she is yet incapable of; experiences the need for the adult’s help; expects it and accepts it eagerly (if they have a cooperative relationship). The adult’s involvement in the child’s problem solving acquires a special value: without the adult’s help, the child will fail to handle the task and will fail to do what he/she wanted or what he/she was to do. When overcoming difficulties with the adult’s support, the child both learns and develops.

Secondly, if the adult builds a cooperative relationship with the child, then *they unite* and exercise collective agency over actions to cope with a challenge. The subject of their activity is a search for *specific modes of action* that will enable them to overcome difficulties; to correct mistakes and to prevent them in the future. Interacting within ZPD, the adult and the child initiate the process of interiorization, in which the modes of joint actions will later become the child’s own modes of action.

An overcome difficulty is a “step” in learning. What steps in development can be facilitated by the child’s awareness that acting “*in this way*” he/she will avoid “*these mistakes*”? And what changes can and should occur for the child if he/she has taken this step? A theoretical answer to these questions lies in the ZPD multidimensional model. *The ZPD multidimensional model embodies Vygotsky’s ideas regarding the capacity of the ZPD concept to be extended to various aspects of personality development, as well as his idea of a specific learning-development relationship which empowers one step in learning to result in a hundred steps in development.*

The diagram (see Fig. 1) depicts a child and an adult (a teacher; an educational psychologist; a counselor; a parent, etc.) who are agents of the child’s progress in the course of learning. In the diagram, the area “above the

child” depicts the child’s abilities, qualities, personality features which relate to the educational activity (learning) being carried out. They are designated as potential dimensions of development, i.e. they can change while overcoming learning difficulties. For example, a successful accomplishment of a challenge can be accompanied both by an improvement in cognitive functions (attention, memory, ways of thinking), and improvements in reflection; motivation; self-efficacy, etc. Each dimension, including the dimension indicated by the plane of a learning activity, falls into three hypothetical zones: the zone of actual development (ZAD), within which the child can solve problems independently without the adult’s help; the zone of proximal development (ZPD), within which the child can perform only with the adult’s assistance; the zone of unattainable challenge (ZAN), within which the child is incapable of a thoughtful collaboration with the adult (the boundary between the comprehensible and the incomprehensible). Assumingly, the steps in learning represent changes in the ZAD and ZPD boundaries on the plane of learning, and the steps in development are qualitative changes in every dimension. Vygotsky’s formula – “A single step in learning can represent a hundred steps in development” – gets filled with concrete meaning within the framework of this model: one-step progress within an educational dimension can be accompanied by simultaneous qualitative changes in many dimensions.

It is essential (prerequisite) that the child engages in joint activities as an agent who actively looks for obstacles to be addressed so as to manage the task and appropriates the experience of overcoming difficulties in collaboration with the adult investing efforts to learn how to solve problems that are unmanageable so far. All the changes that the child may face can be depicted as new formations or “steps” in a specific dimension.

Participating in the process of overcoming difficulties as an agent, the child engages in activity as arranged by the counselor in accordance with the “Intention – Implementation – Reflection” scheme which N.G. Alekseev proposed to describe and arrange a project-oriented action [1]. The Intention arises as an idea to get rid of specific mistakes. Then, with the counselor’s support, the child becomes the agent of intention implementation, and reflection of this implementation. Making efforts to implement his/her intention, e.g., learning to avoid a certain type of mistakes, the child assisted by the counselor starts with identifying the link between his/her mode of action and his/her mistake. Then he invests efforts in becoming aware of the mode of action so as to understand which aspect of it results in mistakes and challenges. Through gaining awareness of the faulty mode of action, the child frees him/herself from its power and – with the adult’s help – attempts to change it. Reflecting on the mode of action is central here since it sheds light on a specific aspect that needs to be modified. Understanding how to

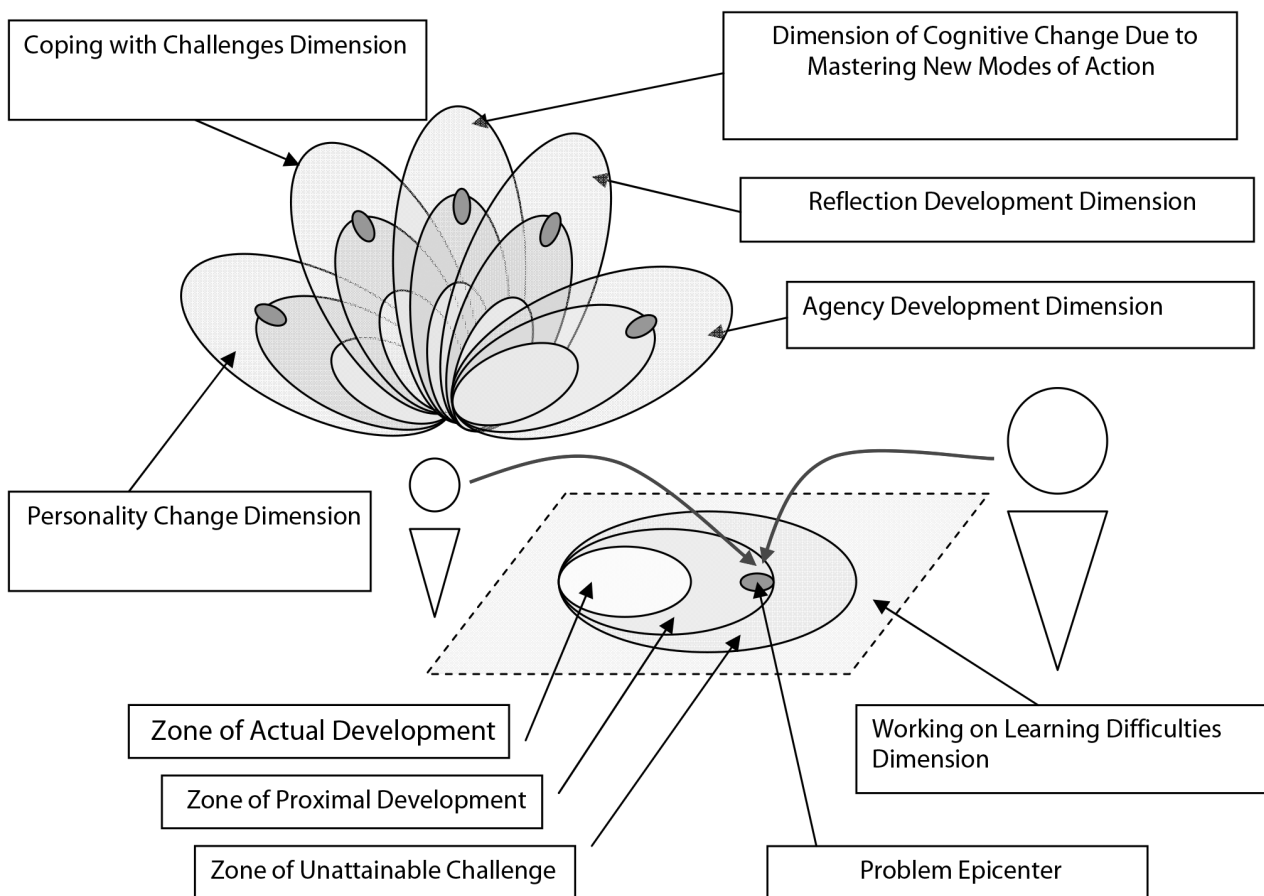


Fig. 1. ZPD as a generality of dimensions of potential developmental steps in the course of learning [15; 46]



produce change is now part of the child's creative work performed with the counsellor's support. After the child finds a new mode of action, and tries, tests, and ascertains its effectiveness, it is helpful to reflect on the process of intention implementation, which is also done with the counselor's help. Final reflection allows to make meaning of the most important points in the dynamics of the process of overcoming difficulties. These include differentiating between what the child is able to do independently; what the child is incapable of; what he/she can accomplish with the adult's assistance and what he/she needs to learn so as to use a new mode of action autonomously. In this way, reflection enables the child to become aware of "the dual resource" – what the child is able to do independently and what he/she is capable of when acting in collaboration with the adult but what he/she will be able to do independently in the future [22]. This brings about a new issue and a new idea for joint actions in the future. All new formations that arise in different dimensions as a result of this dynamics can be accounted for as "steps in development" in a specific dimension [20; 21; 34].

It turned out that it was possible to use the ZPD multidimensional model as a development assessment tool with first-year students – future psychologists. These students held no ZPD stereotype as created by its "classical" 1935 definition which we believe to ignore Vygotsky's most important and heuristic ideas about ZPD. We provide a brief account of this work as an illustration.

*In 2017, the following case arose in the course the first lesson of the Psychological and Educational Assistance with Overcoming Learning Difficulties Course during first-year undergraduate students' training at the Counseling and Clinical Psychology Department of the Moscow State University of Psychology and Education. A teacher found out that most students did not feel confident when writing words with an unstressed vowel and made grammar mistakes occasionally. Then, the teacher and the students invested a collective effort in reflecting on and becoming aware of a mode of action that resulted in errors. Afterwards, they collaborated to build a mode of action that would eliminate mistakes and would allow anyone who had mastered it to write words with unstressed vowels competently and to feel confident that there would be no errors.*

*Later on, the students were asked (one needs to keep it in mind that these were freshmen who were ignorant of Vygotsky's name so far; never attended the Developmental Psychology course, and had no idea about ZPD, etc.) what other change could occur to a person who used to rely on a faulty mode of action that had resulted in errors, and then he/she had mastered a robust mode of action that had enabled him/her to write without errors. It took the "warmed-up" students 5 minutes to single out 25 new formations that the child who had mastered a robust mode of action might have developed. At that time, the teacher was drawing these new formations*

*as dimensions above the child's image on the blackboard, and then asked another question, "Can you demonstrate and provide a rationale for 100 steps in development that can arise in this case?" The students agreed to complete this task, and at the end of the course, each student presented a text where they had listed one hundred dimensions, within which quantum leaps could occur due to mastering of a new mode of action, and five of them had detailed descriptions of how these changes could occur. The concept that had raised doubts among professionals in 2006 seemed natural and logical to first-year students in 2017. By the way, in the same year, this experiment was planned and replicated (rather than carried out spontaneously) by V.K. Zaretskii and I.A. Nikolaevskaya during an option course on RAA at the University of Neuchâtel, Switzerland, where Jean Piaget – L.S. Vygotsky's famous opponent – had worked. The option course was designed for senior students, master's students, and even PhD students. Some of them decided to describe 100 possible steps in development in a given situation of transition to a new mode of action as their credit test assignment and handled this assignment quite creatively.*

In this article, we do not provide numerous practical examples illustrating this self-development mechanism, which makes it possible to break new grounds on various developmental dimensions after making a single "successful" step in learning. This phenomenon which we called the "explosive dynamics effect" was described in a range of publications [19; 25; 34; 47]. The only thing that we would like to note here is that historically, the task of providing assistance so that a single step in learning would facilitate multiple steps in development stood out as a vital practical task for us when L.Z. Saltykova, the President of the "Deti.msk.ru" charity fund, had approached us in 2012. She asked for help with arranging school training for orphaned children with disability and severe somatic conditions and diagnosed with developmental delay and mild intellectual disability. The initial educational and developmental level of these children seemed to be so low that even a perfectly arranged educational process would hardly change their lives significantly due to health limitations and specific social situation of development. Nevertheless, the next 8 years of work showed that it was possible to create conditions for these children's normal development enabling them to overcome their limitations, to receive education and to self-actualize [47].

Christel Manske [32] who positions herself as Vygotsky's follower and whose main practice in recent years has dealt with preparing preschool children with Down syndrome to inclusive education in a regular school described similar cases of "explosive dynamics" and subsequent progressive development in her works. In one of her books, she dedicated the first chapter to the ZPD concept. This chapter could be called "a hymn in praise of the zone of proximal development"<sup>6</sup>. Judging

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<sup>6</sup> The titles of some paragraphs in this chapter look as follows, "In the zone of proximal development, we share joy and pleasure with each other. In the zone of proximal development, no child is a loser. ... In the zone of proximal development, a person begins to understand himself better with the help of another person... In the zone of proximal development, affects are not suppressed, but get culturalized. In the zone of proximal development, we attach great importance on meanings that are relevant for the person ... In the zone of proximal development, a leap from one level of mental development to a higher level is possible" [ 32, c. 5].

by the paragraph names, even without diving into the content, we can see that the idea of the multidimensional model is undoubtedly close to C. Manske [32].

### Evolution of Methodological Status of ZPD Concept

This article has attempted to trace an amazing evolution that the concept of the zone of proximal development, which initially served as an explanatory principle of interiorization and organizing of education for children with different levels of potential development, has undergone over the course of 88 years.

If we use the idea of various functions of conceptual “tools”, which E.G. Yudin examined using the example of the methodological functions of A.N. Leontiev’s conceptual scheme of activity [42], then it can be argued that the concept of ZPD fulfilled the function of an explanatory principle from its development in 1933 and until the late 1990s. Even V.V. Davydov’s [12] work, which referred to the ZPD concept repeatedly, employed it as an explanatory concept rather than an integral part of the research subject.

Nevertheless, the attempts to operationalize this concept in relation to various aspects of child development (cognitive, emotional, meaning making) which were made in the aforementioned works of the Russian authors [2; 15; 28; 30; 36; 40] facilitated ZPD transition from the status of an explanatory principle to the

status of a subject of study. Being an integral part of the designed research subjects, the ZPD concept facilitated design of other subjects, such as development of the emotional sphere, meaning making, subjectness position, learning autonomy, etc. It may well be that the enormous heuristic potential of the ZPD concept hidden in two Vygotsky’s fleeting replicas reflecting the ideas that the ZPD concept can be applied to various personality aspects, and that a single step in learning can represent a hundred steps in development, facilitated the discovery of another methodological function of this concept, and namely, its capacity to serve as a methodological vehicle for designing of new subjects of research and practical development in various areas of psychological and pedagogical practice: special needs education [32]; providing children with psychological assistance with overcoming learning difficulties by means of the Reflection-Activity Approach [20; 47, etc.]; psychological counselling for teachers [24]; psychotherapy [22; 37; 38; 39; 44; 48; 49] and a number of other areas of research and practice [31], etc.

In conclusion, let us get back to Vygotsky’s words about why teachers need to learn to identify the zone of proximal development and to work with students within it. If this happens, then “all the issues of pedagogy in both normal and special schools will look different” [7, p. 52]. V.P. Zinchenko [26] elaborated on this idea in his essay devoted to L.S. Vygotsky, “If a teacher is sensitive to a child’s zone of proximal development, it will grow into the prospect of his unlimited development”.

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## Еще раз о зоне ближайшего развития

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В статье дается анализ понятия зона ближайшего развития (ЗБР) Л.С. Выготского, рассматриваются варианты его определения, проводится критический анализ наиболее распространенного определения ЗБР, взятого из работы Л.С. Выготского 1935 г. и являющегося основным для англоязычных авторов. Исходя из общего методологического замысла Л.С. Выготского о создании психологии-практики и незавершенности его концепции развития, в том числе, незавершенности разработки понятия ЗБР в силу известных жизненных обстоятельств, делается попытка реконструкции понятия на основе анализа различных работ Л.С. Выготского, допускающих возможность иного понимания ЗБР, чем данного в определении 1935 г. В ходе анализа различных положений Л.С. Выготского о связи обучения и развития, о ЗБР, о его значении для диагностики и педагогики, о возможности применения понятия ЗБР к разным сторонам личности устанавливаются содержательные элементы понятия ЗБР, не вошедшие в «каноническое» определение. Дается описание многовекторной модели ЗБР, разработанной в рамках рефлексивно-деятельностного подхода к оказанию помощи учащимся в преодолении учебных трудностей, в которой интегрируются основные идеи Л.С. Выготского о ЗБР. Осуществляется реконструкция методологического статуса понятия ЗБР в опоре на представление о методологических функциях концептуальных схем Э.Г. Юдина. Показано, что с момента своего появления понятие ЗБР проходит стадии объяснительного принципа, предмета исследования и методологического средства построения новых предметов исследований и разработок.

**Ключевые слова:** зона ближайшего развития, Л.С. Выготский, многовекторная модель зоны ближайшего развития, рефлексивно-деятельностный подход, консультативная помощь в преодолении учебных трудностей, субъектная позиция в учебной деятельности, методологический статус понятия.

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**LEARNING INTERACTIONS: CONSTRUCTING  
DEVELOPMENTAL ENVIRONMENTS**  
**УЧЕБНОЕ ВЗАИМОДЕЙСТВИЕ: КОНСТРУИРОВАНИЕ  
РАЗВИВАЮЩЕЙ СРЕДЫ**

## Development of Social Competencies of Primary School Children in Schools with Different Ways of Organizing Educational Interactions

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The article focuses on the results of the study on the development of social competencies in primary school students studying in schools with different ways of organizing educational interactions. Two types of schools are analyzed: a school that implements a system of developmental learning (the method of D.B. Elkonin – V.V. Davydov), and a school based on traditional teaching methods. The research is based on the principle of activity theory, according to which the development of social competencies in the learning activity is mediated by the ways of organizing learning interactions and forms of communication between children and adults, aimed at a joint search for a common way to solve a certain class of problems. The study involved fourth graders from Moscow schools (258 students). The author's method "The conflict" was used. It allows to study the students' search for a way to solve the visual-logical problem of identifying a system of features and multiplying them. The article discusses statistically significant differences in the results demonstrated by fourth graders from different types of schools. It is shown that the school of developmental learning creates favorable conditions for students to master productive forms of group interaction, which increases the effectiveness of joint problem solving, and ultimately contributes to the development of social competencies in primary school children. In students, studying in traditional schools, the phenomenon of "loss of content" in communicative competencies was revealed: children united in a group to solve a problem lost their focus on analyzing the content of the problem, replacing the process of finding a joint solution by demonstrating the learned rules of interaction.

**Keywords:** social competencies, schools with different ways of organizing educational interactions, school of developmental learning, "traditional" school, primary school graduates, joint problem solving.

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The theoretical basis for the development of modern education is the Cultural-Historical Theory of L.S. Vygotsky [1]. The fundamental provisions of this theory – the leading role of learning in the process of child development, the direction in development from intrapsychic (divided between participants) to interpsychic (internal, individual) – determine the organizational and meth-

odological framework in which pedagogical innovations in the Russian school are currently understood and designed.

Based on the Cultural-Historical Theory of L.S. Vygotsky, Russian primary education is faced with the task of forming students' social meta-subject competencies. At the same time, the ability of primary school students to interact with their peers and with adults in the educational process is

considered to be one of the key requirements for the organization of the educational process. This provision is reflected in the new educational standard. Social competencies in it are defined as: “active use of speech tools to solve communicative and cognitive tasks; wish to listen to the interlocutor and conduct a dialogue; willingness to recognize different points of view and the right of everyone to have their own point of view, to express their opinion and argue their point of view and assessment of events; involvement into determination of a common goal and ways to achieve it, ability to agree on the distribution of functions and roles in joint activity and to exercise mutual control in joint activity, to adequately assess their own behavior and the behavior of others; willingness to resolve conflicts constructively by taking into account the interests of the parties and cooperation” [18].

For a school that implements the ideas of developmental learning [3; 4], the inclusion of broad communication (dialogue) and interaction of participants in the educational process is a necessary condition for the organization of learning activity. Numerous studies carried out by V.V. Davydov and his followers have shown the productivity of the “teacher-students” dialogue at the stage of setting a learning problem, i.e., in the case when the object content of the problem is mediated by the search for a joint way to solve it [2; 5; 6; 7; 8; 11; 12; 14; 15; 16; 19; 20; 26]. According to the data, students’ communication aimed at finding the objective content of the problem (the action is defined by its object and is aimed at its object) stimulates the implementation of control and reflection. A joint discussion at the stage of joint search for a solution contributes to the implementation of planning and analysis, creates conditions for the development of imagination, mastering the basics of learning independence, search and research activities, as well as self-assessment. Thus, in many years of research, it has been proved that the special organization of joint learning activity is an essential factor in the effective teaching of primary school students.

As the results showed, joint actions are effective, starting from the first grade, because when they are performed, they help students understand different points of view and coordinate them. This makes it possible for the participants of joint activity to consider the content of the problem being solved, taking into account different positions and highlighting the essential features of the objective content of the problem. On the other hand, the ability to meaningfully, in a businesslike way, get out of a conflict situation, having different points of view, allows students to successfully participate in a frontal class discussion and effectively conduct group work [15; 16; 19]. The data obtained are consistent with the results of the study of the features of cooperative learning and indicate the fundamental importance of communication and learning interactions for the development of metacognitive competencies [10; 21; 22; 23; 24; 27].

In the existing system of education (“traditional school”), the main purpose of the primary school teacher’s work is primarily to convey to children a set of certain operations.

In contrast to actions or activity as a holistic process, when a child fulfills simple operations, their meaning, goals, and conditions, in which these concrete operations are ad-

equated or effective, in most cases are clear only to the teacher, but remain complex and inaccessible to children. An example of such training is a fairly long process of teaching a child to write separate sticks and hooks, from which an entire letter will then be formed. This method of exercise based on fulfilling a set of specific tasks is also implemented in teaching multiplication, where multiplication by 2 is the topic of a particular lesson, and multiplication by 3 is the topic of another lesson, etc. The main form of interaction between the teacher and the students is the teacher’s indication of the need for the student to perform certain operations, and interaction is reduced to simple communicative exchanges. An example of this type of communication is teacher’s giving instructions on how the student should perform the action “according to the pattern”. So, in one of the math lessons, we witnessed how the teacher asked the children more than 250 questions on the multiplication table. If the child answered correctly, she asked the next question, if not — repeated the previous one and called another student. To the experimenter’s question: “Why don’t you talk to the children?” the teacher replied in surprise: “I’ve been talking to them for a whole lesson! I ask them “ $3 \times 3 = ?$ ”, and they answer me either correctly — “9”, or incorrectly”.

With this understanding of educational communication and educational interactions, the content of social competencies is reduced to two interrelated phenomena. On the one hand, when the search for a solution to a problem is reduced to performing a certain sequence of tasks, communication takes on the character of comments such as “solve in a pair” or “do in a group”. Since the content and form of presentation of the task do not essentially change, the “interaction with others” does not become necessary for the participants and does not affect the way the children work. On the other hand, working together, students should not “disturb” the others. Therefore, the conditions for organizing joint work include restrictions — certain rules of communication, such as “speak in turn”, “give in”, “do not interfere with others”, etc. The principal feature of a “traditional” school setting is that in teaching-learning situations it is the teacher who determines the goal of the activity, who manages, controls and evaluates the actions of the student, leaving a child the opportunity to perform the necessary operations. It is obvious that in school which uses this method of organizing the learning process, children cannot be expected to fully master meta-subject competencies. The latter is possible only in the context of meaningful interactions between students and adults, when children themselves act as full-fledged subjects of the interaction, directing their actions and their communication to joint search for a solution to the problem.

We believe that the main indicator of the formation of meta-subject competencies in children is that in the process of learning the child not only learns the performed part of the action (operations), but also identifies and fixes those conditions in which these operations are adequate — provides identification of a certain class of problems for which this way of action is specifically general [3]. It means that in different joint problem solving situations students will look for different ways of organizing interactions. The content of a problem assigned to them, determines the type and structure of communication adequate to the search of the way to solve it. In other words, subject



competencies become meta-subject competencies when the child discovers the object of the operations performed, that is the content of a problem and the limits of the way of action. This discovery can happen when the child has an attitude to the task as to performing a specific set of operations not directly, but through interaction with other participants in joint activity. This position became one of the main hypotheses of our experimental study.

The goal of the study was to determine to what extent primary school graduates who have been trained in schools that differ in the way of organizing educational interactions are able to jointly search for a way to solve a problem.

**Hypotheses:**

1. The association of students in groups in the process of school education increases the effectiveness of the joint search for a way to solve the problem (in comparison with the individual search for a way to solve it).

2. The development of social competencies in primary school is mediated by ways of organizing educational interactions and communication, aimed at joint search for a common way to solve a certain class of problems.

**Description of “The conflict” procedure**

To evaluate the comparative effectiveness of individual and group solutions of a visual-logical problem, we used a specially developed experimental procedure called “The conflict” [9; 13; 17].

The material of the technique is a matrix of 3x3 cells, in nine cells of which one can place 9 elements – images (“faces”). Images (“faces”) are distinguished by four features: “head size”, “eye color”, “nose shape”, and “number of hairs”. A properly filled sample matrix is shown in Fig. 1.

A task. The experimenter offered the participants a partially filled matrix of 5 elements, in which 5 “faces” occupied the top row and the left column (see Figure 2), and suggested finding the pattern of the “faces” and filling the remaining four empty cells with suitable

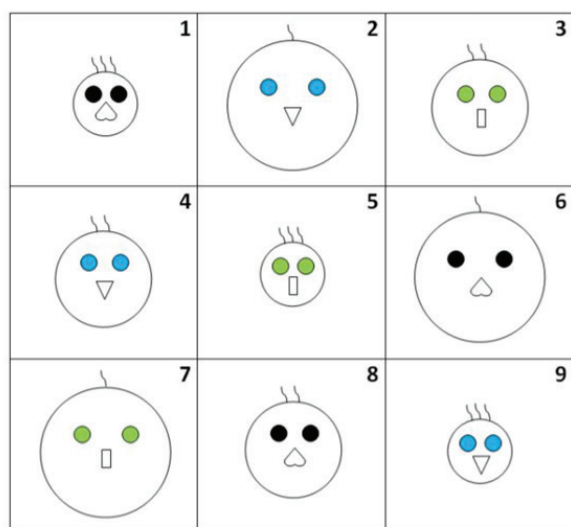


Fig. 1. A filled matrix of 9 elements (“faces”), which differ in 4 features (“head size”, “eye color”, “nose shape” and “number of hairs”)

elements. The problem was considered solved if all the empty cells of the matrix were filled in correctly.

To solve a problem correctly, it is necessary, first, to identify and correlate the essential features of the matrix elements (“faces”), and, secondly, to assume (“predict») changes in these features in a given coordinate system horizontally, vertically, and diagonally (i.e., essentially find a general rule for the arrangement of elements). In a two-dimensional matrix, only two attributes can change. Therefore, in our problem, the four features are combined in pairs (one pair is “head size” and “number of hairs”, the other is “eye color” and “nose shape”). The increase in the number of signs made it difficult to make a decision and created prerequisites for extensive communication. If the group’s work was aimed at finding a common method (rule) for the arrangement of elements in the matrix, then the relationship of features that determines the place of each element was found by these children. If the participants solved the problem without analyzing the relationship of features in the system, then each feature was considered independently of the other. Identifying a set of essential features is the first step in solving the problem. Next, one needs to determine which rule changes the features in the matrix. If students analyzed only a column or only a row, they could correctly determine the set of “faces” for solving the matrix, but did not have enough information to correctly place them in the cells of the entire system of elements. Only if the patterns of changes in the attributes of elements in the column, row and diagonal were determined simultaneously, the correct “faces” fell into the corresponding cells of the matrix.

*Procedure of the experiment*

The study using “The conflict” procedure was conducted in two stages.

The first stage was individual work. Each child was given a form with a matrix (Fig. 2) and a set of 10 numbered images – “faces” (Fig. 3), four of which were suitable for solving the matrix, and the rest were not. There were only four such sets, and they differed from each other by having the same “faces” under different numbers.

At the first stage, the children were provided information about the task that they should complete. “You have two sheets with “faces”. On one of them, all the “faces” are in their places, correctly. There are also 4 empty cells left here. Your task is to select the appropriate “faces” for each cell from the set and enter their numbers.”

The second stage was group work. Immediately after the individual completion of the task, the students were split into groups of 4 (those sitting at one desk turned to those sitting at the next desk). They were given a new group form with the same matrix as in the first stage.

At the second stage the task was formulated as follows: “This is a sheet of paper in which you need to write down your general group solution to the same problem. Discuss it. If you all agree on what “face” should be in an empty cell – draw it. If somebody disagrees – you don’t need to draw. Then fill the empty cell with your names and numbers of the “faces” that you think are correct. You will find these numbers in your individual sets”.

Starting to work in a group, students found out that their individual results were different from those of the

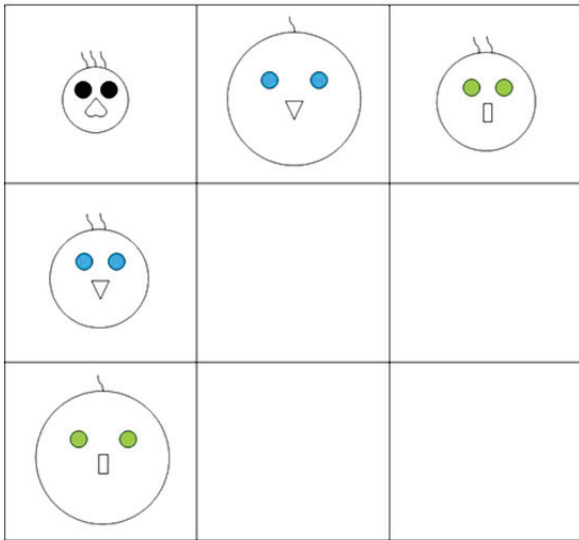


Fig. 2. The material of “The conflict” method (a matrix to be filled in at the individual and group stages)

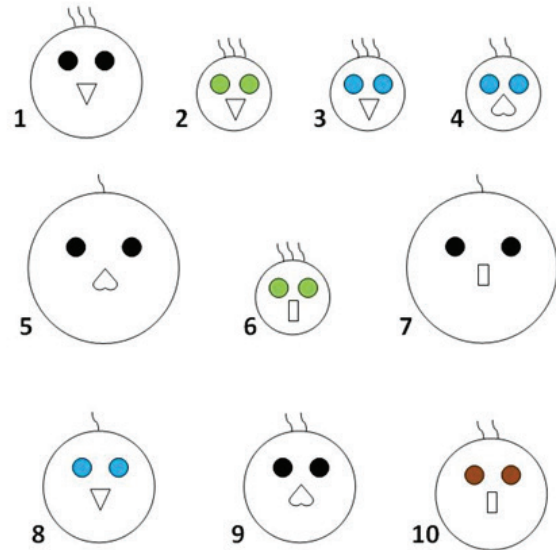


Fig. 3. One of the 4 sets of elements – “faces”, which was used at the first (individual) stage of solving the problem (filling in the matrix)

other participants, i.e. the empty cells were filled with different numbers. The discrepancy between individual results was ensured by providing participants with different sets of numbered elements – “faces” at the first stage of the work (Fig. 2 shows one variant of the four sets used). It created a situation of a socio-cognitive conflict. Initially, at the individual stage of the work, the children developed their own point of view in relation to the solution of the problem, and then, at the second stage, when solving the same problem together, their individual positions collided. This type of organization of joint activity leads to a meaningful conflict, in which the analysis and comparison of points of view becomes more active, bringing it up to their reasonable separation or agreement, or to the development of a new unified group position [see, for example, 10; 13; etc.]. In such a situation, the task of the group was to fix and coordinate the positions of individual participants and agree on which specific element would be placed in each cell.

The experimenter observed and recorded how the group builds interaction in the process of solving the problem. The activity of group members, nominating a leader, conflicts and characteristics of social interactions were recorded (whether individual solutions are used in joint problem solving, whether they detect mismatch of numbers in their individual results, how many features are discovered in the matrix, whether a column, line, or diagonal is analyzed, the content of individual participants’ statements in the process of solving the problem).

The analysis of individual and joint problem solving results, as well as the protocols of monitoring the work of the group, allowed us to study the processes of organizing the participants’ interactions and the features of overcoming their socio-cognitive conflict, to assess the impact of interactions and communication on the effectiveness of solving the problem quantitatively and qualitatively. So, the nature of filling in each cell of the matrix (with a drawing or individual names), the number of drawings and individual names, as well as the correct-

ness of filling in each empty cell are the indicators of setting a common goal, agreeing on a solution method and the effectiveness of a group solution for us. For example, from Figure 3, it follows that in relation to two cells of the matrix, all participants of the group held a common goal and agreed on solutions (the presence of a picture), in the third case, only two participants agreed on a common solution (two names are circled together), and in the fourth case, there was no agreement and four answers were given. As for the way out of the conflict situation, it was possible to state its instability, since the agreed solution was achieved in relation to only two cells out of four (two cells are filled with drawings). However, these drawings are also made by the group incorrectly. This meant that, in overcoming the conflict, the participants attached more importance to the agreed choice of the answer than to the joint analysis of the content of the task

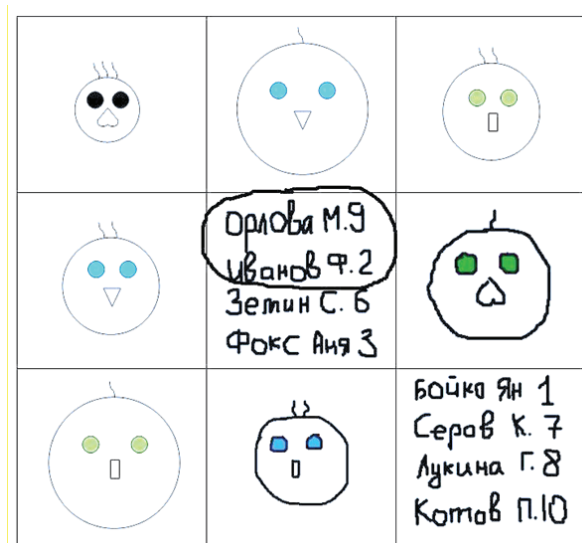


Fig. 4. Example of filling in the group protocol by 4 participants

itself. A general way to overcome the conflict is based on two components – the ability to agree on interaction between the participants and the ability to direct this interaction to find a solution to the problem – to identify and fix the subject content (the features of the matrix elements and the direction of changes in these features in a given coordinate system). Thus, if a group finds the correct solution for all the empty cells, it means that it successfully coped with the conflict of individual solutions in joint searching for the content of the problem.

### **Description of the test samples**

The study involved students from three Moscow schools: a school of developmental learning (School-1), a traditional school (School-2) and a special school for “gifted” children (School-3). The fundamental differences in teaching in these schools lie both in the selection, organization and structure of the content of education, and in the organization of the learning activity itself, primarily in the content of educational interactions and the style of communication between students and between the teacher and students.

“School-1”. In this sample, we included graduates of primary school No. 91, which implements a program of developmental learning. These students did not pass any special selection for admission to the school, and for 4 years they studied according to the well-known system of developmental learning of D.B. Elkonin and V.V. Davydov. The main distinguishing feature of the system of developmental learning is that the content of school subjects is organized as a system of learning problems. Looking for general ways of solving a class of problems permits to master scientific concepts. The organization of meaningful interactions of students with each other and with the teacher in the process of mastering the educational content is a necessary condition of developmental learning. The study of students of this school was conducted in 2016, 2017 and 2019. It was attended by 135 people.

“School-2”. This sample presents diagnostic data for graduates of an elementary school in Moscow that implements traditional teaching methods. It is based on the special features of interaction of the subjects of the educational process, when the organization, management and control remain with the teacher, and the child is transferred to performing actions and operations. Accordingly, communication in such an environment is initiated and managed by the teacher. A total of 78 students from this school participated in the study (data from 2021).

“School-3”. A school where children with a “high level of intelligence development” are taught. The involvement of this school data is important for the following reasons. First, the solution of the visual-logical problem proposed in “The conflict” method, as shown above, requires an analysis of a system of features of the matrix elements with simultaneous consideration of several variables (complex multiplication of features). Therefore, the factor of intellectual abilities could be essential for finding a solution. Secondly, the educational situation in this school is mainly focused on the individual

activities of students. Every year, the school conducts a strict selection of children in the first grade, using special tests. Education in this school is conducted according to the author’s programs. The educational environment is characterized by in-depth educational content, attention to the student’s personality, and a variety of forms of activity. The organization of the learning process creates favorable conditions for the formation of competitive motivation of students. The diagnosis of social meta-subject results in the graduates of this primary school was carried out in 2018. The study involved 45 people.

A total of 258 students from three schools (65 groups) participated in the study. We compared individual and group solutions to the same visual-logical problem “The conflict” in these three samples of students.

### *Results of the study*

The evaluation of the effectiveness of individual and group solutions was carried out in points. For the correct filling of one cell of the matrix, 1 point was awarded. Thus, the minimum number of points when filling in 4 cells is 0, and the maximum is 4. The results of the samples were compared by means of the average values and standard deviations. Mastering of joint forms of problem solving was determined by comparison of the correctness of individual and group solutions. The statistical significance of the differences between the indicators of individual and group decisions and the data on different samples of students was determined by the Student criterion. The degree of consistency of the group solution was determined by the nature of filling in the empty cells: a single drawing as the group’s solution or separate solutions of individual participants in the group work form (names and numbers form individual sets). The strategy for overcoming group disagreements was determined by the social parameters of interaction, which were fixed in the process of observing the work of the group.

The indicators of the correctness of individual and group solutions in three schools that implement different ways of organizing educational interactions are shown in Table 1.

According to the results presented in the table:

1. In all schools the results of a group solution of a visual-logical problem are higher than the results of its individual solution. In general, this fact confirms our first hypothesis – the positive impact of the fact of combining students in a group on the effectiveness of solving the problem.

2. The problem of identifying a system of interrelated features in the matrix is available to all primary school graduates and does not require special abilities to solve it. This was evidenced by the fact that the individual results of the students of “School-3” (for “gifted children”) were lower than the individual results of the students of the school of developmental learning.

3. Statistically significant differences in the results demonstrated by fourth-graders studying in different schools were obtained. Moreover, the results of students in schools with different ways of organizing educational interactions differ significantly both in individual and group indicators. Thus, when considering the data of sample 1, (school with a developmental learning program,

Table 1

The effectiveness of individual and group solutions in “The conflict” procedure in schools that implement different ways of organizing educational interactions

Samples	Number of students	Average score. Individual solutions	% of maximum possible score	Average score. Joint solutions	% of maximum possible score
School-1	135	1,36	34%	2,73	68%
School-2	78	0,84	21%	1,32	3%
School-3	45	1,04	26,1%	2,36	59,1%

where children are used to joint work in a group of peers, participate in discussions, take into account positions of other participants), and sample 2 (schools with traditional educational technology), it can be stated that the results of the group solution of the visual-logical problem differ more than twice. This means that the educational environment of the school of developmental learning creates favorable conditions for students to master productive forms of group interaction, which significantly increases the effectiveness of joint problem solving. This fact confirms the second hypothesis of our study.

4. The educational environment of the school for “gifted children” mainly supports individual orientation and significantly contributes to the development of competitive motivation. Joint forms of solving learning problems in this school are used only in a limited way, are set by the teacher and are more role-based than functional. This allowed us to assume that students of the school for “gifted children” would demonstrate higher individual results while solving the visual-logical problem and a smaller increase in the effectiveness of solutions at the group stage of problem solving. However, the results showed the opposite. If at the stage of individual solutions, these children filled out correctly on average 1 cell of the matrix (individual result 1.04), then after joining the group, their performance increased by 2.3 times. This means that the students’ abilities allowed them to construct effective forms of interaction.

In order to better understand the data obtained, we considered another important indicator of the organization of joint work – the coherence of the group decision. This indicator was determined by the nature of the group filling in the empty cells of the matrix. If the students were able to agree on individual opinions and come to a common solution, then they performed a drawing of the “face”. If the group could not agree on individual opinions, the names of the participants and the numbers of suitable “faces” from individual sets were recorded in the appropriate cell of the matrix.

Let us look at how the coherence indicator is presented in different educational environments. In School-1 (school of developmental learning) in three groups (a total of 34 groups), the missing element (“face”) was replaced by a list of group members and the numbers of “faces” from their individual sets. Moreover, in one group, the participants could not agree on one cell of the matrix, and in two groups – on two cells.

In School-2 (traditional school), the cells in all 20 groups were filled with drawings, which indicates a very high level of coherence in the group solutions.

In School-3 (school for “gifted children”) in two groups, the drawing was replaced by a list of participants

and their individual numbers of “faces”. In both groups, the inconsistency of individual opinions in the group decision process concerned only one cell of the matrix.

Thus, it turned out that the correctness of the solution is not related to the coherence in the search for a solution, because in the educational environment with the highest coherence of opinions, the lowest effectiveness of group solutions was found. To explain this fact, that seems to be paradoxical, it is necessary to turn to the analysis of the interaction parameters that were recorded by the psychologist in the process of observing the process of the groups’ problem solving.

The students of School-1 and School-3 had disputes, conflicts, and emotional reactions while they looked for the way of solving the problem. In one group, for example, the participants offered two hypotheses at once: according to one hypothesis, the features were mirrored along the diagonal of the matrix; according to the other, the features were consistently changed along the same diagonal. The solution was found in discussion with the third participant, who offered to check the assumptions by comparing the features in both the row and the column of the matrix. The group took advantage of the offer and came to a common solution. In all groups, the features were named (partially, or all four, or someone noticed that they were connected in pairs). In all groups, an attempt was made to formulate a rule, such as “faces should not be repeated”, or “if there is one big head in a row, then there shouldn’t be another big one”, etc. In all groups, efforts were made to overcome contradictions and find a common solution.

The students of School-2 demonstrated a completely different strategy of interaction. At the individual stage, these students looked for the solution taking into consideration the content of the problem – analyzing features of the “faces” and their places in the matrix. When moving to the group stage, they “lost” the content of the problem. Though they still named features of the “faces”, the discussion was mainly based on the performative part of the work: “who will draw?” or “how will we draw?”. At the same time, a wide variety of answers were offered. The simplest one: “Let’s draw one by one.” Or a complex decision: “You will draw the head, I will draw the eyes, and they will draw the nose and hair.” Or a quite exotic suggestion: “You paint over one eye and I’ll paint over the other.” Other ideas: “You draw, we think”. “Do I need a big one or a small one? Better a small one!”. “Let’s draw it and then discuss it.” “Let every “face” be different!”. One girl drew everything herself and asked quietly: “You agree, don’t you?” “I don’t know what to draw. Will they access our drawings? Then it doesn’t matter!” (no one objected). “Why do you draw brown eyes? Because green plus black equals brown. Oh, all right, then.”



Thus, for students of School-2, when moving from an individual to a group decision, the organization of the process of interaction itself and the implementation of the rules of interaction (for example, "let's take turns!") came to the fore. At the same time, the content of the task ceased to be significant for the organization of interaction among these students. There was also no criticism of the partners' actions, i.e. the monitoring and evaluation functions were largely lost. At the same time, a paradoxical emotional reaction was observed: those who thought differently were not upset, they didn't try to influence the actions of their partners. Moreover, if at the stage of individual work, many students showed interest in solving the problem, then at the stage of group work, the result of the joint solution ceased to be interesting for these children. The participants were satisfied that they were able to participate or organize the interaction itself. Therefore, in two classes out of three, the effectiveness of group work of children was lower than their individual work.

These facts once again confirmed our point of view, according to which productive interaction occurs in the conditions of "objectification" of social competencies, i.e. orientation to the search for the object content of the problem.

Thus, the main result of the conducted research was the discovery of a peculiar phenomenon of "loss of object" in communicative competencies. This phenomenon was manifested in the fact that students, united in a group to solve a joint problem, lost focus on the content of the problem itself, replacing the process of finding a solution with a demonstration of the forms of interaction learned. The phenomenon of "loss of object" seemed all the more significant because each of the group members had previously independently solved the problem, looking for meaningful reasons for choosing the necessary elements that correspond to the principle (general rule) on which the matrix was built.

### Conclusion

The study made it possible to assess the development of social meta-subject competencies in primary school students studying in schools with different ways of organizing educational interactions. Based on the conducted qualitative and quantitative analysis of the data obtained using the diagnostic method "The conflict", we may notice that students who studied in the "traditional" school were found to have lower indicators of the communicative competencies in comparison with the results of students from a school implementing the program of developmental learning. Communicative actions in most cases are not aimed at finding a way to solve the problem.

These findings are consistent with the results of our study of the role of social interactions in the development of mental functions in children with special educational needs. In this study, conducted with children aged 7–9 years (students of grades 1–3 of general education

schools, among whom were both normatively developing children and children with special educational needs), it was shown that the relationship of communication, mutual understanding and ways of interaction can be considered as an integral indicator of the inclusion of children in a joint way of solving problems and, accordingly, as a meaningful characteristic of the emerging community, defining a new framework for the development of children's object-oriented communicative actions [25].

Moreover, according to the data obtained, the main difference between community, when children are involved in the process of joint problem solving, and other possible forms of association of participants is their orientation to the way of interaction itself, when this way of interaction becomes a means of analyzing the object content of the problem. The features of this orientation can be manifested in the following phenomena of child's behavior: assessment of the limitations of "one's own" and "the other's" actions; the mutual pronouncing and designation (conditional representation) of "scenarios" of possible interactions that can be effective for solving the problem, and the subsequent modeling (symbolic reproduction) of such interactions. Children's focusing on the way of interaction is associated with the appearance of a new problem for them, and the need to solve this problem triggers a new motivation that encourages them to organize joint actions to search for a solution in terms of the content of the problem. Following this motivation, participants discuss the constraints that arise and design the necessary exchanges, strengthening communication and modeling the directions of possible interactions in relation to finding the content of the problem. It permits to form a common emotional and semantic field, based on the participants' experience of new opportunities and meanings of the actions performed, related to the search for the content of the subject of the problem.

Our data confirms the conclusion that productive forms of interaction of students appear when the search for the content of the problem is mediated by the search for the way of interaction itself. Only in a situation, when students need to move from performing actions "according to the pattern" to exploratory actions, when they need to determine the completeness of the problem's conditions and to test together their hypotheses, they are encouraged to use communication as a means of organizing the search for solutions of the problem and its evaluation. At the same time, full-fledged communication can develop only in special forms of interaction, when the child themselves becomes the subject of their activity. The educational system of developmental learning largely creates conditions for the child to become the subject of their activity. Therefore, it creates prerequisites for the development of social competencies as special meta-subject actions that allow students to jointly set and solve learning problems, directing these actions to the selection, analysis and modeling of the object content of the problem.

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# Развитие социальных компетенций у младших школьников в школах с разными способами организации учебных взаимодействий

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В статье рассматриваются результаты исследования развития социальных компетенций у младших школьников, обучающихся в школах с различными способами организации учебных взаимодействий. Проанализированы два типа школ: школа, реализующая систему развивающего обучения (метод Д.Б. Эльконина — В.В. Давыдова), и школа, основанная на сложившихся (традиционных) методах обучения. В основу исследования положен ключевой принцип теории учебной деятельности, согласно которому освоение социальных компетенций в процессе обучения опосредовано способами организации учебных взаимодействий в процессе совместного поиска решения класса задач и зависит от форм коммуникации детей между собой и со взрослыми. В исследовании участвовали четвероклассники московских школ (258 учащихся). Применялась авторская методика «Конфликт», позволяющая изучать особенности поиска учащимися способа решения наглядно-логической задачи на выделение системы признаков и их мультипликацию. В статье обсуждаются статистически значимые различия результатов, продемонстрированных четвероклассниками. Показано, что школа развивающего обучения создает благоприятные условия для освоения учащимися продуктивных форм группового взаимодействия, что повышает эффективность совместного решения задач, а в итоге — способствует развитию социальных компетенций у детей младшего школьного возраста. В традиционной школе у учащихся выявлен феномен «депредметизации» коммуникативных компетенций: объединенные в группу для решения задачи дети в ряде случаев утрачивали ориентацию на анализ содержания задачи, подменяя процесс поиска совместного способа решения демонстрацией усвоенных правил взаимодействия.

**Ключевые слова:** социальные компетенции, школы с разными способами организации учебных взаимодействий, школа развивающего обучения, традиционная школа, выпускники начальной школы, совместное решение задачи.

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# Why Teachers Need Metacognition Training?

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The goal of this paper is to explore the cognitive and metacognitive skills of teachers engaged in cognitive training. One of the best-known stand-alone cognitive programs is "Instrumental Enrichment" (IE) developed by Feuerstein, Rand, Hoffman, and Miller. Similar to other cognitive programs, the main emphasis on IE research has always been on the change that occurs in students' performance. Little is known of teachers' acquisition of IE problem-solving skills and even less of their metacognitive performance associated with this acquisition. In the present study, 28 teachers were pre-and post-tested before and after 90 hours of IE training. The tests included items similar but not identical to those used during the IE training. The analysis of pre-test problem solving demonstrated that a relatively large number of teachers experienced difficulty in solving at least some of the IE tasks. The even greater difficulty was observed in the teachers' articulation of their problem-solving strategies in a written form. The comparison of pre-and post-test results indicates statistically significant improvement not only in the teachers' cognitive problem solving but also in their metacognitive skills. These changes, however, did not reach the level of a complete cognitive or metacognitive mastery. The possible reasons for differences in the two sub-groups of teachers are discussed.

**Keywords:** metacognition, cognitive skills, reflection, teachers, "Instrumental Enrichment".

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## Introduction

The goal of this paper is to explore the cognitive and metacognitive skills of teachers engaged in cognitive training.

It became almost a truism to claim that in the 21<sup>st</sup> century it is impossible to limit the school instruction to already existing disciplinary knowledge because of the new – but at each given moment – still unknown challenges facing the graduates of our schools. There exists a wide consensus regarding the need to teach not just disciplinary but also more general cognitive and metacognitive skills. It is these skills that may help school graduates to tackle future learning challenges (Greiff, Wustenberg, Csapo, et al, 2014). Metacognition is often considered to be the highest level of mental activity involving knowledge, awareness, and control of one's lower-level cognitive skills, operations, and strategies. Amongst the more basic metacognitive skills is the ability to plan and monitor one's problem-solving actions, predict possible outcomes and compare them with actual solutions. Students' ability to reflect upon their own learning and problem-solving strategies is considered to be an indicator of a successful educational process. Some of the major criticisms directed at traditional educational models are associated with the apparent inability of these models to foster students' reflective and metacognitive skills (Burden and Williams, 1998).

Certain educational approaches, such as the Vygotskian "Learning Activity" approach (Zuckerman, 2003; 2018) place the development of reflective and metacognitive abilities at the center of the primary school curriculum. According to this approach, the difference between successful and unsuccessful educational processes can be evaluated by the students' ability to reflect upon their own goals, means, and methods of action, to examine a given problem from the other's point of view, and to perform self-evaluation using clearly defined criteria. The "Learning Activity" model offers a curriculum-based approach because in this model the development of metacognitive skills is embedded into the curricular teaching of mathematics, language, or other school subjects. Of course, in this model, the curriculum itself is radically transformed. It is no longer based on the provision of disciplinary information and the development of narrow curricular skills but is guided by the idea of the development of scientific (academic) concepts (Davydov, 2008).

There are, however, other models that propose to develop students' cognitive and metacognitive skills during specially designed thinking skills lessons (Higgins, 2015). Such lessons require only minimal curricular knowledge and the materials are content-neutral. It is assumed that more general cognitive and metacognitive skills acquired during these lessons can then be "bridged" to various curricular areas. One of the best-known of

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such stand-alone programs is “Instrumental Enrichment” (IE) developed by Feuerstein, Rand, Hoffman, and Miller (1980). The IE was first conceived as a method for developing learning potential and problem-solving skills in socially disadvantaged adolescents, many of them belonging to ethnic minority groups. These students’ low levels of cognitive performance and scholastic achievement were interpreted by Feuerstein and his colleagues as a consequence of inadequate amount or type of mediated learning experience during the pre-school or school-age period. The IE program was thus designed as a remedial and enrichment program that would provide students with the mediated learning experience, correct their deficient cognitive functions, teach them the necessary basic concepts and mental operations, foster metacognitive reasoning and turn these students from passive recipients of information into active learners. Later on, it became clear that the IE program can benefit not only the socially disadvantaged students but a wider range of learners including typically developing children, adolescents, and young adults. One of the main advantages of the IE program for high-functioning populations is its strong emphasis on the development of not only cognitive but also metacognitive skills (Kozulin, 2000).

Although various programs for teaching cognitive and metacognitive skills are by no means recent (Bruer, 1993), the question of how to introduce these programs into the school curriculum and how to prepare teachers who will teach them remains very much open (Zohar & Barzilai, 2015). To be able to teach cognitive and metacognitive skills teachers should have good knowledge about various elements of thinking, cognition, and metacognition, to be skillful in analyzing various tasks in terms of their cognitive and metacognitive requirements, and finally to possess pedagogical strategies for mediating this expertise to students. As demonstrated in the study of Zohar and Lustov (2018) teachers’ acknowledgment of the importance of metacognitive skills in science teaching does not mean that these teachers possess the necessary knowledge about metacognition or pedagogical strategies for teaching the relevant metacognitive skills to their students. The need for proper cognitive and metacognitive skills of course is not limited to teachers who teach curriculum-based programs, these skills are no less needed for teachers who teach the stand-alone cognitive lessons. Unfortunately, research of such programs focuses almost exclusively on their effectiveness in developing students’ skills, while the question of teachers’ proficiency remains mainly unanswered.

It is for this reason that the present study focuses on the cognitive and metacognitive skills of teachers who studied the “Instrumental Enrichment” (IE) stand-alone program as a part of their in-service professional development.

Similar to other programs, the main emphasis on IE research has always been on the change that occurs in students’ performance. Little is known about teachers’ acquisition of IE problem-solving skills and even less about their metacognitive performance associated with this acquisition. When students achieve good results af-

ter being exposed to the IE program, it is assumed that one of the main contributing factors is the teachers’ skillful mediation of the program to their students. A study by Alvarez (quoted in Kozulin, 2000) confirmed that there is a significant correlation between the students’ post-IE cognitive performance and the quality of mediation demonstrated by IE teachers. In those classes where IE teachers showed the poor quality of mediation, the students’ results were barely higher than in the control group that received no IE at all.

The quality of mediation, however, constitutes only one aspect of the teachers’ mastery of the IE program. One of the important but mainly neglected aspects of this mastery is teachers’ ability to solve IE tasks and reflect upon their own problem-solving. The study of Kozulin (2015) with in-service teachers in South Africa demonstrated that even after a lengthy IE training process 47% of the teachers were unable to solve more challenging IE tasks. It must be remembered, that these tasks are intended for average 14-18 year high-school students rather than college-educated teachers. The above findings together with the paucity of the data about teachers’ problem solving and metacognitive skills, prompted us to pose the following research questions:

- 1) What was the level of spontaneous cognitive problem-solving skills of the teachers before IE training?
- 2) What characterized the initial metacognitive performance profile of trainee teachers and how this profile changed after the IE training?

### **“Instrumental Enrichment” (IE) program and teacher training**

The IE program (Feuerstein et al 1980) is one of the most elaborate content-neutral cognitive programs. IE materials include 14 units of paper-and-pencil tasks that cover such areas as analytic perception, comparisons, classification, orientation in space and time, syllogistic reasoning, and others. These units are called “instruments” because they provide students with cognitive and metacognitive tools for enhancing cognitive functions and operations, selecting optimal problem-solving strategies, and developing a reflective attitude toward their own learning. In each one of the units, the material starts with relatively easy tasks that progressively become more difficult. Fig. 1 shows a sample of the task similar to the more challenging tasks that belong to the unit “Comparisons”. The students are expected to respond to the instruction (“In each one of the two frames, make a drawing that is different from the model in those aspects indicated by the underlined words”) while paying attention to the model and the underlined words. The task requires several cognitive and metacognitive skills, starting with rather simple such as the analysis of the model in terms of the parameters indicated in the frames and ending with more complex such as the realization that the task includes not only explicit but also implicit instruction. The explicit instruction of making drawings that are different from the model in the aspects indicated by the underlined words also includes an im-

PLICIT message that the drawing should be identical to the model in all other respects.

The IE program can be used both during individual remedial learning sessions with children who experience cognitive difficulties and as enrichment lessons in the regular classrooms. The whole-class IE lessons are taught as a separate subject for 2 to 5 hours per week. IE applications with different groups of learners including regular, underachieving, learning disabled and gifted students generated considerable research literature. One can even claim that IE is the most researched of all content-neutral cognitive programs (see Kozulin 2000).

Teacher training in IE includes a series of lectures, seminars, and workshops ranging from about 90 hours (for the first 7 units) to 200 hours (for all 14 units). The training includes a theoretical part that encompasses Feuerstein’s concept of mediated learning, the analysis of cognitive functions during the three phases of the mental act (Input, Elaboration, and Output), and the goals of the IE program implementation. One of the sub-goals of IE explicitly refers to the development of not only cognitive but also metacognitive skills of students including the elaboration of the place of metacognition in their thinking processes. The applied part of teacher training includes the cognitive analysis of the IE tasks in each one of the units, preparation of IE lesson plans, and simulation of classroom IE teaching. The IE units vary in terms of their main cognitive objectives, e.g. orientation in space, comparison, classification, etc., and the modality of tasks – pictorial, geometric, schematic, verbal. The length of IE booklets of tasks ranges from 12 to 30 pages. It is assumed that teacher training that lasts 90 hours is sufficient for not only familiarizing teachers with all tasks in the first 7 units of IE but also imparting on them the didactics of mediation of the IE program. Feuerstein et al (1980) pointed to the essential difference in the teacher-student relationships when it comes to content-neutral IE tasks. While with typical curricular tasks (literature, mathematics, science, etc.) teachers have a built-in advantage over their students because teachers’ experience in curricular areas is much greater than that of the students, with the IE tasks, the “distance” between teachers and students is smaller – cognitive tasks are relatively new to both teachers and students. This closeness of positions helps to turn the learning process into less instructional and more meditational.

In the present research, the participating teachers were trained in the IE theory and the use of the first 7 of the IE units. The main interest for us was in three of these units because the pre-and post-training evaluation of teachers’ performance was conducted targeting the skills associated with these units: “Organization of Dots”, “Orientation in Space”, and “Comparisons”. In “Organization of Dots” tasks the “hidden” geometric shapes should be found in the cloud of dots. “Orientation in Space” focuses on the ability to assume the perspective of a depicted person or object (e.g. arrow) and identify the location of other objects relative to this reference system. The unit “Comparisons” includes both verbal and non-verbal tasks that require systematic comparison of various images and concepts (see Fig. 1).

### Methodology

The study was conducted with two groups of educators who received IE training. Twenty-eight educators participated in all stages of the study including pre-and post-tests, and the training itself. In Group 1 the pre-test came after the participants received a theoretical introduction to IE and workshop experience with “Organization of Dots” tasks. In Group 2 the pre-test was made after a theoretical introduction but before workshop experience with any of the IE tasks. At the pre-test, all participants were presented with three types of tasks (“Organization of Dots”, “Orientation in Space”, “Comparisons”), similar but not identical to the IE tasks taught during the training. The teachers were asked to solve the tasks and write down their problem-solving strategies.

Even though educators in Group 1 had the advantage of already having studied some of the “Organization of Dots” tasks the t-test of the pre-test total scores of the two groups was not significant and the data of the two groups were merged. The author and an additional experienced IE trainer checked the correctness of problem-solving. The evaluation of the teachers’ ability to describe their problem-solving strategies included the following parameters: the relevance of the strategy for solving specific tasks, the completeness of the list of all required strategies, and the precision in their description.

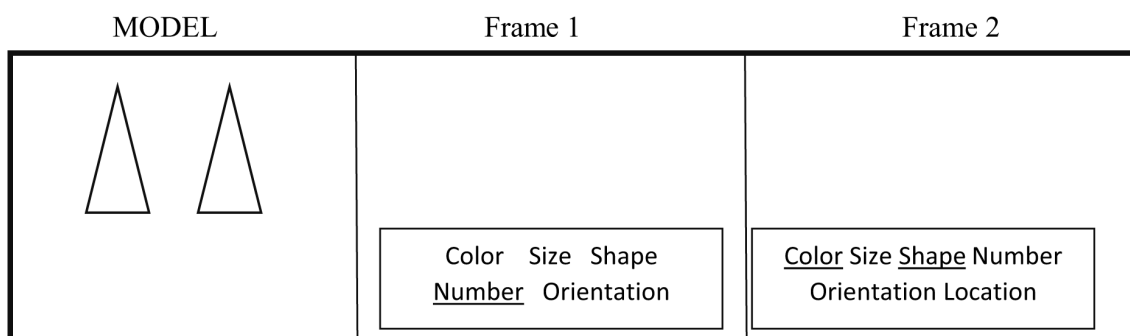


Fig. 1. Sample task of “Comparisons”

## Results

The analysis of pre-test problem solving (see Table 1) demonstrated that a relatively large number of teachers experienced difficulty in solving at least some of the tasks. The even greater difficulty was experienced by teachers in articulating their problem-solving strategies in a written form. Because the reflection results in the two groups were significantly different at the pre-test they have been analyzed separately (Table 2A and 2B). In Group 1 a relatively high level of reflection was demonstrated only regarding “Organization of Dots” that had been already studied by this group before the pre-test. Strategy reflection in all other tasks in both groups was low, ranging from 22.9% to 39.3%. All relevant strategies were described by a very small number of participants, while strategy descriptions provided by many educators were vague, inconsistent, or irrelevant. One can thus conclude that before the IE training the problem-solving skills of at least some of the trainee teachers were not very effective and that their reflective skills regarding cognitive tasks required substantial improvement.

The second set of data was collected from the two groups eight months later after they finished a 90-hour course of IE training. The course included material that corresponded to cognitive tasks similar to those used at the pre-and post-tests. The results indicate statistically significant improvement in IE problem solving as reflected in the total score (see Table 1). The post-training results reached a 93% success rate in “Organization of Dots”. At the same time the average score in the “Orientation in Space” stayed practically at the same level of 82%.

There was also a significant improvement in the participants’ metacognition and their ability to describe

one’s own problem-solving strategies. In this respect, the results differed in two groups (see Tables 2A & 2B). The metacognitive skills of Group 1 at the pre-test were slightly higher than in Group 2 (39.4 vs. 25.8). As mentioned before, this can be attributed to the fact that Group 1 received some training in “Organization of Dots” before the pre-test. At the post-test, however, the Group 1 average score was only 50.9 while Group 2 advanced to the average total score of 65.9. The change was statistically significant only in Group 2. Results of the strategy reflection of individual participants in both groups remained widely different as reflected in large standard deviations, but particularly in Group 2. In two other post-tests (“Orientation in Space” and “Comparisons”) teachers in Group 2 demonstrated a significant change in their metacognitive skills and ability to formulate their problem-solving strategies.

## Discussion and conclusions

The fact that the solution of IE tasks was not trivial for some of the trainee teachers corresponds to the original intention of Feuerstein et al (1980) to place teachers and students in closer position vis-à-vis the IE tasks that, unlike mathematics or literature, do not belong to the professional field of the teachers. At the same time, the fact that the average “Comparisons” problem-solving score for pre-training teachers was only 59% indicates that the teachers’ previous educational experience failed to prepare some of them for cognitive problem-solving.

Even more significant was the wide gap between the satisfactory level of teachers’ problem solving and the low level of their metacognitive reflection. If one accepts that teachers are expected to be particularly skilled in

Table 1  
Average problem solving scores in two groups of teachers at the pre- and post-tests (SD in parenthesis)

	Dots	Space	Comp.		Total
<b>Pre-test</b>	2.57 (0.88)	2.55(0.8)	1.18 (0.86)		6.3 (0.84)
<b>Post-test</b>	2.80 (0.31)	2.46 (0.74)	1.78 (0.5)		7.04 (0.52)*
<b>Max. score</b>	3	3	2		8

N = 28, \* t = 3.38; p < 0.05.

Table 2A  
Average strategy reflection scores at the pre- and post-test in Group 1. N= 14 (SD in parenthesis)

	Dots	Space	Comp.
<b>Pre-test</b>	52.1 (36.3)	26.8 (24.9)	39.3 (35.6)
<b>Post-test</b>	56.8 (27.6)	37.56 (25.5)	58.6 (26.6)
<b>Max. score</b>	100	100	100

Table 2B

Average strategy reflection scores at the pre- and post-test in Group 2

	Dots	Space	Comp.
<b>Pre-test</b>	29.4 (20.7)	25.0 (25.9)	22.9 (25.8)
<b>Post-test</b>	68.9 (33.4)*	66.1 (39.9)*	62.9 (33.1)*
<b>Max. score</b>	100	100	100

N= 14; (\* p < 0.05).

analyzing and explaining the problem-solving process of their students, the fact of the difficulty in reflecting upon their own problem solving indicates that the metacognitive aspect was severely neglected during their previous professional training.

Teacher training of the IE program proved to be effective in improving the teachers' problem-solving skills. At the same time, one might expect the 100% success rate (rather than the actual 88%) in the post-test tasks that corresponded so closely to the items studied during IE training. The change in the teachers' metacognitive awareness of their problem-solving strategies was very different in the two groups. Although a positive trend was observed also Group 1, in no one of the tasks did this trend reach a statistically significant level. On the contrary, in Group 2 that started with a lower level of metacognitive awareness, real progress took place that resulted in significant changes in strategy description in each one of the tasks. This disparity can be attributed to the different mediational styles of IE instructors who worked with these two groups. The instructor of Group 1 apparently placed greater emphasis on cognitive skills and the didactics of teaching IE tasks in the classroom. The instructor of the Group 2 seems to understand that the path to better cognitive skills of students lies in the

enhancement of metacognitive skills of teachers and invested more time and energy into the development of teachers' reflective abilities.

The current study has certain limitations. First of all, the sample size is relatively small – 28 teachers. Secondly, the two groups were pre-tested under different conditions, one already learned some of the IE tasks, while the second one has not. Thirdly, it would have been preferable to have closer monitoring of the training process in two groups, beyond the equality in the training time and the material. As mentioned above, the difference in the metacognitive gains made by the members of the two groups might be attributed to the difference in the emphasis placed by the two trainers.

Two main conclusions can be made based on the present study. The first is that many teachers come to content-neutral cognitive training with a relatively low level of metacognitive and reflective skills. This finding confirms the previous findings of Zohar and Barzilai (2015) regarding teachers' metacognitive skills in curricular subjects. The second conclusion is that IE training is efficient in improving the teachers' general metacognitive skills, but this improvement apparently critically depends on the mediational emphasis made by the cognitive program trainers.

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## Зачем учителям обучаться метакогнитивным навыкам?

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Цель данного исследования — изучить когнитивные и метакогнитивные навыки учителей, участвовавших в тренинге по программе «Инструментальное обогащение» (ИО). Эта программа, разработанная Фейерштейном, Рандом, Хоффманом и Миллером, является одной из самых известных автономных когнитивных программ. Как и в случае других когнитивных программах, основной упор в исследованиях ИО всегда делался на изменения, происходящих в успеваемости учащихся. Мало что известно об изменении в навыках учителей при решении проблем ИО и еще меньше об их метакогнитивных способностях, связанных с этими изменениями. В настоящем исследовании участвовали 28 учителей, которые были протестированы в начале и после 90 часового тренинга по программе ИО. Тесты включали элементы, похожие, но не идентичные тем, которые использовались во время обучения ИО. Анализ решения задач при первом тестировании показал, что относительно большое количество учителей испытывали трудности в решении хотя бы некоторых из задач ИО. Еще большую трудность для учителей представляло изложение своих стратегий решения задач в письменной форме. Сравнение результатов первого и второго тестирования указывает на статистически значимое улучшение не только в умении учителей решать когнитивные задачи, но и в их метакогнитивных навыках. Однако эти изменения не достигли уровня полного когнитивного или метакогнитивного мастерства. Обсуждаются возможные причины различий в подгруппах учителей.

**Ключевые слова:** метакогниция, когнитивные навыки, рефлексия, учителя, «Инструментальное обогащение».

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# The Process of Subject Content Transformation as Examined Through Psychological and Sociological Perspectives: A Study Conducted in Oxfordshire, England

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Drawing from psychological and sociological fields, this study examines how teachers transform subject content for student learning in a classroom situation. Research on understanding teaching has downplayed the framing of macro-regulative contexts in shaping teachers' thinking and thereby pedagogy. Vygotsky [75; 76] brought to focus the teacher's role in mediating learning in classrooms through the use of psychological tools but could not fully, in his lifespan, attend to the sociocultural contexts that impact those who work within them. To address this gap, the study draws on the educational sociologist Bernstein's social theory [9; 10] which states that the ways in which institutions regulate the social relations within them impact the pedagogic practices in these contexts. A qualitative multicase study was applied and involved several English and mathematics secondary school teachers from Oxfordshire, England. The cross-case analysis reveals a connection between the micro-processes of teaching and learning and macro regulative discourse; demonstrates that teachers' pedagogic decisions are influenced by their reflections on their institutional culture within which and using which they work; and reveals an interplay of several processes in the ways in which teachers mediate and shape the quality of their students' learning.

**Keywords:** mediation, subject content transformation, teaching and learning, Bernstein's social theory, Vygotsky.

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## Introduction

This study examines the mediational role that teachers play in transforming the subject content to engage students in their learning of academic concepts. The study was conducted in secondary schools in Oxfordshire, England, United Kingdom and provides an insight into an interrelation between micro-processes of teaching and learning and macro-regulative discourse in shaping the quality of teaching. Research has captured the notion of quality of teaching by looking into classroom subject pedagogy [3; 46; 68; 72; 74; 83] and into sociocultural contexts of teaching [4; 5; 45; 84]. However, these studies have neglected the framing of institutional contexts and have therefore downplayed a relationship between classroom pedagogy and institutional discourse. Research has also explored the concept of teaching through different practices prevalent in teaching; research in reflective practice is more on beginning teachers and reveal how such practices help them in gaining expertise [41;

51; 52; 61]; research in formative assessment in schools highlights the prominence of teachers' assessment of student learning [11; 12; 71; 81] rather than peer- or self-assessment [54; 71]; and lastly, research in daily teaching and learning from sociocultural perspectives shows a sporadic presence in the literature [14; 30; 70] and calls for more evidence. To address these gaps, this study sought to answer the main research question — How do teachers transform the subject content to support student learning in classrooms? The study adopts a Vygotskian view of teachers' role in subject content transformation and looks into texts in the literature that guide a response to this central question.

## Teaching subject content from sociocultural perspective

Vygotsky's reference to the relationship between the students' everyday experiences and abstract concepts

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through the use of psychological tools and to the role of the knowledgeable other in merging that understanding involves three things interrelated and relevant to the study: the use of tasks as mediating tools; the role of knowledgeable other, that is the teacher and peers in mediating learning within the ZPD; and the relationship of tasks and ZPD in the students' conceptual progression in learning. "Tasks form the basic treatment unit in classrooms" [23] in terms of leading students to selectively derive from their experiences and acquire information and operations required to accomplish the tasks [23]. Recently, researchers [25; 58; 65; 68; 69] have again called attention to subject tasks; taking clues from their work, an academic task must involve both dialogic (interaction with peers and a teacher as others) and dialectic (task as other; external activity reflected in the internal consciousness) processes that assist students gain insights into the thinking of others and into their own. The role of the teacher then lies in building a relationship between the psychological and social, the key tenet of Vygotsky's work by means of practices that matter in culture [25; 63; 69; 79]. The studies [2; 13; 20; 40; 47; 70] demonstrate how teachers' use of tasks accompanied by initiated classroom dialogue assisted them to guide and support their students' learning.

### **Teachers' knowledge, learning and expertise**

Four other key areas relevant to the study include the following: Firstly, research on conceptualisation of teacher content knowledge has highlighted several types of knowledge that teachers use to function in their profession: the concept of pedagogical content knowledge (PCK) [64] incorporates both understanding of the structure of the subject matter (content knowledge) and teacher's pedagogy, that is, ways to represent the subject content to maximise its comprehensibility for student learning; curricular knowledge [64] refers to the curriculum, guidelines and resources that the government and the school provide to the teachers; knowledge of self and knowledge of learners [74]; PCK as a collection of teacher professional constructions that constitute knowledge of teaching specific topics that an experienced teacher builds and accumulates [36]; and personal practical knowledge, a notion captures the idea of experience in the way we refer to teachers as knowledgeable and knowing persons [18], which takes the form of images, metaphors [16; 19], emotional aspects [35] and beliefs that determine teachers' actions in class that shape teaching and learning [41; 45; 72].

Secondly, different authors view reflective practice differently. For Dewey, education has a social function that requires transformation of the quality of experience whereby the immature becomes mature [21]. Schön draws attention to the notions of reflection-in-action which involves the teacher learning in the situation the emerging problems in students' understanding of the content, and reflection-on-action which includes drawing from experiences after the action is over and addressing the unresolved problems [62]. Such reflections,

according to Connelly & Clandinin, become part of the personal practical histories of teachers that shape their beliefs and have the possibility of informing their future course of action in the classroom [18]. Korthagen gives prominence to changes that emerge from teachers' being [41], and Freire focuses on transforming practice in which the teachers play a crucial role from shifting from a banking concept of education to an emancipatory approach to education [31; 32].

Thirdly, research has identified three conditions for effective formative assessment (FA), and these are: the quality of interaction [11]; students' involvement in active learning; and the teachers' use of tasks that interest students [81]. Teachers' use of task and dialogue might involve students in self-assessment or peer assessment [81]. However, such kind of assessment is more common in higher education [33; 54] than school education [71].

Lastly, over time, research on teacher expertise has undergone changes. From viewing teacher expertise as something stable [7; 26; 29; 37; 55; 59; 67; 73; 74] to viewing it as continually working on problematising daily routines [6]; as stagewise learning over time [1; 24; 26]; as embedded in teachers' beliefs about their students' learning [3; 49; 72]; and to adaptive nature of teacher expertise [84] that partially connects teacher expertise with the time period view of it, which is problematic as sociocultural contexts are implicitly referred to changing political contexts and education policies that a teacher might have experienced during 10–15 years of teaching and might have worked with almost all situations [34].

### **Theoretical framework**

In examining the micro and macro processes involved in classroom teaching and learning, the study utilised several interrelated sociocultural concepts. Firstly, Vygotsky is interested in development as mediated process. For him, the relationship between psychological tool and behaviour has serious implications for instruction. There are two faces of mediation that assist in enhancing the child's performance: by human assistance and by introducing mediating tools [15]. Vygotsky defined the role of the human mediator in his Genetic Law of Cultural Development [75], according to which human cognition is inherently social; transformation happens when other-regulation is changed to self-regulation. The former involves activities mediated by other people or cultural artefacts, while the latter involves appropriation and reconstruction of the cultural artefacts to regulate or own activities. Secondly, influenced by Vygotsky's work, the concept of figured worlds [38] helps in understanding how an individual participates in the culture in which he or she is positioned to turn it around to make way for oneself as a knowledgeable and committed person; it calls for higher order organisation of one's thought; and involves processes by which human beings as both collective and individual move from one social and cultural reality to

another. Hence, such worlds have developmental history; intentionality in their use; are attributed with some meaning and are both a material and concept [17; 38; 39; 75; 78]. Thirdly, Vygotsky's work was concerned with the micro teaching and learning processes. However, it does not refer to how institutions (schools) regulate learning, shapes the way in which individuals (teachers) work within them. This aspect was addressed by Bernstein who was concerned with "the general principles underlying the transformation of knowledge into pedagogic communication" [9, p. 25] through the process of recontextualisation which he suggested, "selectively appropriates, relocates, refocus and relates other discourses to constitute its own order" [9, p. 33]. However, such a structure of transfer that Bernstein focused on is "unidirectional transmission of influence from institution to individual" [80, p. 259] and runs the risk of obviating the active agent, a teacher with a specific role in the classrooms and in taking the guidelines forward, from the process [80]. Fourthly, deriving from Rosenblatt's theory of transaction, which states that there is always some kind of transaction that goes on during the reading event in which meaning is constructed between the reader and the text, between the individual and the society [56], I view teaching as a meaning making process which includes teachers as readers and writers, reading the classroom dialogue as text and writing that as an understanding derived from such a reading as an internal text. Lastly, deriving from research on reflective practice [18; 62], the teachers utilise the classroom transaction as a psychological tool for their professional growth of practice. Taking from Schön: (a) within the classroom when the action is going on, in which the teacher interprets and responds to emerging situations; and (b) from outside the classroom after the action is done, by which the teacher pays selective attention to the things to review some of the decisions. Taking from Connelly and Clandinin: (c) reflect on their past teaching experiences and derive from those to inform their future aspirations and role as a teacher.

## Methodology

A qualitative multicase study was employed to examine several cases in diverse settings [48; 50; 66] with an aim to study the phenomenon exhibited by the cases [66].

### Participants and data collection

Eight teachers, four each of English and mathematics, were observed from five different schools in Oxfordshire, England. They were selected based on their consistent performance over three years or more and recognised for their exemplary work by their school community [53].

The data were collected in three stages for each lesson observed. These stages include: Think aloud protocol before the delivery of the lesson in which the teachers were asked to think concurrently while planning

the lesson [27; 28]; lesson observation [82] (Wilkinson and Birmingham, 2003) and video recording; and video stimulated recall and semi-structured interviews after the lesson [22; 42; 44; 57; 60]. 2–3 lessons per teacher were observed.

### Data analysis

The data were transcribed and organised into a single document with 2–3 complete lessons per teacher. Then narratives of teaching and learning were written that included teachers' reasoning during lesson planning and in-the-moment decision making; these were then thematically coded. Both narratives of lessons and thematic coding were used during within-case and cross-case analysis; the latter will be discussed in this article.

School descriptions and contexts that emerged during analysis led to framing boundaries of description using Bernstein's sociological theory, the principles of classification and framing [8]. Classification refers to the boundary strength between what is classified while framing refers to a message system of pedagogy, that is, how interaction that takes place in a social relation will be regulated. The framework of description was divided into three parts, namely, Institutional Context, Teacher and Classroom Practice, with further subparts (tab. 1 and tab. 2, which is an example of Framework of Description from an English teacher, Linda). Bernstein, in his analysis of discourse, referred to horizontal and vertical discourses [9]. The data showed instances of vertical discourse that reflected the teachers' hierarchical position, implying its relation to the degree of control that a teacher might have.

### School descriptions

The schools<sup>1</sup> in which the participant teachers worked formed the historical context of their teaching and learning situation. The participant teachers taught in secondary schools situated in different locations in Oxfordshire, England: Spring Hill (Lisa, English teacher) and Forest Lake Schools (Tyler and Jeffrey, English teachers; Alex, maths teacher) were both located in inner-city; Whitewater School (Justin, maths teacher) was an academy, a sponsor-led school, situated in a market town located in an area with high levels of social and economic deprivation; Lakewood School (Linda, English teacher) was an urban city all-girls' secondary school converted into an academy; and Valley View school (Lauren and Steve, maths teachers) was a co-educational secondary school situated in an outer-city school with students coming from both affluent and economically deprived families.

## Findings

The qualitative thematic cross-case analysis identified five themes that reflect how the participants played a mediational role in subject content transformation.

<sup>1</sup> Names of schools and teachers are pseudonyms.



**Framework of description**

Institutional Context	
Theory of instruction	Refers to a good teaching policy by means of which the school regulates the teaching and learning discourse. It includes expectations from the teachers in terms of teaching and from the students in terms of their own learning.
Scheme of Work (SoW)	Provides a yearly division of the content to teach. These can be long-term schemes covering the schedule for the entire academic year or a short-term which covers a half term unit of 6–8 weeks.
Teaching resources	The resources used for teaching the subject as provided by the school or created by the teacher.
Duration of the lesson	The time allotted for the lessons in a school.
Class sets	Grouping the students according to their attainment.
Discipline in school	The school behavioural policy that rules conduct for the students before, during and after school, and the responsibilities of the teachers concerning it.
Teacher	
Vertical axis	Refers to the power dynamics, the influence on social relations and communication among the teachers in the school or within the department.
Classroom Practice	
Instructional practice	These are discursive rules that include selection, sequence, pacing, and criteria (of evaluation).
Instructional context	The ways in which tasks are distributed and the students grouped within classes.
Regulative practice	These are hierarchical rules that regulate learning in the classrooms. Implicit rules that the students follow and the instructions that teachers give to their students in relation to the task help in managing the lessons.
Everydayness	The unique culture of the classroom that forms over time; element of trust between the teachers and the students.

Table 2

**Example of Framework of Description for Linda, an English teacher at Lakewood School**

Institutional Context	
Theory of instruction	A good teacher is the one who puts the systems and the structures in place. All the teachers are expected to use the gold, silver and bronze success criteria. If a member of faculty walks into a lesson with the criteria not displayed, then teaching will be classed as not a good teaching.
Scheme of Work (SoW)	The department informed the teachers of the texts to use.
Teaching resources	Linda used the success criteria as lesson objectives and to regulate students to think of the level they might want to achieve.
Duration of the lesson	One hour lesson.
Class sets	Top set, based on exam results from the previous year.
Discipline in school	No discipline issues.
Teacher	
Vertical axis	Strict hierarchy existed. Teachers were required to follow the guidelines set by the department and higher management whether working collaboratively or when teaching individually.
Classroom Practice	
Instructional practice	Linda assigned quotes from a poem to the groups to deconstruct. These were later swapped amongst groups.
Instructional context	There were eight groups with four students in each group.
Regulative practice	Linda roughly timed the tasks and grouped the students according to their ability. The success criteria regulated both classroom dialogue and students thinking.
Everydayness	Students worried for their grades and were often given confidence by their teacher that she will assist them in reaching their goals. The success criteria were the guiding principle for action in the class.

### Task design

The data analysis indicated that the participants engaged in teaching and learning in three phases involving inquiry, organising and managing, which, in combination, involves six elements of task design (tab. 3). The inquiring phase includes context and intentions. Example, Linda, in teaching poetry to top set Year 9 students to structure their response to a GCSE type question, uses the success criteria in the form of three medals: “We

have bronze, silver, golds, and the idea is that whatever they [students] do in the lesson, they’ll get somewhere. They’ll get a medal” (Linda, during lesson planning).

The next phase involves organising intentions which includes teachers’ use of *figured worlds* and *selection of artefacts*, which is the use of resources drawn from various sources and used to conceptualise the pedagogical approach. Example, Lauren, a mathematics teacher, in teaching “Bearings” to her Year 7 students at Valley View School, used

different websites: the one recommended by her department (STEM) and the other on her own accord (Diagnostic Questions) to engage the students with misconceptions.

The third phase is an extension of the organising phase and involves the management of task execution: involves making *learning objectives* known to students either explicitly or implicitly and includes *task distribution, instruction and time management*. Example, Tyler managed teaching the concept of immigration when teaching American poetry from 1840s to 1940s in a forty-minute lesson. He used three poems that would help him put the novel (*The Great Gatsby*) that the students were reading for the term on the “historical continuum” and provide them with different perspectives about the concept: “I deliberately picked three examples, one very pro-immigration, one very anti-immigration and one from the perspective of an immigrant” (Tyler, during the interview). He formed three groups, assigned one poem to each group to analyse in detail and instructed them to give a quick reading to the other two poems. The students were required to share their critical reading during whole class discussions. He gave students a space to lead their learning, both by presenting their analysis and adding their critique to discussions, as per his school policy.

**Practices of formative assessment**

Task design paved the way for teachers to practice formative assessment (FA). The teachers created opportunities for themselves to know their students’ thinking, where their students were in their learning of concepts, or of any cognitive conflict through the use of tasks. The participants employed several tools of FA (as shown in tab. 4).

**Recontextualisation**

Recontextualisation can be defined in terms of the ways in which the participant teachers framed, reworded or provided a different situation of a similar example of the content so that their students were able to form a conceptual understanding of it (as shown in tab. 5).

The theme is closely related to the theme of FA. Having used different ways of FA to identify learning gaps and misconceptions, the teachers then used these methods (tab. 4) to recontextualise the subject content for student learning. Learning gap here refers to the distance between teachers’ intentions for students’ learning and where the students were in relation to that. Misconceptions refer to the existence of erroneous understanding or an idea that makes sense to the student but is faulty. In responding to gaps or misconceptions,

Table 3

**Elements of Task Design**

Six Elements of Task Design	
Context	Refers to teachers’ repertoire of knowledge that supports them in their thinking about creating learning situations. It includes teachers’ knowledge of institutional demands that regulate teaching and learning in classrooms and therefore, the nature of talk; teachers’ awareness of their students’ prior learning of concepts; knowledge of Schemes of Work provided by their departments; and their past pedagogical experiences including their education and training.
Intention	Gives direction to the teacher. Refers to teachers’ thinking about what they want their students to learn and why they want that.
Figured world	Refers to teachers’ imagining and organising a near future classroom experience in bringing about a change or shift in students’ thinking; deriving from their intentions.
Selection of artefacts	Use of resources as both material and concepts for teaching and learning. These artefacts can be drawn from teachers’ own collection of resources, derived from websites, borrowed from colleagues or handed to the teachers by their departments.
Learning objective	Serves as a guide to students. It refers to what teachers want their students to be able to do as a result of learning. This is closely related to intentions but becomes explicit during the teaching and learning situation. Teachers’ intentions are presented to students in the form of a topic to learn or as clear set of guidelines, both verbal and/or explicitly written, about what they should be able to accomplish.
Task distribution, instruction and time management	Refers to teachers’ division of tasks among students accompanied by information about how they are expected to carry out a task; gives students direction and sense of time; helps teachers organise learning in an allotted time.

Table 4

**Practices of Formative Assessment**

Practices of Formative Assessment	
Moving around the classroom	Refers to teachers’ purposeful physical movement in the class when students are set at group or pair or individual work to listen to their discussions and assist them.
Asking questions	Refers to teachers putting questions to students to elicit information from them or to direct their thinking; students’ verbalisations serve as a source of information about their present level of learning.
Collaborative problem-solving	Teachers solve tasks along with students to make visible to themselves how the students might have reached an answer and, at the same time, helps students reflect on the reasoning that they provide and participate in the ongoing discussion.
Other ways of assessment	Teachers’ use of tools to help themselves derive some pattern to assess the success or struggle of students in completing tasks.

teachers adjusted instruction with the aim that their students might see the content from a different angle and make sense of it for themselves. Example, according to Lauren, “When it came to the conceptual understanding of the concept (Bearing), though they were practising it and saying it when asked, it had not yet come from them” (Lauren, during the interview). In the third lesson on the topic, Lauren invited her students to imagine themselves as a member of a “Quick Reaction Alert Group” which gives them “the power to deploy an aircraft at a moment’s notice.” They had to prove that they were “a worthy member of the team” (during the classroom observation). The task required “a lot of visualisation on their behalf because they needed to in their heads picture what this bearing might look like. It involved a lot of geometrical reasoning, estimating...” (Lauren, during the interview).

### Reflective practices

The teachers reflected for designing tasks, reflected while teaching, and reflected on the teaching and learning that took place (as shown in tab. 6). A key finding was that a point of focus of their reflections was their students’ responses and their own teaching.

Reflective practice emerged as a constituent of continuous action and was intricately weaved into FA and

recontextualisation that, at times, it was difficult to segregate it from the other two themes; it also informs knowledge base and influences task design.

### Knowledge base

This theme differs from the previous four in that that teachers use and build on their knowledge base while designing tasks, when making formative assessments, when recontextualising the content and when they reflect on their thinking. Hence, teachers draw on and from their existing knowledge base and further assimilate new pedagogical experiences. The different types of knowledge bases are presented in tab. 7.

There exists an intricate relationship between the five themes that emerged from the data analysis. For instance, recontextualisation is a consequence of FA; reflective practice sometimes works in between FA and recontextualisation, sometimes occurs after the classroom situation where-in teachers might reflect on their teaching, and sometimes comes before the classroom situation when teachers reflect on their thinking in designing tasks; and, finally, in engaging with several pedagogical processes, teachers continuously draw from their knowledge base and add to it and thus contribute towards their own personal growth of practice.

Table 5

### Ways of Recontextualisation

Ways of Recontextualisation	
Teachers’ explanations	Teachers’ statements or narrations giving out critical information or revealing facts, giving details or describing situations; rephrasing students’ responses.
Creating imaginative situations	Transporting students into a different context or physical reality and assigning them a different role in it.
Drawing connections	Assisting students in making connections between different parts of texts, among different responses from their peers; assisting them in reflecting on their own responses by rephrasing their verbalisations.
Breaking into smaller steps	Teachers divide a lengthy task into smaller manageable steps and give critical information about a concept in parts.
Provide a model response	Teachers provide an example of a response either by working along with the students or by giving them an example to imitate or by giving them an example of a similar situation that students are required to accomplish.
Provide suggestions for thinking	Direct the students to something particular to make them think differently about a situation or a problem; might be phrased as a question.
Students recontextualise the content	Students’ verbalisations serve as a means of re-explanation of the content at hand for other students as well as for the teacher. These verbalisations are in the form of individuals summarising their understanding of the content or students’ collective interpretation of the content.

Table 6

### Reflective Practice

Reflective Practice	
Reflections on students’ understanding of the subject content	Refers to teachers’ analysis of students’ current level of learning by means of their responses in order to take the next step towards supporting them in their learning; teachers’ thinking of the next element that they might require to engage students with; these reflections take place in-the-moment.
Reflections on the challenges interpreted for future planning	Teachers recognise that students are still not where they intended them to be in their learning; recognise the gaps in their learning and think of the ways in which they might address those gaps in the subsequent lesson or distant lessons.
Self-assessment: Self-critique for their own teaching	Teachers identify gaps in their action for students’ learning; their display of discomfort in having missed something they could have possibly used for teaching; their awareness of the measures they could have possibly taken.
To ascertain their beliefs	Re-evaluate their thinking in relation to assumptions they hold; might consolidate the existing assumptions or cause a stir.

**Discussion**

The analyses conducted in this study focused on the mediational role that teachers, whether of English or mathematics, play in supporting their students in their learning. Teachers continually engage with pedagogical processes represented as four intertwined or interconnected phases (fig. 1).

The phases are discussed as follows:

**Phase One: Reflect on their personal sense of experiences**

The first phase of subject content transformation involved the teachers working by means of a regulatory discourse of the institution and by drawing from several resources in making classroom teaching and learning decisions. Their knowledge base ranged from their personal sense of experiences as a student in school, university or as a teacher trainee to their personal sense of experiences as a teacher, which includes a combination of several sources: their understanding of their *institutional demands* defined in the form of “good teaching” processes along with their sense of their past diverse experiences inclusive

of their *knowledge of pedagogical structures*; *knowledge about students*; their *beliefs* about teaching and learning; their *interaction with others*, for instance their colleagues, mentors, professors, tutors, school teachers, students, literature and subject websites. The sources, in combination, form the contextual element, one of the six elements of Task Design. The teachers, thus, worked by drawing from several resources in making classroom teaching and learning decisions which aligns with previous studies [18; 64; 72; 74] and also by means of regulatory discourse of the institution which this study demonstrates.

**Phase Two: Design tasks and build figured worlds**

The second phase included *designing tasks*; this phase works in tandem with the first phase. In designing tasks, teachers fostered a balance between their situatedness and their intentions for students’ learning. Teachers used tasks to introduce concepts and start the learning activity. The teachers framed the tasks in a specific way to prompt their students to think in a particular direction or at a certain aspect, thus, implying that they not only attached their intentions to the tasks they assigned, but they also purposefully steer their students’ reflections and influence

Table 7

**Teachers’ Knowledge Base**

Teachers’ Knowledge Base	
Knowledge of context	The intricate link between institutional demand, departmental policy, SoW and national examinations.
Knowledge about students	Teachers’ knowledge about students’ interests, their learning difficulties, their prior learning or cumulative learning, their learning in other subjects and their collective characteristics.
Knowledge from interaction with the other	Teachers’ knowledge acquired over time in relation to their interactions with others in the teaching community: their colleagues; their academic tutors; their own teachers when they were at school; their students; their reading of the literature; and their memberships to various teaching websites.
Knowledge of self	Their beliefs about teaching and learning or about the subject they teach, their feelings, their identity as knowledgeable persons or of their roots.
Knowledge of pedagogical structures	Teachers’ knowledge of the type of inquiry or cultural practice with which to engage students in their learning of subject content.

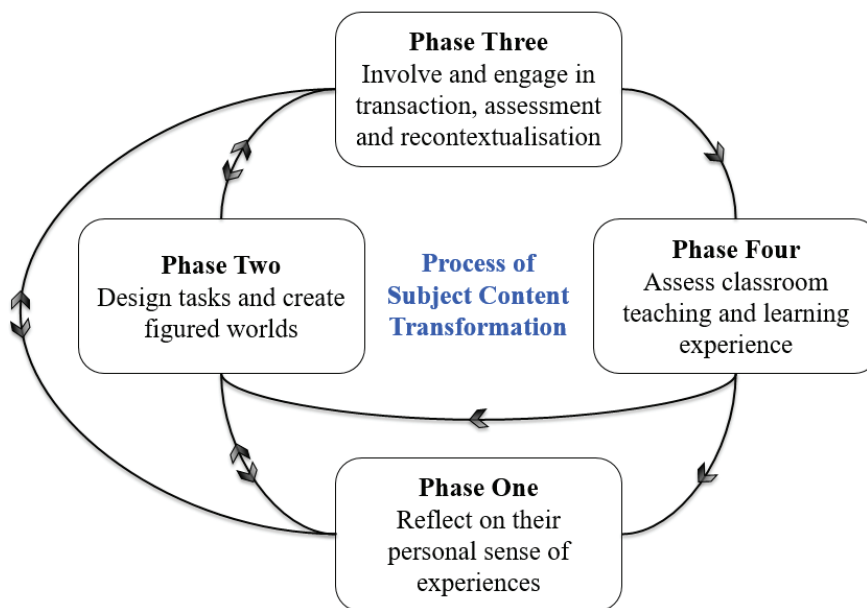


Fig. 1. Process of Subject Content Transformation (PSCT)



their selection process [23; 25; 56]. For instance, one of the mathematics teachers, Steve, had given a “calculate the power” task to the students, he intended that they understand the Base 10 system and eventually use that to reflect on their thinking to understand the other base systems.

The study extends the application of the concept of figured worlds [38] as proposed in anthropology to daily teaching and learning situations. In a teaching and learning situation, *figured worlds* functioned in two ways: as mediational means for teachers to get through an inherent contradiction of teaching subject content to their students; they also serve as psychological tools to invite students as critics to enter into a new physical reality in order for them to contribute toward their own learning of subject content. Such imaginary situations provided them with an opportunity to: visualise the way they want to see their students engage with the tasks; think of the groups or individuals that they will have to reach out first; give them access to possible students’ responses to tasks and think ahead of the ways in which they might respond to those responses; and prepare for an unexpected contingency when they might think of changing or modifying their plan. The use of figured worlds thus assisted teachers in creating relative experiences for their students for them to think about and think against. In this way, the experiences created functioned as both external and internal, that is, coming from the authority of a teacher and used as psychological tools to mediate students’ learning [76; 77], and whereby the students were able to make some form of connection or relation between their daily regularities or experiences with new knowledge presented to them [21; 56].

### **Phase Three: Involve and engage in transaction, formative assessment and recontextualisation**

In this phase, teachers implement the tasks designed and enact figured worlds. The teachers in this phase were highly involved in their students’ learning, and that was where the concept of the ZPD [75] became evident. ZPD functioned both as a diagnostic tool and a means to understand the development of academic or abstract concepts. The question then is how teachers assess their students’ learning of abstract concepts and their higher order psychological processes. This research demonstrates that the way the teachers designed the tasks as material and concept [17] accompanied by social interaction between teacher and students and among students, gave the teachers the scope to formatively assess their students’ progress in learning [25; 69]. The interaction around tasks provided scope to the teachers to start with the reading and writing processes [56], reading the text of students’ responses and making sense of that to be able to recontextualise their students’ thinking. The teachers used different practices of FA (Tab 3) to assess where their students were in their learning and think about what needs to be done as a consequence – in terms of explanations, further questioning, making them think on a certain aspect or use more tasks; assist their students toward their potential level of development [75]; and how they might adapt their teaching to meet their students’ learning needs [11; 12]. In doing so, teachers drew from their past similar experiences or from their repertoire of resources to reflect upon the learning needs of their students. Peer assessment and student self-assessment were

not common amongst the teachers [71], except in the case of Linda, where the routine need of student self-assessment came from top-down in the form of success criteria.

Furthermore, social institutions, which are schools in this study, impacted the work of teachers [10] by providing them with schemes of work and guidelines of the “good” ways of teaching (Phase one). The process of recontextualisation, however, does not end with SoW. Rather teachers add to these schemes their knowledge and intentions to design tasks (Phase two) and, thereby, further impact the content that the students learn and their learning experiences; which, in turn, creates ripples of discourse and establish a culture of learning, the kind of teaching valued (Phase three). In the light of the new understanding of the concept of recontextualisation, combining both linguistic [43] and sociological aspects [9; 10], I define the term “recontextualisation” in terms of (a) directionality: recontextualisation is bi-directional as that involves both teachers and students as active participants in the learning process and in shaping the content; and which involves teachers as active participants in shaping the content by reflecting upon their intentions and pedagogic decisions (b) revisitation: recontextualisation is a way in which the teachers assist their students to form a conceptual understanding of the subject content by revisiting the same concept using a different context or different choice of words with similar context.

### **Phase Four: Assess classroom teaching and learning experience**

In this phase, the teachers made assessments about students’ progress and their own teaching based on their reflections on their interactions with their students. In this sense, the findings align with the notions of reflection-in-action and reflection-on-action [62] and with the concept of personal practical knowledge [18] that the teachers build over time through their reflections on their classroom experiences. The teachers assessed the progress of their students and their future needs; they reflected on their beliefs and either further cemented those or reviewed those; and critically self-evaluated their teaching based on their performance in the classroom. However, the analyses also revealed that teachers reflected in further ways than suggested in research [62]. The teachers reflected while designing action as well and which can be termed as reflection-for-action. The teachers reflected before entering the teaching and learning situation, that is, when they think of their intentions for students’ learning of scientific concepts, imagine the way action might unfold, think of pedagogical structures they might use or think of ways in which to balance their beliefs, teaching of subject content and institutional regulatory policy.

Hence, PSCT involves a continuous flow of thought formation and transactional action amidst different phases; and it is not sequential in nature. Phase One and Phase Two work together, backward and forward. Task design and figured worlds created in Phase Two are enacted in Phase Three. In Phase Three, which is a teaching and learning situation, teachers reflect on their personal sense of experiences (Phase One) for making in-the-moment decisions; sometimes, they also think of the tasks (Phase Two) they might have to introduce in their subsequent lessons when reflecting on their students’ responses. In

Phase four, teachers use their interactions with their students in Phase Three to assess their teaching. Such assessments then become a part of their personal sense of experiences (Phase One) and which they also use to design tasks. Teachers are thus involved in continuous action and reflection on their own teaching to derive from to support their students' learning of academic concepts.

### Conclusion

The study contributes towards an understanding of teachers' mediational role in supporting their students' learning by providing a model of the four phases of Process of Subject Content Transformation (PSCT). The model highlights the intertwining aspect of several elements, highlighting the ways in which the teachers mediate and shape the quality of learning for their students. The elements are previously known in research; however, these are presented mainly as separate entities. This study demonstrates that

the teachers engaged and were involved with several pedagogic processes in unison and not piecemeal in supporting their students in learning the academic concepts.

The study has several implications for different stakeholders. Firstly, for teacher educators to consider exposing their student teachers to various theoretical stances to create possibilities for them. Secondly, for teachers to think of the demands of the institutions in which they work and how they might use that knowledge in shaping teaching and learning. Thirdly, for schools to step back, rethink and re-question their role as an authority in creating affordances or constraints through the artefacts that they provide to their teachers. Lastly, for researchers to risk combining different theoretical perspectives and ways of analysis to explore a phenomenon of their interest. Further research may examine the four phases of PSCT in the light of understanding teaching across contexts, the number of years of teaching experience and teaching online. The studies focusing on task design have a high potential in throwing further light on teachers' thinking processes.

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## Трансформация предметного содержания сквозь призму психологии и социологии: исследование в графстве Оксфордшир (Великобритания)

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В настоящей работе, с опорой на психологическое и социологическое знание, исследуется то, как учителя трансформируют предметное содержание для учеников в ситуации урока. В научной литературе, посвященной преподаванию, уделяется недостаточно внимания тому, какую роль играют макрорегулирующие контексты в формировании мышления учителя и, следовательно, в педагогике в целом. Выготский поместил в фокус научного рассмотрения ту опосредующую функцию, которую берет на себя учитель в процессе школьного обучения, используя различные психологические орудия, однако он не успел более глубоко изучить влияние социокультурных контекстов, в рамках которых осуществляется учебное взаимодействие. Чтобы восполнить этот пробел, мы обратились к работам социального теоретика и специалиста по социологии образования Б. Бернштейна: он утверждает, что способы, которыми институты регулируют социальные отношения внутри себя, неизбежно влияют на педагогические практики в данных контекстах. Далее было проведено исследование множества конкретных случаев (multicase study) из практики учителей английского языка и математики, работающих в средних школах графства Оксфордшир (Великобритания). Комплексный анализ случаев обнаружил связь между микропроцессами обучения и макрорегулирующим дискурсом. Также показано, что на педагогические решения, принимаемые учителями, влияет их собственное восприятие институциональной культуры, в рамках которой — и средствами которой — они осуществляют свою деятельность. Наконец, анализ высветил взаимосвязь между несколькими способами, которыми учителя опосредуют и направляют процесс обучения своих учеников.

**Ключевые слова:** опосредование, трансформация предметного содержания, обучение, социальная теория Бернштейна, Выготский.

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# Examining Instructors' Roles in Facilitating Students' Learning Process in Pedagogical Information and Communication Technology Massive Open Online Course

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This study examines how course instructors facilitate students' learning in the Pedagogical Information and Communication Technology (ICTPED) Massive Open Online Course (MOOC) aiming to develop professional digital competence in pre-service and in-service teachers in Norway. It also provides an insight into how students' agentic engagement in learning may affect the course instructors' guidance. Students' online meetings with the course instructors and students were observed and recorded. The meetings aimed to develop students' understanding of the examination assignment. The data (4.5 hours video recordings) analyzed by the method of interaction analysis revealed that the instructors performed four pedagogical functions: (1) setting up the learning process, (2) reifying students' ideas; (3) assisting students in developing their conceptual understanding; and (4) summarizing and structuring students' understanding about target concepts. These pedagogical functions evolved out of mutual collaboration of the instructors and students. The students' agentic engagement in learning was visible when they took the initiative to explicitly share their ideas related to their examination assignment. Instructors' agency in guiding came into play when addressing students' ideas and questions emerged during the interaction process. Students' agentic engagement in learning shaped the course instructors' pedagogical functions and enhanced their agency. In doing so, the dialectical interplay between the students' and course instructors' agency comes to the fore as an essential aspect of learning and teaching in online environments.

**Keywords:** instructors' guidance functions, students' agentic engagement, online meeting, learning and teaching, agency. P.Ya. Galperin.

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## 1. Introduction

This study examines the online course instructors' role facilitating participants' learning process in the ICTPED MOOC offered by a Norwegian University College aiming to develop professional digital competence in pre- and in-service teachers. The study also provides an insight into how participants' agentic engagement in learning may affect the course instructors' guidance. Several studies suggest that instructors perform approximately four roles while facilitating students' learning in online environments: managing (setting agenda, managing, leading, and directing interactions), pedagogical (promoting interactions to develop

students' understanding of the target concepts), social (creating a friendly environment and promoting group learning), and technical (facilitating students' engagement with digital technologies [1–3]). Instructors, focusing on adopting a facilitating role, emphasize an experiential, collaborative, and problem-solving nature of the learning processes, while those who prioritize teaching as a knowledge transmission direct their attention mostly to content delivery [4–6]. This distinction might be contested, but it aptly describes instructors' role in the so-called two types of MOOCs: cMOOCs and xMOOCs. The initial cMOOCs, also called connectivist MOOCs, emphasized network creation, learner autonomy, and interaction among learners [7, 8] and instructors are ex-

pected to act more like facilitators by helping learners to connect to and learn from each other [9]. On the other hand, “xMOOCs are built as an extension of the conventional campus course” [8] providing more structured learning resources such as video lectures, reading materials, automated quizzes, and assignments [8, 10, 11]. Instructors take the role of knowledge/content experts in xMOOCs by delivering premediated contents for learners [12, 13]. However, facilitating students’ learning in online environments, including MOOCs, may depend upon how students present and (re)position themselves in particular learning events (i.e., online meetings), and in doing so, manifest their agency.

By taking the Vygotskian perspective, students’ agency is understood as an ability to propel themselves forwards, recognizing and responding to the demands in tasks, and, with increasing competence, repositioning themselves within the epistemic domain (Edwards, 2015). Such a perspective has been adopted in other studies that discuss how students may develop their agency while learning online. For example, [14] found that learners were able to address their agentic needs by engaging in interactions with video resources in the ICT MOOC. The video resources in the ICT MOOC offered an approach for students to engage in online learning and, in doing so, may have contributed to enhancing their agency. Repositioning themselves as active agents in the epistemic educational practices in MOOCs, students might enhance their digital agency [15]. Therefore, in online learning, instructors’ roles might become “the guide on the side” rather than “the sage on the stage” [1, 16]. In this sense, instructors’ roles to facilitate students’ learning are contingent upon how students (re)position themselves in learning activities while making their needs explicit and responding to the arising demands. However, instructors are rarely engaged in facilitating students’ learning due to a massive number of participants [8, 17], and their guidance remains mostly under-researched [18]. Several studies have expressed the need to examine a course instructor’s role to facilitate online learning [19, 20]. This study addresses this gap by examining instructors’ facilitating of students’ learning in the synchronous online meetings in the ICTPED MOOC aiming to help students to solve the examination task.

The following research questions are addressed:

RQ1: How did the course instructors facilitate students’ learning in the ICTPED MOOC during online meetings?

RQ2: How did the students’ engagement in online learning affect the course instructors’ guidance?

## 2. Instructors’ roles in online learning environments

Several studies outline different roles that an online course instructor performs to facilitate teaching-learning practices [1, 21–23]. Online course instructors may perform a pedagogical role [2, 24], managerial role [1, 25], or facilitating role [26]. The pedagogical role, for Maor [24], is concerned with micro-level practices such

as stimulating discussion, raising questions, promoting interactions, providing feedback, synthesizing students’ comments, and referring to resources. Other studies [2, 22, 27] have found that the pedagogical role concerns both micro-level practices as well as the designing of those practices (designing instructional strategies, developing appropriate resources for learning). The managerial role [1, 25] includes agenda setting, recordkeeping, and initiating and facilitating interactions. It focuses on how to engage participants in the learning process. Instructors’ facilitating role is concerned with welcoming students, responding to students’ questions or needs, providing feedback, and promoting interaction [26].

In the MOOC context, a course instructor’s role may differ according to the types of MOOCs [12, 13]. Literature shows, besides the existing two types of MOOCs (cMOOCs and xMOOCs), other types of MOOCs emerging in terms of learning functionality such as tMOOCs (transfer MOOCs), sMOOCs (social or participatory MOOCs), and ahMOOCs (Adaptive Hybrid MOOCs) [28] and instructors’ role might differ according to different types of MOOCs. However, how instructors perform their functions to support students’ learning in various types of MOOCs is considerably absent in the literature. Considering [29] acquisition and participation metaphor, we reiterate the two existing categories of MOOCs, cMOOCs, and xMOOCs, as the majority types of MOOCs are grounded in the acquisition metaphor since they emphasize delivering highly structured content for learning [8]. A suitable description of the learning process of these two types of MOOCs is provided by [Moya 2013, cited in 28]: cMOOCs emphasize a more participatory, active, collaborative, and interactive learning process while xMOOCs focus on a teacher-led, less participatory learning process. Thus, in cMOOCs, course instructors function more like facilitators by creating networks, connecting students to learning resources, and promoting collaboration and interaction [9, 13, 30]. Instructors in xMOOCs, on the other hand, take knowledge/content experts’ roles by transmitting expert knowledge to students with minimal engagement in their learning [12, 13]. It is often the teaching assistants, rarely the instructors, who engage in facilitating students’ learning by posting questions, replying to queries, and providing resources for learning [8].

In summary, the above-discussed studies point out that online instructors are expected to play multiple roles in online learning environments. The most recurring roles are pedagogical, managerial, social, and technical. Most of these studies emphasize the pedagogical role (course designing and content delivery) as crucial to facilitate students’ online learning. They suggest that the social role (connecting students, building a learning community, sharing experiences, and providing feedback) is underexplored. These studies provide important insights into how instructors facilitate students’ online learning. However, they do not adequately capture what instructors do in this process. There is a gap between general strategies to organize the learning process in online environments and what instructors do to facilitate students’ online learning. This study addresses this gap

by examining instructors' roles in the ICTPED MOOC through the lens of cultural-historical theory.

### 3. Theoretical framework

From a cultural-historical perspective, the quality of teachers' guidance is crucial for the development of students' conceptual understanding [31]. Teaching-learning is a two-way, collaborative, and transformative process, originating in the external practices with tools [32] that mediate students' learning and enhance their development as learners [33, 34].

However, Vygotsky did not explain how the gradual transformation of students' external interactions with material or materialized tools to their internal plane happens [35-37]. Galperin, a contemporary of Vygotsky, expanded Vygotskian ideas by explaining that the transfer of the original, external, socially meaningful activity to learners' internal plane happens through six dialectically evolving phases: (1) motivation, (2) orientation, (3) materialized action, (4) communicated thinking, (5) dialogical thinking, and (6) acting mentally [36]. In the initial motivational phase, a learner's attitude and relation to the learning outcomes that have to be achieved is formed. In the second orientation phase, Galperin identified three types of orientation: (i) incomplete, where mediational means and the essential features of the target concepts are identified by learners through multiple trials and errors; (ii) complete, where learners are informed about all mediational means that encapsulate the essential features of the target concept; (iii) complete, but constructed by learners following a general approach identifying the essential features of the target concept. In the third phase of a materialized action, learners interact with material or materialized objects, and over time become less dependent on the material support they give and more aware of the meanings they carry. Speech becomes the main guiding tool in the fourth phase of communicated thinking. The fifth phase, dialogical thinking, establishes a dialogue of a learner with him or herself so that the action is being transformed mentally. In the final phase of acting mentally, an action is performed by means of mental images and meanings that help a learner to deal with similar or differing situations on the basis

of previous experience. These phases are used as an analytical resource to understand what the course instructors did at different times in the learning process in the ICTPED MOOC.

Students' increasing agentic engagement as independent learners is visible in their move from orientation to materialized action, communicated thinking, dialogical thinking, and acting mentally. While at the beginning of their learning, students are dependent on explicit orienting information and meanings encapsulated in the materialized objects they interact with, gradually, their agentic capacity becomes enhanced as they become less dependent on the support of the materialized objects and gradually move forward in their learning by making a transfer to the phases of communicated and dialogical thinking.

Such a transfer and transformations the students undergo during the learning process can be explained from the position of the transformative activist stance (TAS) perspective, which posits agency as collectively developed and expanded through participants' engagement to solve a common task [38, 39]. Agency is enacted in "transactional and collaborative dynamics of social practices in the process of individuals contributing to their realization" and transforming practices as well as actors involved in the practices [39]. Such a perspective is useful to examine how students' agentic engagement in learning during online meetings may affect the roles of the course instructors.

### 4. Methodology

#### 4.1. Participants and setting

Data were collected during the online meetings, which were arranged on the Whereby video conferencing platform. The meetings aimed to help students to develop their understanding of the examination assignment they were to engage in. In the examination assignment, "Creating a Multimodal Text," the students were to submit: (i) an original monomodal text, (ii) a remediated multimodal text, and (iii) a reflection video. Table 1 presents a description of the examination assignment.

Students' participation in online meetings was voluntary, and in total, 30 meetings were offered and 17 different students participated in eight different meetings. Each meeting lasted for 45 minutes and was facilitated

Table 1

<b>Examination assignment: creating a multimodal Text</b>
<p>The main goal of this assignment is to remediate a self-selected monomodal text into a new, multimodal text. The multimodal text should be used as a self-produced teaching resource that provides added pedagogical value in relation to the original text. Use an analogous printed or digital text (monomodal) as a starting point for the remediation. The remediated, multimodal text will be put into a pedagogical context, and you should be able to argue why and how the remediated multimodal text will enhance the development of students' conceptual understanding.</p> <p>You will need to submit the following three elements, which together constitute the examination assignment:</p> <ol style="list-style-type: none"><li>1. Original text (file/link)</li><li>2. Remediated, multimodal text (file/link)</li><li>3. Reflection video in which you reflect on the theoretical grounds to justify the chosen modes. You will also need to reflect on the pedagogical value of the remediated text by explaining how the remediated text may enhance the development of students' conceptual understanding.</li></ol> <p>You may also write a declaration giving other participants the right to use your remediated texts in their teaching practice if they follow the copyright law in the correct manner.</p>

by two-course instructors. One course instructor had been involved in the course designing and facilitating of students' learning for about six years and another was a novice who had joined the course in his first time facilitating students' learning online. The first author participated in the meetings as an observer, and he did not take part in the course instructor-student interactions. The online meetings were recorded in Studio as integrated into the Canvas Platform. Participants' consent was taken prior to the meetings. Table 2 provides an overview of the number of participants and instructors involved in the meetings, which were recorded for further analysis.

4.2. ICTPED MOOC

ICTPED MOOC (Pedagogical Information and Communication Technology Massive Open Online Course) is a credit-bearing course aiming to develop digital competence with pre- and in-service teachers. ICTPED MOOC is an xMOOC; it consists of seven modules and includes video lectures, information texts, automated quizzes, and assignment tasks. In the ICTPED MOOC, students have an opportunity to interact with the course instructors and their fellow students in discussion forums on Canvas and engage in online meetings. Table 3 presents the structure and the progress plan of the MOOC that students are to follow.

Module 3, "Multimodal texts," was selected for the data collection to examine how instructors facilitated students' learning during the online meetings.

4.3. Data and analysis

Video recordings of the supervision meetings were the primary data source. In the initial phase of data

analysis, we went through all recordings (8 meetings, 360 minutes). Two recordings (90 minutes) that represented the patterns of facilitating as performed by an experienced instructor and a novice instructor (engaging for the first time in online instructional activities) were selected. The rationale behind selecting these two recordings was to examine whether the novice instructor considerably differed in his approach to facilitate students' learning from the experienced one.

The recordings of the online meetings were transcribed in Norwegian by using Jefferson's transcription notation (Appendix 1) [40]. Then the data were translated into English by the research team. Both authors examined the recordings separately and then discussed the patterns of facilitation together. The researcher triangulation was thus applied.

Eight extracts (four from each meeting) were selected for further analysis. The selected extracts representing the patterns of interaction between the students and the course instructors were analyzed by the method of interaction analysis [41–44]. The primary unit of analysis was sequences and turn-takings in sequences of interactions between the instructors and the students [45]. Each utterance was analyzed in relation to the previous one in the ongoing learning trajectories.

The interaction analysis was conducted in three steps [46]: first, the instructor-student interactions were described by referring to the numbered lines; second, interactions were analyzed from the perspective of the research questions; and third, the emergent findings were outlined. Finally, after the completion of interaction analysis, the extracts were examined following the analytical lens offered by Galperin's pedagogical phases

Table 2

Supervision meetings

Number of online meetings	Length of the meeting (in minutes)	Number of participants	Facilitators
1	45	1	Instructor 1
1	45	2	
1	45	3	
1	45	2	
1	45	2	Instructor 2
1	45	2	
1	45	3	
1	45	2	
8	360	17	2

Table 3

Structure and progress plan of ICTPED MOOC

Module	Progress plan (week)
0. Pre-course	2
1. ICT and learning	3–4
2. Digital studying techniques	5–6
3. Multimodal texts (examination module)	7–9
4. Cyberethics	10–11
5. Classroom management in digital learning environments	12–13
6. Assessment for learning	14–16
7. Flipped classroom (examination module)	17–21



to examine what course instructors did to facilitate students' learning at different times in the online meetings.

Additionally, students' reflection videos submitted as a part of their examination assignment were also analyzed. The aim was to examine how the ideas that students discussed in the online meeting were developed further into their examination assignment. Additional data were collected through the questionnaire administered to the students upon their completion of the course. The questionnaire consisted of 33 questions, and a question related to the online meeting was selected for the analysis (Q31: To what degree were you satisfied with the online meetings?). The question consisted of two parts: one part used a five-point Likert scale, and in the second part, the students were to provide their comments. By analyzing this question, we were interested in gaining further insights into students' experience of participating in the online meetings.

## 5. Findings

### 5.1. Analysis of quantitative data

We start our analysis by presenting participants' responses to Q31: To what degree were you satisfied with the online meetings (Table 4)? Initially, the questionnaire was administered to 365 students, and 25 students responded to Q31. However, 17 students participated in online meetings with instructors (see Table 2) and gave

their consent to record the meetings. The students' responses to the first part of the question (that used a five-point Likert scale) are presented in Table 4.

The data show that the majority of the students were satisfied with the meetings, and a few students remained neutral about their opinions. For example, the students explicated their attitude to the online meetings by saying:

*S1: It was useful to know if the examination assignment works as a pedagogical resource.*

*S4: It was excellent to discuss ideas, get confirmation and further guidance. It made me more confident when working on the examination assignment.*

*S6: Rather than answering the questions, the instructors could have given more advice about how to improve the examination assignment.*

### 5.2. Analysis of qualitative data

#### 5.2.1. Analysis of instructor-student interaction:

##### *Experienced instructor*

##### *Initiating the learning process*

In the following extract, Table 5, the instructor and student are in their starting phase of the online meeting. From the Galperian perspective, the instructor and the student are in the orientation phase.

The instructor starts the meeting by explaining the requirements of the multimodal text the student will create (line 1). The student states that he has already started working on the task (line 2) and has chosen a book for remediation (lines 3 & 4). He explains the approach he

Table 4

**Students' degree of satisfaction with online meetings**

Responses	Frequency
Very satisfied	4
Satisfied	14
Neutral	6
Unsatisfied	1
Very unsatisfied	0
Total	25

Table 5

**Initiating the learning process**

1	Thomas (instructor)	Let me say something briefly before you start presenting your thoughts. The examination task you are going to solve should have a pedagogical value. You should explain this in the reflection video. I suggest you use a resource that is old or monomodal. For example, a book from the 1950s is often better than a book from the 2000s, as a lot of pictures are included in the textbooks created after the 2000s. However, you may use several books, not one.
2	Henrik (student)	Okay, yes. I have already started working on the assignment. I have chosen a book.
3.	Thomas	Yes. What is the name of the book? What is it about?
4	Henrik	The book is called "Breed Knowledge"; it is about dog breeds. This is the book that I used in my teaching before. It is no longer available. First, I have created a PowerPoint about the content of the book. Then, I have uploaded the PowerPoint further into Book Creator. Therefore, I think that I have come a long way. However, there are still some things that I wonder about. I have also created a series of educational films about dog breeds. I wonder if I should include links to these films in my multimodal text.
5	Thomas	Yes. Can you just show me the book?
6	Henrik	(Showing the book to the instructor). There is a lot of text, a good deal of pictures of different dog breeds. Text, text...
7	Thomas	Yes.
8	Henrik	It is roughly like that throughout the whole book.

has pursued to solve the assignment (line 4). The student is wondering if the videos he has created previously can be used in the examination assignment (line 4). The instructor is curious about the book the student has selected for remediation (line 5). The student presents the book to the instructor while commenting on its content (line 6). The instructor clarifies the examination assignment, and the student presents the draft he has created. He also explains how he intends to create a multimodal text. The instructor attempts to make sense of what the student has done. The instructor performs an orienting role by opening up the online meeting while reminding the student about the requirements of the examination assignment. In doing so, the instructor might have initiated students' reflections about what he has already done. However, by explaining his work-in-progress and presenting his ideas about how to further develop his multimodal text, the student might have affected the instructor's further advice about how to solve the examination assignment.

*Reifying ideas*

In the extract in Table 6, the instructor and student are engaged in making the student's ideas about how to solve the examination assignment explicit. From the Galperian perspective, the instructor and student are in the materialized action phase—they are engaged in discussing the student's draft.

The instructor explains how to select the content and present it in the multimodal text (lines 1, 3, & 5). He also points out the need to reflect upon the pedagogical value of the multimodal text in the reflection video (line 3). The student is wondering about the number of cases to be included in the assignment

(line 4). The instructor explains the required length of the text (line 5) and the student is willing to share what he has done (line 6).

The instructor explains how a good multimodal text can be created by exemplifying the characteristic features of the breeds. He points out that it is important to make each characteristic feature visible, preferably by using different modes. However, the student insists on the variety of breeds and different species within each breed. By offering the student to select two to three breeds, the instructor clarifies the requirements of the multimodal text.

By explicating how the characteristic features of different dog breeds can be presented by using different modes, the instructor may have initiated the student's reflections about how different modes may complement each other in a multimodal text. The student's comments about a variety of species within one breed may have evidenced his confusion concerning the amount of information that needs to be included in the multimodal text. Such a comment might have initiated the instructor's further clarification of the assignment requirements.

*Developing conceptual understandings*

In the following extract (Table 7), the instructor and the student are engaged in the discussion about how the student's draft can be developed further. From the Galperian perspective, they are in the communicated thinking phase.

The instructor encourages the student's ideas about how the multimodal text can be developed further (line 4). The student explains his approach to the content presentation (line 2). The instructor points out the

Table 6

**Reifying ideas**

1.	Thomas	We do not expect you to include the whole book in your multimodal text... Let's say there are 20 dog breeds in that book. We are not necessarily interested in you presenting the same case twenty times.
2.	Henrik	I understand.
3.	Thomas	Insert several pictures of the dog. Take close-up pictures of the distinctive features of the dog. Make a movie showing the dog... animation [...]. You have to create a multimodal text. In the reflection video, you need to explain your choices and reflect on the pedagogical value of your multimodal text. For example, last year a student made a video about how football moves could be performed, and it was very good also.
4.	Henrik	Yes... but there are different species of a dog breed. For example, there are many types of a hunting dog.
5.	Thomas	I think two breeds can be enough. However, students may fail the examination because they take far too short text as a starting point.
6.	Henrik	Would you like to see what I have done so far?

Table 7

**Developing conceptual understandings**

1.	Thomas	Tell me about your further thoughts.
2.	Henrik	There will be a presentation of different breeds of dogs one by one. I will present videos about dogs' breed and insert links to further information and activities.
3.	Thomas	But what I'm thinking here, after I heard your thoughts, you should visualize the characteristics of the dogs better than it is done in the original text. For instance, let's say that there was a vampire dog, which had vampire teeth. Then it is important to get a picture of its teeth. If it also had three stripes under the belly, then there should be a picture of three stripes, then you know that it was a vampire dog.
4.	Henrik	(Pointing the cursor to the dog on the shared screen) We have a bit of it on the one standing here, fast-running hunting dogs. For example, their eyes are much more out on the sides than other dog species.

need to present the characteristic features of the specific breeds (line 3). The student shows that he has already attempted to do so (line 4).

The instructor offers the student advice concerning how to explicitly present the characteristic features of the selected dogs' breeds. The student explains how he intends to make these characteristic features visible.

By asking the student to explicate his further actions, the instructor might have encouraged the student's reflections about his further steps. However, the student's ideas initiated the instructor's explanations about how a multimodal text might enhance students' conceptual understanding of the target dogs' breeds. In doing so, the ideas explicated by the student might have initiated the guidance offered by the instructor.

*Summarizing*

In the following extract, Table 8, the online meeting is coming to an end, and from the Galperian perspective, the student and the instructor are in the phase of dialogical thinking.

The instructor encourages the student's further reflections about the assignment (line 1). He provides advice on how to create a reflection video and draws the student's attention to the assessment criteria (line 3). The instructor offers further support to the student (line 5). The student reflects on his understandings (lines 1 & 3) and explicates his ideas about how to organize and present various modes in the text (lines 2 & 4).

The instructor initiates the student's further queries. The student outlines his further actions by summarizing the ideas they discussed at the meeting. As an extension of the student's thoughts, the instructor offers technical advice about how videos may be created and reflects on the need for a universal design when creating a multimodal text. In addition, he reiterates the assessment criteria for the reflection video. The student explicates his understanding by detailing how the advice offered by the instructor will be taken in his work. Finally, the instructor reminds the student about the other available lines of support.

In the reflection video submitted as a part of the examination assignment, the student mentioned:

I revised the tutorials that I had prepared for students with dyslexia last year [...] I have selected some dog breeds and highlighted their characteristic features in bullet points. I have also prepared audio and video files of the presented breeds. I have also embedded links for quizzes [...] I have embedded the link to the Swedish dog kennel club that describes many breeds of goods for further information and deeper understanding. I used the Book Creator for remediating my text (...) I have uploaded it in Itslearning for my pupils.

This extract indicates that the student has implemented ideas discussed in the online meeting in his multimodal text. Such reflections might evidence his understanding of the examination assignment.

*5.2.2 Analysis of instructor-student interaction:*

*Novice instructor*

*Initiating the learning process*

Two students and an instructor are participating in the online meeting. One student takes the initiative to open up the meeting. From the Galperian perspective, the instructor and the students are in the orientation phase.

Ellen takes the initiative to open up the online meeting (line 1) and makes a four-minute-long presentation about her task-in-progress in detail. She explains and justifies how she has planned to present the content of a book chapter she has selected. The instructor encourages the student to present her ideas (line 2). He, along with another student, listens to her.

By encouraging the student to share her examination task-in-progress, the instructor initiates the student's reflections about the examination assignment. The student's detailed reflections set up the scene for the meeting to shape the instructor's further guidance.

*Reifying ideas*

Table 10 shows that the students and instructor are engaged in a discussion to make the student's ideas about

Table 8

**Summarizing**

1.	Thomas	We have a few minutes left, so if you have any questions, go ahead.
2.	Henrik	I think I will work on videos and pictures of dogs' breeds and try to make [them] more explicit. And then I wonder if I should put an audio file on each breed where I explain the characteristic features of each breed in bullet points.
3.	Thomas	Remember the standard icons for sound. An important advice for the reflection film: do not record it in one click. Besides, make sure that you reflect on all assessment criteria. Remember that the multimodal text task you create should have a pedagogical value.
4.	Henrik	Yes. I will do so. Recoding at one go can be difficult for me... I am thinking about short sequences in the reflection video (...) Now, I think I have picked up the key ideas for this assignment. Some students will be able to listen to the audio file I have made, and others will be able to read the text.
5.	Thomas	I wish you good luck with the examination assignment. Ask questions in the discussion forum if there is anything else you are wondering about. Alternatively, we offer tutoring sessions. You can participate in these sessions if you have further questions about the examination assignment, but note that the instructors are available only 20 hours in a week. You can also contact the student service center and they can also provide you some assistance.
6.	Henrik	Yes, this sounds good.

solving the examination assignment explicit. From the Galperian perspective, they are in the phase of materialized action.

The instructor prompts the student to choose various resources (line 1). The student explicates her ideas about the topic of marketing (line 2). The instructor indicates the availability of various resources for creating a multimodal text with pedagogical value (line 3). He emphasizes the learning design of the multimodal text and elaborates what a learning design entails (lines 1, 3, & 5). He draws the student's attention to the need to enhance student-centered learning (line 5). The student gets an insight into the design of the examination assignment (line 6).

The instructor draws the students' attention to the need to use various resources. The student elaborates on the details of the topic marketing, and the instructor reveals how the design of a multimodal text can enhance student-centered learning.

By explicating the details of the topic "marketing," the student might have shaped the instructor's further guidance to reveal the various aspects of a learning design. In doing so, he might have helped the students to understand the complexity of creating multimodal texts to enhance student-centered learning.

*Developing conceptual understandings*

In the following extract, Table 11, two students and the instructor are engaged in developing their understanding of the examination assignment. From the Galperian perspective, they are in the phase of communicated thinking.

The student explicates her understanding of how to organize her multimodal texts to address the needs of different pupils (lines 1 & 3). However, she expresses her concerns about the amount of information in the videos and written texts (line 1). The instructor acknowledges her challenges; however, he suggests making a video

Table 9

**Initiating the learning process**

1.	Ellen (student)	Who would you like to start first, Geir?
2.	Geir (instructor)	You can just start, Ellen.
3.	Ellen	Okay. Well, I am going to remediate a chapter from a marketing and leadership textbook used in the upper secondary school. The text is about pricing strategies. It explains how the company should set reasonable and correct prices for its goods. I chose this text because I think it is difficult for the students. Both textbook authors have given their consent to publish the multimodal text based on their book. The content I have selected also meets the curricular goals. I am going to use the Book Creator to create an e-book. I would like to change the original order of the content because I think it is presented in a fragmented way. Then I will prepare an audio file of the whole text. I have also prepared some tutorials explaining how to do price calculations, followed by the problems that students will engage with. I use Explain Everything to show how multimodal texts I have selected for the examination assignment are interrelated. I will add quizzes that will help students to check their understanding of the concepts. However, here, I am a little uncertain whether one can do the quiz as it opens in a separate tab, so students have to go back to the main task when they finish it. Then I thought I should also make a multiple-choice test for students to check their understanding. I will also end the entire task with a case study... So, I use both text, audio recordings, tutorial videos, practical exercises, links, explanatory videos, quizzes, and other types of activities. That is what I have been thinking.
4.	Geir	[...] Okay, we discuss it now in the meeting [...]

Table 10

**Reifying ideas**

1	Geir	Well, I think you should go beyond the linear design of multimodal texts. Imagine that you have a learning design with various quizzes, multiple-choice questions, etc. It seems like you have had a lot [...] You said that you were working on the topic "marketing," right?
2	Ellen	Yes. [...] Pricing strategies is the topic now [...] Moreover, there is psychological pricing; for example, we put 299 and not 300. It is one of the ways of competing with pricing. After all, it does not influence digital marketing as a theme.
3	Geir	Okay. But if you are going to develop an examination assignment that has a pedagogical value, there are many ways to do it. For example, YouTube videos and other courses address how to work with marketing in such a social media context. I think you should select various resources, but you just talk about the practical use of marketing.
4	Ellen	[...] Okay.
5	Geir	You should build up a learning design. You should somehow break the design down into something like 1, 2, 3, 4 modules. You can call it a learning path. In other words, it is about specifying when the teacher should have an active and a passive role in the students' learning activities. Then you have learning activities for students to work on. Another element that you may consider is to what extent your learning design itself promotes sharing, collaborative, and individual learning. How does your multimodal text facilitate your students' learning? Thus, these things should be clear in your design.
6	Ellen	I have not really thought about this dimension of the assignment. I have to write it down.



rather than presenting a text (lines 2, 4, & 6). Both the instructor and the student acknowledge the usefulness of developing understanding of marketing concepts by watching tutorials rather than reading textual information (lines 5 & 6).

The student explicates her concerns about presenting information in videos and texts in a balanced manner. Admitting the challenges, the instructor suggests creating a video. The student agrees with the instructor.

By raising questions about how to present multiple modes in a balanced manner, the student initiates the instructor's guidance to address the challenges indicated by the students. The instructor suggests creating videos and the student explicates her agreement.

*Summarizing*

In the following extracts (Table 12), the online meeting is coming to an end, and from the Galperian perspec-

tive, the instructor and the students are in the phase of dialogical thinking.

Following the instructor's indication about the end of the meeting (line 1), the students summarize their ideas about solving the design of the examination assignment. Both students decide to create an e-book combining multiple modes to cater for varied students' needs (lines 2, 3, 5, & 7). The instructor is curious about the usefulness of his guidance (line 4) and emphasizes the need to consider a learning context (line 6).

The students explicate their further steps to solve the examination assignment. However, they remain somewhat uncertain about balancing content in multiple modes.

The students summarize their understanding of their approaches to solve the examination assignment. They express their concerns about balancing content in multiple modes to cater for students' individual needs. Their concerns might have called for further clarifications

Table 11

**Developing conceptual understandings**

1.	Ellen	I am thinking of making an audio file of all texts because students with visual impairments will take advantage of it. However, I think it is a bit difficult to make videos. For example, if I am going to write everything I say in the videos, then I have both text and videos, but is it necessary? Should I write in the text about what comes in every video? I think I should either say the key things in the videos or write in the text. A video of just a few minutes will correspond to many pages as a text. What do you think?
2.	Geir	I think it is a difficult question to consider. I do not know exactly what to say about that.
3.	Ellen	Okay. When I record something in the videos, I say a lot more than I write. If someone prefers reading the text, then she/he will get less information than those who prefer watching videos.
4.	Geir	[...] I think an audio-visual explanation is better [...] You should focus on making a video, and you do not necessarily need a text. So avoid offering redundant information.
5.	Ellen	Yes, I have not seen anyone who managed to learn these calculations by reading the textbook. Therefore, I have decided to make a tutorial rather than an e-book. In the talking head videos, I show them calculations in Excel and explain different elements.
6.	Geir	When you explain things in that way, then I think it enhances the pedagogical value of your examination assignment. Making mathematics tutorials is not unusual in an online course. Such videos are more effective for learning than reading a textbook.
7.	Ellen	Yes.

Table 12

**Summarizing**

1.	Geir	I think our time is over.
2.	Ellen	Yes. Thank you for your feedback [...] I have also thought a bit about the examination assignment that I have created. The pupils will also be able to complete it alone at home. If, for example, they are away for a week due to the flu, they should be able to solve the task on their own and learn the target concepts.
3.	Maya (Student 2)	Yes. I have had similar thoughts.
4.	Geir	Was my advice helpful?
5.	Ellen	Yes [...] I am just a little unsure (...) Whether I should create an e-book that pupils should follow. As Maya said, I am concerned about an individual approach. For example, I have some pupils with dyslexia in my class, and they need much time for reading. These students will benefit from watching videos, but they might be unwilling to collaborate on classroom tasks.
6.	Geir	Think about different learning contexts as well. The task you create for the classroom might not be useful for the online context.
7.	Maya	Yes, at least we have some ideas. I feel that I end up creating a type of e-learning book. However, I disagree concerning what has the greatest pedagogical value. Therefore, I will focus on collaborative tasks. We will collaborate to work on the ideas we have discussed.

from the instructor, but he neither clarifies nor informs the students about the possible resources for further guidance. This might have led the students to seek out their own resources (peer collaboration) to discuss the examination assignment further.

In the reflection video submitted as a part of the examination assignment, Ellen mentioned:

[...] Setting psychological pricing strategies is the topic of the multimodal text [...] I have created audio-visual and textual resources accompanied by different tasks. I have used many text types. I have also used the Explain Everything tool for summarizing key concepts in the multimodal text. I have added some exercises for students to reflect their understanding [...] At the end of the text, I have assigned a case study work for pupils because it is a normal practice in [the] marketing and leadership subject [...] Students can solve the case study as an online exercise. I have attempted to be creative when designing my multimodal text [...]

This extract indicates that the student has implemented the ideas discussed in the online meeting in her multimodal text. Such reflections might evidence that the guidance of the course instructor offered in the online meetings might have contributed to the development of the student's understanding of the examination assignment.

## 6. Discussion

By taking a cultural-historical perspective, this study examined how the course instructors facilitated students' learning during online meetings in the ICTPED MOOC. Additionally, it also attempted to provide an insight into how students' engagement in the meetings affected the instructors' guidance. The quantitative data showed that the students were satisfied with the online meetings. The findings of the qualitative analyses are

discussed in relation to previous research. The patterns of instructors' guidance are presented in Table 13.

The analyses of instructor-student interactions with both the experienced and the novice instructors revealed the patterns of facilitating students' learning in the online meetings. These patterns make visible that the instructors (i) set up the learning process, (ii) discussed the students' drafts in detail, (iii) assisted the students to develop their understanding about their further steps to solve the examination assignment, and (iv) structured the students' understanding by clarifying the target concepts and offering further support. These findings corroborate with the studies that have examined teachers facilitating students' learning in technology-rich classroom contexts [35, 47]. The findings in the previous research indicated that instructors offered more guidance to the students in the orientation phase and in the phases of communicated thinking than in the phase of dialogical thinking. In this study, the course instructors, especially the experienced instructor, offered limited information about how to engage in the examination assignment task in the orientation phase. In the case of the novice instructor, the students themselves set up the learning process by sharing their examination assignment drafts. The instructors offered more elaborate guidance in the phases of materialized thinking and communicated thinking than in other phases. They probed into students' ideas and explained in detail how multimodal texts can be combined to enhance the pedagogical value of the examination assignment. The instructors' orienting function was partly similar to the managerial role discussed in the literature, which includes creating conditions for learning by setting an agenda, approaches to carrying out the agenda, and directing learners' activities [1, 24].

While performing the executive role, the instructors assisted the students in developing their conceptual understanding of the examination assignment. They vetted and reified the ideas embodied in students' drafts in the phase of materialized action. Students' assignment drafts

Table 13

Patterns of instructors' facilitative activities

Phases of guidance	Instructors' functions	Galperin's pedagogical phases and instructors' roles
Initiating the learning process	Setting up the meetings by explaining the examination assignment Encouraging students to present drafts	Orientation
	Making sense of the students' drafts	Materialized action
Reifying ideas	Discussing students' drafts Reifying students' ideas and concepts	Communicated thinking
Developing conceptual understanding	Encouraging students to express their ideas about the further development of their multimodal texts Providing feedback on the students' ideas	
Summarizing	Encouraging students to reflect upon their final understanding of the examination assignment Structuring students' understanding	Dialogical thinking

as the objects of discussion functioned as the meditational resources for visualizing the target concepts. The experienced instructor used examples from students' drafts shared on the screen and referred to the sample examination assignments to help the students understand how multiple texts could be combined using various technological tools to create a multimodal text. By doing so, the instructors might have helped the students to understand various dimensions of the assignment. In the phase of communicated thinking, the instructors encouraged the students to express their ideas about the further development of the multimodal texts and provided feedback on them. The experienced instructor explicitly asked the students for their reflections, while the students interacting with the novice instructor took the initiative to reflect upon their understanding. However, both instructors encouraged the students to explicate their further thoughts and develop their understanding of the examination assignment. The analyses of students' reflection videos indicated that the students implemented the concepts discussed in the meetings in their examination assignments. The instructors thus helped the students to cultivate their thinking and reasoning about the examination assignments and develop their conceptual understanding. The instructors' executive functions can be compared with the pedagogical role [1, 21, 24] and facilitative role [26] as instructors stimulated interactions and reflection, provided feedback, and asked probing questions.

While performing a controlling role in the phase of dialogical thinking, the instructors encouraged the students to explicate their understanding. They summarized and structured the target concepts and offered advice for further guidance. Synthesizing students' comments, clarifying dilemmas, and offering further assistance is a part of the instructors' pedagogical role [1, 21, 24]. The experienced instructor explicitly checked students' understanding by encouraging them to reflect upon what they had understood and thought of further steps to improve the assignment drafts, while the novice instructor was more interested in the students' feedback concerning the usefulness of his guidance. This suggests that novice instructors might feel a little uncertain about the impact of their guidance.

More interestingly, unlike in the classroom context where instructors performed their explicitly designed preplanned activities [e.g., 47], none of the instructors had pre-prepared content in the meetings. Their facilitating activities were contingent upon what and how students presented their drafts and ideas about how to solve the examination assignment. The instructors primarily focused on making sense of students' thoughts related to their drafts and adjusted their guidance to their needs. In doing so, the instructors became the co-participants and co-contributors to the learning process as the students chose what to discuss, enacting their agency.

The orienting, executive, and controlling guidance offered by the instructors evolved as they engaged in the interactions with the students. The instructors' guidance and students' learning in these interactions were cyclic and mutually inclusive, forming a coherent learning ecology where both instructors and students en-

gaged in making sense of how to design the examination assignment.

The online meetings were student-initiated as they first explicated their needs in the meetings by sharing their assignment drafts, which were the objects of interactions between the instructors and students in the meetings. The students extensively engaged in and contributed to the learning process from the beginning to the end of the meetings. The instructors engaged in making sense of students' ideas embodied in their drafts, vetting and reifying them to help students develop and enhance their conceptual understanding of the examination assignment. Their guidance functions were subject to change according to students' articulations of their needs. Students' active engagement in the learning process immersed the instructors in students' learning, as they explicated and validated students' ideas and directed the learning process. The students' agentic engagement and their contributions to the learning process positioned the instructors as co-contributors to develop and expand their conceptual understanding of various aspects of the examination assignment. Students' meaningful immersion in the learning process also demanded the instructors' guidance, which brought the instructors' agency into play by engaging them in understanding students' ideas, structuring them, and guiding them forward while addressing their needs [48]. This might suggest that students' agentic engagement might affect the guidance the instructors provide in online meetings, and by immersing in meaningful learning activities, both students and instructors can enhance their agency as active participants of and contributors to the learning process [39, 47].

To summarize, the instructors performed three mutually inclusive and evolving roles: orienting, executive, and controlling to assist the development of students' conceptual understanding during online meetings. The students' active engagement and contribution to the meetings made the instructors actively participate and contribute to students' learning. Thus, the instructors' guidance was contingent upon students' articulations of their needs in their pursuit to design the examination assignment.

## **7. Implications and directions for further research**

There are several pedagogical implications for designing and facilitating social, collaborative learning activities in MOOCs and online courses. First, the course instructors performed three mutually evolving roles: orienting, executive, and controlling. While performing these roles, they set up the background for the online meetings, engaged in reifying and explicating the students' ideas, and assisted the students in developing their conceptual understanding of the examination assignment. However, these roles evolved out of collaborative practices aimed at designing the examination assignment. This indicates the need to integrate goal-oriented collaborative learning activities in MOOC and online

learning environments to assist students in developing their understanding of the target concepts.

Second, the differences in the guidance offered by an experienced and a novice instructor demonstrate different approaches to develop students' conceptual understanding. In particular, the guidance offered by the experienced instructor suggests the need to assist students in developing their understanding of the examination assignment by validating their actions and ideas against the text of the assignment and the assessment criteria.

Third, probably a more profound implication is that students' agentic engagement might affect the course instructors' guidance in online learning environments. The findings indicate that students were active in setting up and driving the learning process by expressing their ideas, justifying their approaches, to solve the assignment task, and articulating their needs for guidance. Such student engagement positioned the instructors as sense-makers and providers of feedback to students' ideas. In their words, the instructors' guidance was contingent upon students' contributions to the learning process. Students immersing themselves meaningfully in a collaborative learning process may activate their agency, calling for instructor agency in responding to as well as (re-) directing students' pursuit to solve the task. Such student engagement in the online meetings positions them as central drivers of their learning, which might contribute to enhancing their agentic capacity to

learn. The instructors' guidance adjusted to students' needs might contribute to further enhancing their agentic development as professionals.

Finally, the instructors' guidance shaped by the students' agentic learning in online meetings might offer useful considerations about how to realize, expand, and enact agency. These considerations suggest that collaborative practices are of paramount importance for students' learning and development and indicate the need to offer synchronous, collaborative social learning activities in the predominantly asynchronous MOOCs format. Instructors have a vital role to play in supporting students' collaborative social learning activities. Numerous technologies are available to enable synchronous collaborative learning; however, the instructors have a vital role in including these technologies to help students develop their conceptual understanding and agentic capacity to learn.

These findings inform the practitioners, MOOC, and online course developers about how instructors facilitate students' learning online and how students' agentic online learning may influence their guidance. The instructors' and students' engagement in online meetings might therefore contribute to the development of students and instructors as learners and professionals. Further research would therefore benefit from a longitudinal study examining how students' engagement in online learning might enhance their agentic capacity to learn.

## Appendix 1

### Transcription notations

Symbol	Description
[ ]	Speech overlapping.
()	Unclear section
Underlining	Denotes a raise in volume or emphasis.
CAPITALS	Louder or shouted words
[... ]	Utterances removed from original dialog
...	Incomplete sentences

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# Исследование функций преподавателей в процессе обучения студентов в онлайн-курсе о педагогическом использовании информационных и коммуникативных технологий

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В статье исследуются функции преподавателей в процессе обучения в онлайн-курсе с целью формирования навыков преподавания с применением цифровых технологий студентами педагогических вузов и учителями норвежских школ. В статье также рассматривается, как участие студентов в процессе обучения влияет на функции преподавателей в данном процессе. Онлайн-встречи студентов с преподавателями наблюдались и записывались. Встречи были направлены на развитие понимания студентами экзаменационного задания. Данные (4,5 часа видеозаписи) были проанализированы с использованием метода коммуникативного анализа. Результаты анализа показали, что преподаватели выполняли четыре основные функции: 1) начинали учебный процесс; 2) выясняли идеи студентов по выполнению экзаменационного задания; 3) помогли студентам в формировании их концептуального понимания; 4) обобщали и структурировали понимание студентами основных концепций. Данные функции педагогов возникли в ходе совместного обучающего процесса преподавателей и студентов. Активное участие студентов в процессе обучения было особенно заметно, когда они проявляли инициативу и открыто делились своими идеями по выполнению экзаменационного задания. Преподаватели, в свою очередь, играли важную роль в обсуждении идей и вопросов студентов, возникающих в совместном процессе обучения. Таким образом, активное участие студентов оказало влияние на педагогические функции преподавателей онлайн-курса. При таком подходе диалектическое взаимодействие между студентами и преподавателями является важным и одним из основных аспектов обучения в онлайн-среде.

**Ключевые слова:** функции преподавателя, активное участие студентов, онлайн-преподавание, обучение, взаимодействие, агентность, П.Я. Гальперин.

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# Measuring Higher-Order Cognitive Skills in Collective Interactions with Computer Game

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The present study is focused on testing the computer game system ‘PL-modified’ as a diagnostic tool for measurement of higher-order cognitive skills by middle-school students in individual and collaborative game. The ‘PL-modified’ is a computer system designed as a game which implies a set of concrete parameters specially elaborated for assessment of the cognitive actions of analysis, planning, and reflection – the basic higher-order cognitive functions which determine high achievements in school education according to the Russian theory of developmental education. 189 middle-school students at the age of 11–12 years participated in this study. Two research questions were asked: 1) whether the cognitive actions of analysis, planning, and reflection measured by special markers of the computer game system performance are correlated with each other as a valid indicator for the new constructed diagnostic instrument; 2) which type of the game – individual or collaborative – provides better conditions for manifestation of the above mentioned higher mental actions. Abstract intelligence as an additional anticipated factor for high game performance was also assessed and controlled. It was revealed that participants exhibit the higher level of the cognitive actions of analysis and planning in collaborative game. At the same time the patterns of the interactions between the researched variables as well as distinct parameters of game performance are determined by the concrete level of intelligence which rather varies in different pairs of collaborators. We discuss our results from the position of the further prospects for the application of the ‘PL-modified’ computer system as a potential instrument of measurement and development of higher-order thinking actions. In terms of the modern educational programs teachers need simple diagnostic tools for measurement of school-children’s thinking development. Traditional ‘pen-and-paper’ techniques become quickly outdated as much as they may not be sufficiently motivationally attractive for children and focus only on the result of the thinking process. In this regard, such diagnostic instrument formed in the format of a computer game and centered on the whole gaming process allows fixing children’s actions and provides important information on the dynamic characteristics of their mental process.

**Keywords:** The 'PL-modified' computer game system, higher-order cognitive skills, individual and collaborative game, intelligence, decision making.

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## 1. Introduction

The present study aims at testing the higher-order cognitive skills level measured by the 'PL-modified' computer game system in individual and collaborative game. The relevance of the present research task is determined by the practical requirements formed for the diagnostics nowadays. The growing usage of computer technologies, various devices and the Internet in different social domains also outline high challenges for the diagnostics criteria in education. Therefore, in its turn, the elaboration and the usage of a valid and accurate diagnostic tool to measure cognitive skills more precisely is getting a big importance.

On one hand, diagnosticians possess many of standardized psychometric tests whilst conducting studies. On the other, numerous 'pen-and-paper' tests are rather outdated so far they do not always correspond to the overriding provisions of the diagnostic conditions. This is more alarming for school-children who are often less motivated while being tested and feel worry for the whole diagnostic situation which can lead to incorrect data. Moreover, the social situation of growing up of kids today triggers the problem of the ecological validity of the present psychometric tests which also do not simply reflect real activities of the new generation of schoolchildren. Taken the above mentioned into account, the modern tendency to explore potential of diagnostic techniques by using various games or game components so far children are rather fascinated with computer games nowadays (Voiskunsky & Bogacheva, 2017) is getting to be more pronounced.

Gamification effect research has already affected a variety of different domains over the last decade (Foroughi et al., 2016; Gallagher & Grimm, 2018; Margolis et al., 2018, 2020; Quiroga et al., 2015, 2016). Many researchers stick here to the 'Digital Game-based Science Assessment' approach by incorporating the game context itself into the educational process that brings numbers of advantages from the diagnostic point of view (Chu & Chiang, 2018; Godwin et al., 2015; McClarty et al., 2012). First, a game situation increases attractiveness to schoolchildren and has general positive motivational effect (Lumsden et al., 2016a). Another apparent benefit from gamification implies to bring specific various characteristics of computer games such as competitiveness, player communication skills, and active use of visualization techniques into appropriate diagnostic tool. It means that these cognitive techniques structured in a game format capture children's mental activity in its dynamic that corresponds to real life situations. The

present points draw in general rather realistic possibilities in application of computer games as an up-and-coming psychometric instrument in diagnostic process since such 'gamification' tools allow covering not an isolated action or a concrete trait, but rather complexes of various interrelated psychological qualities including social skills and meta-cognitive knowledge that are definitely required to be successful in learning process and then in modern world.

To sum up, the research question about the possibility to use a controlled computer game for the assessment of certain mental skills is considered as being reasonable and worth of further examining. Based on the popularity of some modern computer games and classification of game types (achievement/challenge-, immersion-, and social-based games by Hamari & Tuunanen, 2014; Koivisto & Hamari, 2019), we elaborated the special computer-like game system entitled 'PL-modified' to analyze the higher-order cognitive actions' level by middle-school students. The system rests on the principles of popular game 'Lines' where randomly appearing balls are needed to be somehow organized on a game field. So the present game is quite easy to be learned and brings a touch of entertaining. At the same time a number of distinct differences were set up for each game step. Thus, the whole game challenges participants to use their mental skills for getting more points. Another one challenge brings a collaborative game when children are divided in pairs and stimulated to collaborate and communicate with each other to be advancing playing the game. Such circumstances should aim to consider which research possibilities trigger the realization of concrete cognitive actions in this game format when two partners are needed to constantly collaborate to be successful. In this case the main effects on game performance compared in two types of the game will be significantly under the spotlight of this study.

## 2. Theoretical background: higher mental actions and the theory of developmental education

The methodological basis of the present study grounds on the cultural-historical activity theory (Vygotsky, 1935; Leontyev, 1959) and the theory of developing education (Elkonin, 1966; Davydov, 1996) postulating that human's mental development is determined by the attribution of generalized modes of actions in communication. Therefore, collaborative activity realized through communication promotes an



active position of collaborators themselves and triggers development of their mental actions being at the core of theoretical thinking which is considered to make essential impact in educational process from the very beginning. Davydov (1996) allocated three key components of theoretical thinking process highlighting the mental functions of the higher order (or the higher mental actions) such as analysis, planning, and reflection. Formal theoretical level of analysis (in contrast to empirical) is aimed at highlighting the internal, essential features in the studied phenomenon which allows attributing an object to a specific class. The cognitive action of planning as a part of the more general ability to act 'in mind' is interpreted as the ability to predict what will happen to an object if certain transformations are made (Brown & Bransford, 1982). Reflection as the ability to see the origins of one's own way of action represents the skill to distinguish a universal relation in a studied object.

Taken together, these three so called learning actions considerably contribute to the high attainments in education by setting up the ground to understand main concepts of school disciplines and to widely hone reasoning skills. Moreover, collaboration and any other forms of children's cooperative activity seem to play a pivotal role in the mental actions' development. The advancement of those preschool- and school-students who are skilled well enough to interact in small groups and cooperative games in their conceptual thinking and better learning performance were shown in number of contemporary studies (Guruzhapov, 2000; Gordeeva, 2019; Davydov, 1996; Roubtsov, 1996; Polivanova, Rivina, Ulanovskaya, 2013; Tsukerman, 2016, 2020). All of them stress that namely collaborative activity allowing children to mentally hold equal points of views together paves the way of how the conceptual thinking will be finally formed. Collaborative problem solving is also assessed by PISA (2017) as the key abilities to communicate, manage a conflict, and organize a team to be successful in many social domains.

Taking these empirical studies into account we presume that introduction of a computer game into children's collaborative work brings an important input in the understanding of psychological aspects their interaction and – above all – the manifestation of their cognitive actions. In Russian psychology there are a lot of studies focused on different points of collaborative activities using a computer (Kritsky, 1989; Kuravsky, Baranov, 2005). For example, Kritsky and Shcherbinin (2007) organized of computer-mediated communications in educational activities and demonstrated how much the division of individual operations within a necessity to perform a certain action with the object of study together can promote collaboration and communication between students by fostering their ability to act jointly in a way which is corresponding to the principle of the studied object. Specifically, control over the communication process (in particular, the consequent narrowing the channel and modes of communication in messages) can contribute to change of the nature of communication and discover a sign-symbolic (math-

ematical) form of representation of the studied object. The analysis of partner message texts provides valuable information about the level of interaction and the target orientation of the subjects' communication.

Which conditions are required to organize collaborative learning process promoting to acquire the generalized mode of actions? A division of individual operations under conditions of necessity to perform jointly seems to be a right decision for that because it suspends the whole activity by stimulating to understand additional characteristics of the activity itself and to coordinate own actions within joint context and express arguments in a favor of one's own action and a partner's action as well. In this study the 'PL-modified' computer system creates such type of the game collaborative problem-solving when partners cannot further play unless they are working on each step together and discussing every move they take. So, the communication process delivers here not conditions, but first of all means of collaborative actions. Participants encountered with the necessity to analyze and reflect their and joint moves to create general mode of actions.

Considering the previews facts we formulated *the main hypothesis* of the study stating that participants will exhibit the higher level of the cognitive actions of analysis, planning, and reflection in collaborative game in contrast to individual game. These differences will be specified in the faster dynamic of getting the game points, the higher total game points, the better comprehension of the game rules, and its changes in different cycles.

### 3. Material and methods

#### 1. Participants

189 middle-school Russian speaking students (46% of girls and 54% of boys, age range: 11–12 years) participated in our study. The whole sample included participants from 5<sup>th</sup> and 6<sup>th</sup> classes of two traditional city schools.

#### 2. Materials

##### 3.2.1 The 'PL-modified' computer game system as a diagnostic instrument

The whole computer system represents the game field with the design of 9 x 9 cells where the balls of different colors appeared. Three balls were displayed at each game turn. Participants had to move one ball by one mouse-click in a free space of the field in a way to build a vertical, horizontal or diagonal line of five or more balls with the same color. After such line of colored balls has been built, it completely disappeared and participant earned his points. More points were given for the longer lines consisting of six and more balls.

One important remark is here worth of notion. Unlike the standard version of this game elaborated by Gamos Company where the balls are displayed randomly, the present research version implies certain sequences due to a principle which might be changed in different cycles of

the game in a hidden way by stimulating students' reasoning about the possible regularity of how the balls are appearing each time. We assume that these sequences or so-called 'rules' of the balls' (and students' attempt to discover and use it while planning their moves) will booster the whole game process by raising the chances of students to earn more points. Thus, three rules for each game set were elaborated. For example, for the first game set the following algorithm was prepared: 1) Each row of the game field implies one *distinct color of the balls* which is *repeated at regular intervals of two succeeding lines* (the sequence of red — blue — green lines of balls every time); 2) each next ball of a distinct color *succeeds in the next through one vertical cell* (it means that if the first red ball appeared in the 'a1' cell then the next red one will be displayed in the 'a3' cell meanwhile the third one will be at the 'a5' cell position); 3) the whole game field is divided into two sections implying *the 'sequent balls' section* and *the 'random balls' section*. In the 'sequent' section balls were displayed in accordance with the above mentioned rules whereas there was no special logic for the balls' presentation in the 'random' section — that is how this section served as kind of a 'storage' for the balls of different colors which could be used for the lines construction. To sum up, there were three balls appeared in a different way every time. The first one was of a distinct color and was displayed at the special cell position in conformity with

the first two rules in the 'sequent' section. Another two balls appeared in the 'random' section, in so doing, always to be of different colors.

The described principles of the balls' presentation were carefully created for each game set by taking the age of participants into account. So, they involve certain flexibility whilst keeping on changes for a special need to make them more or less complicated. The examples of both game field and balls construction are displayed in *Figures 1 & 2*.

Transformation of original computer game in research environment was carried out using the following programs: HTML, JavaScript, jQuery library, Ajax technology and MySQL DBMS.

### 3.2.2 Research procedure

Participants played two games set in two different conditions: first individually and then together with a partner. Before the main procedure started participants were exposed to two minutes short test version to make their first acquaintance with the game process. The whole procedure was going online by clicking at a special link. Each of the two games consisted of three sets. Thus, participants were dealing with three different algorithms playing each game. Every algorithm was lasting for 10 minutes. And each game was lasting for 40 minutes (one lesson), respectively.

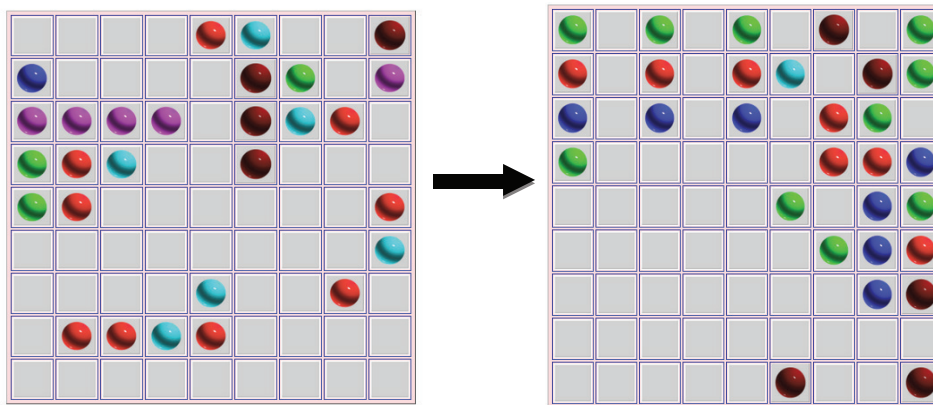


Fig. 1. Examples of two versions of computer game systems elaborated by Gamos Comply (left) and that one created for the current study (right)

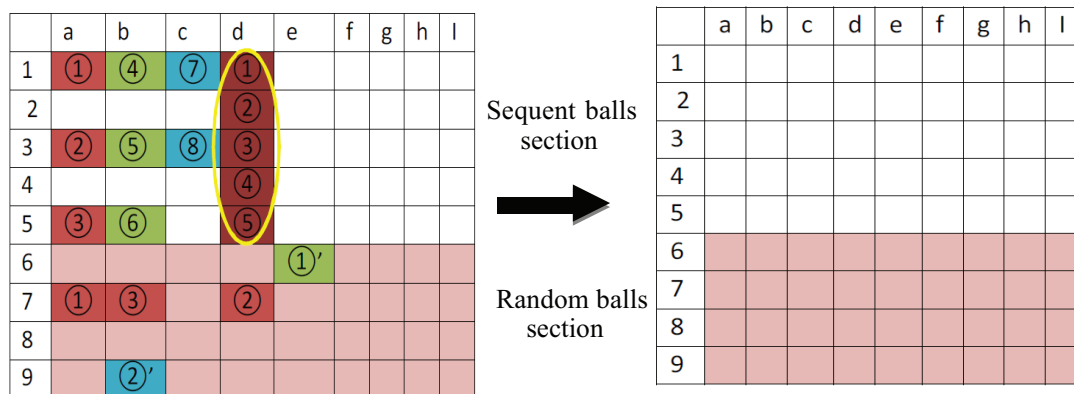


Fig. 2. Examples of basic principles of the balls' sequences for one distinct game set

First individual game started when every student was working separately by sitting in front of a personal computer. At the second lesson online collaborative game started. Participants were randomly divided in pairs in advance. In these game conditions students have also build up the lines of the balls, but they must have to coordinate their individual actions at each joint game step. It means that every time when one partner makes a move, it is popping up on the game field of the second partner who is able to 'approve' or 'stop' this move. In case of the 'stop' option the first partner had to change his decision by making another one move whereas in case of the 'submit' option it is the second partner's turn to play. The example of such game field of collaborative game problem solving is displayed in Figure 3.

Participants were given an instruction whereby they were informed about the new game and intentionally paid intention to collaborative type of the task. Therefore, they have to interact with each other discussing their possible and actual game actions. All dialogues were recorded by google\_meet online system and voice-recorder program.

Three variables represented three cognitive actions were assessed: 1) the analysis defined as the ability to discover the rule which determine sequences of the balls appearance; 2) the planning defined as the ability to use the very knowledge about the rules and to use it whilst playing the game by predicting appearance of a certain ball in a certain place; 3) the reflection defined as the ability to understand change of the previous rule in a new one in each succeeding game set and to restructure own actions in accordance with new rules. We used the following scoring strategies to measure these cognitive skills by certain methods. So far that the cognitive action of 'analysis' in its clearest meaning implies the ability to discover and understand the rule the following scoring strategy was introduced. A special list with descriptions of several rules after each

game set was created. Some of such descriptions correctly characterized the very principles that were just put into the concrete game set. Each list included nine descriptions with three correct and six wrong rules. Participants were asked to pick amid all descriptions those which in their eyes precisely match the sequences that they faced during a game set with. The number of the descriptions picked correctly after each game set and that in total were scored and used as an 'analysis' variable — in this case understood as awareness of the rule. In the collaborative game the number of picked descriptions was scored for each partner separately. As for the cognitive action of 'planning' the number of play points for an each game set and in total was calculated. In the collaborative game mode the total number of points was scored as an overall contribution to the game performance, and was attributed to each participant of a pair.

The cognitive action of 'reflection' was the most difficult variable for our measuring process. In general, this cognitive action involves a deep thinking process of understanding that something goes wrong as a starting point, the ability to recognize the beginning of his/her way of action, to redefine his own actions and to set them in a new direction. In terms of the play process the ability of a child to be reflective implies his comprehension that the way of action which was effective in respect to the rule in the preceding game set does not work in the new one, and he needs to find out this rule and construct a new strategy again considering ongoing balls sequences. Thus, it seems to be obvious that more 'reflective' gamers will not chaotically move the balls, but will structure lines of the balls of the same colors on one side of the field and wait for an every further move to see which new balls will arrive. In other words, they will interrupt in a way their own play trying to collect more data for construction of a new strategy by moving from

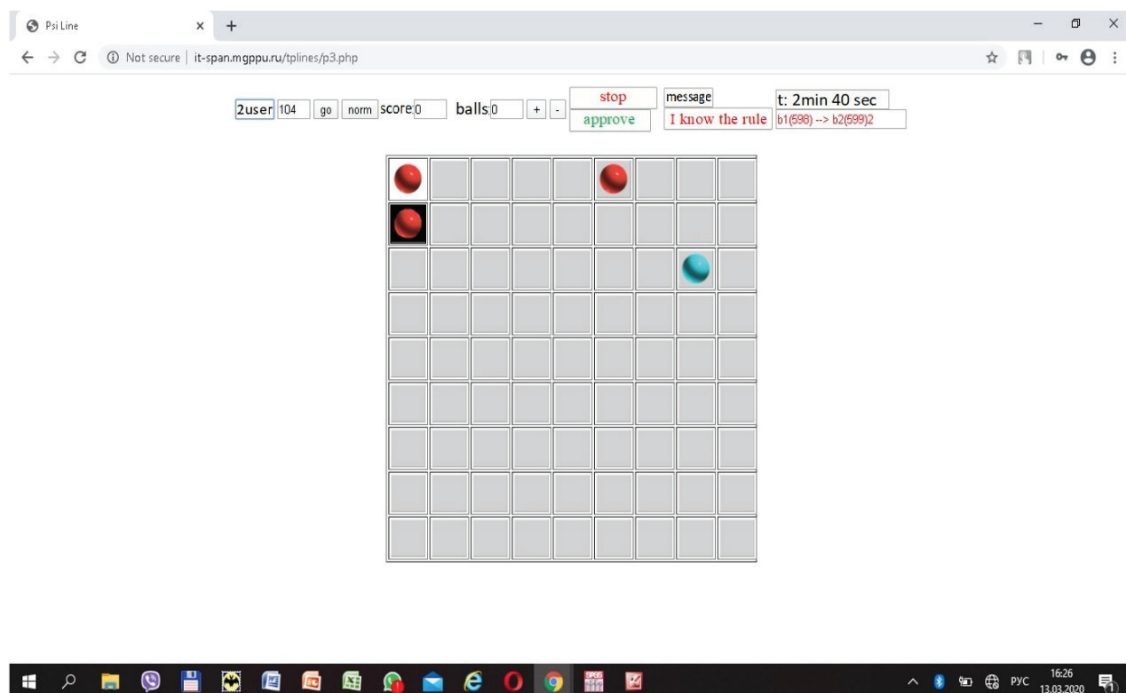


Fig. 3. Example of game field in collaborative game problem solving conditions

play to search and explore exploration. Previously made pilot studies let us be sure that such gamers will have the very structured game field at the end of the game. So, finally we used total amount of free cells on the last game step as the most precise variable for the variable 'reflection' in the further statistical analysis.

The whole game process and the main researched variables are displayed in *Figure 4*.

At the third lesson abstract intelligence was measured by the Raven's Advanced Progressive Matrices by J. Raven (2002). The test consists of twelve tasks with increasing difficulty. Each task is presented in black ink on a white background and represents sequences of abstract figures in horizontal and vertical lines in 9 × 9 design. The last ninth figure is absent. Participants have to complete the line by finding this ninth figure in accordance with the logic of presented lines of figures. The whole testing procedure was lasting for fifteen minutes. Students earned one point for each correct task. Therefore the total test productivity implied the number of correct answers.

#### 4. Results

##### 4.1 The whole sample: main effects

Mean scores were calculated for the three variables representing intelligence, and two cognitive actions of 'analysis' and 'reflection', respectively. As for the cognitive action 'planning' special calculations were additionally done. It is clear that participants are in unequal conditions playing individually or with a partner, having more time to coordinate their moves together, and getting less point from the beginning. Thus, the qualitative game performance parameter was calculated in that way:

$$X\text{-parameter} = X1/X2,$$

where X is the game performance (or 'planning') itself, X1 is the total points in each game set, and X2 is the number of the moves in each game set.

All means were counted and compared for all variables in two game conditions. A Wilcoxon Test was made on the comparison of the means. Results are presented in *Table 1*.

The data included in *Table 1* show advantages in means by two of three variables in collaborative game. These are the cognitive actions 'planning' and 'reflection'. Additionally we analyzed means of the X-parameter for each game set. These results are depicted in *Figure 5* and demonstrate different patterns of game performance from the first up to the last game set by decreasing in individual game and increasing in collaborative conditions. Thus, participants exhibit better game performance playing in collaboration.

At the next step the correlation analysis between all researched variables was done. The coefficients matrix is presented in *Table 2*.

The results presented in the *Table* let us see two key effects. First, the 'analysis' parameters significantly correlate with each other in two types of the game. And second, there are essential interactions between researched variables in each game. In individual game variable 'planning' correlate with both variables 'analysis' and 'reflection' whereas in collaborative game there is only one interaction between 'analysis' and 'planning'. As for the variable 'reflection' it doesn't show any correlations with 'analysis' in any type of the game. Such effect seems to be interpreted taking the game type into account. In case of collaborative game participants have free cells in the end anyway so far they spend much more time to make each move. Thus, in such conditions their game field is more 'clear'. But this fact can be caused by the game quality or low motivation when they

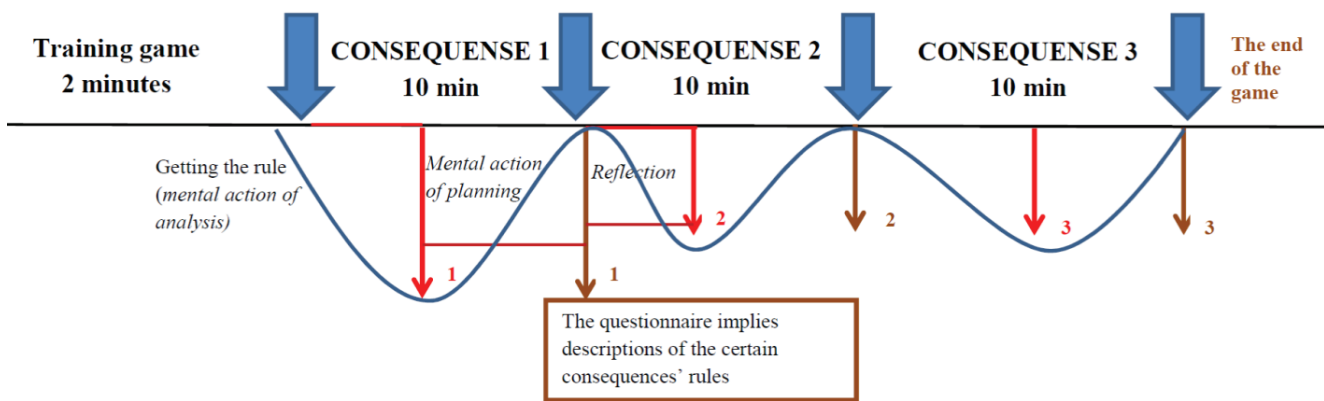


Fig. 4. The structure of the whole computer game process

Table 1

The main differences in means by comparison of two game conditions (SD are displayed in parentheses)

Measure	Individual game	Collaborative game
'Analysis' (No. of correct rules)	3,33 (2)	2,56 (1,61)*
'Planning' (X-parameter of game performance)	4,1 (1,22)	6,44 (3,38)*
'Reflection' (free cells on the last game step)	72,24 (39,38)	121,57 (28,24)*

\* differences are significant at the P-0.000 level.



waste a time instead to work meaningfully. Therefore, in collaborative game cognitive action 'reflection' shifts from individual's thinking process and goes up to the level of discussion and communication. We took another scoring procedure for 'reflection' in further data analysis.

4.2 The data analysis in groups divided by the intelligence criterion

Next step concerns the data analysis in groups. As we previously mentioned participants were divided in pairs by chance. It means that pairs (as well as two partners in one pair) could widely differ in their cognitive abilities. Based on this fact all couples were classified by the intelligence criterion. For this aim the result of APM-test was marked as the 'high level' (above 66,7% of the whole sample), the 'middle level' (lies between 66,7% and 33,3%), and the 'low level' (less than 33,3%) for every student. After that two main groups were revealed, namely: the group 1 with two partners (58 students in

total) of the equal level of intelligence, and the group 2 with two partners (70 students in total) of the different levels of intelligence. Some of the data (10% of the sample) were excluded from the current analysis because of their defect or very low intellectual performance.

At the first step the comparative analysis in mean values for all researched variables was accomplished. The results are displayed in Table 3. This Table doesn't include means in reflection because it was previously clear that the scoring procedure used for the data in individual game doesn't match for the data in collaborative game. Therefore, such means seem to be impossible to compare, and we focus on 'analysis' and 'planning' mental actions more precisely.

ANOVA analysis was used to compare all means. First, it was revealed that participants in the group 2 outperform those from the group 1 in both 'analysis' and 'planning' in individual game ( $F = 13,18; p = 0,001$ ;  $F = 2,79; p = 0,02$ ). Second, individual game conditions provide better chances for 'analysis' in comparison to

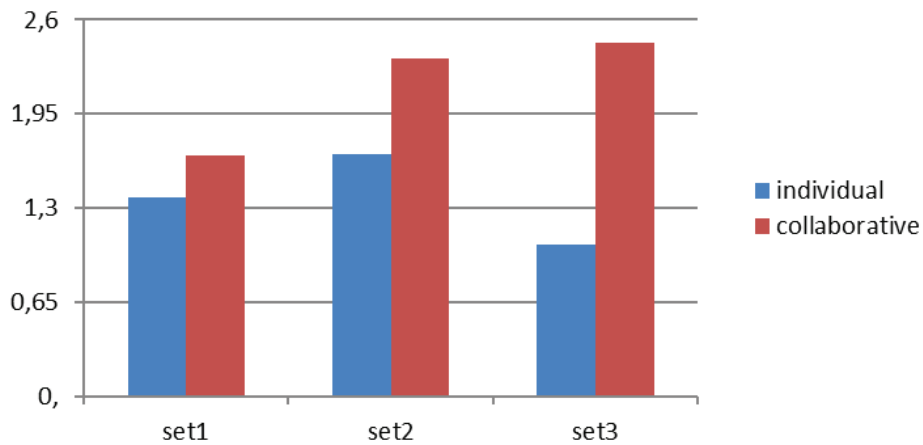


Fig. 5. Means of game performance for each game set

Table 2

The correlation matrix of the interactions between researched variables in two types of the game

Variable	1.	2.	3.	4.	5.	6.
1. Analysis (individual)						
2. Analysis (collaborative)	0,35**					
3. Planning (individual)	0,22**	0,20*				
4. Planning (collaborative)	0,2*	0,21*	0,17			
5. Reflection (individual)	-0,14	0,04	0,48**	0,06		
6. Reflection (collaborative)	-0,03	0,02	-0,03	-0,1	0,06	

\*p = 0.05; \*\*p = 0.01.

Table 3

The main differences in means by comparison of two game conditions in two groups (SD are displayed in parentheses)

Measure Game type	Group 1		Group 2	
	Individual	Collaborative	Individual	Collaborative
'Analysis' (No. of correct rules)	2,63 (1,96)	2,44 (1,56)	4,02** (1,8)	2,75 (1,63)
'Planning' (X-parameter of game performance)	4,15 (0,99)	5,9 (3,51)	4,43 (1,24)	6,89* (3,04)

\*\*p = 0.02; \*p = 0.001

collaborative game. No matter which group is taken for consideration. But completely reversed effect is revealed for 'planning': in both groups participants are better in getting the points in collaborative game. Moreover, students in the group 2 demonstrate the higher level of means in 'planning' than students from the group 1. Significantly, correlations between intelligence and any means in game performance were not shown.

At the second step patterns of the interactions between researched variables were analyzed on each game set. The main effects are shown in *Figures 6 & 7*, and demonstrate different effects on the correlations. In the group 1 the connections between two researched parameters of mental actions is rapidly growing from the first till the last game set. In the contrary, for the group 2 a small acceleration of the correlation coefficients is clearly seen only for individual game, but not collaborative.

To sum up, the present results lead to the following conclusions. Participants exhibit higher game performance in collaborative game. Such effects are shown

in total game points as well as on each game set. Furthermore, different intellectual sources provide additional significant conditions. Students with an equal level of intelligence (the group 1) demonstrate better connection between two higher-order cognitive actions of analysis and planning through the whole game process.

*4.3 Partners' dialogues analysis as cognitive action reflection' in collaborative game*

All participants' dialogues were transformed into the written texts after being listened auditory. The text was prepared for every student and for each game set. All expressions were written without being skipped for a detailed analysis. After that the phrases were divided into six categories by the criterion of participant's attitude to the game and to his / her partner. In the end each phrase was awarded by one point for a concrete category. The categories and expressions examples are presented in *Table 4*.

Not all categories are meaningful as the indicators of the 'reflection' variable. For example, the first and the

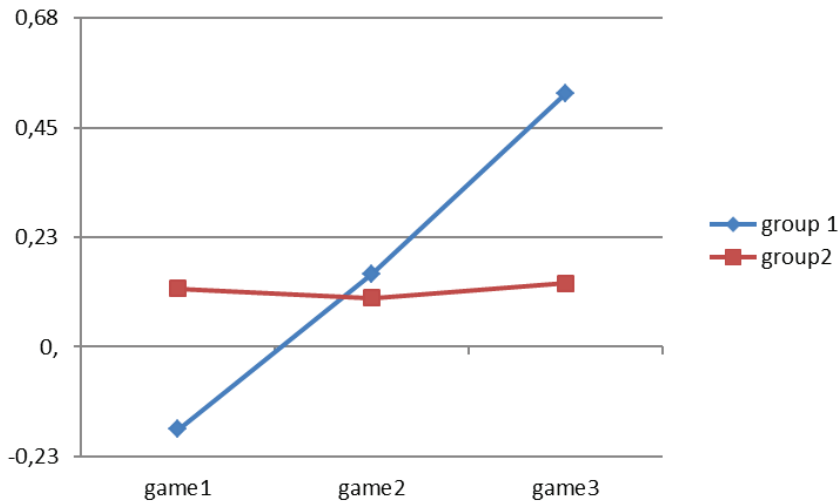


Fig. 6. Correlations between 'analysis' and 'planning' on each game set in individual game

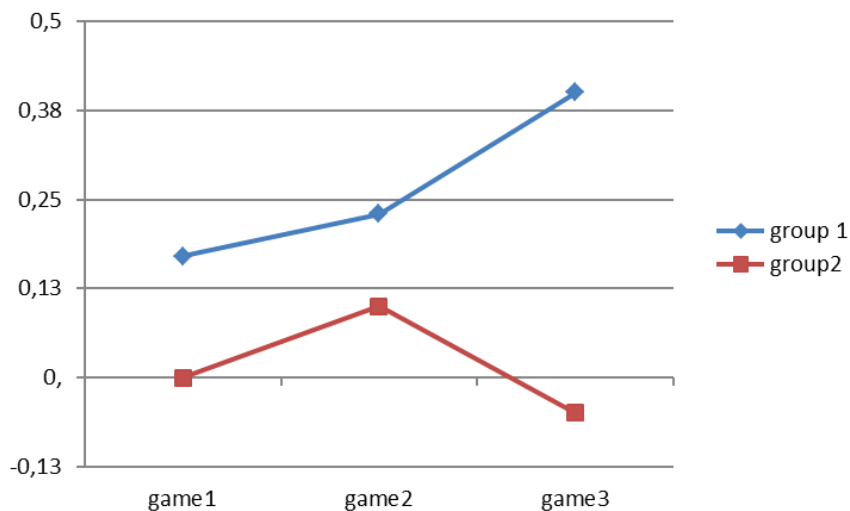


Fig. 7. Correlations between 'analysis' and 'planning' on each game set in collaborative game

second don't have a significant impact on the thinking unless they change game behavior trajectory. But such expressions provide emotional attitude and catalyze generally the game. The third and the fourth category are of a big interest because of their focus on the participant himself or his partner. In this case the fourth 'collaborative' intended category should be correlated with the 'planning' variable as a key parameter of game performance. Finally, the fifth and the sixth categories play the pivotal role by having a substantive direction to the whole game situation. The phrases from these categories are signified as generalized markers of the 'reflection' insofar as they concern to expressions about concrete rules and reflect arguments of how to act to be successful in the game.

Means for the whole sample and two groups are displayed in *Table 5*.

From the present Table we can derive significant differences between two groups of participants almost in each category excluding the fifth. All means are more frequent in the group 1 and show that students with an equal level of intelligence tend to more often interact with each other using different expressions including as much neutral or emotional as meaningful.

At the next step the correlation analysis between the researched parameters — variables 'analysis', 'planning', and each category displays the variable 'reflection' — was accomplished. The main results are presented in *Table 6*.

The present correlations demonstrate general patterns of the interactions no matter which sample is under the spotlight: the robust relation between the 'planning' parameters and means of the last three categories (i.e. 'collaborative intended', 'agreeing', 'changing') is significant for the whole sample and also for each group. Thus,

Table 4

The list of the categories with concrete phrases examples

Category	Expressions
<b>1. Neutral</b> <i>(doesn't change behavior of a participant)</i>	«Shall we begin», «What's that? », «I can't», «Have you moved in this way?», «Where are you moving!»
<b>2. Neutral-motivational</b> <i>(it doesn't participant's behavior in general, but it brings emotional / motivational investment in the dynamic of the game)</i>	«Common, move on! », «Please, approve», «Hurry up, we're just running out of time», «Common! », «Ah! All right! », «Yes, let's make it in this way»
<b>3. Individually intended</b> <i>(when partner talks about his actions or asks his partner to pay attention to his actions)</i>	«I'm making vertical line», «I'm making horizontal line», «I'm making horizontal line», «Amid / cancel my move».
<b>4. Collaborative intended</b> <i>(when participant talks to his partner about his moves or their collaborative actions and plans)</i>	«Make it again», «Let build this line together», «Better to take this ball», «Take balls of the other color» («take balls from this angle... green...blue» etc.), «We need to clear the field», «We need to try this».
<b>5. Agreeing</b> <i>(participant agrees with his partner and accepts his move or cancels his own move, but understands the reason)</i>	«Generally, yes, it is so», «Yes, we take the green one», «I accept», «Yes, I agree, we move in this way», «Yes, all right».
<b>6. Changing (objecting)</b> <i>(an attempt to change partner's behavior with concrete arguments or statement about the game rules)</i>	«We can't build a line in this way», «This move is useful», «This move doesn't bring anything», «This move will destroy a line», «Diagonals are coming this way», «We could get more points in such manner», «It's easier», «Three blue balls are arriving one after another» etc.

Table 5

Means of all categories

Category	Whole sample	Group 1	Group 2
<b>1. Neutral</b>	3,61	4,63	2,86**
<b>2. Neutral-motivational</b>	16,20	21,1	12,58**
<b>3. Individually intended</b>	3,91	4,1	3,79*
<b>4. Collaborative intended</b>	13,44	15,00	12,28**
<b>5. Agreeing</b>	1,14	1,13	1,16
<b>6. Changing (objecting)</b>	1,72	2,19	1,37*

\*p = 0.05; \*\*p = 0.01.

Table 6

The correlation matrix of the interactions between researched variables in collaborative game

	Whole sample		Group 1		Group 2	
	Analysis	Planning	Analysis	Planning	Analysis	Planning
1. Neutral	-0,23*	-0,37**	-0,28	-0,51**	-0,13	-0,22
2. Neutral-motivational	-0,34*	0,11	-0,24	0,22	-0,32*	0,34*
3. Individually intended	-0,13	0,44**	-0,25	0,18	-0,1	0,61**
4. Collaborative intended	-0,15	0,60**	0,1	0,80**	-0,27	0,63**
5. Agreeing	0,02	0,51**	0,27*	0,82**	-0,17	0,39*
6. Changing (objecting)	-0,18	0,49**	-0,1	0,72**	-0,22	0,55**

\*p = 0.05; \*\*p = 0.01.

we can conclude the deep connection between such variables as ‘planning’ and ‘reflection’ which represent two key mental actions for successful problem solving.

Another significant interaction ties ‘planning’ parameter with the mean of the fourth, ‘collaborative intended’ category. This empirical fact let us discuss about the validity of participants’ dialogues as significant markers of their verbal reactions catalyzing the game process. The effect of the stronger correlation between ‘planning’ and means of the three last categories popping up in the group 1 is also important of additional notion. It points to better mental possibilities for successful game problem solving.

On the other hand, weaker correlations are obvious when it comes to the variable ‘analysis’: its connection to the categories whether negative or of low significance. The exception concerns again the group 1 where positive correlations are seen in case of the fifth category. Thus, this is the group 1 which can be an appropriate example of the interactions between three researched higher mental actions of analysis, planning, and reflection.

## 5. General discussion

The present study was aimed at testing the computer game system ‘PL-modified’ as a diagnostic tool for measurement of higher-order cognitive skills by middle-school students in individual and collaborative game. For this purpose two versions of the system were elaborated: the first one is for an individual game, and the second one was set for a collaborative game where participants had to work together – at the verbal and behavioral level by splitting individual game actions under conditions of making a joint game decision (step) – to get more points. All parameters of game performance were compared then for the whole sample as well as in two groups divided by the intelligence level criterion.

The results let us derive the following key conclusions. First of all, the main parameters of game performance assessed by the proportion of total game points to the number of game moves are higher in collaborative game. These effects are to be increasing at each game set by keeping positive game dynamic. Such results partially confirm the hypothesis that participants will exhibit the higher level of cognitive actions in collaborative game in contrast to individual game. These differences are specified in the

faster dynamic of getting the game points, and the higher total game points. Thus, we can also deduce that this is the collaborative game which provides good conditions for participants learning to communicate and better understand each other. Unlike the individual game where game performance decrease can be caused by faster fatigue and exhaustion of motivation to further play.

At the same time, the above mentioned effects are relevant for the cognitive action planning, but not for the analysis which parameters were higher in individual game. We assume that such results can be partially explained by the very way of how the variable was assessed. In all cases participants picked the rules individually, even in collaborative game. This measurement procedure was initially introduced because of some technical reasons. We also aimed to separate the input of every kid in rules awareness and to stick to more valid conditions by making the data statistically comparable. Nevertheless, the correlation analysis revealed significant interrelations between the data of the ‘analysis’ variable in two types of the game that confirms the correctness of the used measure technique. Thus, we can conclude that participants simply see more rules in individual game.

On the other hand, the correlations between the variables of ‘analysis’ and ‘planning’ demonstrated more robust interactions in collaborative game – the fact that stresses deeper connections of two mental actions in collaboration. As for reflection then this variable was the most difficult to be scored because of qualitatively various game conditions. Thus, in case of collaborative game the micro-analysis of the dialogues was undertaken and revealed significantly high correlations between parameters of ‘planning’ and ‘reflection’, and (in some cases) ‘reflection’ and ‘analysis’. In general, the interactions between three researched higher cognitive actions obviously manifest themselves in collaborative game. The present empirical facts statistically confirm that three researched variables are correctly represented and scored by the elaborated game procedure. Moreover, these main data confirm those revealed in the previews study (Margolis et al., 2020) about the relations of the mental actions of analysis, planning, and reflection. For its part these data concern to our first research question about the correlations of the cognitive actions as a valid indicator for the ‘PL-modified’ computer system and make to outline appropriate prospects for its usage as a potential diagnostic tool in education.



Another one important result highlights the impact of individual differences on the major effects. Both types of game performance seem to be determined by the level of the higher-order cognitive actions of analysis, planning, and reflection as well as the patterns of their interactions. However, manifestation of the above mentioned cognitive actions is additionally caused by the factor of different cognitive abilities (for this game there is equal / unequal intelligence) as well as main game results depend (qualitatively and quantitatively) on cognitive abilities of partners' interactions. The pairs with an equal intellectual level generally play more effectively. This impact is shown in positive dynamic of the interactions between game parameters and (in some cases) higher final game performance.

Such results coincide to a certain extent with those detected by Perret-Clermont(1991) who stated that cognitive development is determined by a special form of human's interaction when a person deals with various thoughts and meanings. A child stimulates his own development by coordinating his opinion with others, and summoning socio-cognitive conflict which in its turn leads to intelligence development. Taking this position into account we were not focusing on the intellectual development precisely, but considered children cognitive sources with a big attention. And it turned out that namely this factor – of an equal intellectual level – played an important part in general effects.

Finally, the meaningful and thoughtful collaboration of partners provides better comprehension of the game rules, and as a result better game itself. This outcome is expressed in higher game points. Thus, the real intellectual activity in collaborative work seems to be more difficult than the traditional scheme of a direct connection between an action and an output. And forms of the partnership create space of possibilities which encourage potential patterns of interactions under different psychological factors.

To sum up, the present conclusions let consider the key collaborative game parameters as additional diagnostic markers for the level of higher mental actions by middle-school students so far the effects were shown on the whole sample as well as in two divided groups. Meanwhile this is worth of notion that there are not direct and simple connections between assessed variables without consideration of various internal and external factors. Collaborative game doesn't simultaneously lead to a better result, but does form many start-up chances for potentials expressed in concrete forms of mental actions.

For the computer game system itself the results let clearly characterize the potential advantages for its usage as a supplemental diagnostic tool since the system obtains psychological and technical possibilities including time limits, big motivational attractiveness, its speed, easiness and also accuracy whilst empirical data will be testing and processing. Furthermore, the system implies measurement of multiple cognitive actions at one time period and in terms of one type of activity which involves not just simple gaming process, but also information analysis and thinking of a strategy before trying to solve a problem. In this context the present computer system can be also observed as a learning tool which is supposed to enhance

players' problem solving skills. Some positive steps were done by Adachi & Willoughby (2013) in this domain. They argued that exactly strategic video-games promoted self-reported problem solving skills and indirectly predicted academic grades. We gather that the current findings let the present system to be incorporated into educational process in the future. The measurement of the whole process of the present problem solving while playing a game let to analyze more comprehensive presentation of cognitive actions in their internal form (as mental actions). On the other hand, such representation appears also as a form of social interactions by creating not only a context of joint playing actions, but manifesting itself in external way by a dialogue with a partner of communication. In general, these modern game-like diagnostic tools allow studying more subtle psychological phenomena and overcoming traditional static measurements that capture only single elements of a researched object instead of considering their real interactions. Thus, the elaborated 'PL-modified' computer game system seems to be more valid as a new potential instrument taking its closer correspondence with the real thinking process during a concrete (here game) activity into account.

#### *5.1. Limitations of the study and its further prospects*

While the main hypothesis of the study was confirmed, some limitations should be acknowledged. First, we studied and compared the effects on the sample which includes only two schools. The fact that school children from one school can have some cognitive edges and advantages in learning process must be taken into account. Although the intellectual impact was deliberately controlled and wasn't strongly revealed on the whole sample which means that such participants couldn't have and use any intellectual benefits from game performance in advance. Secondly, the potential gender differences were not analyzed. Since female participants are generally more motivated by challenge games (McDaniel et al., 2012), some gender effects should be taken in the focus of the future studies.

In general, the whole diagnostic potential of the computer system must be anticipated with a sufficient caution since it is not fully studied. The following research prospects are worth of being outlined:

1. the researched sample must be extended by recruiting students of different ages, academic performances and those who stick to diverse educational processes and learning methods. Such methods will allow expanding the psychological relevance of the results up to the general sample of Russian school-children;
2. an increasing number of cognitive tested parameters makes the accurate and differential measure of students' cognitive potential more possible;
3. the flexible properties of the whole game system imply varied forms of the organization of the game process in the future. As an example in certain circumstances the collaboration of participants whilst they are solving game tasks not exactly in pairs, but in small groups will allow to study their different individual traits including social intelligence, communicative abilities, and other social and cognitive patterns.

## 6. Conclusions

The present study was aimed at testing the computer game system 'PL-modified' as a special diagnostic tool for the measurement of higher mental actions by middle-school students in individual and collaborative game. We took the sample of children at the age of 11–12 years to prove whether the higher mental actions of analysis, planning, and reflection measured by special markers of the elaborated computer game system are correlated with each other as a valid indicators of a new appropriate diagnostic instrument. The factor of the game type – individual and collaborative – was also controlled to reveal better conditions for manifestation of the higher mental actions level. Another independent variable was abstract intelligence. The results showed that participants exhibit the higher level of the mental actions of analysis and planning in collaborative game. Moreover, the present game type provides the more robust interactions between the mental actions of analysis and planning, and planning and reflection. Furthermore, the strongest patterns of these correlations between the researched variables were demonstrated by those pairs of participants whose intelligence levels were rather equal. Thus, the main hypothesis was

confirmed and let derive some important advantages by using the tested computer game system as a potential future diagnostic tool.

### Informed Consent from the Participants' Legal Guardians

Written informed consent to participate in this study was provided by the participants' legal guardian.

### CRedit authorship contribution statement

**Arkady Margolis:** Conceptualization, Methodology, Supervision. **Evgeniya Gavrilova:** Investigation, Formal analysis, Writing – original draft, Writing – review & editing. **Lev Kuravsky:** Conceptualization, Methodology, Supervision. **Elena Shepeleva:** Investigation, Formal Analysis, Writing – review. **Vladimir Voitov:** Visualization, Software, Formal analysis. **Sergey Ermakov:** Investigation, Writing – review. **Pavel Dumin:** Formal Analysis.

### Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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## **Оценка умственных действий с помощью компьютерной системы в условиях взаимодействия с партнером**

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Исследование направлено на разработку и тестирование компьютерной игровой системы 'PL-modified' как инструмента диагностики универсальных учебных действий (далее УУД) у учащихся среднего школьного возраста в двух условиях проведения игры: индивидуально и в игре в паре с партнером. 'PL-modified' представляет собой компьютерную систему в формате игры с разработанными параметрами оценки мыслительных действий анализа, планирования и рефлексии — ключевых УУД, необходимых, согласно теории развивающего обучения, для успешного обучения. В исследовании принимали участие 189 учеников в возрастном диапазоне 11–12 лет. Были сформулированы два главных исследовательских вопроса: 1) существует ли взаимосвязь между измеренными показателями анализа, планирования и рефлексии как основной идентификатор валидности разработанной компьютерной системы; 2) какой тип игры — индивидуальный или в паре с партнером — представляет лучшие условия для проявления высоких показателей оцениваемых УУД. Общий интеллект также оценивался и независимо контролировался. Результаты исследования показали более высокий уровень анализа и планирования в условиях игры в паре с партнером. Более того, паттерны взаимосвязей между оцениваемыми параметрами УУД, равно как и отдельные характеристики игровой результативности, зависят от уровня интеллекта, который демонстрируют пары игроков (уравненные vs. не уравненные по уровню интеллекта). Представленные эмпирические факты обсуждаются с точки зрения перспектив использования системы 'PL-modified' в качестве потенциального инструмента диагностики и развития УУД. В рамках современных образовательных программ учителя и психологи нуждаются в простых и относительно легких диагностических методиках оценки умственных действий школьников. В то же время традиционные бумажные тесты не всегда способны мобильно реагировать на запросы диагностической ситуации, поскольку не учитывают мотивационную составляющую и концентрируются исключительно на конечном результате мышления. В связи с этим представленная компьютерная система, включающая игровой формат диагностики и фокусирующаяся на процессуальных характеристиках оцениваемых когнитивных конструктов, имеет большие диагностические возможности, поскольку в перспективе может предоставить содержательную информацию о динамических аспектах мыслительного процесса.

**Ключевые слова:** компьютерная игровая система 'PL-modified', универсальные учебные действия, индивидуальная игра, игра в паре с партнером, интеллект, принятие решения.

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**INNOVATIVE PRACTICES:  
LEARNING, DEVELOPMENT, UPBRINGING**  
**ИННОВАЦИОННЫЕ ПРАКТИКИ:  
ОБУЧЕНИЕ, РАЗВИТИЕ, ВОСПИТАНИЕ**

# Experimenting with Roles in Adolescence: Applying Drama for Constructing the Zone of Proximal Development

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In 2019 a multidisciplinary research project “Digital Storytelling Theater” was launched in Moscow State University of Psychology and Education. The project aims at elaborating, evaluating, and introducing drama technologies into secondary school settings with the goal of applying them as a powerful tool for learning and development. The article focuses on the ways, in which drama can be used for constructing the zone of proximal development in adolescence. It is argued that not any kind of drama-based activities is consistent with the principles of a developing environment in the framework of the Cultural-Historical Paradigm. Creating such a setting is a challenging research task, which requires organization of such types of activity and interaction as role exchanges and reflexive communication. On the example of creating a play with a class of adolescents, it is demonstrated how drama, based on role experimenting, can contribute to overcoming group contradictions, boosting learning motivation and turning personal “pereghivaniye” into a resource for development (on the experience of living through the pandemic of COVID-19).

**Keywords:** adolescence, zone of proximal development, drama, theater, social role, experimenting with roles, pereghivaniye, joint activity, reflexive communication.

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## Introduction: social role as a unit of analysis

Adolescence is probably the most controversial age period in the framework of the Cultural-Historical Theory. Though it regularly becomes the focus of research, there is still no consent even on such fundamentals as the leading activity and the new formations, as well as on the very character of this psychological age (critical or stable). In comparison with the other life periods, elaborated in CHT, its structure remains poorly designed and rather unclear [8, p. 72–74]. A possible explanation for this paradox might be the complexity of spotting the “ideal form” for the age, which lies on the boundary of childhood and adulthood. Obviously enough, the “ideal” form of adolescence should be connected with the pro-

cess of socialization — that is, with the transition to the “world of adults”. However, revealing the developmental mechanisms behind this transition is challenging indeed.

For facing this challenge, a unit of analysis is needed that could be applied for analyzing both individual and social aspects of the transition. This unit of analysis was suggested by L.S. Vygotsky in his unfinished, thus little-known work “Concrete Human Psychology”, where he introduces the concept of **social role** and coins it as a mechanism that regulates the relationship between higher mental functions: “*Social roles (judge, doctor) determine the hierarchy of functions: that is, functions change hierarchy in different spheres of social life. Their collision = drama*” [15, p. 1030]. This short yet comprehensive remark indicates that social roles may be consid-

ered **signs**, which regulate human behavior. In the same text L.S. Vygotsky argues that studying the hierarchy of higher mental functions and, consequently, roles as their regulating mechanisms, represents a fundamental research aim in relation to adolescence: *“The task in adolescents ... to study different spheres of behavior (professional complex etc.), the structure and hierarchy of functions, their relations, and collisions”* [15, p. 1031]. Thus, for L.S. Vygotsky, understanding the content of development in adolescence requires the analysis of “role dramas” that emerge when a child starts to get actively involved in the system of social relations. The question is: why the research aim, formulated by L.S. Vygotsky, has remained almost neglected by CHT scholars for over one hundred years?

The answer to this question is intricately linked with the history of the concept of “role” in Russia’s psychological tradition. For a long time, this term was literally forced out of developmental psychology (except for the role in children’s play), and its content was reduced exclusively to a set of social functions that an individual performs depending on the surrounding social context. The most vocal opponents ascribed to the concept a connotation of “hypocrisy” and “programmed behavior”, which still seems to persist in Russia’s psychology [8, p. 73–74].

The standpoint of the founder of the CHT was quite different. In his work [15] L.S. Vygotsky clearly indicated the regulating function of social roles as of cultural signs. And, since signs are interiorized, it is impossible to perceive roles as some kind of “masks” imposed on the individual “from the outside”. Moreover, exactly as “perezhivaniye”, considered by L.S. Vygotsky as a unit of personality and environment, which reflects the unity of social and personal aspects of the developmental process, *social roles* act as double-facet units, directed both “in-ward” (individual plane) and “out-ward” (social plane). The “individual content” of the role is determined by the personality, while its “social content” relates to the cultural-historical context. Roles as social functions are thus never simply “played out” by the individual. They are always refracted through the personality and creatively “lived through”<sup>1</sup>.

Thus, interpreting roles from L.S. Vygotsky’s perspective opens a new dimension for understanding the process of development in different psychological ages — particularly, in adolescence, which is apparently the sensitive period for interiorizing roles and role patterns. It is by acquiring new roles that adolescents “enter” the adult world and try to find their place in the complex system of social relationships existing in their culture. This complex system of relationships, represented by various social roles, may be regarded as the **“ideal form”** of adolescence. Interactions with this “ideal form” presuppose adolescents’ acquiring (interiorizing) roles as specific cultural signs, which may be regarded as the **main content of development** during this age period [8].

Since any kind of sign interiorization does not happen immediately, certain time and space is needed for

“trying the roles on” and experimenting with various patterns of role behavior. **Experimenting with roles** may be thus perceived as the **leading activity** of adolescence, where new formations of this age period (including theoretical thinking, reflection, and self-awareness<sup>2</sup>) emerge and develop.

This point of view can be illustrated with the examples of adolescents’ everyday practices, as “role experimenting literally permeates them” [6, p.40]. In whatever interactions adolescents emerge — creating profiles and making friends in social networks, joining a subculture etc. — they seem to be testing images and piloting role patterns. These explorative, play-like activities are spaces for adolescents’ development, since it is through these practices that they give content to the roles they acquire and make them personally meaningful.

From this perspective, constructing the zone of proximal development in adolescence requires conditions where adolescents could creatively experiment with roles. Drama is one of the means for creating such environments in a school setting.

### Methodology: drama as a tool for constructing the ZPD

In the last few decades different kinds of drama-based pedagogies have widely spread all over the world. Theater and drama are applied for resolving various developmental, educational, and cultural tasks [1], [2], [3], [4], [10], [12], [14]. They are also used as tools for socialization and rehabilitation of different groups of children and adolescents, including those with poor social backgrounds or special educational needs [9], [11], [13]. In many countries drama is step by step earning a place in the national curriculum, where it is applied both for teaching content in specific disciplines as well as for developing life competences and soft skills.

The growing popularity of drama may be explained by its demonstrated effectiveness, particularly in the work with adolescents. Research shows that adolescents are willing to engage in drama activities and are likely to remain motivated for participation for longer times in comparison with other learning formats [4]. However, there is not much evidence, why does this happen, and what psychological mechanisms determine this engagement.

We may assume, that attractiveness of drama for adolescents relates to the developmental content of this age period. As mentioned above, one of the main psychological tasks in adolescence consists in acquiring new cultural signs — social roles, which is done through experimenting with them. Theater and drama represent perfect spaces for these experiments, which allow to try on roles and role patterns. This basic feature of drama-based activities is often intuitively used by teachers and educators, who are in search for ways of engaging adolescents in the learning process. However, if we want to apply

<sup>1</sup> «Переживаются» и «проживаются»

<sup>2</sup> Понятийное мышление, рефлексия и самосознание

drama as a developmental tool, we need to understand how exactly it can create the zone of proximal development and deliberately use this knowledge in the work with adolescents.

A few words now need to be said about the concept of ZPD in relation to adolescence. Most often ZPD is considered in the context of child-adult interactions, where the adult, as the bearer of the “ideal form”, literally “guides” the child, and the child, in their turn, interiorizes the “ideal forms” of the adult [16]. In this context, while constructing a developing environment, the accent is put on *interiorization*, when external processes turn into internal functions.

There is yet another possible “reading” of ZPD, which is elaborated, particularly, by V.V. Rubtsov, and is exclusively interesting in relation to adolescence. This interpretation considers ZPD in terms of joint activity, which triggers profound changes in all the participants of the interaction, including the adult [7]. From this perspective the adult is not the one, who is “guiding” the child, but rather the one creating a space for an engaging interaction (here the Russian word “obshchnost”<sup>3</sup>, designating a particular kind of community, is appropriate to use). This approach emphasizes “pereghivaniye”, emerging in the process of joint activity, and turns the interaction into a series of “micro-dramas”, which result in qualitative developmental shifts. It also allows to focus not exclusively on the process of interiorization, but also on that of *exteriorization*, paying attention to the inner contradictions and emotions that reveal themselves in the process of interaction (fig. 1).

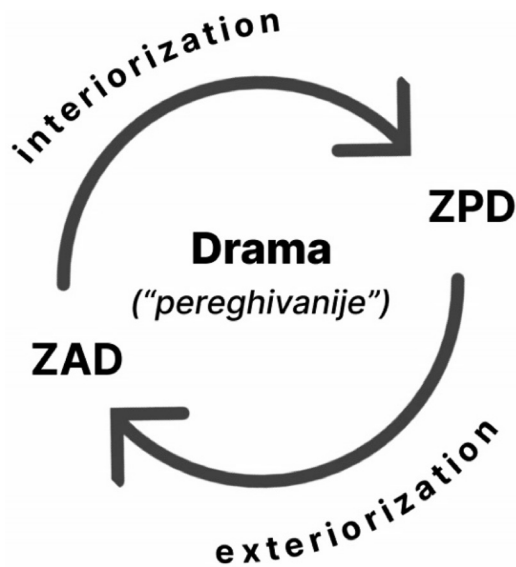


Fig. 1. Applying drama for constructing the ZPD

However, as O.V. Rubtsova and T.A. Poskagalova argue, not any kind of drama-based activities may be perceived as a developing environment [10]. Very often drama in school settings is reduced to a format, where the teacher

chooses a scenario for a performance and distributes roles that adolescents are supposed to play out. Students are rarely given the chance to creatively contribute to writing of the scenario, or to the elaboration of characters.

To become a tool for constructing the ZPD in adolescence, it is essential that:

- *drama is regarded as a process-oriented, rather than a product-oriented activity*; this does not imply that the final product (performance, improvisation etc.) is not important; it rather implies, that the process of its preparation is not less important than the final product per se;
- *drama-making process allows to engage adolescents in different kinds of activity*, which means that adolescents do not just play out roles, but also contribute to play writing, costume making etc;
- *drama-making process provides opportunities for experimenting* – particularly, with various roles and means of interaction, which presupposes role exchanges during the drama-making process;
- *drama is perceived as a “safe” place*, which means that adolescents are encouraged to experiment, to express themselves, and are not afraid of a failure or of a bad mark;
- *sessions of reflection (reflexive communication) are included into the drama-making process*, which means that adolescents are encouraged to reflect upon their interactions, discuss *what* and *how* they are doing in the process of joint activity, and share their emotions from the process.

Thus, applying drama for constructing the ZPD in the work with adolescents requires creating a particular kind of setting, where different types of interactions are intentionally organized in a way, that could encourage for experiments. The more diverse opportunities for trying and experimenting are provided, the more powerful the setting is from the developmental perspective.

An attempt to create such a setting was made in the framework of a research project, operated by Moscow State University of Psychology and Education in 2019–2021.

#### Research Project “Digital Storytelling Theater”<sup>4</sup>

##### *A brief overview*

In 2019 a multidisciplinary research project “Digital Storytelling Theater” was launched by MSUPE in the Center for Interdisciplinary Research on Contemporary Childhood. The project aims at introducing drama technologies into secondary school settings and applying it as a powerful tool for learning and development in adolescence. Within the framework of the project, the research group seeks to trace the influence of drama activities on learning motivation, communicative skills, reflexive abilities, critical thinking, and academic performance. It also aims at revealing the potential of using drama for boosting adolescents’ well-being.

<sup>3</sup> Общность.

<sup>4</sup> More information about the project is available at Digital Storytelling Theater – CIRCC (childresearch.ru)



In the framework of the project theater is perceived as a particular kind of communicative educational environment, where adolescents can experiment with social and psychological objects – roles, positions, and relationships. The elaborated model of the “Digital Storytelling Theater” does not focus on the final product (play/performance) per se, but rather on the very process of its creation. The participants of the project are involved in various types of activity, including play writing, filmmaking, video montages, creation of costumes and scenery. The diversity of activities and the possibility of changing roles allows the participants to experiment and to “try out” different means of interaction, which is essential for constructing the ZPD in adolescence.

In the period from October 2019 to May 2021 the research group:

- organized over 100 drama sessions with 303 adolescents from 4 schools in Moscow and Moscow Region;
- put on 3 plays, based on the scenarios, written by adolescents;
- shot and analyzed over 150 hours of video recordings of the drama sessions, workshops and rehearsals;
- recorded and analyzed over 50 interviews with the participants of the project, including adolescents, teachers, and school psychologists.
- analyzed over 200 adolescents’ reflexive diaries.

Because of the space constraints, the present article focuses on the experience of organizing drama only in one of the schools and, particularly, on those aspects of the research, which are relevant to the issue of constructing the ZPD.

#### *Research design.*

The research was conducted in a secondary school in the town of Stoopino (Moscow Region) from October 30<sup>th</sup>, 2020, to May 14<sup>th</sup>, 2021. 89 adolescents aged from 12 to 16 (forms 8 “B”, 8 “G” and 6 “N”) participated in the experiment. The experimental program consisted of 40 drama sessions, in which students from different forms took part. The sessions took place once a week and lasted for 1 hour 30 min. The sessions were led by two facilitators (members of the research project).

*Methods*, applied in the framework of the research, included:

- participant observation;
- analysis of the interactions between adolescents at different stages of the playmaking process;
- analysis of the products of the activity (scripts of the plays, written by adolescents; videos, shot by adolescents and used in the performance; sketches of sceneries and costumes etc.);
- testing before and after the drama project in experimental and control groups (testing included questionnaires on learning motivation, communicative skills, emotional intelligence, critical thinking, reflective abilities etc.);
- interviews with students and teachers at different stages of the drama project;
- analysis of reflexive diaries, filled in by the participants after each session;

- analysis of the interim and final scripts of the plays, written by the students.

The project included 6 stages, with each stage having its aims and working strategies. The research group set concrete goals for each stage, as well as for each drama session. Working strategies were adjusted for each session based on facilitators’ feedback after the sessions and adolescents’ reflexive diaries.

Data, collected in the framework of the project, was analyzed from different perspectives and with the help of various tools, including quantitative and qualitative methods. The results of the testing before and after the experiment demonstrate tangible shifts in communicative skills, reflexive abilities and learning motivation of adolescents, who took part in the drama project. However, this analysis is out of the scope of the paper. The present article focuses exclusively on the ways, in which drama was applied for constructing adolescents’ ZPD.

#### *Data analysis.*

**Stage 1. Introduction to the project.** During the first stage of the project the research group organized regular meetings with the teachers and school administrators. The meetings were designed for discussing the main objectives of the project and receiving more information about the students, involved in it. The analysis of the interviews with the teachers and administrators, as well as the data, received from participant observation and adolescents’ reflexive diaries in the first weeks of the project, testified that many students demonstrated poor academic achievement and extremely low learning motivation; many of them also had problems in communication both with the teachers and classmates. Moreover, in one of the classes there was a rather tense confrontation between a group of the class “leaders” and an adolescent with special educational needs. According to the school psychologist, Olga V. Shvedova, before the start of the project *“form G. has been going through an exceedingly difficult period. Most of the students in the class seemed disengaged and demotivated, it was extremely difficult to raise their interest during the lessons. This situation was aggravated by the general stress, caused by the pandemic. Moreover, the class was split into small groups, with one adolescent with special needs being literally an “outcast” of the group. He was constantly ousted from the group, and made fun of, and we couldn’t succeed in changing this situation”*. Thus, the major request from the school was to boost adolescents’ learning motivation and help in instilling a team spirit, particularly in form “G”.

The fact that the class was split into groups was evident from the character of interactions during the first drama sessions: adolescents refused to exchange partners, with some of them obviously ignoring the others. Many participants also demonstrated high levels of stress and anxiety, which was most probably due to the pandemic and uncertainty that it caused.

Careful analysis of the data, collected in a two weeks’ period, allowed the research group to outline the contours of the ZPD for the participants of the project. It embraced:

1. overcoming contradictions between the classmates and creating a more positive learning environment;
2. exchanging experience of living through the pandemic and transforming it into a resource.

The work with adolescents started with a few introductory sessions, where they were provided with information about the project and the members of the research group. During the introductory sessions, the facilitators organized “warming-up” exercises, which included role playing improvisations, storytelling, “tableaux”, “hot-seating” etc. The aim of these sessions consisted in motivating adolescents for taking part in the project and bringing together the groups, which the classes were split into. There were also a few workshops aimed at teambuilding and development of communicative skills. The “warming-up” exercises were later embedded into the structure of the sessions at all stages of the project and proved to be efficient for engaging adolescents in the drama-making process.

**Stage 2. Exchanging experience.** At the second stage of the project adolescents were asked to share their experience of living through the pandemic in the spring of 2020. The first sessions within this stage turned out rather challenging for the participants. The analysis of the interactions at this stage of the project allowed to identify at least two groups of emerging difficulties:

- stiffness; fear to speak about personal feelings and emotions;
- communicative challenges: difficulties in formulating messages, receiving and providing feedback.

In reflexive diaries adolescents often reported, that discussing something with classmates, formulating messages, providing feedback, and coming to a consensus was particularly challenging: *“I find it difficult to express my ideas and make others understand, what I mean”; “I often fail to find the right words for explaining my point of view”; “It’s really difficult for me to listen to others in the process of discussion”* etc.

For facilitating adolescents’ work at this stage, the members of the research group elaborated numerous tasks, including writing narratives on behalf of different inanimate objects, which surrounded adolescents during the lockdown (smartphone, pillow, refrigerator, chewing gum etc.). The participants wrote short stories and even poems, focusing on their personal experience; they also made videos featuring their flats and rooms, where they spent time during the lockdown. Later on, adolescents were encouraged to read their stories to each other, exchange opinions and find similarities in their experience. There were also tasks on acting out their narratives and making improvisations based on their “pereghivaniye” of the situation. Finally, the participants were challenged to find examples of artistic works (poetry, fiction, non-fiction), featuring outbreaks of diseases.

During the sessions, adolescents described the situation of lockdown in terms of “boredom”, “fear”, “anger” and “anxiety”. Many of them also gave negative feedback on distant learning, which they considered “badly organized” and “demotivating”. Data showed that the situation of lockdown was a truly “dramatic” experience for adolescents, who witnessed their rela-

tives and friends being ill, going to hospitals and some of them dying. Sharing this personal experience with each other was at first rather difficult for the participants. Adolescents were not used to discussing their “pereghivaniye” in a classroom and it took a few sessions before they started freely describing their feelings and emotions. However, that was a turning point for “breaking the ice” in the relationships between the groups. During the sessions the participants discovered a lot of new things about each other; they also found out that they often experienced the same feelings, and facilitators used this a basis for building mutual understanding between the confronting groups.

**Stage 3. Writing of the scenario.** The third stage of the project was devoted to creating a scenario for the play. Adolescents were invited to make up a plot, based on their experience of the lockdown. For assisting adolescents, the facilitators introduced the participants into some theoretical aspects of playwriting, illustrating them by examples from the course of literature. The participants were then split into small groups and each of the groups was working on one of the scenes for the future play. The work in groups alternated with general discussions with the class. Within two months adolescents created a scenario of an original play.

The plot of the play is centered on the experience of a young Boy, who is bored by the lockdown and suffers from loneliness in his room. While reading a book for his literature class, he takes a pen and writes a poem about a girl whom he likes. Then he sends the poem to one of his classmates, who makes fun of him. Frustrated and angry, the Boy tears apart the paper with the poem and sits down on the floor. While he is overwhelmed, Emotions and Feelings (Anger, Anxiety, Disgust) surround him and start arguing with each other, what he shall do (see Fig. 2, illustrating the episode, where Disgust is talking with the Boy). Finally, the Boy falls asleep. He dreams, that the famous Russian poet A. Pushkin comes into his room and tries to persuade the Boy, that he must keep writing poems, no matter what the others think of that. Encouraged by the poet’s words, the Boy wakes up and posts his poem on Facebook. At the end of the play, the objects in the Boy’s room come into the light and tell their stories of living through the pandemic in the room of the main character.

It is important to highlight, that the play was written exclusively by adolescents. The facilitators’ role consisted in encouraging adolescents for discussing the plot with their classmates and motivating them for working in groups. The facilitators also gave ideas about how the narratives, created at the second stage of the project, could be introduced into the play. However, the final decision about *what* and *how* to include was always made by adolescents.

Data analysis at this stage echoes many findings of P. Smagorinsky and J. Coppock, who conducted research on applying drama in teaching literature. The researchers emphasize the role of dialogue in students’ collaboration, since the dialogue helps them mediate their understanding of the story: “The production of the text appeared to serve two complementary functions. On the one hand, the dramatic text represented the students’



Fig. 2. The Boy and the Feeling of Disgust (photo of the final performance)

thinking about the story as they interpreted it through their experiences and knowledge. ... At the same time, the creation of the dramatic text helped shape the students' thoughts about the story" [12, p. 386]. Another important issue were the collisions, which frequently emerged between the participants in the process of discussing the plot. Exactly as mentioned by P. Smagorinsky and J. Coppock, "The interactions within the group suggested that collaborative learning is not always the harmonious interaction it is often portrayed to be" [12, p. 385–386]. In our research it was indeed full of dramatic contradictions between the students, arguing who was to play which role, what words would be more appropriate for this or that character etc. However, despite the frequent dissonance, the work of the groups turned out to be very productive, and the students were willing to find a solution and move forward in their work.

**Stage 4. Play production.** At this stage, the participants split into three groups with each of them concentrating on a particular task, connected with the play production. One group of adolescents was involved in the play as actors; the other one was responsible for costumes and scenery, the third one – for multimedia and digital effects. There were also smaller teams within the two groups, focusing exclusively on the light, sound etc. Each group was offered a series of workshops including those on acting, scenic speech, stage movement, digital media etc. Adolescents could decide, which of the groups they wanted to join. They could also contribute to different groups, with some of them performing a role and at the same time participating in the creation of scenery or making videos for the stage screen.

An important element of this stage were role exchanges. Adolescents were encouraged to "move" between groups, providing feedback on the works of the other groups, and coordinating efforts to make the performance a holistic piece.

At this stage of the project an interesting episode took place. During one of the sessions the class was given a creative task on expressing emotions. The task

turned out rather challenging for adolescents. However, adolescent with special educational needs succeeded in completing the task in a very original and creative way. As adolescents wrote in their reflexive diaries after the session "*N.'s creativity at the session was absolutely astonishing*" and "*No one could have expected N. to be such a talented person*". This episode was a turning point in changing the group's opinion about N. It also was a turning point for N. himself, as he wrote in his reflexive diary after the session: "*I've discovered something about myself today. I didn't expect myself to be capable of things that I did today*". By the end of this stage qualitative shifts occurred in the character of interactions between the participants of the class. Adolescents became much more flexible in switching partners and moving within groups in the process of joint activity. There was also a change in the relation to N., whom adolescents started to include in their interactions.

**Stage 5. Reflexive communication.** At this stage of the project the participants were encouraged to reflect upon the work that they have been doing. In fact, this stage did not take place only once, but it was embedded in every session, since adolescents were constantly encouraged to share their thoughts and emotions, give feedback to the work of the classmates, and fill in reflexive diaries for each session. Reflexive communication was organized in different formats: adolescents exchanged ideas in small groups and in a big circle; they were also invited to take part in numerous activities, aimed at boosting their reflexive skills.

As a particular stage of the project, reflexive communication presupposed adolescents' watching recorded fragments of the rehearsals and discussing them. At this stage adolescents changed roles again – from actors and play-producers they turned into spectators, assessing the work, which has been done.

**Stage 6. Final performance.** At the end of the school year the final performance took place. Students from other forms as well as teachers and school administrators were



invited as spectators. Due to the pandemic restrictions parents and other guests were not allowed in the school. After the performance adolescents were awarded certificates.

After the performance, the research group also took final interviews with the participants, teachers, and school administration. Particularly interesting was the interview with the school psychologist, Olga V. Shvedova, who admitted being “very skeptical” about the project at the beginning. *“In fact, I didn’t believe in this drama project at all. I thought that there was absolutely no way how drama sessions could help in a class of demotivated adolescents, with a few being quite aggressive. But I saw them changing in the course of the project. They started communicating, they started engaging in joint activities... I can see that they’re willing to do something together. Many students showed themselves from a totally unexpected perspective. I think that the project helped us discover these students. The results actually exceeded all expectations”*.

*Literature teacher: “It seems that the group has accepted N. It really worked, this drama project!”*

In the process of data analysis the research group tried to trace, how the personal “dramas” of the participants were transformed into an artistic representation of their experience. At the beginning of the project the experience of living through the pandemic was an interiorized “perezhivaniye” of each adolescent. At the stage of exchanging experience, the research group created conditions for **externalizing** the “perezhivaniye” and making it an object of communication. At the next stages, adolescents created a “meta-drama” based on their personal experience, making a complex representation of their “life dramas” by means of art (see fig. 3).

Particularly important changes and transformations took place on the stage of reflexive communication, when the participants were encouraged to switch roles and assess their joint work from a new perspective. Role exchanges created the basis for **mutual understanding** and qualitative shifts in adolescents’ perceptions of each

other and their own experience (“re-positioning”). The movement towards the ZPD was reflected in adolescents’ reflexive diaries: *“It was a fantastic experience. I’ve discovered that I’m surrounded by very interesting people”; “Now I know that my classmates have many talents; it’s really great to study together”*.

Thus, the original aim to help adolescents in overcoming their contradictions and create a more positive learning environment was achieved.

### Some concluding remarks.

The analysis of a two-years’ work clearly demonstrates that applying drama for constructing the ZPD – particularly, in the work with adolescents – requires creating a space for experiments. This setting should be perceived as “safe” by adolescents, which means, that the participants should feel free to express themselves without being afraid of “a failure” or a bad mark. The more diverse opportunities for trying and experimenting are provided, the more powerful the setting is from the developmental perspective. It is particularly important to emphasize the significance of role exchanges and reflexive communication in drama sessions, which largely contribute to participants’ reconsidering their experience, their relationships, and, eventually, to the development of their agency.

It is obvious that not any kind of drama-based activities is consistent with the principles of a developing environment in the framework of the Cultural-Historical Paradigm. Creating such a setting is a challenging task, which requires specialists, who could organize the interaction of adolescents with each other and with the teacher. It means that not only adolescents, but primarily teachers need to be trained how to create such a setting and what strategies to use for constructing the ZPD in the work with concrete classes of students. Our research group is looking forward to further research in the framework of the project and introducing drama technologies into school practice.

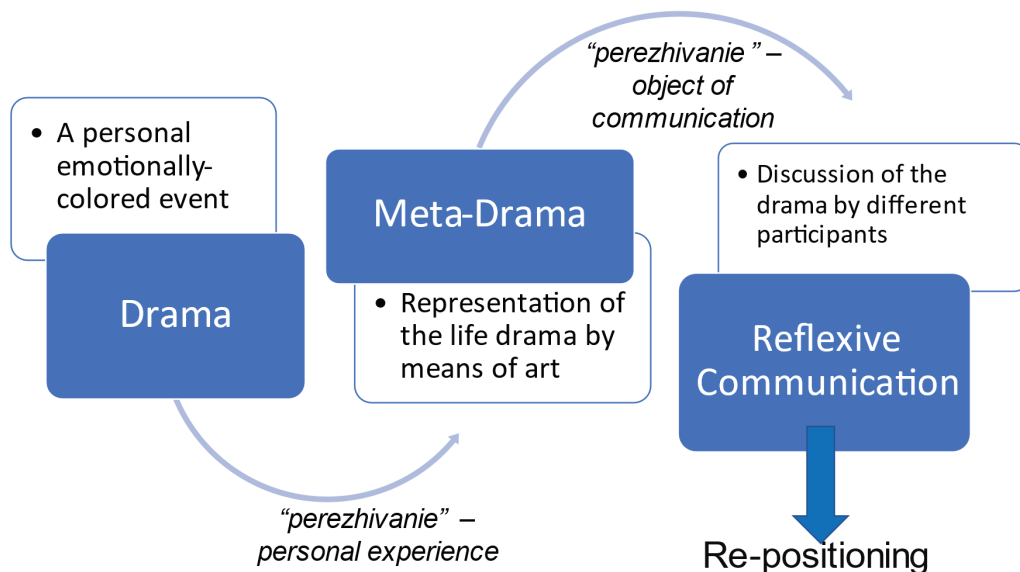


Fig. 3. Tracing the role of “perezhivaniye” at different stages of the project



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## Ролевое экспериментирование в подростковом возрасте: применение драмы для конструирования зоны ближайшего развития

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В 2019 г. в Московском государственном психолого-педагогическом университете стартовал исследовательский проект «Инновационная модель организации экспериментально-исследовательской деятельности подростков («Мультимедиа-театр»). Основная задача проекта заключается в разработке, оценке эффективности и последующем внедрении технологий драматизации в школьную практику, с целью их применения в качестве средства обучения и развития. В фокусе настоящей статьи находится анализ возможностей применения драмы для построения зоны ближайшего развития у учащихся подросткового возраста. Автор статьи утверждает, что не всякий тип драматизации в образовательном процессе отвечает принципам построения развивающей образовательной среды в контексте культурно-исторической парадигмы. Создание такой среды — это особая исследовательская задача, которая требует организации таких форм деятельности и взаимодействия участников, как ролевое экспериментирование и рефлексивная коммуникация. На примере школьного спектакля на тему ситуации локдауна в период пандемии COVID-19, поставленной с классом подростков, показано, как драматизация, основанная на ролевом экспериментировании, может быть эффективной для преодоления групповых противоречий, повышения учебной мотивации и трансформации индивидуального «переживания» у детей подросткового возраста.

**Ключевые слова:** подростковый возраст, зона ближайшего развития, драма, театр, социальная роль, ролевое экспериментирование, совместная деятельность, рефлексивная коммуникация.

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# “Can I change mine?” Role Experimentation in Adolescents’ Digitally Mediated Social Emotional Learning

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Schools are increasingly focusing on ways to increase adolescents’ self-efficacy in areas of their life from relationships to sleep. Commercially available apps such as mood and sleep trackers may be able to support this process. This paper draws on Rubtsova’s explication of “role experimentation” and on Vygotsky’s reading of Freud to delineate dynamics within adolescent personality development. This theoretical background is utilized in a study of seven 12–13 year-olds in a secondary school in London. Participants used an app designed by other students to track their sleep for two weeks. Their data mediated dramatic situations while discussing their experiences with their peers in the study. This process supported self-reflection and helped participants develop concepts for talking about their everyday life in subsequent one-on-one interviews. In negotiating peer and student roles, participants experimented with scientific and everyday concepts, allowing them to see their own data and the experiences it signified from a new angle.

**Keywords:** information technology, social and emotional learning, adolescents, experimenting with roles, drama, ideal form.

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## Introduction

Drawing on Freud and Aristotle, Vygotsky uses an example from Chekhov’s *Cherry Orchard* to consider how a play affects an audience [35]. Vygotsky asks why the sale of the cherry orchard is such a terrible misfortune for the rich Ravenskaya. “Perhaps she lives permanently in this cherry orchard. But then we learn that she spends her entire life traveling abroad and that she never could or would be able to live on her estate. Perhaps the sale could mean ruin or bankruptcy for her, but this motive falls away, too, because it is not the need of money that places her in the dramatic situation.” Indeed, there is no *instrumental* explanation for the value of this artefact. The selling of the cherry orchard plays a role in a symbolic order familiar to Ravenskaya and Chekhov’s audience. The play works because we invest the cherry orchard with a meaning beyond that directly given in its present material form, as land or real estate:

“The melancholy of Chekhov’s [characters] becomes the emotion of the whole audience because it was to a

large degree a crystallized formulation of the attitude of [wider] social circles...” [39, p. 241].

The cherry orchard helps scaffold what neither we nor Ravenskaya can yet fully grasp: the impact of the contradictions at the heart of being a member of the Russian intelligentsia at the start of the 20th Century. Vygotsky calls this symbolic order an *ideal form* [37]. Yet the example can also highlight that there is something unique about our own experiences within this symbolic order; something we each bring to it. Perhaps the cherry orchard evokes some childhood image of white blossom, the smell of cherry, a painful loss<sup>1</sup>.

Aristotelian psychoanalyst Jonathan Lear describes a client who happened to leave the door of Lear’s office slightly ajar at the start of their session. Over the course of his sessions with Lear, the door started to take on a host of meanings:

“Leaving the door ajar meant that nothing he was going to say was going to be so important or private that it should not be heard by someone outside. He longed for us to be working together on a collaborative project, and if we both closed the door, we were a team.

<sup>1</sup> This initial characterization may imply that the ideal form regulates us while remaining beyond our grasp, like the phenomenological concept of background or Bourdieu’s habitus. Vygotsky departs from these regularist [26] theories of social practice. As he clarifies, the ideal form of an activity is produced in reciprocal action [37].

My noticing that he left the door ajar meant that I was sensitive.” [15, p.x]

The door here mediates the drama between real people rather than actors. It was appropriated into the situation to express wider ideas appropriate to the roles of analyst and client. This process gave the client new concepts with which to grasp experiences outside therapy.

Commenting on Freud’s treatment for Little Hans’ horse phobia, Lear suggests “Freud is... giving Hans a set of concepts with which to think about his wishes. This does more than enable Hans to conceive of a reality that existed in toto antecedently to his newfound ability: it enables him to conceptualize his wishes in a certain way. The wishes themselves absorb this conceptualization and thus enter into commerce with secondary-process thinking.”<sup>2</sup> [ibid, p. 113].

Vygotsky refers to such dynamics as *perezhivanie* (sic. lived experience). Veresov explains *perezhivanie* in terms of the “dialectic between present and ideal forms” [34]<sup>3</sup>. Lear traces a similar dynamic in Freud’s “dialectic between loss and love”<sup>4</sup> [ibid, p. 160].

“Psychic structure can continue to develop because the world outstrips my ability to appreciate it. As I develop complexity, so does the world as it exists for me. The internalization of structure can thus continue at ever higher levels of complexity and refinement... what were once taken to be forces of nature, I now recognize as my own active mind.” [ibid, p. 177].

For Vygotsky, this is the process by which humans acquire freedom [38, p. 209]. According to Sévéc, “*Perezhivanie* is [the] cognitive and emotional modification through which the power of the milieu is expressed in the individual, or provides direction for the very power of this individual” [29]. Against the Freudian focus on “active mind”, it should be stressed that for Vygotsky we transform our world in concrete activity rather than in thought.

That an artefact can take on multiple meanings, does not mean that the form of the artefact is arbitrary. Reflecting critically on his earlier work, Vygotsky draws a contrast between a knot in a handkerchief and the diary of an adolescent in how they can act as external stimuli [40, p.275]. Though they can both be mediating artefacts used to direct our own memory, the knot has a direct instrumental function, while the diary’s affordances can implicate far more of who we are: it may be more entrenched in our practices when judged against our whole identity/personality (*личность*) [37].

### Role Experimentation in Adolescence

Adolescence is the time of life most characterized by personality development as we negotiate new rela-

tionships and identities [13]. Rubtsova has followed Vygotsky in characterizing this age period as involving “experimentation with roles” [28]. Social situations give adolescents opportunities to engage in “systems of roles” through which to experiment with their own role and identity. As Rubtsova cites Jaroshevsky, “The drama of development [for Vygotsky is not] im-personalized external circumstances, but a dynamic system of mutual orientations, motivations and actions, which has its own “story line” (*plot*) and where personality is shaped as a participant of drama”.

The development of personal identity can also be characterized in terms of *self positions* which become available to individuals when they engage in dialogue with others [2]. However, as Balestra argues, the Bakhtinian notion of *self positions* may not appreciate how such positions develop dialectically through factors like past experience, present activity, and socially available signifiers. Ramos & Renshaw, like Rubtsova, characterize this process through a Vygotskian lens as “the recursive nature of *perezhivanie*” [25]. What these approaches share is an emphasis on identity as developing in collaborative activity and reflection.

### Social and Emotional Learning

Although the kind of discursive practice described by Lear has supported adolescents’ autonomy and identity formation in the context of psychotherapy [5], less is known about how such discourses may unfold in educational contexts.

The new Relationships & Sex, and Health Education curriculum in the UK is among the increasing number of strategies targeting youth wellbeing and self-determination. Schools in the UK have a statutory requirement to support adolescents in learning how to make good decisions in aspects of their life from friendships to stress management [8]; however, little is known about how such autonomy can be facilitated in a classroom context [19]. Technology could play a role in the design of such pedagogical strategies. Rubtsova [27; 28] reports on studies in which semi-structured technology use offered adolescents a “training platform” on which to enact ideas, values and other aspects of their identity in ways that could be personally insightful and empowering.

Slovak & Fitzpatrick note that a central challenge for social and emotional learning (of skills such as self-awareness, social awareness and responsible decision making) concerns transfer of the learning to real-life contexts [30]. While activities like group discussions, journal writing, and workshops have proven effective

<sup>2</sup> Conversely, Vygotsky observes the consequences of lacking such concepts: “There are no concepts and there is no mastery of the self, i.e., emotionally there is the drive to get out, but refracted through the prism of a complex and not a concept, without understanding himself, in the dark, in the twilight of consciousness...” [40, p. 194].

<sup>3</sup> Veresov gives an authoritative explanation of *perezhivanie*. This concept has gained recent prominence in research.

<sup>4</sup> Vygotsky himself draws this parallel after a lecture by Vera Schmidt [40, p. 391].



with teens, less is known about how the skills can be implicated in everyday life. Technology can both support such boundary crossing [1], and encourage independence [9]. Slovak & Fitzpatrick suggest that one mechanism for this could be in "presenting ambiguous cues, which can nudge people to engage, interpret, and reflect on their experiences" [ibid.]

Personally-collected data (about an aspect of a young person's life like their mood, exercise or productivity) can offer just such a boundary object [7; 21]. Some related work has shown that such learning can extend to adolescents' identity formation, prompting reflection about life goals [33], values [22] and socio-political context [31] through constructing narratives about personal data.

The present work reports on a study of self-tracking technology mediated learning framed around sleep hygiene. Good decisions around sleep can aid adolescents in a wide range of life factors from emotional regulation to lesson focus [20]. Building on prior work [23], this study investigates whether manually collected data can support the transfer of concepts from class discussion to everyday life. Discussion of personal sleep habits in a semi-structured classroom setting could offer a *training platform for role experimentation* [28] to support personal insights.

## Method

### *Participants and procedure*

The study took place at a secondary school in London during a weekly 40-minute period designated for social and emotional learning and life skills. To frame the study, a class of Year 8 students (12–13-year-olds) were introduced<sup>5</sup> to digital literacy ideas around personal data, including data privacy and how data could be useful to them. They were introduced to the concept of self-tracking technology [16] and practices of interpreting data visualizations on *LifeMosaic*: a self-tracking app designed by a different group of students in a previous study [23]. *LifeMosaic* is a pictorial daily journal (Figure 1). The class was asked if they would like to take part in a study trialling the app to track their own sleep. Seven participants (3m; 4f) joined the study by returning forms of ascent and parental consent (approved by an institutional ethics board). Study sessions took place in a classroom at the participants' school. Participants were asked to use the *LifeMosaic* app on their smartphone for a week to log how well they slept and anything they thought was affecting or affected by their sleep. At the end of the week, they met with the researcher at a classroom in their school to share anything they learned about sleep from their self-tracking.

During the **discussion session** participants sat in a circle and shared anything they found interesting or informative in the data they had collected in the previous week on *LifeMosaic*. Participants could choose when to contribute to the discussion and whether to show their personal data to others. The facilitator gave prompts and questions and brought the discussion back to the topic of sleep, as well as offering relevant information about sleep when it was appropriate to the participant-led discussion. Participants' comments and queries were allowed to motivate wider discussions without rebuke for error or digression. At the end of this discussion session, participants were encouraged to use the app for a further week, after which they attended a **one-on-one interview** in the same classroom and timetable slot. The interviews focused on whether the participant felt they had gained or learned anything from tracking their sleep and discussing their data.

### *Data collection and analysis*

The discussion session and one-on-one interviews were audio recorded, transcribed and coded with NVivo. Codes were developed with inferentialist discourse analysis [14]<sup>6</sup>. This involved coding inter- and intra-personal anaphora<sup>7</sup> to identify concepts introduced into

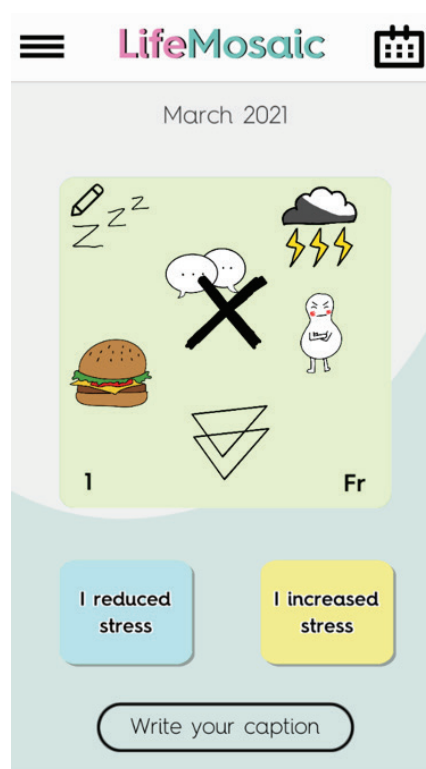


Fig. 1. The *LifeMosaic* app. Users pick two contrasting factors to track using a colour gradient then add symbols to represent aspects of their day like contexts and triggers.

<sup>5</sup> The researcher is an English teacher at the participants' school, though these were not his students.

<sup>6</sup> Derry has shown the many parallels between Vygotsky and this school of contemporary philosophy [6].

<sup>7</sup> While *deixis* draws on an indexical relationship with aspects of the present situation [12], *anaphora* draws inferences from deixis or other anaphora. This is the contrast between saying "here" and "there", though the inferentialist use of the terms is broader [3; 4]

the discourse. The expansion of concepts was analysed within and between sessions. Expansion was identified through the commitments or entitlements made explicit by participants i.e., reasons and norms given. For example, in the extract, “Do you want to know what I put? I put apples because I ate more healthy.” (Chanel) *I put* is an anaphoric reference to adding sticker symbols onto the app, while eating “more healthy” is an implication of “putting apples”.

Coded transcripts were organized into eight themes and then reorganized into three themes which relate to insights about sleep: *staying up because of technology*, *diet and sleep*, *sleep and stress*. Illustrative vignettes from the discussion session were selected and analysed using the Vygotskian theoretical framework introduced in preceding sections. This analysis is presented below.

## Findings

### *Staying up because of technology*

At the start of the session participants were somewhat reluctant to share what, if anything, they had learned about their sleep in the previous week while using the *LifeMosaic* app, with Chanel commenting, “I’m not really sure what to say”. Tom was the first to volunteer a response.

### Vignette One

**TOM:** *Yesterday I went to bed pretty early. About ten thirty. But other nights I stayed up, but usually it’s fine.*

**FACILITATOR:** *Is that something you learned with the app?*

**TOM:** *No. Just some days I have good sleep, other days I don’t, so you can just track it.*

**F:** *Okay and on some nights you had good sleep. Why do you think it was good?*

**TOM:** *Because if you go to bed early it’s good because then you focus better in lessons.*

**F:** *Okay and have you found if you go to bed at ten thirty then you focus better?*

**TOM:** *Yeah.*

**F:** *Is that what you put on LifeMosaic? Can you tell us a bit about your data?*

**TOM:** *I put it a bit blue because I’m still tired a bit and then on other days when I went to bed later then I’m obviously more tired.*

**F:** *Okay. Is there anything else you noticed from your data? Did you use stickers?*

**TOM:** *No.*

**F:** *That’s okay. So on some of those days where you stayed up later, did you notice anything?*

**TOM:** *So, Tuesday I put it as dark blue because yeah, I was really tired on that day. Like yeah I was literally falling asleep. Yeah, and I don’t even know. I just go on YouTube usually.*

**CHANEL:** *Yeah same.*

**F:** *That’s interesting. How many of you stay up late because of YouTube?*

**CHANEL:** *Yeah, because you get sucked in. Yeah, so if*

*you watch something and you have certain channels that you follow and then you just watch them.*

Tom begins this vignette referring to *sleep* and *tracking* in the abstract, as scientific concepts [36]. In giving “because you focus better in lessons” as a reason for having good sleep, he seems to be trying to offer *the right answer* in his role as student, rather than reflecting on his own experience. While at first Tom does not refer to his own data or make any inferences from it, being prompted back to the data introduces contradictions with his story line. By the end of the vignette, a data visualisation Tom is looking at on his phone offers a “ticket-to-talk” [32] for Tom to expand and personalize his story, seeing new significance in the data. Once Tom negotiates a role in which he can introduce everyday concepts, his peers are brought into the discourse through the frame of this ideal form. They are keen to identify with Tom’s story, offering their own experience of staying up because they are watching Netflix in bed or are too distracted with their phone to finish homework. In his follow-up interview, Tom proposes that self-tracking can “give you a different perspective on [sleep]”. Asked if he now feels differently about his sleep, Tom refers back to his reflection in the discussion session, suggesting “...if I stay up on my phone I might not stay up as late or I might keep it in mind.” Tom did not initially make inferences about his phone use from his self-tracking data but the process of discussing and justifying the data established this connection.

### *Diet and sleep*

Although Ali had not used the app every day, he was keen to show his data visualizations to the group on the days he had collected it. He had added several symbol stickers (Figure 1) to his daily tiles and explained the meaning of some of them during the discussion, with the topic of diet becoming prominent.

### Vignette Two

**ALI:** *I don’t know if it was this one or Friday.*

**F:** *Right so the darkness is how tired you were and was there anything else you noticed in terms of your data?*

**ALI:** *So, I put burgers because I went to Sam’s [fast food chain].*

*\*Several participants laugh\**

**CARLY:** *You always go Sam’s.*

**F:** *Do you think that was related to how you were feeling?*

**ALI:** *Yeah, because if you get stressed you eat.*

**F:** *That’s really interesting, can you explain?*

**ALI:** *Just because you’re stressed so you want to buy yourself some chicken.*

**CHANEL:** *Can I say?*

**F:** *OK quickly.*

**CHANEL:** *It’s called comfort eating because if you feel bad you eat food to give yourself a treat.*

**F:** *That’s really important yeah. Do you think that’s a good idea?*

**CHANEL:** *Obviously no because it could be unhealthy.*

**ALI:** *In small quantities.*

**F:** *Right so you can treat yourself to junk food once in a while in small quantities. But do you know actually your sleep does affect what you eat a lot. You're a lot more likely to eat junk food if you sleep badly and if you don't get enough sleep on a regular basis it can really affect you having a healthy weight.*

**DHARMA:** *Sir, on mine I actually put a burger on the days I didn't sleep.*

**F:** *That's really interesting.*

**POPPY:** *I think it affects your self-control.*

Ali has added a chicken drumstick on one of his daily logs on *LifeMosaic* to signify Sam's Chicken Restaurant. He does not suggest any association between this and his sleep. Mentioning "Sam's" makes others laugh because of its significance in his peer group: it is a hangout spot for Year 8 boys, as Carly acknowledges. Ali continues in this joking role with his peers in suggesting that he eats chicken when he is stressed, when invited to justify the relevance of his initial assertion. However, when Chanel takes up the role of a student with valuable knowledge about "comfort eating", Ali now genuinely attempts to justify his past activity. Chanel has potentially judged his visit to Sam's as *unhealthy* or *comfort eating* and Ali negotiates with his story against this new ideal by saying it is acceptable "In small quantities." In treating Ali as if he is contributing to a practice of learning about sleep, he and others are able to recognize this role and its wider social value. In interviews, Chanel and Ali refer back to the link between diet and sleep, with Ali suggesting he learned about "...things that affect your sleep, or you don't sleep and then you just want to munch."

Over the course of the discourse in this vignette, the group expanded their understanding of concepts related to diet and sleep. Though it's unlikely that a correlation between diet and sleep would be visible after a week of tracking in Dharma's data, her suggestion that she "put burgers on the days [she] didn't sleep" suggests that these are concepts she could adopt to reflect on her experiences in future. The inter-personal data-mediated dynamic arguably made the participants more receptive to hearing relevant information about sleep hygiene from the facilitator, and later helped Poppy to make sophisticated inferences about how low sleep could affect impulsive behaviours.

#### *Sleep and stress*

The group discussed factors which affected their sleep as well as factors which were affected by sleep. Stress and emotion were often referred to. Dharma showed the group a visualization of her day and explained what the symbol stickers she has been using signify.

#### **Vignette Three**

**DHARMA:** *Yeah, like I said if I was out with my friends or I had a lot of homework. That's the book one.*

**F:** *Okay, so you used the book for homework and then another one...*

**DHARMA:** *Yeah.*

**F:** *And do you think those affected your sleep?*

**DHARMA:** *Erm, well I think it definitely affects it. Yes, because on Wednesday I had a lot of homework so I stayed up doing that and on a day you have a lot of homework you might stay up because you have to do it.*

**F:** *Okay, so that's why you were tired on Thursday?*

**DHARMA:** *I think so. I sometimes do it in the morning. Or, basically if you have a lot of homework you get stressed because you know you have to do it.*

**F:** *Definitely. So, you think the stress affected you?*

**DHARMA:** *Yeah. I thought it would show like...*

**F:** *You thought the data would show it?*

**DHARMA:** *Yeah. But I know stress affects me though.*

**F:** *But your data didn't show it?*

**DHARMA:** *No. Can I change mine?*

**F:** *Yeah.*

**DHARMA:** *So basically, on Thursday something happened in school so that's why I put stressed and friends. So, I think that affected me and I put that one.*

**F:** *Okay and then now you don't think homework affected you?*

**DHARMA:** *Not affected. No, like obviously if you stay up and you're tired it affects you but not in that way. Like if something happens it's going to affect you more. So, I think friends is more important than homework... If I don't sleep, that is probably why.*

In this vignette Dharma is explaining why her sleep on some nights was much worse than others. Dharma moves from a first-person focus on the particulars of what she was doing to the perspective of an ideal "you" who comments "you have to do it... you know you have to do it", evaluating her actions as conventional or appropriate within a wider system of norms. Though Dharma is keen to clarify and justify her past activity, as she develops her story line, the flow of the narrative is broken when she is unable to use her *LifeMosaic* data to illustrate her point. Dharma seems to perceive her role as giving testimony to something she needs permission to "change". The contradiction between the initial story line and the data reveals new layers of complexity: the word "affected" now proves inadequate in expressing this nuance. Dharma is led to evaluate the significance of dissimilar aspects of her experience against a broader evaluation of her life. The metonyms of "homework" and "friends" in the narrative correspond to symbol stickers to which she assigned these labels on her app. In her subsequent interview Dharma showed a visualization on *LifeMosaic* in which symbols participated in a complex system of meanings: "I [tracked] sleep but I did like different things, either if it was good and then it affects you so I did the sun as well... or on this one it's more dark where I didn't sleep that good and you can see I didn't do that much, and then as well you can see I was stressed."

Although the exchange in Vignette Three was between the facilitator and one student, another participant (who was reluctant to contribute to the group discussion) appears to have appropriated some of Dharma's concepts into her own practice while collecting her own data independently:



#### Vignette Four

**F:** *Okay and you tracked your sleep? And did you learn anything about your sleep?*

**SARAH:** *Like stress. If you don't sleep you feel stressed.*

**F:** *Okay and is that something you noticed or was it from the last workshop?*

**SARAH:** *Yeah workshop.*

**F:** *And do you think it's relevant to you?*

**SARAH:** *Yeah, if I don't sleep, I put a cloud because I feel stressed or lightning, or yeah.*

**F:** *Great and those were things on LifeMosaic about stress?*

**SARAH:** *Yeah, and I put friends and like I tried to use different ones.*

**F:** *OK and the symbols mean you're stressed?*

**SARAH:** *I just do it for how I feel depending on sleep or like anything.*

**F:** *And the different stickers are different feelings?*

**SARAH:** *Yeah.*

When Dharma made the insight that “friends are more important than homework” in Vignette Three, there was a sense of recognition from other participants. Participants referred to “friends” multiple times in the antecedent discussion, as a factor affecting sleep and wellbeing. It is also noteworthy that while Sarah’s interview answers are fairly limited and she is reluctant to take on the kind of storytelling role adopted by Dharma, Sarah can nonetheless use her data to express a complex and nuanced set of personal experiences. Dharma’s stories may have helped model this complexity for Sarah and others.

#### Discussion

The case study analysed in this paper explored young people’s use of a manual self-tracking app to investigate whether practices mediated by this technology could support social and emotional learning skills, including self-awareness, social awareness and responsible decision making. The findings suggest that self-tracking technologies and practices may help young people to reflect on their everyday experiences and to make personally relevant insights, which could support decision making. The process of collecting and discussing personal data may contribute to the development of skills and strategies for self and social awareness and problem solving.

While prior work bringing self-tracking technology to the classroom has often focused on the transfer of specific curriculum content [24], the discursive nature of the present study blended adult instruction with youth exploration of concepts the participants themselves found valuable or intriguing. Though the study focused on the topic of sleep, participants also reflected on other curriculum-relevant topics such as diet and stress. Future work could investigate this pedagogical approach with other kinds of self-tracking e.g., mood, physical activity, or even metrics relating to arguments the young people got into. Such work

will need to consider how it can maintain student autonomy over the self-tracking practice while creating a space in which students are safe to experiment with roles and share personal insights.

It should be noted that the concepts offered by participants in the one-on-one interviews are limited in the extent to which they can be called *spontaneous*. That participants referred to themes from the discussion session of a week earlier is not adequate to establish whether they had integrated this knowledge into their everyday practice. This is not a major limitation as the focus of the study was on learning rather than development. Where the study activities did appear to aid development was in students’ abilities to form cogent self-narratives involving knowledge about sleep. The impact of such learning on broader development within the adolescents’ everyday life practices is a topic for future work.

In experimenting with roles as students and members of peer social groups, participants took on various vantage points on the same data. The data provided a useful object of inquiry [7] to bring participants’ contributions into the right social situation for learning relevant concepts.

As Vygotsky argues, while everyday concepts make learning personally meaningful, scientific concepts help to organize everyday concepts [36]. The participants in this study blended scientific and everyday concepts in creative ways to form new links, expanding their concepts.

Introducing self-tracking data into discourses about sleep habits proved effective at scaffolding learning. In interviews, participants did not simply regurgitate the knowledge imparted by the facilitator but explained what they learned, contextualizing it in their own experience. Some now challenged rather than reaffirming the concepts introduced in the group discussion; for instance, Dharma suggested that she would continue using her phone in bed if it could help her feel less stressed before sleep. Abstracted concepts like “If you go to bed early it’s good because then you focus better in lessons” had expanded into a wider system of related and personally relevant concepts, which the young person evaluated against their sense of identity/personality as a whole.

The present work has suggested some points for exchange between Vygotsky and Aristotelean Freudianism. One should note Vygotsky’s comment that “one can work with Freud’s method without being a Freudian.” [40, p. 484]. While this paper has illustrated some points of convergence with Freud’s theories, it also diverged from them in important ways.

For Freud, meaning is within us and “oozes out of [our] every pore” [11]. Every word, gesture or Rorschach ink blot can reveal hidden significance. As Macintyre argues, there is a danger that such interpretation brackets out the role of the psychoanalyst in meaning



making in a way that can obscure the ways in which she gives the concepts with which the client explicates meanings<sup>8</sup>. What is "repressed" in the mind of the client could equally form in the discourse between them and the psychoanalyst [17].

The present study showed that, unlike an ink blot or a knot in a handkerchief, self-tracking visualizations have affordances that make them publicly available in ways that can contradict the interpretations of their user. We saw how this happens through a process of justification and clarification between interlocutors. Yet like a Rorschach, the data supported participants in working through their own nature and past experiences.

Macintyre's interpretation of Aristotle may be helpful in tying these threads together:

"Reflective agents increasingly understand themselves and others in terms of a certain kind of narrative, a story in which they as agents direct themselves or fail to direct themselves toward a final end, the nature of which they initially apprehend in and through their activities as rational agents. Progress toward that final end is marked by slowly and unevenly increasing self-awareness and self-knowledge, so that agents become better able to understand what in their past has gone well and what has gone badly in their own lives and in the lives of others with whom they have interacted and why." [18, p. 54].

By collecting data about themselves for the purpose of later reflection, on their own and with others, participants framed the data, and thus their own activities, in particular ways. The data scaffolded adolescents' reflections by acting as memory cues as well as expressions of what they judged to be significant in their everyday lives. The act of sharing their data with others prompted them to experiment with roles in which they could make sense of their past and create narratives to explain their deci-

sions. The fact that the data were shared objects of inquiry meant that the narratives could be contested or re-interpreted by others, prompting the storyteller to offer further justifications. This led to some richer and more concrete learning experiences than is typically found in learning instruction for social and emotional learning in secondary schools [10]. Participants were keen to exercise skills relevant to the development of their identities. Through its appropriation in social practices of interpretation, personal data on the *LifeMosaic* app took on new meanings which could allow future reflection to happen with greater levels of granularity.

## Conclusion

Creating a space for adolescents to discuss their self-tracking data can offer a training platform for role experimentation and support self-understanding. The concepts participants applied to their self-tracking data were intimately connected to the roles they adopted in presenting themselves to their peers and the adult facilitator. When the data posed contradictions with the narrative by which they justified their past actions and experiences, the adolescents in the study took on new roles; they moved between roles of student, friend, Year 8 boy, and others to try to tackle the incongruities. These contradictions were explicated through semi-structured discussions which allowed students to make connections between abstract concepts and their everyday life. The data offered auxiliary signs that could help to cross the boundary between home and school. Initiating young people in self-tracking practices proved an effective pedagogical strategy for broaching challenging topics and skills related to social and emotional learning.

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<sup>8</sup> Lear is among psychoanalysts who are sensitive to this criticism.

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## «Можно ли это изменить?»

# Роловое экспериментирование подростков в процессе дигитально опосредованного социально-эмоционального обучения

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Данное исследование опирается на идеи О.В. Рубцовой о «ролевом экспериментировании», а также на основные положения теории, объясняющие динамику развития характера подростка в интерпретации Л.С. Выготского. Это теоретическое обоснование лежит в основе исследования семи 12–13 летних подростков из средней школы в Лондоне. Участники эксперимента в течение двух недель использовали приложение, созданное группой учеников. С помощью этого приложения участники эксперимента могли выявить «драматические ситуации» и обсудить со

сверстниками из группы свои ощущения и переживания. Благодаря возможности обсуждать с другими волнующие их вопросы, подростки развивали способность к самоанализу, формированию понятий. Этот процесс способствовал развитию самосознания. Обсуждая роли сверстников и учеников, участники экспериментировали с научными и житейскими понятиями, что позволило им увидеть значимый для них опыт под новым углом зрения.

**Ключевые слова:** информационные технологии, социально-эмоциональное обучение, подростки, разыгрывание ролей, драматическая ситуация, идеальная форма.

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# Playing with Social Roles in Online Sessions for Preschoolers

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Educational isolation, as a consequence of the global pandemic, has become an obstacle for guiding activity of pre-school age for a period of over one year. Online education did not include collective playing activity; actually, simultaneous modality of sessions was not at all applied in many public and private pre-school institutions in Latin America. The goal of the article is to show a unique experience of organizing collective sessions of playing with social roles by a preschool institution in Mexico. The results show the necessity of modification of some of the elements of the structure of playing activity, such as the means and the orientation of the activity. A broad variety of means at concrete, perceptive and verbal level were used for online playing. The part of orientation of action was separated from the part of realization of playing to guarantee the process of collective playing. The favorable and negative aspects of organization of online playing activity with social roles are discussed. The conclusions claim for the necessity of profound analysis of online modality of education for psychological development together with urgent re-conceptualization of the content of pre-school period as a period of affective communication and preparation for studying at school.

**Keywords:** playing activity, online education, preschool development, cultural development, effects of pandemic.

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## Introduction

According to cultural historical psychology, preschool age is an essential period for development of child's personality [1; 2]. The central line of development is the line of affective communication and social relations, while the accessory line is the line of operational practical and intellectual development [3]. Concrete direct relations with the mates of the same psychological age emerge at the end of this period. According to Vigotsky, the main qualitative consequence of positive development at preschool age culminates in acquisition of reflected emotional experience of a child, which was determined by Vigotsky with Russian word "perezhivaniye" [4].

From education point of view, preschool age should be understood as the period of development of commu-

"The playing activity is the source of and the mean of satisfaction of cognitive necessity of preschool child".  
*Bezrukih, Dubrovinskaya & Farber, 2005*

nication with the children of same psychological age. Communication process doesn't happen spontaneously but should be introduced by adults in correspondent social situations of development. It is well known that the term of social situation of development was introduced by Vigotsky [4] and is related to particular kind of relation conformed between the child and society. In our opinion, it's possible to understand the term of social situation of development in a more concrete way, as particular forms of activities directed to the child from the adults. This term should differ from the term "guiding activity of psychological age" [3; 5], which is the kind of own activity of the child, which guarantee his or her psychological development by acquisition of new psychological formations at the end of the age [6].

As for preschool age, playing activity is considered as guiding activity of psychological age. This activity is a cultural determined activity and cannot be understood



as a “natural expression of child’s inner world” or as a necessary biological stage of development [3]. Playing activity is a manifestation of cultural historical achievement of development of human society. In this activity, the children may openly practice social communication with the help of different symbolic actions of representation of collective and individual actions and situations of joint narration [7; 8; 9].

Guiding activity of the age is closely connected to the social situation of development of the same age. Social situation of development of preschool children should include organization of space and time of the children, allowing them to take part in collective playing with social roles and rules. As each cultural activity, playing activity needs proper spatial and temporal organization and become an integral part of child’s day-to-day life. This aspect is not clearly understood by preschool educators or psychologists, so that in very few pre-school institutions such kind of collective activities really take place [10].

Psychologists have to admit that different historical and social circumstances may produce obstacles for conformation of optimal social situations of development. Social situations of development might be disturbed not only by mistakes of concrete adults or concrete school institutions, but also because of negative global social events. A clear example of such negative social event is happening at the present day in the whole world. This situation is global crisis of public health together with global crisis of educations system.

Since the year of 2020, sudden health crisis covered the entire world. Generalized Pandemic caused by virus COVID-19 obliged the whole society to take decisions of isolation of individuals from participation in public activities. Education system was included into this decision. The relatively new modality of online education was obligatory implied for all levels of education. In some special occasions, this modality of education has become the only kind of accessible educational activity for children and students at primary school, college, and university levels. This occurred in many countries of Latin America.

In the case of Mexico, online education was implied for all educational levels, starting from preschool education up to post graduated education, which started on March 23, 2020. Till the present moment, this situation continues in the whole country, with exceptions of some states, where permitted traditional way of education in limited conditions for preschoolers and for primary school was permitted by local authorities, starting from April 2021. Similar situation takes place in other countries of Latin America.

Such difficult non-expectable condition of education became an obstacle for proper organization of life and activities for all children, but especially for preschool children. Social situation of development, correspondent for this psychological age, changed into drastic obstacle for children’s development. Cultural situations, which guarantee emotional involvement of children in playing activity were suddenly interrupted. Playing activity, which involves collective communication and emotional exchange between children and adults is absence

for most children in Mexico and other Latin American countries. Joint collective activity of playing social roles became a rare and even impossible activity in all contexts of social life during the pandemic.

The limitations or total absence of playing activity may have drastic consequences for psychological development. We are convinced that such negative consequences in psychological development will be discovered and reported in psychological literature in a nearest future; psychological science has a real opportunity for assessment of such severe negative consequences. This opinion was expressed in recent publications [11; 12]. It was already noticed, that learning at home conduct to difficulties in self-regulation [13]. The absence of playing activity with social roles and rules, together with limited possibilities of direct interactions with children of same or similar age means the absence of necessary level of development of imagination, of self-reflection, symbolic function, consolidation of broad cognitive motives in child’s personality and self-regulation [2; 14; 15]. The authors claim for the necessity of participation of an adult as organizer of playing activity, at least at the stages of initial introduction [15].

All these qualitative features of preschool development are known as new psychological formations of preschool age [4] and conform the basis of preparation for learning at school [16]. Such new psychological formations never appear spontaneously according to chronological age or living in society but might be formed during child’s participation in specific activity, useful for acquisitions of these features. The guiding activity of preschool age, the activity of thematic play with social roles is the one activity, which allow to introduce the appropriate level of preparation of children for learning at school [3; 17; 18]. As specialists in developmental psychology and neuropsychology, we should admit that social isolation during pandemic has negative developmental effect and that decision of Secretary of Public Education in Mexico to apply online modality for preschool age was wrong from developmental point of view. At the same time, some examples of original application of programs of preschool education according to cultural historical psychology and activity theory exists in Mexico.

The goal of this article is to show original methodology of organization of online playing activity with social roles. The authors provide the experience of small private educational institution in Mexico, which was able to continue with guiding activity of preschool age, plays with social roles in online modality. The article is of qualitative nature and design and is based on unique pedagogical experience of collective and shared activity between teachers, children, and parents.

## Method

The application of original methodology of playing activity with social roles and rules has taken place in a small private educational center in the City of Puebla, Mexico. In this institution, methodology of playing activity has been used for 10 years as basic developmental

activity in daily group sessions with children of three levels of preschool education [9; 19]. The playing activity is understood as essential kind of activity, which helps to guarantee psychological preparation of children to school, from affective and intellectual point of view [16; 20]. Preschool educators were prepared for this activity by taking specialized, 120-hour long courses and master classes to familiarize themselves with the concept of cultural historical development, psychological age, and preschool guidance activity.

Playing activity was organized according to psychological structure of cultural activity, including relation between objective and motive of activity and a variety of means and operations: concrete, perceptive and symbolic materialized and symbolic perceptive; verbal and corporal means. Essential element of the structure of this activity always was orientation (orientation base of action) provided by an adult. The adult was always simultaneously participant and organizer of the playing activity, especially during initial stage of introduction, in groups of children between three and four years old and in cases of children with special developmental need.

At the beginning of social isolation and impossibility to go on with classes off-line, the teachers, academic advisers and directors had to take very quick decision to switch all created methods to work in online modality. The changes were applied in practically a week or even a few days to start the online sessions. The decision of our institution was related to continuation of all kinds of joint collective activities of preschool age such as: formative introduction of drawing and analysis of fairy tales and stories as central activities used in this institution. The situation with collective playing with social roles was the most difficult because of interactive and communicative specificity of this activity and we hoped to return to face-to-face classes modality in September of 2020. The decision of application of online playing with social roles was taken during the August of 2020, because of notification of Secretary of Education about the impossibility of returning to face-to-face classes in autumn 2020. We would like to stress that such activities are unique in Mexico and are only applied in this preschool institution in Puebla ([www.colegioplep.edu.mx](http://www.colegioplep.edu.mx)).

The sessions of academic discussion about the possibility of realization of these sessions were organized with the teachers immediately after official notification of obligatory online classes on March 23, 2020. It's important to mention that nobody imagined or analyzed the

possibility to use this online activity before. In the case of organization of playing with social roles, some necessary modifications for online modality were provided.

The College attends 26 children from three levels of preschool education, between three and six years old. There are 6 children of first (from three to four years old), 9 children of second (from four to five years old) and 11 children of third (from five to six years old) levels of preschool education. Online playing with social roles takes plays three time per week in session of 40 minutes. All children and the teacher connect by zoom in established time. Sometimes and according to possibility, the children's parents or relatives take part in these sessions. The participation of the parents is not obligatory. In cases of children with developmental difficulties, the parents participate with more frequency. According to each family's possibilities, children use computers, tablets, or mobile phones for classes. There practically no home tasks for preschool children.

The table 1 shows the distribution of children according to three grades of pre-school institution and the quantity of sessions with online playing.

Before starting the online work, the general online meeting with the parents of preschool children was organized, during which basic explanation about the content, schedule and dynamic on the sessions of online playing of social roles. The parents have expressed their agreement to continue with online classes, and to take part in experimental assessment and observation of the sessions by psychologists, neuropsychologists, and post-graduate students from other countries of Latin America.

### Procedure of the online sessions

At the beginning of each session, the teacher greets the children and asks them to switch on their cameras and their microphones. In cases of interference, only one child or only the teacher uses their microphones. The children may choose between be seated or be standing in front of the camera. The teacher advises them to be standing, because it's easier to use the objects, toys and symbolic means, to show the gestures and the movements according to each social role of the play. At the same, such active standing position guarantees optimal level of general brain activation during the sessions and even for longer periods during the day. Such activation suffers strongly if the child remains in same corporal

Table 1

Distribution of participants

Age	Children with developmental difficulties	Groups	Sessions of online playing September 2020 – June 2021	Duration of sessions
3 – 4	2	First grade: 6, no previous experience of playing with social roles	44	3 times per week for 45 minutes
4 – 5	1	Second grade: 9, one year of previous participation in playing with social roles	44	3 times per week for 45 minutes.
5 – 6	2	Third grade: 11, two years of previous participation in playing with social roles	40	3 times per week for 45 minutes

position for long hour, which became a routine during pandemic.

The changing of corporal positions is very important for all ages, but it's crucial for preschool age, as functional systems appear in the process of continues development. The obligatory social isolation became a real obstacle for corporal and emotional flexibility of preschool children.

After accommodation of standing position, the teacher proposes the children the topic (argument) for the play. If children want and can, they also propose the topic for the play or discuss different possibilities of topics in group. Following decision of the topic or simultaneously, the roles (the characters) of the argument are identified during comments and discussion. The children agree who will represent different concrete roles in the play. The whole session of 45 minutes is required to introduce orientation for realization of the playing with understanding of the topic and distribution of the roles (characters) of all participants.

On the following two sessions, the play is realized with variety of dialogues and actions with the toys, objects, and symbolic means. All these objects are used by each child at home, and the child shows in the camera his or her toys and objects for all participants. The teacher takes part as organizer of the play who proposes and explains everything during the play and, also as a participant of the play. At the end of the second session, the teacher always takes some minutes for reflection in group about all details, procedures, and funny moments in the play.

The types of arguments of role plays, which were used during the period from September 2020 to June 2021 in the first grade of pre-school education were as follows: the hospital, the pizzeria, the ice cream café, car washing, watch repair, bakery, cooking of cakes, hair cutting,

dentist, restaurant, small shop, school, jewelry, concert, vegetable shop.

The arguments of the plays used in second grade were: the hospital, the restaurant, the painters, the explorers, the constructors, the firemen, the costumers, the pizzeria, the show store, lavatory, the concert, the bakery, watch repair, ice cream café, toy store, the circus, hair cutting, dentist clinic, the breaking news, the school, the veterinary clinic, the small shop.

As for the third grade, the arguments were: veterinary clinic, the supermarket, medical consulting, restaurant, reparation of watches, unusual restaurant, the circus, the breaking news, the Zoo, the school, the dry-washing, the airport, the sculptures, the concert, the ice cream caf, the bakery, cooking of cakes, the spa, the toy store, the show store, the constructor burrow, the flower market, the park, ophthalmology clinic, aquarium, explorers, designers of shoes, the jewelry, hair cutting.

The same argument was repeated for several occasions in each grade, so that different participant might represent different social roles for same argument.

Some aspects of procedure might be mentioned for each one of three levels of pre-school education in relation to procedure and the content of online playing social roles.

The following example of playing with social roles is presented below.

### **The content of online the sessions of plays with social roles**

Online playing activity might be considered as unique variation of playing activity in traditional conditions, as collective activity. Online playing with social

Example 1

#### **Online play with social roles "The bakery"**



roles shares same structure as the structure of cultural activity in general: motive (concretization of necessity of activity), goal (direction of activity), means (verbal and non-verbal means of expression) and external or internal orientation. During organization of online sessions of playing with social roles and rules it was possible to observe all structural elements of playing activity. The surprising fact is that online playing is really a kind of collective and not individual activity of preschool child.

The motive starts as the general need for social communication with the other children and adults. Together with continues participation in the playing with social roles, children might present concrete and special motives for organization of one or another concrete argument with specific characters. Such concretization of the motives appears in the oldest preschool group, while the younger children normally agree to organize the play according to teacher's suggestions. In this case, it's possible to speak about different levels of concretization of children's motive according to their shorter or longer experience of participation in playing activity.

The goal of playing activity is related to understanding of the content of playing imaginary situation: actions of each role of the argument.

The means of this activity are different operations of each participant with concrete objects and symbolic, according to chosen social role inside the argument. Verbal means are the dialogues and short verbal expressions of the children according to the actions of each roles. It's important to stress, that especially the means of the play change strongly during online playing. The children must show all objects in camera, which makes conscious each movement. The children must pay attention to the actions of the other participant and adequate own actions to the actions of the others. In the case of verbal expression, important changes also take place. The children must respect the turns of each affirmation or question or an adult or other participant. They must be very clear with their expressions and must try hardly to hear and to understand the oral speech of everyone in the

group. Specific means such as attributes of each social role also became an essential support during social playing in line. It's possible to mention that such attributes are means of orientation at the same time.

The orientation is the form of external presentation of the whole situation with roles and actions to the children. Orientation is an essential element of each activity [21], but it converts in real need of educational work in online modality. It even is possible to say that without orientation of an adult, the online play with social roles will never take place. In the cases of this modality, orientation might be shared between the educator and the parent of each child. The adult organizes the whole activity of the child; the actions of the child become chaotic or lose the sense of the action. Without adult's orientation, the actions of the play disappear. The means of orientation, which are used during online sessions are as follows: attributes of each social role, explanations of the educator and of the parents, questions of the teacher, examples of the parents given as the answers to the educator, showing of the objects and toys useful for the argument of the play. The use of the attributes helps for recognition of each character through the camera during the actions of each participant of the play.

The structure of the playing activity with social roles was showed in our previous publication [9]. In this case, we propose the structure of the playing activity in online sessions with modifications, according to observations. The table 2 shows the structure of online playing activity.

According to the table 2, the most notable changes in the structural content of online playing activity is related to the means and orientation of activity. The whole orientation becomes even more conscious, as the teacher has to achieve active participation of each child through the screen. The children have to recognize every participant of the play, here and understand the questions and expressions and fulfil the actions according to the play. Emotional involvement of each child might be guarantee only by emotional involvement of the adult. This involvement isn't casual and is not the same as in might

Table 2

Structure of playing activity

Structural components of online playing activity	Description of content
Necessity	Broad social communication with adults and other children.
Motive	Representation of imaginary communicative situations.
Objective	Representation of concrete social roles according to established argument.
Means (operations)	Producing and listening to verbal expressions in turns with the help of microphone. Gestures and corporal movements, accessible in camera. Emotional expressions and reactions, accessible in camera and microphone. Using of objects and toys according to the social role. Using of materialized and perceptive (drawn) symbols. according to the rules of acting in the play. Wearing of concrete or symbolic attributes, according to each chosen social role.
Orientation	Dialogical conversation in turns. Presentation of examples of acting with the objects, toys and symbols. Questions about acting of each character. Answers of the adults (teacher and parents). Wearing of the attributes of each social roles.
Result	Procedure of the play with emotional involvement of all children, teacher, and the parent.



be in common day-to-day practical experiences. During online sessions of playing, the children have a chance to be the observers of emotional involvement of the others.

The difficult or even negative aspects of organization of online sessions of playing activity include the absence of direct close corporal contact together with the absence of direct eye contact between all participants and the teacher. The real corporal and eye contact is only possible with the parent, if the one would be present during the playing. Our observations allow to precise the necessity of direct visual contact between participants of playing with social roles, which makes this activity so special for children.

### Orientation in online playing activity

The great theorists of cultural historical psychology, as P.Ya. Galperin, D.B. Elkonin or N.F. Talizina couldn't imagine the necessity of organization of online playing with social roles, but their proposals remain useful or even become more useful and more urgent for us in conditions of online work with the children. In these conditions, absence of orientation means absence of the whole process of activity.

Orientation, as essential part of each activity, includes specific elements (Galperin, 1998): presentation of the global situation, consideration of meaningful elements of the situation, possibility of planning of the steps for fulfillment of the action, possibility for realization of reflexive control of the action in case of difficulties. In our previous publication, we have exposed proposal for analysis of the content of orientation for playing activity (Solovieva & Quintanar, 2019). According to our experience of organizing of online playing activity with social roles, it's possible to precise the content of orientation for this kind of collective activity.

In online sessions, the whole process of orientation has become very long, and the whole session of approximately 45 minutes was used to provide expanded orientation for the topic. Such situation never happened while organizing face-to-face sessions of playing with social roles, according to our previous experience [8]. In all year of our practice, the part of orientation was the initial part of each session of playing, after which the proce-

cedure of fulfilment of the playing takes plays. The sessions were concluded by the part of collective reflection about behavior of each participant during the playing and the planning of the next possible session.

This modification of the process of orientation was necessary for teachers and children to achieve the understanding, initiative, and emotional involvement of children for participation in online social play. The table 3 shows possible content of each element of orientation within playing activity.

According to the content of table 3, it's possible to notice important differences in orientation during organization of online play in comparison with organization of play face-to-face. One of the differences is the constant combination of different means for orientation: images, objects, videos, explanations. The second difference is inclusion of attributes of social roles as one of the most important aspects of general orientation. The attributes allowed the children to recognize and remember each role of the game and to organize own behavior according to the roles. The third difference in the content of orientation is double participation of adult as a narrator and as an organizer of the play during the whole procedure. Verbal narration, together with questions and answers were obligatory conditions for fulfilment of the play. It's probably that such narrative participation of an adult allowed to establish a kind of relation with the understanding of play activity as drama or narration [1; 15]. This experience has convinced us once again that no kind of proper narration or self-realization would appear simultaneously from the child's nature, but the whole process of organization of playing activity may support development of imagination and creativity at preschool age [22; 23; 24; 25].

In general, we stress that the part of orientation became obligatory reference for all teachers at the college and helped them to understand better the importance of adult's participation in the children's activity. The whole activity remained as collective activity, including the part of orientation. This orientation allows the child to achieve own imagination as essential element of playing activity [26].

During playing online activity line, orientation remains as an open and flexible element of activity. At the same time, orientation becomes more dependent from

Table 3

#### Orientation in online playing activity

Elements of content of general orientation	Observed of orientation in online playing
Presentation of the global situation.	Presentation of example of social situation with roles with the help of explanation, power point presentation, showing of objects, toys, pictures, photograph.
Consideration of meaningful elements of the situation.	Presentation of each social role with broad possible actions, possible usage of objects, symbolic means, curtesy phrases and dialogues of the roles. The use of videos, presentation, explanations, photographs, objects and toys.
Possibility of planning of the steps for fulfillment of the action.	Agreement of participation of each child, election of the roles with election of each concrete attributes of social character (role).
Possibility for realization of reflexive control of the action in case of difficulties.	Inclusion of constant replicas, questions, and answers with verbal characterization of the whole imaginary situation of the play, constant narration of the adult as reflection of each event of the play.

the adult's participation, professional knowledge, emotional involvement and understanding of the elements of plays with social roles and rules.

The table 4 includes modifications of the components of orientation during online play sessions.

Such kind of broad orientation, as shown in the table 4 allows children to imagine and to understand what may happen during the play. According to orientation, the child can start to have reflection of how he or she may play collectively. The children can imagine how to play, whom to play with, what to use, what to show and what to say, how to show and how to say, so that everybody may see and hear clearly. We may say that reflection starts in the very beginning together with orientation. Adult's constant narration of all details and actions converts in important mean of orientation.

The level of narration appears as the latest stage of playing activity, after experience of social plays [14] with variety of external means and corporal and visual direct contact. We may suppose that the absence of this possibility of direct exchange of corporal and visual contacts becomes an obstacle for profound development of children's dialogues. The only possibility to avoid this is to include the adult's narration in all moments of the play. Narration of an adult helps to achieve advanced level of dialogues of the children during the play, which takes place in the children of the third grade. In this case, the situation is inverted in comparison with face-to-face playing with social roles. We propose to consider means of communication, which should be included in organization of playing with social roles in online sessions. The table 5 resumes this means.

According to the table 5, we show that different levels of means of orientation and communication must be used to achieve the process of online play. The platform is used and manipulated by the teacher. Actions with concrete objects and toys are shared between adult and the children. The adults (teacher and parents) show the possible actions, so that the children may reproduce and

modify these actions creatively according to each particular social role in the argument. The adult (teacher) narrates all the events, which happen in the play, asks, and answers the questions, so that children may reproduce and change expressions and achieve the short or long dialogues according to the role in the argument.

## Discussion

The presented experience shows the possibility of organization of playing games with social roles in online sessions. All participants of online playing, the teachers, children, and parents were able to take in this activity in our institution. Our article has presented some new considerations about the elements of the structure of online playing with social roles. The main differences concern the elements of the means and orientation of playing activity. The absence of direct corporal and visual contact was established as dominant difficulties and negative aspects of online sessions for preschool children. The part of the orientation of activity has become an independent session of each play argument, as it was necessary to attract the children to the topic of the play, explain the content with clear explanation and presentation of verbal and non-verbal actions of each character. The part of orientation included active participation of parents of some of the children, especially in cases of children with developmental difficulties and neurological syndromes.

The main developmental achievements were noticed in the third grade of preschool education, as the children were able to take part in organized dialogues and independent decisions about the arguments, roles, actions and means of each play. All these children had experience of playing activity face-to-face before pandemic in the same school. The small children from the first and second grade showed yet dependent fulfilment of the content of plays. All children have demonstrated high level of emotional in-

Table 4

### Components of orientation for online play

Elements of content of orientation in playing activity	Options and possibilities of content of online orientation
Examples of imaginary social situation.	Detailed explanation and presentation by different means (objects, toys, actions, images, videos, narration) of the argument of the play.
Possible social roles with actions, objects, and symbolic means.	Suggestions, offers and propositions of adult related to characters, what they usually do and don't do, and how and by what mean they might do it. Presentations and examples by diverse means.
Agreement of participation.	Collective and reflexive consideration of various possibilities and options for the process of the play for the next session.
Inclusion of reflection during and after the process of the game.	Constant narration of the adult with questions, answers and description of all events, actions, and comments of the play future (during planning of future play and during realization of the play).

Table 5

### Means of communication in online playing

Use of platform	Actions with objects and toys	Verbal expression
Visual representation of actions and movements of adults and of all participants of the play, images, photographs, videos.	Concrete level, using of object and toys by adult and of the children simultaneously.	Narration of the adult, description, questions and answers of the teacher, parents with involvement of the children.

volvement and positive general attitude towards playing activity. We would like to stress that it was unique opportunity for them to stay communicated to each other during obligatory educational isolation. All parents have expressed their agreement and proper understanding of the importance of playing activity, provided by the college.

The positive effect of online play with social roles was that this activity gave opportunity for guided and orientation emotional communication for children. Negative situation of online playing was also observed in our study as the absence of direct eye and corporal contact between children and adults, situation, which was noticed in a recent publication [13]. Preschool age is the age of communication in groups guided by adults, which require constant interchanges of corporal position, gestures, eyes contact, movements, and actions with objects between all participants of playing activity. Direct eye contact is considered as one of powerful means for psychological development [27]. Playing activity should not only include established rules, but also flexibility with possibility of creation of new rule and own variants of plays. "This guarantees development of creative capabilities of the child and formation of own programs of behavior and self-regulation of attention" [28, p. 175].

At the same time, this was unique experience of online playing sessions in Mexico. The general position adopted by public and private preschool institutions were suspension of simultaneous collective online classes. The teacher, following indications of educational administration, preferred to send tasks by videos, whatsapp or phone calls to parents. The common work consisted only in obligatory monotonous fulfilment of home tasks, which children had to fulfil with the help of the parents. Frequently these tasks were to make patrons of lines in the notebooks, copying of graphic simple given designs, letters, numbers, which had to be sent punctually in specific days and hours pointed by the teacher. The other option of homework was realization of constructions of models, preparing of meals or home tasks. Very usual task was of watching of video with explanations of social behavior during pandemic, such as washing of hands, respecting of the distance avoiding of touching hands and external objects, wearing of sanitary masks properly and so on. It's even possible to say that any kind of computer tasks was advised as the only useful was of teaching during pandemic in many countries with no kind of analysis of psychological content of the tasks. Such analysis was substituted by analyses of usage of technological complex and simple means [29; 30]. Kim [13] proposed the usage of videos as useful strategy during pandemic for preschool education. At the same time, it's known that not all kinds of computer tasks are useful for psychological development and for physiological activation [13]. Previous studies have shown that not all kinds of computer or video games are favorable for cooperation between adult and child [32]. In our proposal, the children have an opportunity not only to see the objects on the screen, but also to use them haptically. Even more, the children can see as the others (adult and children) use the objects simultaneously. Such situation of online playing avoids the difficulty of recognition of an object

and actions (visual-haptic discrepancy) with the object as a result of constant online learning process, which was pointed out in a recent study [33].

Not all kinds of online tasks might be considered as appropriate for preschool children have nothing to do with psychological development. The tasks are based on constant repetition of same copy or same video. The authors of recent publications claim that online teaching requires different methods and different strategies [13], but it's still not clear, which are these method and strategies.

In Mexico, as in many other countries, the parents were declared as responsible agents of their children education with having no kind of experience or knowledge of how to guide them. The parents were always responsible for their children's tasks, as the teachers have openly expressed in the interviews about their practice during the last year [34]. Most of the teachers of normal and special education in Mexico, in the states of Puebla and Tlaxcala, who took part in the interviews have answered that education of children during pandemic should be provided by the parents at home. Very few teachers have expressed necessity of changes in existing methodology and have said that the only difficulty during the pandemic are difficulties with internet connection and economic difficulties of parents, both very true for the context of leaving in Latin America. At the same time, most of assessed parents and children have answered that they eager to return to school and to take part in collective activities with their teachers and mates. Most of preschool children in Mexico remained at home for more than a year practically without any kind of participation in collective activities, which guarantee their psychological development and preparation for school learning. They never met their friends or teachers. Even the possibilities of going out for shopping very limited during pandemic. Very few families were able to include the children into outdoors significant activities such as visiting museums, parks, or natural places. Cultural centers such as museums, theaters and cinemas are closed in most regions of the country.

There is no possibility for psychological preschool positive development without participation in playing activity permanently. As expressed in the epigraph for the article, the playing activity is the source and mean of psychological development, so that "perezhivaniye" or emotional involvement of preschool child should be shared with adult's orientation. Online classes with the absence of playing activity don't satisfy this developmental necessity. The authors of the article hope that the article will help educators and psychologists to appreciate once again the great importance of playing activity for child's psychological development. We also hope that educational administrative decisions will consider the urgent changing to face-to-face modality for preschoolers.

## **Conclusions**

Online playing with social roles in simultaneous interactive sessions is the only option of realization of collective playing activity as guiding activity of preschool age.

Specific modifications in the structure of playing activity were proposed and used in online sessions. Such modifications concern the means and orientation of activity.

Adult's constant narration becomes important means of orientation for online play sessions.

Online playing activity offers unique opportunity for sharing of affective communication between preschool children and help to guaranty optimal physical and brain activation in day-to-day life during educational isolation caused by pandemic.

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## Социальная ролевая игра на онлайн-сессиях для дошкольников

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Образовательная изоляция, как следствие глобальной пандемии, стала препятствием для руководства деятельностью детей дошкольного возраста на протяжении периода продолжительностью более года. Обязательное онлайн-обучение не включало коллективную игровую деятельность. Фактически, формат параллельных сессий (занятий) не применялся во многих государственных и частных дошкольных учреждениях Латинской Америки. Цель статьи — показать уникальный опыт организации дошкольным учреждением Мексики коллективных игровых занятий с использованием социальных ролей. Полученные в исследовании результаты свидетельствуют о необходимости модификации некоторых элементов структуры игровой деятельности, в частности, таких как средства и направленность деятельности. Для онлайн-игры использовались самые разные средства на конкретном, перцептивном и вербальном уровнях. Часть направленности действия была отделена от части реализации игры, чтобы гарантировать процесс коллективной игры. В работе обсуждаются положительные и отрицательные стороны организации сетевой игровой деятельности с социальными ролями. В заключении сделан вывод о необходимости глубокого анализа формата он-лайн обучения в контексте дошкольного детства.

**Ключевые слова:** игровая деятельность, онлайн-образование, дошкольное развитие, культурное развитие, последствия пандемии.

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# The Adolescent at the Center of Activity Systems in the Context of COVID-19: Redefining Routines and Relationships at the Heart of Learning

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In March 2020, teenagers in Quebec, Canada suddenly faced with a challenge related to the way their learning activity was mediated following the closure of schools due to the COVID-19 pandemic. Studies reporting the effects of human disasters and confinement in young people are limited. This study identifies the tensions experienced by 1057 adolescents as they redefine their relationship to family life, learning and school: mediation tools to their learning activities, spatio-temporal redefinition of their activities, modification of relationships with significant adults for them. Two theoretical frameworks are combined: the overlapping spheres of influence model and cultural historical activity theory. A questionnaire was sent online on an opensource survey software. The results present the demographic characteristics of the adolescents' participants and their family, their general state of mind and daily routines adjustments at school and at home, and their perceptions with regards to their relations to their peers, teachers and their parents' support. Findings pinpoint the tensions related to loss in the activity systems of adolescents as their school activity is challenged by the pandemic and proposes avenues to put in place a boundary zone to support the adolescent.

**Keywords:** adolescents, boundary crossing, cultural historical activity theory, school, family, tensions.

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## Introduction

Adolescence is a period of development and self-consolidation specific to the second decade of life (Steinberg, 2014) and is recognized as critical for psychosocial development (Meeus, 2016). At the same time, school becomes a process of socialization during which the adolescent becomes more and more aware of external perspectives, perspectives coming from teachers or other social influences (Choudhury et al., 2006). The maturation process is then consolidated with the help of interactions between people and the social contexts surrounding the adolescent (Meeus, 2016). To achieve an identity of their own, the adolescent needs to feel understood and respected. This

process can occur through positive, secure and stable relationships (Anderson et al., 2004) with a competent adult who may be outside the family nucleus. This kind of relationship has been shown to be an important resilience asset in adolescents regardless of their risk status (Anderson, 2004). For many adolescents, these relationships are formed at school with a staff member such as a teacher. Despite the fact that the relationships created differ from one teacher to another (Roorda et al., 2019), the results of Yu et al., (2018)'s study show that key interactions between teacher and adolescent appear to meet the developmental needs, such as autonomy, competence and connection, of adolescents. It goes without saying that learning-based relationships are different from interpersonal relation-

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ships, but according to Tobbell and O'Donnell (2013), the latter are a prerequisite for learning relationships. In addition to studying the quality of relationships between teachers and students, especially at-risk students, it is important to study the attitude and belief that teachers have towards the success of their students (Davis & Dupper, 2004). These facts are important to consider because, in Quebec, a pre-pandemic longitudinal study reveals that 35% of adolescents responded that they had a low level of sense of belonging to their school, while almost 20% felt that they had a low or medium level of social support in their school environment (Quebec Health Survey of High School Students 2016–2017 (QHSHSS), 2018). So, if teachers and the school community members work to strengthen student-teacher relationships, considerable improvements will occur in student motivation, engagement and performance (Doré-Côté, 2007; Scales et al., 2020). School also provides students with the possibility to develop relationships with peers, relationships that are crucial for the development of adolescents' identity. Whether they are developed through interest-based groups, group projects or extracurricular activities, these relationships help teens to stay connected to school and facilitate their understanding of who they are as learners. Without those, young people can feel more anxious and more isolated (Hill & Steinberg, 2020 cited in Boudreault, 2020).

During this adolescence period, the family can naturally play a role in influencing the psychosocial development of the adolescent. The results of another longitudinal study involving the participation of more than 500 16-year-olds demonstrate the benefits of a constant and predictable family environment for healthy development and suggest that family routines, although little studied, are an important factor in long-term adolescent development (Barton et al., 2019). In Quebec, 31% of adolescents consider that they have weak or moderate social support in their family environment (QHSHSS, 2018). However, Deslandes' numerous studies (see Deslandes, 2020) carried out with a large number of adolescents in Quebec have highlighted the crucial role of parental practices including supervision, time management and emotional support with regard to the success and development of young people. Parents are at the front line of the management of their adolescents' daily routines also outside their regular school hours: sleeping habits, time spent on social media and videogames, as well as paid part-time jobs. In Quebec, 34% of adolescents sleep less than the recommended time which vary depending of the age group (QHSHSS, 2018). According to CEFRIO (2019), for the group aged from 13 to 17 years old, 39% spent more than 11 hours per week on electronic devices and 26% go over the recommended time which is 2 hours a day. In general, it appears that mothers are more sensitive and warm-hearted (engagement dimension)-than fathers and they participate more in the adolescents' schooling (Deslandes, 2020). In Quebec, a high parental supervision is associated with school success (Deslandes, 1996).

In March 2020, teenagers in Quebec suddenly found themselves confined to their homes following the closure

of schools due to the COVID-19 pandemic. Unlike natural disasters, responses to pandemics encourage isolation, separation and quarantine (Sprang & Silman, 2013). Ruptures of relations, loss of reference points, disruption of routines. Despite the fact that we have lived through the H1N1 and SARS pandemic, studies reporting the effects of human disasters or confinement in young people are limited. The incidence of post-traumatic shock and depression in adults following the SARS pandemic in Canada has been found to be similar to that following natural disasters and terrorism (Hawryluck et al., 2004).

The results of a cross-sectional study examining individual and family turmoil among young people in grades 4 to 12, 6 months after the September 11, 2001 attack, show that factors such as a parent's job loss, regulated parental travel, and school closures were associated with higher rates of post-traumatic stress disorder, anxiety disorder, and depression (Comer, et al., 2010). In addition, mental health problems as listed above, in addition to sleep disturbances in 9-18 years old, were assessed to persist for three years following the Ya'an earthquake in China in 2013 (Tang et al., 2018). In contrast, a questionnaire-based study of over 10,000 adolescents aged 15 and 16 in Norway found that the teacher-student relationship was a potential mechanism to reduce negative associations between mental health problems and non-completion of high school.

The closure of Quebec schools in March 2020 also brought about a change in the way young people learn. In September 2020, after an improvement in the socio-sanitary situation, all secondary school students attended school in person, at least for next couple of weeks, depending on the evolution of the pandemic. Rapidly, it deteriorated and the conditions varied according to school levels and geographic regions. The teens suddenly found themselves faced with another challenge. Although distance and hybrid learning in high school has been poorly studied (Turley & Graham, 2019), Stark (2019)'s findings have shown that distance learning students had a lower level of motivation compared to regular class students and was correlated with performance in the course and not necessarily with learning strategies.

## Theoretical Frameworks

We begin with the external structure of Epstein's model consisting of three spheres representing the main contexts in which children and adolescents learn and develop: family, school and community, whether or not intersected according to the following four forces: time, i.e. age, school level and social conditions at the time (force A), family characteristics, philosophies and practices (force B), school (force C) and community (force D). Some practices are carried out separately and others jointly. All the links between educators, parents and the community in the same living environment and between different contexts can be represented and studied within the framework of Epstein's model. Deslandes (2020) has used this model as a lever for integrating a sociocultural approach to examine the links between the

characteristics of students, families, and teachers based on collaborative school-family relationships as well as their values, beliefs, and expectations. In this paper, we push further and integrate the interrelated elements of Epstein’s model in a more systemic way. The contextual and systemic aspect of the reality of adolescence takes on all its importance when situated at the heart of an activity system hit by COVID-19. “The concept of “activity” as mediating between the individual and the social dimensions of human development originated from Vygotsky’s proposal of human action mediated by psychological tools as a unit of analysis of the individual’s higher cognitive processes” (Liang, 2011, p. 313). Grounded in cultural historical activity theory, Engeström (2015) created a systemic model integrating the socioinstitutional infrastructure of the activity, namely, rules, the division of labor, and elements of the community and is referred to as second-generation CHAT, building on Leontev’s work. Although these elements delineating an activity system may presumably be considered separately, they must be interpreted as being interconnected. The pursuit of an activity aims at the transformation of a given environment and this activity is oriented towards an object such as the adolescent’s learning during the pandemic. According to activity theory, the introduction of new elements, such as COVID-19, is accompanied by a questioning of the rules and the division of labor of a community that regulates the adolescent’s learning. When recurrent tensions in the form of inner contradictions are identified, the lens of the triangular representation helps understand the systemic dimension of the individual/collective level of communication and organization (Engeström & Sannino, 2013). Several fac-

tors affecting adolescence are likely to create tensions in teens’ daily life and interrelations with others (Barma et al., 2017). These elements could include modifications related to the rules and routines of their daily life, modifications of the relationship with the teacher as well as modifications with regard to the tools proposed by the teacher and mobilized by the young people in the act of learning. The adolescent is not acting alone but interacting with other significant school community members (school sphere) who are key actors in his learning activity. When two or more activity systems are interacting, they form a network of interacting systems. In third generation CHAT or expansive learning, a possible zone of proximal development takes place between activity systems and when a collective motive is shared, boundary crossing can lead to the development of the object of the activity. Figure 1 presents a network of activity systems.

In light of the contradictions identified, this study will circle how boundary crossing could happen between the school sphere and the family sphere to help the adolescents’ efforts to adapt to disruptive conditions brought by the pandemic and do their best to engage in learning.

### Project and Research Objectives

This project aims to better describe the experiences of Quebec adolescents following confinement due to the COVID-19 pandemic in March 2020 and their return to class in September of the same year. In short, we propose to identify the zones of tensions experienced by adolescents when COVID-19 forces them to redefine their re-

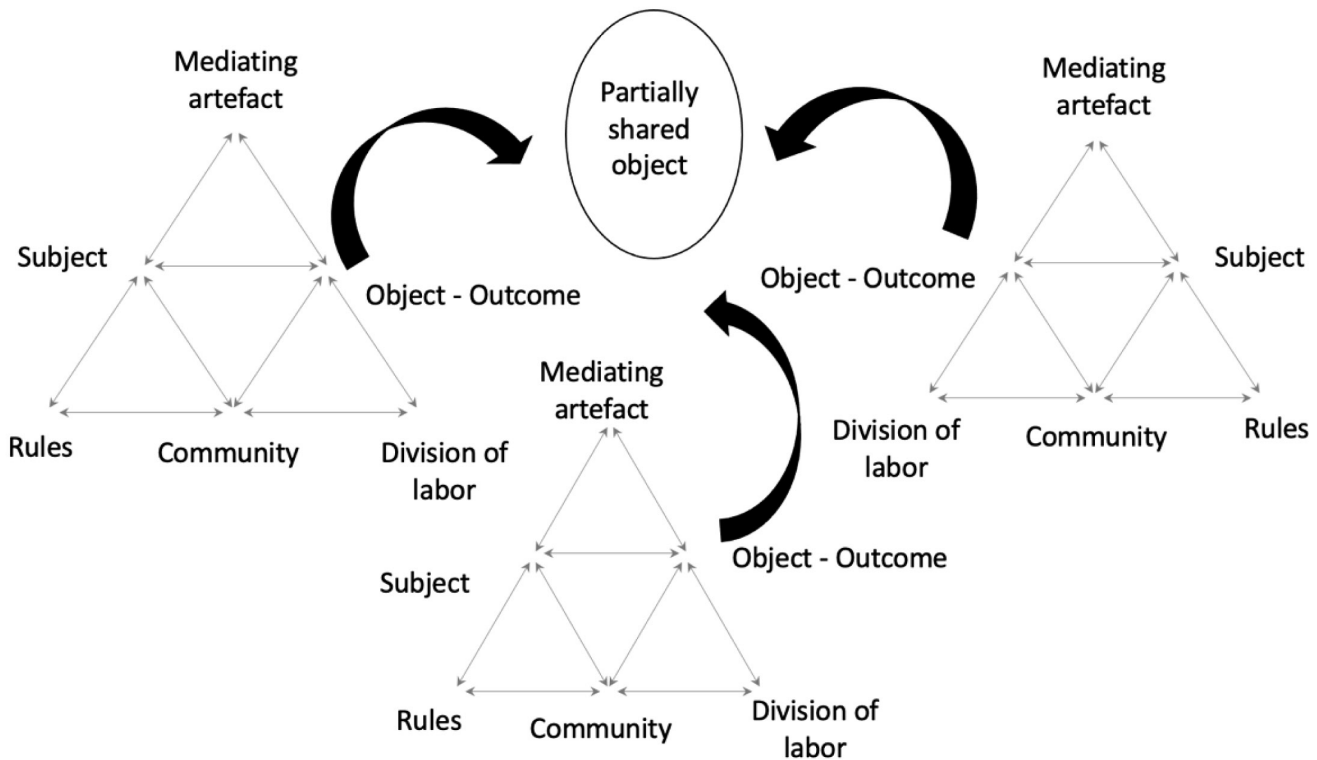


Fig. 1. Network of activity systems with a partially shared object (Engeström, 2015)



relationship to family life, learning and school: mediation tools to their learning activities (online learning, hybrid mode, etc.), spatio-temporal redefinition of their activities (ergonomics, systemic understanding), modification of relationships with significant adults for them (parents, teachers). These tensions, if identified could help us better understand the impact of COVID-19 on the learning activities. If unresolved, they could indicate recurrent internal conflict situations for adolescents.

More specifically, this project aims to:

1. Highlight the tensions with relation to the adolescents' perceptions during COVID-19 regarding:

a. their adjustments and routines;

b. their state of mind;

c. their relations to their peers, their teachers' and their parents' personal and family situation and their support.

2. Suggest individual and collective mediating avenues to better support adolescents' learning activities and their parents' and teachers' collaboration having the potential to put in place a zone of proximal development.

## Method

### Participants

Participants in this study were secondary level students registered in Quebec high schools in September 2020. Public and private schools from French and English school boards were included in the study. The sample size calculation for our descriptive-level research project was 385. This sample size is based on a statistical margin of error of 5% at the 95% confidence level (Bartlett, 2001).

### Instruments

The quantitative survey used were largely inspired by the measurement instruments translated, validated and then used in several research studies by Deslandes and her team (see Deslandes, 2020). The questionnaire developed was available online on an open source survey software (LimeSurvey). The 52 questions explore the objectives described above. More specifically, the questionnaire is divided into 4 parts:

1. Characteristics of participants and their families (e.g., socio-demographic data)

2. Physical and school organization (e.g., work tools, time management)

3. Perceptions of the school environment (e.g., school schedule, extracurricular activities)

4. Relationships with parents, teachers, school stakeholders, and friends (during confinement and following return to school)

The validity of the questionnaire was assessed by 16 students who completed it as a pre-test and ensured the clarity of the questions. Some adjustments were made after the analysis of the student's comments.

### Procedures

Emails were sent to all high school principals asking them to share our study information sheet with the

parents through emails or their newsletter. If parents accepted through passive consent, then they could share the link of the questionnaires with their adolescents. By reading the introduction to the questionnaire, the adolescent was able to learn about the objectives of the research project and his role as a participant. He had then the opportunity to proceed to the questionnaire if he agreed to participate in the project or to leave the site if he refused. The answers to the questions were anonymous and voluntary and the consent, explained in the introduction, was implicit by clicking to the first question of the survey. The answers to the questionnaire were compiled and recorded on the Lime Survey platform. The project was approved by the Laval University ethics committee (2020-286/28-09-2020).

Following data cleaning, quantitative analyses were done by first conducting descriptive analyses for each variable, such as frequencies, percentages and histogram generation. Then bivariate analyses were performed to examine associations between certain variables (e.g., school cycle, family status, gender, etc.). Finally, independence and strength of association analyses showed the existing associations with the use of chi-square and Cramer's V. Documented tensions were delineated in emerging activity systems and possible avenues to put in place a zone of proximal development.

## Results

To keep in line with the research objectives, results focus on data that reflect tensions to provide a clearer picture of the impact of COVID-19 on the adolescent learning conditions. Invitation emails were sent to 598 schools' principals starting in the week of November 19<sup>th</sup>, 2020. Two French school boards and two English ones required an application before contact could be made directly to the schools. Applications were completed and submitted to three of those school boards however, due to the cost of the last one, the application for one of the English school board was put on hold. We received our first completed questionnaires on November 19<sup>th</sup>, 2020 and the survey was closed on April 3<sup>rd</sup>, 2021. After data cleaning, a total of 1057 adolescents, from 37 schools, completed the questionnaire and of those, 929 questionnaires were answered in full and 128 were partially completed because the teenagers stopped the questionnaire before the end. Due to the exploratory goal of this research, the descriptive analyses included the fully and partially completed questionnaires.

The characteristics of our participants and their family are showed in Table 1.

The majority of the participants are Quebecers, Francophones and have parents well educated. More than half attend regular school programs and live with both their parents. A good majority of mothers and fathers have a fulltime job. Interestingly, their situation changed during COVID-19: a greater proportion of mothers and fathers ended up with a higher rate of part-time jobs.

Table 1

**Sociodemographic characteristics of participants and their families**

Characteristics	<i>n</i>	%
Gender		
Girl	626	59.2
Boy	405	38.3
Other	26	2.5
Age		
less than 13 years	341	32.3
14–15 years	430	40.7
more than 16 years	285	27
Ethnicity		
Quebecer or Canadian	926	87.6
Other	131	12.4
Language of study		
French	1048	99.1
English	9	0.9
Program of study		
Regular	704	66.6
Particular program	314	29.7
High school diploma	16	1.5
Other	23	2.2
Family structure		
Both parents	709	67.1
Other	347	32.9
Education level of father		
Primary and a few years in high school	110	10.4
High school diploma	238	22.6
College or University	504	47.8
Don't know or not applicable	202	19.2
Education level of mother		
Primary and a few years in high school	48	4.6
High school diploma	178	16.9
College or University	663	62.9
Don't know or not applicable	165	15.6
Father's employment before the pandemic		
Unemployed	32	3
Part-time work	69	6.6
Full time work	874	83.1
Other	77	7.3
Father's employment since the pandemic		
Unemployed	77	7.4
Part-time work	102	9.8
Full time work	769	73.7
Other	95	9.1
Mother's employment before the pandemic		
Unemployed	66	6.3
Part-time work	119	11.3
Full time work	787	74.9
Other	79	7.5
Mother's employment since the pandemic		
Unemployed	100	9.6
Part-time work	131	12.5
Full time work	719	68.8
Other	95	9.1

### Adjustments and Routines

Adjustments regarding physical localisation of learning, resources availability and frequency of homework had to be made in COVID context. When it comes to physical localisation of learning at the time of the completion of the questionnaire, 52% of all respondents attended school everyday, 34 % only a few days per week, and 14% stayed home every day. In terms of resources available to the adolescents, 36% declared not having access to a quiet space to study or attend their classes on line, 19% didn't have access to a computer on a regular basis. As for the frequency of homework, 48% of students declared doing homework less often than they did before the pandemic.

However, of all participants, 49% played videogames more than 3 hours per day and, 51% spent more than two hours a day on social media and 50% reported engaging in less than one hour a day or not at all in physical activities and interestingly. Of those who were playing videos games and were active on social media, 16% of the adolescents spent more than 4 hours a day on video games and also more than 3 hours a day on social media. 62% of girls reported being active on social media compare to 38% of boys ( $\chi^2(2, 968) = 49.73, p < .001$ , Cramer's  $V = 0.23$ ).

As can be seen in Table 2, for sleeping habits, 42% of respondents slept fewer than 8 hours per night. Of those who are playing video games more than 4 hours a day, 52% sleep less than 8 hours compare to 36% who play less than 3 hours per day. Among the group that spend more than 3 hours a day on social media, 55% sleep less than 8 hours while 21% of the adolescents that do not use social media sleep less than 8 hours. When asked about part-time work, 29% of our respondents declared having a part-time job. Of the teenagers who work more than 16 hours per week, 64% sleep less than 8 hours while 42% of those who work less than 11 hours sleep and 38% of those who do not work sleep less than 8 hours.

### State of Mind

Of our participants, when asked how they felt in general during that time of COVID-19, 59% were sad and 82%, bored. Nearly 57% declared that COVID negatively impacted their school success while 24% said they didn't understand the subject matter being taught. When looking at elements that seemed to affect their will to do their best at school, 42% attributed it to the changes in their routines, 55% missed school and 65% declared lacking motivation towards their school work.

### Perceptions of the Adolescents with Regard to their Relations to their Peers, their Teachers' and their Parents' Personal and Family Situation and their Support

When asked if they were happy to meet their friends again at school in September 2020, 86% of them responded positively while nearly 30% were not really happy to meet their new teachers. Since the beginning of the pandemic, 33% of adolescents did not think that at least one teacher was concerned about them. In the same line of thought, 21% did not think that at least one teacher was preoccupied by their learning progress. Likewise, 20% did not believe that at least one teacher was understanding and 37% thought that their well-being was not important in the eyes of many teachers. When comparing the situation before and during the pandemic, among the adolescents who said they felt close to at least one teacher at school, 47% did declared they did not remain in touch with at least one teacher they appreciated.

About their family relationships, 68% of the adolescents felt that their mother's stress increased since the pandemic while 56% thought the same about their fathers' stress ( $\chi^2(1, 736) = 187.35, p < .001, \phi = 0.50$ ).

Table 2

Frequencies and Chi-Square Results for Sleeping Hours in Hours of Activity

Sleeping hours	<8 hours		8–9 hours		>10 hours		$\chi^2(6)$	Cramer's V
	n	%	n	%	n	%		
Work (n=1053)								
do not work	287	38.4	409	54.8	51	6.8	27.4***	0.11
<11 hours	66	41.8	80	50.6	12	7.6		
11–15 hours	49	57.6	35	41.2	— <sup>1</sup>	— <sup>1</sup>		
>16 hours	40	63.5	22	34.9	— <sup>1</sup>	— <sup>1</sup>		
Video games (n=1054)								
does not play	47	42.7	54	49.1	9	8.2	19.75**	0.1
<3 hours	155	36	245	56.8	31	7.2		
3–4 hours	92	40.5	124	54.6	11	4.8		
>4 hours	148	51.7	124	43.4	14	4.9		
Social media (n=1054)								
does not use	13	21	39	62.9	10	16.1	63.78***	0.17
<2 hours	147	32.6	270	59.9	34	7.5		
2–3 hours	109	48.4	111	49.3	5	2.2		
> 3 hours	173	54.7	127	40.2	16	5.1		

\*\* $p < .01$ , \*\*\* $p < .001$ .

<sup>1</sup> Due to the small number of people, the results cannot be released.

When asked the questions if they agreed with their parents being worried to leave them alone when they had to study from home while their parents were at work, 72% agreed that neither their mother nor their father were worried, while 15% thought only their mother was worried compared to 2% who thought only their father was worried (Table 3). About supervision of school work, 34% of the adolescents said that none of their parents supervised their work while 25% said only their mother compare to 4% who said only their father. Of all adolescents, 25% said that neither their father nor their mother both their parents keep an eye on their comings and goings while 16% thought that only their mother did compare to 3% who thought only their father did. When discussing supervision of daily routines, 26% said that neither one of their parents supervised them whereas supervision was done by the mother for 20% of respondents compare to the father for 3% of the respondents

Adolescents' perception of their parents' emotional support is presented under the angle of encouragements, sincere congratulations and openness to listen to their troubles and worries. Most of the adolescents said that they could talk about their troubles and worries with both their parents however, only 8% of the adolescents said that they could not to talk to neither their mother or father. 18% said that they could talk only to their mother while 4% said that they can talk only to their father. When having a problem, 8% said that they could talk only to their mother, 4% said that they could talk only to their father and 3% said that they could not talk to neither of them. When asked if they were congratulated for their achievements, 12% said that they were only from their mother, 2% only from their father and 4% did not receive any. Finally, of all the teenagers who answered when asked if they received encouragements about their school activities, 12% said that they received some only from their mother, 3% said only from their father and 5% didn't received any encouragements.

### Discussion

This section presents specific findings that help understanding the emerging tensions in the form of inner contradictions at the poles of the adolescent activity system with

relation to their perceptions during COVID-19 regarding: their state of mind, their relations to their peers, their teachers' and their parents' personal and family situation and their support their adjustments and routines (see Figure 2). To do so, we purposely focused on the findings that evoked possible clashes with situations that existed during COVID-19.

### Systemic Analysis of the Adolescent's Activity System

Our attention focused on a systemic analysis of the adolescent's activity system engaging in learning during the pandemic in order to pinpoint a possible zone of proximal development with other activity systems such as the school one and the parents' one. First, we focus on the adolescents' activity system. Figure 2 illustrates reported tensions at each pole (inner contradictions) of his/her activity system during the pandemic.

The adolescents declared an important decline in their motivation during COVID. As for their state of mind, a great majority said that they felt sad and missed their friends. Half of them said they did not miss going to school. After the period of confinement (March 2020 – September 2020), when they actually returned to school face to face, a third of them were not really happy to meet their new teachers and they questioned the caring expected from their teachers. Moreover, almost half of the adolescents declared that they did not remain in touch with at least one teacher when they were confined. A quarter said that they did not understand the subject being taught. As for relations with their families, the adolescents said that their mothers and fathers were more stressed out during the pandemic. It is well known that an increase in stress is likely to lead to more misunderstanding within the family relationships and affect parental practices. For instance, some adolescents revealed that they could not rely on either one of their parents when having problems. A small percentage declared not receiving affective support regarding their schooling, mainly from their father.

The usual object of the activity of learning adolescents attending middle of high school is to find a balance between their school work, sleeping hours and leisure activities, including videogames and use of social media. In general, a daily routine normally comprises five hours of instructional schooling in Canada. The rest is gener-

Table 3

Frequencies and Chi-Square Results of Adolescents' Perceptions for Parental Support and Supervision

Parents	Mother only		Father only		Neither		$\chi^2(1)$	$\phi$
	n	%	n	%	n	%		
Worry when I am alone at home (n=623)	95	15.2	12	1.9	450	72.2	160.71***	0.51
Supervise my school work (n=744)	185	24.9	28	3.8	250	33.6	180.91***	0.49
Supervise my outings (n=712)	112	15.7	21	2.9	178	25.0	271.53***	0.62
Supervise my routines (n=725)	142	19.6	20	2.8	186	25.7	235.74***	0.57
Encourage me in my school school activities (n=897)	103	11.5	29	3.2	45	5.0	114.95***	0.36
I can talk about my worries (n=770)	135	17.5	31	4.0	65	8.4	99.35***	0.36
I can count on my parents (n=805)	62	7.7	30	3.7	25	3.1	73.52***	0.30
Congratulate me (n=904)	107	11.8	22	2.4	35	3.9	95.94***	0.33

\*\*\* $p < .001$ .



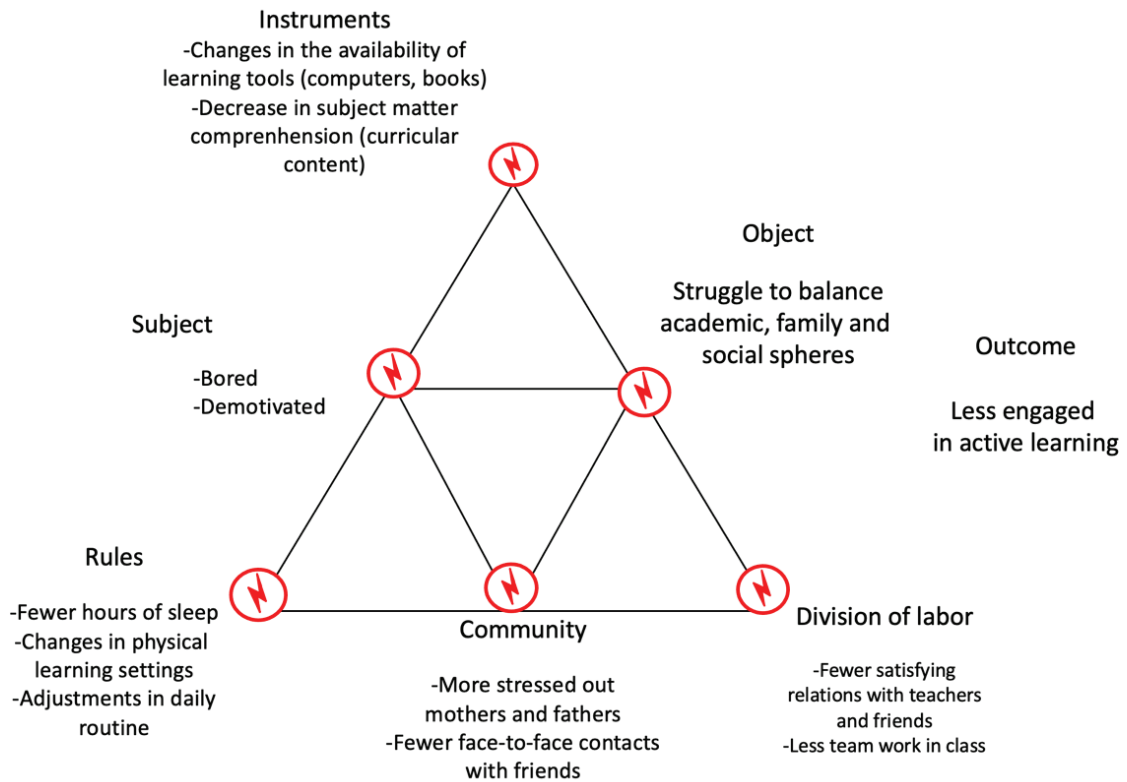


Fig. 2. Inner contradictions identified in the adolescent activity system

ally dedicated to extracurricular activities, homework, sports, etc. Our results indicate a loss of balance between the previous activities. First, there was a change in the physical localisation of schooling based on the unpredictable sociosanitary situation: constant back and forth between face to face and online learning. Not all students had access to a computer at home and a third declared not having access to a quiet place to study. Almost half of them said they did not do their homework as expected. Likewise, they slept less than the eight hours per night recommended, especially the videogames players who dedicated more than four hours a day to play and adolescents active on social media more than three hours a day. One third of the students had paid jobs which, according to QSHSS (2018) represents an increase compared to pre COVID situation (7%).

A decrease in motivation and the loss of references points at school, within the family and with friends might weigh on the adolescent's capacity to engage fully in his/her learning tasks as well as his/her general well-being.

**Suggested Individual and Collective Mediating Avenues to Better Support Adolescents' Learning Activities and their Parents' and Teachers' Collaboration: A Possible Boundary Crossing Zone**

In light of the zones of tensions identified, promising avenues are considered to better support the adolescents during these challenging times. Many parents cite technology as a reason why parenting is harder today than in the past, even before COVID-19. Conflicts are likely to have increased in family settings during the pandemic.

In order to prevent power struggles and control issues, involving directly the adolescents when establishing routines and schedules (leisure time and academic time) would be a good idea. Parents should be open to a more flexible schedule when it comes to teenagers' difficulty to concentrate early in the morning when attending classes. When online, teachers should also be more sensitive of the attention span of their students. Nevertheless, social media can act as a promising tool if not restricted to a passive leisure activity. During pandemic time, school could propose group projects using social media in order to engage students with other friends to prevent isolation (oral presentations, music groups, chess competitions). Another promising avenue would be for schools to ensure they have enough human resources to identify adolescents in need and put in place mentoring programs. As for parents themselves, they would benefit from technical support to connect better with the teachers in the context of online learning as well as enhance their understanding or their adolescent's reality. The possibility for teachers to phone home when needs are expressed by parents or teenagers is a positive action to take. To help lower their sense of isolation and empower the adolescents, members of the local community could be creative and inform the adolescents about people in need and encourage them to contribute to a collective effort (environmental projects, help to the elderly, community gardens while respecting the sociosanitary measures). Figure 3 illustrates positive avenues to be taken by individual/collective acting in three activity systems so a boundary crossing zone is formed for the benefit of the adolescent.

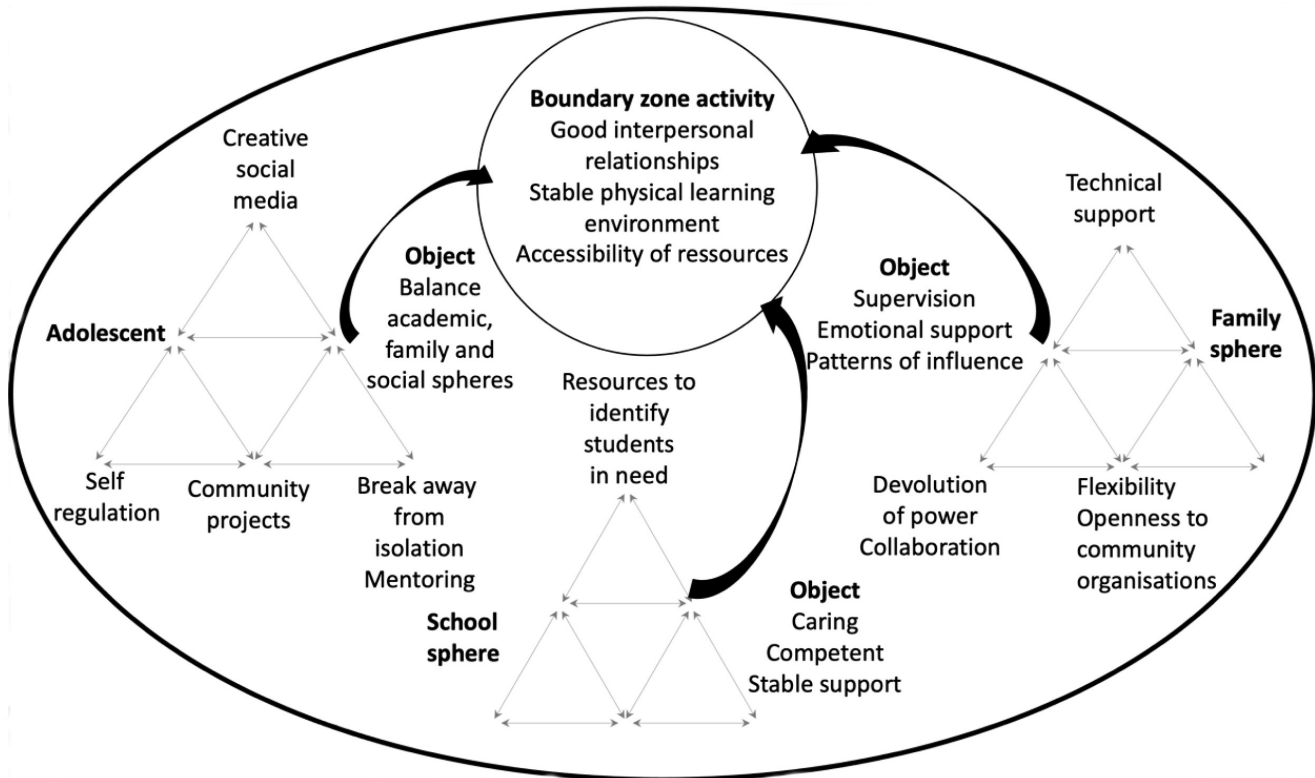


Fig. 3. A possible boundary zone activity for a zone of proximal development

### Conclusion

Our research provides an improved comprehension of the impact of COVID-19 on adolescent's efforts to balance disruptive changes to their routines and its impact on their state of mind, relationships with their parents as well as their perceptions of teacher's caring. Combining elements coming from the family and the school spheres, the descriptive and systemic analysis of the questionnaire data allows a holistic understanding of the adolescent's new learning conditions. Findings put into evidence the tensions in the form of inner contradictions identified at the poles of the adolescent activity system: sadness, demotivation, disruption on their daily routines and loss of reference points when it comes to their learning settings. Access to a quiet space and to a computer is not for all

of them. Their sleep is affected and many get less than needed. Several are engaged in paid jobs and they spend time on video games and social media. They also think that their parents are more stressed out. Many parents experience job insecurity. The adolescents report not always getting emotional support from them. The students miss their friends but not their teachers as much.

This is a challenging time and research is ongoing. Data make it possible to suggest avenues that are relevant and realistic to create a boundary activity zone for the benefit of the adolescent: more flexibility on all parts, more clever use of social media, more technical and human resources to support students and families. In order to balance their academic and leisure time, the adolescent needs to self-regulate and break away from isolation in the best way proposed by their school and family spheres.

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## **Подросток в центре деятельности систем в контексте COVID-19: переосмысляя практики и отношения, лежащие в основе обучения**

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В марте 2020 года подростки в Квебеке (Канада) внезапно столкнулись с серьёзными вызовами, связанными с закрытием школ и изменениями в организации учебного процесса вследствие пандемии COVID-19. Данная работа описывает противоречия, характеризующие эту новую ситуацию, на примере 1057 подростков, которые вынуждены были переосмыслить свои взаимоотношения с семьёй, учёбой и школой: использовать новые инструменты, опосредствующие учебную деятельность,

иначе планировать свои занятия с точки зрения времени и пространства, пересмотреть свои отношения со значимыми взрослыми. Мы использовали одновременно две теоретические концепции: модель пересекающихся сфер влияния и культурно-историческую теорию деятельности. В рамках исследования мы предлагали подросткам заполнить онлайн-опросник, реализованный на платформе с открытым кодом (opensource survey software). Результаты позволили выявить демографические характеристики подростков и их семей, а также их общий психологический настрой, изменения в режиме дня в школе и дома, субъективные оценки касательно взаимодействия со сверстниками и учителями, родительской поддержки. Полученные данные чётко высветили противоречия, связанные с негативными эффектами пандемии на деятельностные системы и учебную деятельность подростков. В статье обсуждаются возможные способы обеспечения специальной приграничной зоны (boundary zone) для поддержки подростков.

**Ключевые слова:** подростки, преодоление границ, культурно-историческая теория деятельности, школа, семья, противоречия.

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# Fitness Blogging as a New Social Practice and Its Implications for Young Women’s Mental Health

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Fitness blogging and fitness marathons are becoming a popular social practice, especially among young women. Although these practices are claimed to provide health benefits, in reality they pose serious risks to the participants’ mental wellbeing. The paper focuses on a study aimed at the analysis of the level and factors of mental distress in female fitness blog subscribers, and the dynamics of their emotional wellbeing in the course of fitness marathons. A total of 112 women aged 18 to 35 years old, with a mean age of 23.5 (SD=4.7), participated in the study. All the respondents were Instagram fitness blog subscribers. The following methods were used in the study: Physical perfectionism scale [8]; Situational Inventory of Body-Image Dysphoria [14]; Perceived sociocultural pressure scale [3]; Brief Fear of Negative Evaluation Scale [9]; Beck’s Depression Inventory [17]; N.G. Garanyan and A.B. Kholmogorova’s Three-Factor Perfectionism Questionnaire [1]. Received data testify that young women who spent on Instagram over 60 minutes a day differed from those who spent maximum 30 minutes online by significantly higher levels of excessive body standards and body dissatisfaction, and a greater severity of emotional maladjustment symptoms, including suicidal tendencies. The regression analysis showed that physical and general perfectionism as well as social anxiety and depression symptoms had the most significant effect on an increase in body dissatisfaction levels. After completion of a fitness marathon, women had significant increases in body dissatisfaction and emotional problems. Further research is needed to identify targets that would help to prevent the emotional maladjustment which occur as a result of young women’s engagement in fitness blogging.

**Keywords:** body dysphoria, fitness marathon, fitspiration, fitness blog.

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## Introduction

This work relies on an assumption of L.S. Vygotsky’s cultural-historical psychology that a person’s development occurs through interiorizing of cultural norms, rules, customs, and various standards. Body and beauty standards and ideal body concepts have considerably varied in the course of time, while girls tend to assimilate them at an early age through playing with fashion dolls, looking at the magazine images, etc. [4; 10; 11; 26]. Since the beginning of the 21<sup>st</sup> century, these standards have been rapidly changing over the past 20 years: from an unnaturally thin body at the beginning of the century to an athletic frame with a thin waist, pumped up abs, and strong arm muscles at the present time [4; 10]. The contemporary cultural and social space is associated with an upsurge in information technologies and mass media development. Various mass media such as television, radio,

magazines, and the Internet, have been continuously informing people that they need to conform to unrealistic beauty ideals.

Social media have become an important source of various standards and norms in the 21<sup>st</sup> century. Over the past few years, social media users have found another way to actively engage in them, namely by running fitness blogs with images of athletic bodies. There has been a rise in the popularity of fitness blogs whose authors post images of their athletic bodies and present themselves as “inspiring people”. These blogs have become almost a cult due to carefully selected, beautifully designed and compelling content [24].

At first glance, social media fitness culture contributes to healthy eating, develops exercise habits, and promotes the idea that achieving one’s ideal body shape is within one’s power. However a lot of studies show that it is the mass media that trigger an increase in body dis-

satisfaction [11; 12]. Images in various mass media interfere significantly with the socio-cultural ideals of the body and exert a strong effect on the perception of the female body image [16; 23]. Investigating the relationship between dissatisfaction with one's own appearance and viewing the web content about the "ideal" body parameters and looks is an urgent problem. Experimental research has found an association between body dissatisfaction in women and their exposure to ideal lean images broadcast by media such as television, magazines, the Internet, and advertising [20].

Recently, an athletic frame with a thin waist combined with developed abs, powerful biceps, and firm buttocks, has become highly popular on the media and has been considered "ideal" for women at the present time [25; 10]. This shift to the ideal of an athletic frame takes root in a global social media movement known as "fitspiration" (a combination of "fitness" and "inspiration"). "Fitspiration" embraces images and inspirational quotes targeting mostly women to inspire them to a healthy lifestyle by means of giving advice on physical exercise and diet. A 2016 survey of the "Instagram" social network found that the rate of the #fitspiration hashtag entries reached 10 million images which proves the popularity of this kind of content. A recent content analysis of sports websites showed that focusing on looks and weight control resulted in such negative consequences as growing body dissatisfaction and general emotional maladjustment in women [25].

At the moment, there is a shortage of Russian studies on the social media fitness blog and fitness marathon effects on the youth's mental wellbeing. This highlights relevance and novelty of this study.

### **"Fitspiration" (Fitness Inspiration) and Fitness Marathons as Common Social Practice in Contemporary Informational Society**

#Fitspiration (or "fitspo") is a genre of social content aiming at inspiring women to get a certain body shape. Images and videos usually focus on attractive, lean, and pumped bodies. Fitspiration was originally developed to promote fitness; it emphasizes the advantage of an athletic frame rather than thin one [24]. As it is claimed, this content aims at motivating women to exercise and to encourage a healthy lifestyle and healthy eating.

Tiggemann and Zaccardo [24] emphasized that Instagram had many vivid images of slim women who were exercising or wearing sports outfits. Therefore, it promotes an idea that only slim and fit women and men are beautiful and healthy. However, recent research shows that these accounts can adversely affect people's body image and cause severe emotional distress as a result of unfavorable social comparisons [22; 13].

Fitspiration is often available on social media; however it is still unclear to what extent the body image and exercise messages differ when targeting men and women. A content analysis aimed to identify specific features of fitspiration content in social media and to evaluate sex-related differences [19]. #Fitspo-marked content on Insta-

gram, Facebook, Twitter, and Tumblr was collected within a 30-minute period. First of all, the findings showed that 87.2% of the images were extracted from Instagram. Most of the posts (308/415; 74.2%) were thematically related to exercise, and 81/415 (19.6%) were related to nutrition. 151 (36.4%) images targeted women only, and 114/415 (27.5%) images targeted men only. Women in the photos were significantly more likely to be under 25 years old ( $p < 0.001$ ); to be almost completely naked ( $p = 0.001$ ), and to have emphasized toned buttocks ( $p < 0.001$ ). Women were more frequently sexualized than men ( $p = 0.002$ ). #fitspo showed that the ideal female bodies were slim and toned, and male bodies were muscular.

Subsequent studies of sports blogs [12; 23; 24] demonstrated that almost all (97.82%) sports blogs included images of toned women. This analysis also showed that most blogs (92.85%) had posts that laid emphasis on exercise. Furthermore, these blogs often contained posts with negative or shaming comments about unhealthy diet risks and corresponding dietary recommendations.

In the first study of the effects of Fitspiration images, Tiggemann and Zaccardo [24] found that participants who viewed sports images wrote about their wish to improve their body shape and to eat healthy food, but they also reported decreased mood and an emerging dissatisfaction with their looks. Some studies showed that women's pursuit of an ideal appearance and a toned body had positive associations with eating disorders and compulsive physical exercise [25; 26]. Moreover, experimental studies showed that viewing images of ideal bodies was associated with an increased body dissatisfaction [13], anxiety and depressed mood. Another study found that women who viewed #fitspiration photos reported lower body satisfaction levels as compared to women who viewed travel photos [23].

A fitness marathon is a specific sports game that is carried out with the help of special applications or social media. Participants complete tasks, and the organizers exercise a remote control of the process. The participants who have failed to complete the task get dropped out of the marathon gradually. Information on the first fitness marathons appeared in 2014–2015. The popularity of fitness marathons has led to the emergence of special online applications. A fitness marathon participant buys access to the marathon and waits for it to start. The marathon usually lasts for one month, during which the participant gets daily video instructions with exercise, diet guidelines, and enjoys daily chat access. At the end of the marathon, the participants' "before and after" photos get evaluated by "likes", and the marathon organizers award prizes.

**The objective of this study** was to investigate the relationship between fitness blog participation, body dissatisfaction, mental distress, and personality features.

Research hypotheses:

1) Female fitness blog subscribers are guided by high beauty standards and have rigid concepts about the ideal body and its specific parts.

2) Women who often view Instagram images and dedicate more time to fitness marathons have higher levels of variables reflecting excessively high body standards (body dissatisfaction, physical perfectionism, and sociocultural

pressure), emotional distress (symptoms of social anxiety and depression), and maladaptive personality traits (hypersensitive narcissism and perfectionism).

3) Fitness marathon participation increases the levels of body dissatisfaction, unreasonably high bodily beauty standards and emotional distress among female fitness blog subscribers.

## Methods

**1) The “Fitness Blog Subscriber” Questionnaire** consisted of questions regarding the respondent’s frequency of Instagram use, personal activity, and commitment to fitness blogs. The Questionnaire included statements describing subjective assumptions as to the fitness blog influence on body standards that participants needed to rate on the Likert Scale. At the end of the Questionnaire, participants were invited to share their ideas about an ideal female body.

### 2) Body-related attitude measures

**1. The Physical Perfectionism Scale** [8] was developed for physical perfectionism severity assessment, with physical perfectionism being a system of individual appearance-related concepts and attitudes. These include being increasingly concerned about one’s appearance; striving to comply with high body standards and to achieve the best results in one’s struggle for an ideal body. An original questionnaire included 16 items and it was later expanded to 22 items. Participants were asked to express their agreement or disagreement with each item using 4 options, “definitely not”, “perhaps not”, “probably yes”, “definitely yes”.

**2. The Situational Inventory of Body-Image Dysphoria** [14] was developed by T.F. Cash in 1994 and adapted by L.T. Baranskaya and colleagues for use in a Russian sample in 2008. This method allows for evaluation of negative attitudes towards one’s own body in the context of certain situations. The inventory consists of 20 statements that represent different real-life situations. Participants were asked to recall times in their lives when they had faced each of the situations and to rate how frequently they had experienced negative emotions because of their own looks on a scale from 0 (“never”) to 4 (“always or almost always”).

**3. The Perceived Sociocultural Pressure Scale** [3]. The Scale was developed to study the effect of sociocultural pressure on the desire to lose weight in young women. It consists of ten statements that describe family, friend, partner, and media pressure to lose weight, e.g. “I’ve noticed a strong message from my family to have a thin body.” Nowadays, young women and many young men report feeling the external pressure regarding the need to increase their muscle mass. Therefore, the scale was modified to include statements related to muscle mass gain and achieving an athletic body frame. The respondents were asked to rate the perceived pressure on their wish to lose weight / gain muscle mass / achieve an athletic frame on a scale from 1 to 5 (“none – a lot”). Both the mean score for all factors and the mean values of every pressure factor (family, mass media, en-

vironment, i.e. friends, a training group, a partner) were calculated.

### 3) Emotional distress measures

**1. The Brief Fear of Negative Evaluation Scale** [9]. This scale was proposed by M. Leary in 1983 as a brief alternative to the Fear of Negative Evaluation Test. The scale consists of 12 statements which are related to respondents’ attitude to receiving attention and evaluation from other people. Each statement was rated on a scale from 0 to 4 (“strongly disagree – almost completely agree”). At the end, the total score of all statement ratings was calculated.

**2. Beck’s Depression Inventory** [17]. The Inventory includes descriptions of depression symptoms of varying severity. Respondents had to evaluate whether they had or lacked these symptoms. Depending on the symptom severity, each item could be rated on a scale from 0 (no symptom, or minimum symptom severity) to 3 (maximum symptom severity).

### 4) Maladaptive personality trait measures

**1. N.G. Garanyan and A.B. Kholmogorova’s Three-Factor Perfectionism Questionnaire** [1]. The questionnaire consists of 18 statements, that can be grouped according to three scales: 1) “Concerns about being evaluated by others resulting from unfavorable comparisons with them”; 2) “High standards and requirements to oneself”; 3) “Negative selection and fixation on one’s own imperfection”. The first scale tests socially prescribed perfectionism; the second scale tests self-oriented perfectionism; and the third one tests perfectionistic cognitive style. Answers were scored as follows: “definitely yes” was 4 points; “probably yes” was 3 points; “perhaps not” was 1 point, “definitely not” was 0 points. The total score describing the general perfectionism severity and individual scores for each scale were calculated.

**2. The Hypersensitive Narcissism Scale** [22]. A new scale for hypersensitive narcissism was derived by correlating the elements of the H. A. Murray’s (1938) Narcissism Scale with an MMPI-based composite latent narcissism scale. As a result, 10 items of the Hypersensitive Narcissism Scale (HSNS) were identified. In the meantime, the Scale has been undergoing validation in a Russian-speaking sample.

## Research procedure

The research was designed as an online survey. Female fitness blog subscribers were asked to fill out a set of 7 measures. Before the start of the study, the participants were informed about the survey design and that the study was anonymous, and the results would not be disclosed to third parties. Every participant had an opportunity to get feedback on their results.

The second part of the study included young female fitness marathon participants. 44 participants filled out the set of measures before and after the marathon. At the end of the fitness marathon, we asked the participants to describe their general wellbeing in any format.

## Sample

The study included 112 women aged 18 to 35 years; their mean age was 23.5 (SD=4.7).

**Results**

One of the “Fitness Blog Subscriber” Questionnaire items aimed at identifying the frequency of one’s body comparisons with social media images. Table 1 shows that 4% of women reported that they compared their bodies with social media images on a constant basis, and 25% did it frequently.

The last Questionnaire item invited the participants to describe the ideal female figure in any format. The rate of descriptions (N=73) of a toned athletic figure allows us to confirm the other authors’ findings that the ideal body concepts have shifted from a thin frame to athletic one. At the same time, some participants left comments that contained thoughts about the importance of being free from standards and taking one’s own feelings into account (“An ideal figure is the figure that its owner likes”; “The body should be comfortable for its owner”, “Different things suit different people, there is no one ideal frame” etc.)

Figure 1 below illustrates the rate (%) of the women whose statements emphasized the importance of being independent of existing body standards and the women who stuck to the ideas of a lean muscular body.

There were three groups of women depending on the amount of time they spent on Instagram per day: 30 minutes maximum; 60-90 minutes; or 90 minutes minimum. The first group included 31 women; the second one included 37 women and the third one included 44 women. Fig. 2 illustrates their distribution in per cent.

Describing their ideas about the ideal body, the young women singled out 7 key features. Table 2 shows that the women who spent more time on Instagram mentioned specific body parts when describing the ideal body more frequently than the others.

Table 3 below presents various test findings in three groups of the women singled out depending on the time they spent on Instagram.

As Table 3 shows, depending on the time spent on Instagram, the young women had significant differences in terms of body attitudes as measured by the Physical Perfectionism Scale and the Situational Inventory of Body-Image Dysphoria. Physical perfectionism and body dissatisfaction were significantly higher (p<0.001) in the women who spent more time online. These women also had significantly higher levels of emotional distress as evidenced by more severe depression symptoms and fear of negative evaluation from others. As for the socio-cultural pressure levels, all the three groups perceived it as quite high. The **Three-Factor Perfectionism Questionnaire** variable levels did not differ between the three groups and were characterized by a wide scatter, with the average values approaching extreme values for the community sample that the authors had studied for the Questionnaire validation [1]. According to the validation data, the Interquartile range varied from 29 to 43 scores in the community sample, and from 36 to 50 scores in the clinical group of patients with depression and anxiety disorders. The lack of differences between the groups

Table 1  
**Frequency of Body Comparisons with Social Media Images in Female Fitness Blog Subscribers (Based on Answers to “How Often do You Compare Your Body with Social Media Images?”)**

Frequency of one’s body comparisons with social media images	Number of participants N (%)
Constantly	61 (54%)
Frequently	29 (25%)
Rarely	21 (21%)

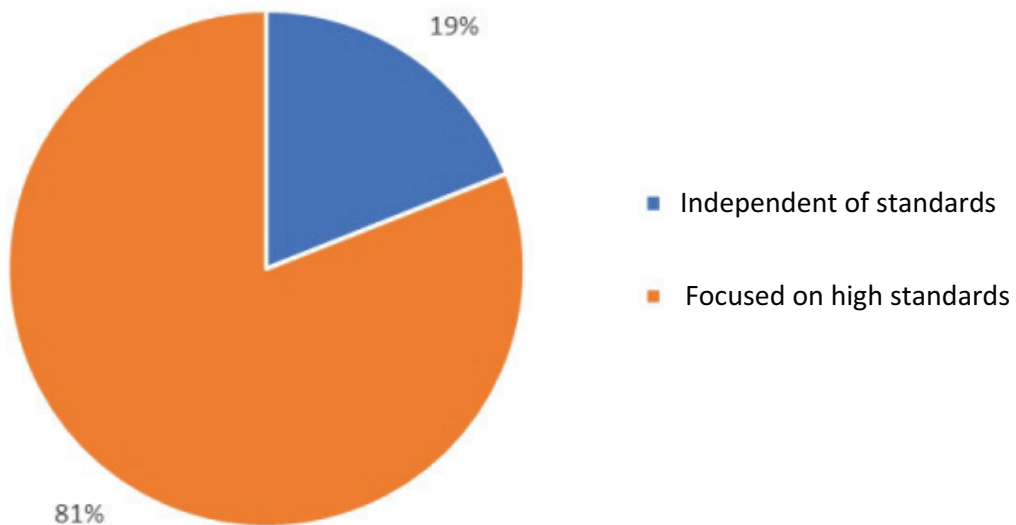


Fig. 1. Respondents’ answers describing their ideal female figure concepts



highlights the importance of studying specific types of perfectionism for certain activities. In our case, with the respondents engaging in body-perfectioning activities, it is important to study not only general perfectionism (total perfectionism score), although it correlates with gen-

eral body dissatisfaction (see Table 5), but also physical perfectionism as a specific destructive factor.

As Table 4 shows, more than half of the women who spent on Instagram over 90 minutes a day had moderate-to-severe depression symptoms, that was twice as much

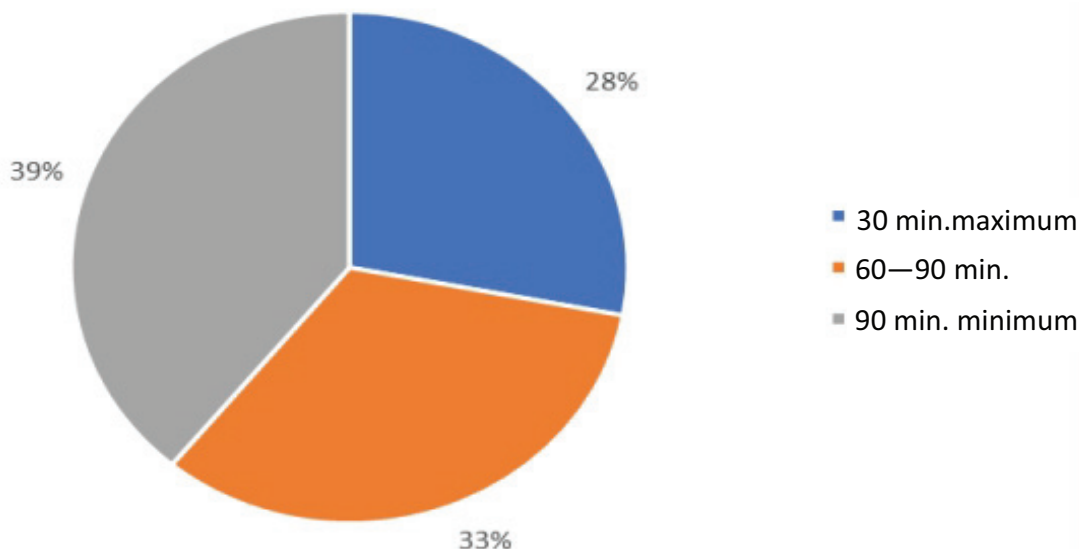


Fig. 2. Women distribution by time they spent on Instagram

Table 2

**Differences in Mean Values of Body Part Mentions in Ideal Body Descriptions**

Groups	Instagram time per day			Significance level (p) (Kruskal-Wallis test)
	30 minutes maximum (N = 31)	60–90 minutes (N = 37)	90 minutes minimum (N = 44)	
	M (SD)			
Number of body part mentions in ideal body descriptions	2.3 (0.8)	5.7 (1.6)	6.8 (1.8)	0.000*

\* – the between-group differences are statistically significant (the Kruskal-Wallis test).

Table 3

**Differences in Body Attitudes, Emotional Distress, and Maladaptive Personality Traits**

Measures	Instagram time per day			Significance level (p) (the Kruskal-Wallis test)
	30 minutes maximum (N = 31)	60–90 minutes (N = 37)	90 minutes minimum (N = 44)	
	M (SD)			
<b>Body Attitude Measures</b>				
Physical perfectionism	17.01(6.5)	21.7 (5.17)	28.64(7.6)	0.000*
Body dissatisfaction	1.5(0.95)	1.74 (0.85)	2.17(0.96)	0.000*
Perceived sociocultural pressure	1.75(0.56)	1.91(0.65)	2.18(0.89)	0.306
<b>Emotional Distress Measures</b>				
Depression severity	8.36(7.2)	11.55(5.95)	17.03(11.13)	0.000*
Fear of negative evaluation	21.9(6.24)	20.69 (6.76)	26.8 (7.8)	0.000*
<b>Maladaptive Personality Traits Measures</b>				
General Perfectionism	38.94(15.2)	37.07(10.8)	39.97(12.65)	0.479
<i>Socially-prescribed perfectionism</i>	14.6 (7.2)	14.2 (5.4)	15.3 (7.4)	0.329
<i>Self-oriented perfectionism</i>	12.05 (5.00)	13.01 (4.66)	12 (4.54)	0.418
<i>Perfectionistic cognitive style</i>	11.8 (6.54)	10.9 (4.94)	12.5 (4.58)	0.434
<i>Hypersensitive narcissism</i>	26.47(6.66)	29.9 (6.2)	32.7 (7.83)	<b>0.07t</b>

\* – the between-group differences are statistically significant (the Kruskal-Wallis test), t – the significance level is  $p < 0.1$ .

as for the young women who spent 60 to 90 minutes a day on the network. It was also striking that about half of the women in these two groups (45% and 47%, respectively) reported suicidal thoughts, which significantly exceeded the suicidal ideation levels in the group who spent less than 30 minutes online, as well as the general population levels. Nevertheless, 29% of the young women who spent less than 30 minutes on Instagram had suicidal thoughts and intentions, with this level being quite problematic too.

Thus, women who used Instagram often, had significantly higher levels of excessive body demands (as expressed by physical perfectionism and body dissatisfaction); emotional distress (depression symptoms and fear of negative evaluation) and suicidal tendencies.

Moreover, there were significant correlations between body dissatisfaction levels and other various measures reflecting: 1) excessively high body demands (a moderate association between physical perfectionism, body dissatisfaction and perceived social pressure); 2) emotional distress (a moderate association between depression and fear of negative evaluation); 3) maladaptive personality traits and cognitive style (weak associations with the Three-factor Questionnaire's total score of perfectionism, socially-prescribed perfectionism, perfectionistic cognitive style and hypersensitive narcissism) (see Table 5).

As Table 5 indicates, the only variable that had no positive association with body dissatisfaction was self-oriented perfectionism. This finding is consistent with several other studies, which showed that this variable might be associated with a greater personal autonomy and goals and attitudes' relative independence of external demands and standards [1; 7], which may also include the ideal body concept.

A series of regression analyzes was also carried out to assess the effects of emotional distress, excessively high body standards and maladaptive personality traits on body dissatisfaction. Table 6 presents the results of regression for body dissatisfaction as a dependent variable.

It was found that four independent variables – and namely, physical perfectionism, fear of negative evaluation, depression, and perfectionism total score – influenced the body dissatisfaction levels. The model explained 71.2% of the dependent variable variance ( $R^2 = 0.71$ ;  $F = 99.03$ ).

### Dynamics of Body-Related Attitudes and Emotional Maladjustment Levels in Women before and after Fitness Marathon

44 women of the whole sample participated in a fitness marathon. They were asked to fill in the question-

Table 4  
**Depression Severity in Female Blog Subscribers Who Spent Different Amount of Time on Instagram**

Depression Severity	Respondent Groups	30 minutes maximum (N = 31)	60–90 minutes (N = 37)	90 minutes minimum (N = 44)
	Number of participants, N (%)			
No symptoms		16 (51%)	10 (27%)	5 (11%)
Mild		9 (29%)	17 (45%)	16 (36%)
Moderate		2 (7%)	6 (16%)	6 (14%)
Severe		4 (13%)	4 (11%)	17 (39%)
Suicidal thoughts and intentions		9 (29%)	17 (45%)	21 (47%)

Table 5  
**Relationships between Body Dissatisfaction and Other Measures of Body Attitudes, Emotional Distress and Maladaptive Personality Traits**

Variables and methods	Body dissatisfaction (Situational Inventory of Body-Image Dysphoria)
<b>Body attitudes</b>	
Physical perfectionism	.532**
Perceived sociocultural pressure	.412**
<b>Emotional distress</b>	
Depression symptoms	.517**
Fear of negative evaluation	.422**
<b>Maladaptive personality traits</b>	
Perfectionism Total Score	.325**
Socially-prescribed perfectionism	.323*
Self-oriented to perfectionism	.071
Perfectionistic cognitive style	.419**
Hypersensitive narcissism	.319*

\* –  $p < 0.05$  (Spearman's rank correlation), \*\* –  $p < 0.001$  (Spearman's rank correlation)

naires before (Time 1) and after (Time 2) the marathon. At Time 1, the participants described their goals including weight loss, gluteal and abs muscles strengthening. The fitness marathon procedure was as follows: every day at a certain time the participants were sent a file with a set of exercises and one creative task, and they had one day to complete the exercise and the task. The young women had to report on their progress by sending a photo of the completed task and an accelerated training video. At the beginning and at the end of the marathon, the young women took their body measurements and provided them as a final report.

Statistical data processing was carried out using the SPSS statistical package and Microsoft Excel. The Wil-

coxon signed-rank test for related samples was used to compare the variables' levels at Times 1 and 2 (tab. 7).

As Table 7 shows, at Time 2, after the fitness marathon, the young women's levels of body dissatisfaction, physical perfectionism, and depression symptoms grew significantly.

At Time 2, we also asked the participants to describe their general wellbeing in any format. Then, we singled out the criteria, which the women used to describe their wellbeing after the fitness marathon completion. Table 8 presents the results of the analysis of the women's self-reports.

As Table 8 shows, the women mentioned various characteristics of their emotional state with domi-

Table 6

**Regression Analysis for Body Dissatisfaction as Dependent Variable (N = 112)**

Variable	Beta	T	P
Physical perfectionism	0.363	4.212	0.001
Fear of negative evaluation	0.312	3.920	0.000
Depression symptoms	0.402	3.635	0.000
Perfectionism Total Score	0.251	3.013	0.001

Table 7

**Wilcoxon Signed-Rank Test for Related Samples and Mean Levels of Body-Related Attitudes and Emotional Distress in Young Women before and after Fitness Marathon**

Variables and methods	Values		Wilcoxon signed-rank test	
	Time 1 M (SD)	Time 2 M (SD)	Z	Asymptotic significance (2-sided)
<b>Body-Related Attitudes</b>				
Physical Perfectionism (Physical Perfectionism Scale)	21.6 (4.67)	24.3 (6.03)	5.896 (a)	.000
Body dissatisfaction (Situational Inventory of Body-Image Dysphoria)	2.07 (.83)	2.17 (.87)	3.404 (a)	.001
<b>Indicators of emotional distress</b>				
Depression severity (Beck's Depression Inventory)	13.9 (7.42)	18.6 (8.09)	5.802 (a)	.000

Table 8

**Self-reported Evaluation of Wellbeing in Fitness Marathon Completers**

Criterion	Statements	Number of mentions
Performance	I didn't lose even 100 g / I see no changes / the waist has become thinner / I have pumped up what I wanted / [I have achieved] "nothing" generally / I have put on weight and that's it / it seems that I have just gained weight / no matter how hard I tried, nothing worked / I have lost weight / [it was] useless for me / I do not see the result / [I got] nowhere near losing weight / I weighted 56 kg and nothing has changed / the result sucks / I failed to lose weight / [my] weight froze / I lost so much in the beginning, and then there was no change / I have achieved the result, gained mass / the result is good, my body has become more toned /	16
Emotional state	I am disappointed * 7 / massive (utter) disappointment * 3 / I became even more unhappier / I am terribly upset as a result / it seems it is even more disappointing / ... [I am] happy / I feel disappointed, this was quite an amount of money for me / I was so nervous every day; I felt relief when this whole thing came to an end / I'm angry that I have lapsed /	18
Self-image	It failed work for me, I'm a loser / .. and I'm obese and fat / Everyone is so great, not like me / I'm a real loser /	4
Behavior	I lapsed and overate / I have been having the blind munchies, I have been eating so much / I started to spend more time at the gym/ well, I have signed up for the gym /	4

neering negative feelings (disappointment, hurt and anger) and provided subjective evaluations of their fitness marathon performance, i.e. subjective feelings of the changes in the body (with a feeling of being dissatisfied with the results standing out), most frequently. Statements characterizing one's own self and behavior after the marathon contained more negative evaluations.

## Discussion

The findings obtained are consistent with the results of multiple foreign and domestic contemporary studies. For example, there is evidence for a shift towards an athletic figure popularity over thin one [4; 5; 10]. "The ideal of an athletic frame", characterized both by a lean and toned body with a more muscular upper body, flat belly with six-pack abs, and a toned lower body, has become popular with various social groups [25]. Likewise, our study participants provided significantly more descriptions of a muscular, toned body image when writing about the ideal figure. Our study showed that female fitness blog subscribers were guided by high appearance standards and had rigid ideas about the ideal figure and its specific parts which complies with the existing research data [5]. When comparing our results to earlier findings, we can see an increase in the rate of women who focus on high beauty standards. P.M. Tarkhanova's study showed that 70% of women laid an extreme emphasis on appearance and had strict beauty standards, while in our study this high beauty standard orientation was present in 81% of the women [4].

Previous experimental studies showed a link between an exposure to thin ideal images published by various mass media (television, magazines, and advertising) and body dissatisfaction in women [20]. The rise in the athletic frame popularity was partly due to a global uprise of fitness blogging on social media, i.e. the media sources that many women use today to get information related to health, diet, and exercise.

Our study highlighted the importance of time that the female participants spent on Instagram: the more time the young women dedicated to viewing fitness blog images, the higher their levels of excessive body demands, emotional distress and maladaptive personality traits were. In compliance with a number of foreign stud-

ies, our study findings clearly indicate that active Instagram use can give rise to body dissatisfaction.

Our study also confirmed the hypothesis that female fitness blog subscribers' levels of body dissatisfaction, excessive bodily beauty standards and emotional distress increased significantly upon the fitness marathon completion. Their levels of physical perfectionism and depression symptoms increased significantly as well. There was also a predominance of negative emotional state evaluations and dissatisfaction with the results after the fitness marathon.

## Conclusions

1) In the present times, the ideal of a "thin" figure, which was typical of the late 1990s and early 2000s, has undergone significant changes. The new ideal, a "sculpted" athletic body, which is portrayed as toned, high in muscle mass and low in body fat, is widely promoted on fitness blogs and social media.

2) Preoccupation with one's appearance has been assuming epidemic proportions — an increasing number of people have been experiencing concerns about, and often dissatisfaction with the way they look. Female fitness blog subscribers are guided by excessively high body standards and have rigid ideas about the ideal figure and its specific parts.

3) Young women who spent on fitness blogs over 90 minutes a day had high levels of excessively high body standards and emotional distress, including increased suicidal tendencies. The regression analysis showed that physical and general perfectionism, depression, and social anxiety exerted the strongest effect on body dissatisfaction.

4) Following their participation in the fitness marathon, young women had significantly higher levels of body dissatisfaction, physical distress, and depression symptoms, which is confirmed by the descriptions of their negative emotional state immediately upon the fitness marathon completion.

5) The findings obtained allow us to infer that young female fitness blog subscribers and marathon participants have a high risk of emotional maladjustment. There is a pressing need for preventive measures to address the youth's massive engagement in social media practices that are dangerous for their mental health.

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## Участие в фитнес-блогах как новая социальная практика и ее последствия для психического здоровья молодых женщин

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Участие в фитнес-блогах и фитнес-марафонах становится одной из популярных социальных практик, прежде всего среди молодых женщин. И, хотя в качестве одной из целей этих практик заявляется польза для здоровья, в реальности они сопряжены с серьезными рисками для психического благополучия участников. В статье представлены результаты исследования, цель которого — изучение уровня и факторов психического неблагополучия женщин-участниц фитнес-блогов, а также динамики их эмоционального состояния в процессе фитнес-марафонов. В исследовании приняли участие 112 женщин в возрастном диапазоне от 18 до 35 лет, средний возраст — 23,5 лет; среднее отклонение — 4,7. Все респонденты являются подписчицами различных фитнес-блогов в социальной сети Instagram. В исследовании были использованы следующие методики: Опросник

физического перфекционизма [8]; Опросник «Ситуативной неудовлетворённости образом тела» [14]; Шкала воспринимаемого социокультурного давления [3]; Краткая шкала страха негативной оценки [9]; Шкала депрессии Бека [17], Трёхфакторный опросник перфекционизма Н.Г. Гаранян и А.Б. Холмогоровой [1]. Полученные данные свидетельствуют о том, что молодые женщины, проводящие в сети Instagram 60 минут в день и более, отличаются от тех, кто проводит в Сети не более 30 минут, значимо более высокими показателями требований к своему телу и неудовлетворенности им, а также большей выраженностью симптомов эмоциональной дезадаптации, включая суицидальную направленность. Согласно данным регрессионного анализа, наиболее значимое влияние на рост показателей неудовлетворенности своим телом оказывают физический и общий перфекционизм, а также социальная тревожность и депрессивная симптоматика. После участия в фитнес-марафоне у женщин значительно повышаются показатели неудовлетворенности собственным телом и показатели эмоционального неблагополучия. Дальнейшие исследования необходимы для того, чтобы наметить мишени профилактики эмоциональной дезадаптации, к которой приводит массовое увлечение молодых женщин фитнес-блогами.

**Ключевые слова:** неудовлетворенность своим телом, фитнес-марафон, fitspiration, фитнес-блог.

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# Changing the World for Children with Complex Feeding Difficulties: Cultural-Historical Analyses of Transformative Agency

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How to bring about positive change is a key concern in cultural-historical theory. There is an urgent imperative to address questions of transformation at the nexus of the individual and the social. One way to approach this is through the concept of agency, the means through which people go beyond coping with problems or adapting to the status quo, instead striving to make the future that ought to be a reality. This paper takes up ideas from Stetsenko's transformative activist stance (TAS), Sannino's transformative agency by double stimulation (TADS), and Edwards' relational agency, tracing the emergence and enactment of agency among parents of children with complex feeding difficulties. These children were unable to eat orally, instead using a tube to feed. Each family strived towards, and realised, futures where their child was able to feed orally, without a tube. Parents acted agentially in ways that were contingent upon relevant cultural tools. Such tools are key to futures that are more inclusive, equitable and nurturing for all children and their families. The paper highlights the value of contemporary cultural-historical approaches to agency in understanding and provoking transformation at the nexus of the individual and social.

**Keywords:** agency, transformation, cultural tools; parenting, feeding, Vygotsky, tube-weaning, tube-feeding dependency, enteral feeding, health consumer engagement.

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## Introduction

How to bring about positive change is a key concern in cultural-historical theory. A focus on the dynamics of change is a hallmark of cultural-historical approaches [5]. Stetsenko [53] critiques the domestication of Vygotsky to suit politics-neutral approaches, arguing that Vygotsky, in the footsteps of Marx, advocated world-changing scholarship committed to activist agendas. Vygotsky's early work can be seen in this activist light, an unapologetic orientation to so-

cial justice, equality, liberation of the oppressed, and social transformation through equal access to education [52]. Instead of 'banal biscuit-box' readings of Vygotsky, Stetsenko [52] suggests Vygotsky's work belongs alongside other radical movements including Freire's critical pedagogy.

These currents are clearly visible in contemporary cultural-historical research, including that of Mariane Hedegaard [22], Finnish work on Change Laboratories and enacted utopias [39], Indigenous learning laboratories tackling historical racism in schools [2; 3], Edwards



and colleagues' project reducing social exclusion of children in the UK [15], and Edwards' work with young people with autism [16]. There are many other examples of cultural-historical scholars upholding an ethico-political approach to research. Stetsenko [51] urges for theory in general, Vygotsky in particular, to be made 'dangerous again', meaning useful and put to use in the struggle for a better world, for cultural-historical research to be (or go back to being) flagrantly partisan [43].

The concept of agency is central to this. However, dualistic thinking that pits individual agency against social structure embroils the concept in precisely a rift between persons and the world that cultural historical activity theory (CHAT) seeks to overcome [51]. Unsurprisingly, CHAT scholars have been wary of agency. Stetsenko suggests researchers within and beyond CHAT have, in debunking the myth(ology) of isolated individuals, thrown out important concepts — including the person, subjectivity and agency. These concepts need not imply dualistic thinking. One of today's major challenges in theorising human development and mind is...

*"... how to conceptualize human agency yet not slip into the pitfalls of traditional approaches premised on assumptions about agency as an autonomous, solipsistic achievement of isolated individuals understood either as "free-will" subjects or, on another spectrum of views, as puppets of extraneous influences at the whim of powerful forces outside of one's control and even awareness."* [51, p. 5].

Agency can be conceptualised dialectically such that the gulf between persons and society disappears [8; 51]. A dialectic view enables us to see 'the adaptive and innovative opportunities that humans create through agentic projects with each other and the natural world, rather than as against each other and the world' [8, p. 283]. Agency can and should be taken up in CHAT, in non-individualistic ways [10; 33; 34]. Agency manifests in CHAT scholars' interest in identity development [23], collaboration at sites of intersecting practices [13; 14], double stimulation [34; 39], mediation in breaking away from given frames [19; 21; 28; 56], breaching social order [20], collaborative change [30; 31], civic participation [11], and *pouvoir d'agir* or power to act [6]. Vygotsky's work can itself be read for more than glimpses of agency, including through children's active deployment of tools [1], creative sense-making [7; 9], and idea that actions are not dependent on an immediate need or situation, but are rather directed toward the future [51].

These examples reflect a recent surge of interest in agency [48]. If we commit to transforming the status quo, not just adapting to it, then we need concepts that allow for agentic action at the intersection of individual and social dimensions [50]. This paper takes up three contemporary approaches to agency within CHAT: Stetsenko's [45–54] transformative activist stance (TAS); Sannino's [35–41] transformative agency by double stimulation (TADS); and Edwards' work on relational agency [13–17]. Each of these will now be outlined.

## Contemporary cultural-historical views of agency

Stetsenko's transformative activist stance (TAS) incorporates agency as a central feature of a wider, unified ethico-ontopistemology [50; 51]. This offers a notion of the 'collective' [42], which transcends social/individual divides. Personal becoming is contingent on how one comes to matter in social processes, and social practices are contingent on individual contributions [51]. This shifts from a focus on *participation* to a concern with *contribution*: each person 'not only enters social practices, but agentively realises them while making a difference to them' [49 p. 10]. TAS combines standpoints (who is speaking, acting) with endpoints, the future towards which people strive. Actions are world-making, with agency a matter of moving beyond the status quo rather than adapting to it, infused with activism as opposed to political quietism.

*"Paraphrasing Kohn, I would say—show me a conception of agency that operates with the notion of responding to the world and stays away from politics, and I will show you a conceptual terrain tacitly defined by behaviorism and neoliberalism"* [48, p. 11].

Nardi [32] concurs with Stetsenko's [45] efforts to (re)direct CHAT towards understanding what enables us to transform our circumstances, acknowledging that this will require a readiness to deal with individual agency without losing sight of the social. Individuals strive towards the future that ought to be, while doing so is contingent on access to relevant cultural tools, and always unfolds within social practices. TAS is not about solipsistic acts of heroism; it reclaims agency at the intersection or nexus of individual and collective.

Sannino [35–41] approaches agency through the concept of double stimulation. Transformative agency by double stimulation (TADS) links double stimulation, volitional action, and transformative agency. TADS refers closely to Vygotsky's writing, was further developed through experiments [37; 41], and analysis of efforts to eradicate homelessness [38–40]. TADS foregrounds intentionality in agency, focusing on situations where there are conflicts of motives. Double stimulation is elevated from an epistemological principle of formative intervention (as in change laboratories), to a core principle of agency:

*"Transformative agency built on double stimulation transpires in a problematic, polymotivated situation in which people evaluate and interpret the circumstances, make decisions according to the interpretations and act upon these decisions"* [35, p. 2].

Key to TADS is the use of artefacts as auxiliary stimuli connected to auxiliary motives that provide a new frame, a way out from the dilemma through new modes of action. TADS can capture the emergence of agency whether focusing more on how individuals escape from conflicted situations [26; 27; 39], or at diffuse, city-wide scales [39]. It does so without evacuating the social in the former, or individual contributions in the latter. Recent expansions of TADS incorporate the concept of warping or anchoring forward [40]:

*“Forward anchoring involves the formation of novel representations emerging through personal sense-making, social interaction and experimentation embedded in the materiality of a problem situation... Second stimuli understood as forward-oriented kedge anchors are instrumental in the elaboration of new meaning which may be stabilised to the point of supporting transformative actions in problem situations for which there are no known solutions”* [40, p. 4].

The individual and social are also equally present without being separated in Edwards' work on relational agency. This comprises three concepts: relational agency, relational expertise, and common knowledge [13]. Relational agency refers to how two or more people work with different object motives while tackling the same complex object of activity, such as a child's trajectory [14]. This involves joint expansion of the object, revealing its complexity in ways that a person working alone could not do. This expansion, opening up new possibilities for action, depends on relational expertise, a 'capacity to elicit and hear what matters for other practitioners or the family and to be explicit about what matters for themselves as professionals and to be able to draw on these understandings when needed' [14 p. 2]. The links between people working relationally in this way are built through what Edwards calls common knowledge. This refers to knowledge of each other's motive orientations, which ...

*“... can then become a resource that can mediate responsive collaborations on complex problems. In this sense, common knowledge is what Vygotskians would recognise as a second stimulus... a resource that is constructed and reconstructed in use on problems while it mediates actions on the problems.”* [13 p. 9].

Here we see an auxiliary stimulus arising through collaborative work. Edwards links common knowledge with asking and giving reasons, revealing specific values and motives so that people can recognise what matters to others, articulate what matters to them, and align their responses [13]. As with TAS and TADS, Edwards' advocates work that is 'deeply ethical as it allows for creative responses which stem from what is important for each individual, at the same time connecting people dialogically to each other and to a common good' [13, p. 2].

### **Complex feeding difficulties in childhood**

Feeding difficulties affect many children. They can vary in severity and duration, from fussy or picky eating, to life-long difficulties associated with chronic disease or disability. Feeding difficulties affect around half of otherwise healthy children (with parents identifying more cases than are recognised clinically), with a much higher figure of around 80% for children with developmental delays [4].

In severe cases, children are unable to feed orally. This is common in prematurely born babies, recovery after surgery or cancer treatment, and is associated with hundreds of conditions, such as cerebral palsy, autism spectrum disorder, cleft palate, and some genetic condi-

tions [29]. Where oral feeding is not possible, a tube is often used. This is called enteral feeding, and commonly begins with a nasogastric (NG) tube, which passes up the nose then down into the stomach. A surgically emplaced tube may be used if tube-feeding extends beyond a few months, including a percutaneous endoscopic gastrostomy (PEG), passes from near the naval through the skin and into the stomach or intestines. Data on tube-feeding prevalence are patchy and incomplete, with estimates pointing to between 1 and 92 children per 100,000 [29].

Tube-feeding can solve the problem of nutritional intake, providing a safe and reliable of delivering food to the body. However, tube-feeding can also create problems, including biomedical side effects (such as excessive vomiting), and feeding-tube dependency, meaning that children who *could* feed orally do not because continued use of a tube inhibits their learning and ability to do so [57]. Tube-feeding impacts all aspects of home life, and can also cause distress, anxiety and social isolation among families, challenged by the logistical and material complexities of tube feeding, and feeling stigmatized and subject to the critical gaze of others [24].

Given these difficulties, what matters to many parents is a transition to a future where their children thrive without being negatively impacted by the tube. For some, this means long-term tube-feeding, however most hope to transition to oral feeding, removing the tube completely. However, the healthcare system is not always adequately set up to make such transitions happen. Tube-feeding helps ensure children gain weight, which is a key indicator of 'thriving', while the untoward problems that tube-feeding can trigger are often out of clinicians' sight. Failure to plan for eventual tube-weaning can cause additional anxiety in families, lead to feeding-tube dependency, and unnecessarily delay transition to oral feeding [18]. Tube-weaning should be part of the discussion and planning from the day tube-feeding starts, for all children who are expected to be able to feed orally at some point [55]. This was not the case for the parents whose agentic actions are the focus of this paper. They each describe significant struggles in accomplishing tube-weaning. In these struggles they both challenged the status quo in the healthcare system, and were assisted by healthcare services and professionals. We need to better understand how parents have been able to realise tube-free futures for their children, and the challenges they have faced in doing so.

### **Narratives of change from an unfolding, collaborative activist study**

This paper considers data from a larger collaborative activist project called the SUCCEED Child Feeding Alliance, which strives to foster better futures for children with complex feeding difficulties and their families. The SUCCEED team includes a paediatrician, speech pathologist, parents, an artist, and academics from education and business. The project co-created the childfeeding.org website, which curates parents' knowledge, sharing practical strategies that help families of children who tube-

feed go from just surviving, to situations where everyone is thriving. The website aims to ensure tube-feeding is no longer a barrier to inclusion in developmental opportunities for children, enjoyment in family mealtimes, and wider social activities for siblings and parents. This was based on a cultural-historical analysis of the tools that parents develop and use in their everyday life to help get out of the house, manage care responsibilities, and resist stigmatising practices [24]. The website is a unique resource not constrained by geography and timing (clinic locations and opening hours), nor by a prescribed relationship to the child (available to wider relatives, friends, professionals and others usually not present in clinic appointments).

Guided by parents, SUCCEED took on new forms of activism, including arranging Australia's first tube-feeding picnic in 2019 (featured on national news television), and an online version in 2020 (due to the Covid-19 pandemic). An art installation was co-developed with parents and artist Kate Disher-Quill, presenting a series of photographs of parents, children, and tube-feeding equipment, exhibited at a number of locations across Sydney. The images share the challenges of parenting children who tube-feed, while celebrating courage, and children as playful, happy, nurtured, loved and accepted [12]. Another thread in this activist work involves advocacy for change in healthcare, co-writing an agenda for research and care improvement, co-authored with parents and clinicians [27]. Central to this is improving care by addressing the tube-feeding life-cycle, from tube initiation to tube-weaning (or for those for whom weaning is not possible, transitioning to long-term tube-feeding). This paper extends the tube-weaning agenda by examining how parents enable their children to transition to oral feeding — through agentic practices that shed critical light on ways the healthcare system can create tube-weaning as a site of greater struggle than it needs to be — while also playing a crucial role in successful weaning.

The analysis focuses on three mothers' narratives of tube-weaning. Transitions to oral feeding were accomplished in different ways in each family. The mothers were asked to tell the story of tube-weaning from wherever they felt it started, up until the present day. The researcher probed for additional detail or confirmation, but otherwise, the narratives were free-flowing and unfolded as each mother chose to tell the story. Table 1 outlines the three cases.

In the analysis, a timeline was constructed, placing each action in unfolding historical context. Then, relationships between the mother, child and others were mapped to anchor the analysis in the nexus between individual and social. Next, specific attention was paid to mediating tools, conflicting motives, common knowledge, and future orientations. Through this, a distinct character emerged for each of the three cases. The cases are presented below, beginning with a summary narrative in the first person that foregrounds each mother's contribution to the transformations from tube- to oral feeding. These are discussed with reference to the cultural-historical concepts of agency outlined above, emphasising aspects that are particularly resonant in each case. This is a diffraction for analytical purposes, and in reality each case displayed aspects of agency highlighted in the other.

### Kate, Jessica, and family

*Jessica's first feeding tube was placed the day she was born, even before I got to first properly hold her. Tube-feeding was life-saving, but then became a problem when she was physically able to eat orally, but have become tube-feeding dependent.*

*Jessica's tube-weaning story began 16 months later, on the beach. A family came up to us and said, "Oh your baby's tube-fed. Our niece was tube-fed and she's just done a rapid tube wean at the Royal Children's in Melbourne and they got her off her feeding tube." We said, "Tell us more!" I rang the mother. She'd done a net-coaching rapid tube wean with the Graz Children's Hospital Austria, supported by the Royal Children's Hospital (RCH) Melbourne. We did our research and connected with other families who had used this approach. It felt legitimate and safe because RCH Melbourne had been involved. But I wanted to be sure. I read articles and made phone calls. Family stories on the Graz website were really important, as was the opinion of a dietician whom I trusted and felt knew and trusted Jessica. We connected with another family who had actually travelled to Graz for their rapid tube-wean.*

*We made our decision using a BRAN test, which we had learnt from another parent: What are the Benefits, Risks, Alternatives and N is for No thank-you. We knew our child and our instincts were that Jessica could eat orally, but she*

Table 1

**Overview of tube-weaning cases\***

Mother	Child	Tube-feeding history	Approach to tube-weaning	Key theoretical insights about agency
Kate	Jessica	Birth to 16 months	Rapid tube-wean led by overseas hospital, based on hunger	Relational agency, building a coalition of professionals to overcome inertia in the healthcare system
Elena	Izzie	Birth to 14 months	Puppets, hunger, learning to chew and swallow, giving Izzie control	Diverse cultural tools of agency, collective, relational agency
Irene	Connor	NG tube from birth to 10 months, then PEG for just over 2 years	Developing interest in food while tube-feeding; cessation of tube-use during 'testing' period before final removal	TADS, use of auxiliary motives to resolve conflicts of motives; anchoring forward

\* Parents chose the names to be used for them and their children.



*was not hungry from the constant tube-feeding, and had so many negative experiences around food and tubes and equipment around her mouth that she was not motivated to eat.*

*I really had to sell the idea to Jessica's paediatrician, presenting our research and finally the pitch that if kids in Melbourne are able to do rapid tube-weaning, then Brisbane kids should also be able to. Thankfully, Jessica's paediatrician engaged. We connected with the hospital paediatric child psychiatrist, and she knew the lead consultant involved at RCH Melbourne and made contact. The rapid tube-wean was on! But we still had to get the wider feeding team on board. Now we had two consultants supporting us and the connected care nursing team. The speech pathologist and occupational therapist who were concerned by Jessica's lack of feeding skills. With the consultants' endorsement they got on board. Eventually we persuaded the hospital legal team, and finally we could go ahead.*

*We started the wean following a feed reduction schedule from the Graz team in Austria, overseen by Jessica's paediatrician. We had daily play picnics with three other families, including one from Brisbane who had been to Graz. Seeing the quick progress made by one 6-month old in our group really helped keep us going.*

*Progress was initially slow and hard going. We were sending daily videos and updates to Graz. The professor was always very positive and confident, saying "She's close! You see what she's not doing. We see what she is doing". They were noticing subtleties that I now realise are massive milestones for a child regaining interest in food. Jessica was losing weight as expected, but the messages from Graz and our local team's support gave us confidence to keep going.*

*Day 17 – Jessica started eating! We were brainstorming with all of the team (clinicians, nursing, allied health, and mum) after one play picnic and the complex care nurse said, "She loves the bath, try feeding in the bath". We tried later that day and Jessica ate some puree off her Dad's fingers!*

*Jessica had to feel hungry and learn that food was the solution to that hunger. We had to make food and eating fun and follow her cues, her pace and her timing. We transitioned Jessica from feeding in the bath to the dining table, with a bucket of water beside her for play. After a few days we no longer needed to do this. Jessica was happily eating puree off a spoon with no distractions.*

*Three months later our feeding-tube dependent child was completely orally fed. It has still been a lot of work to get Jessica to eat age appropriately. We found a speech pathologist who helped enormously teaching Jessica to chew and grind food with different textures. Now we go out and order food for Jessica straight off any menu. To see her enjoy food and mealtimes just like any other child brings us the greatest joy. Tube weaning truly transformed Jessica's and our whole family's lives.*

The relational aspects of agency in this case are clear, in the sense associated with Edwards' [14] concept. This was not a matter of one mother taking on the health system. Rather, Kate built coalitions of people, each of whom contributed something crucial to the process. This required acts of advocacy and persuading others to advocate, as

when the consultants brought the wider team on board, who in turn helped convince the legal team. The many healthcare professionals involved each brought their own object motives, while tackling the same complex object of helping Jessica feed orally. Not only were different professionals involved, but the collaboration spanned Australia and Austria. Kate recognised and addressed the demands of bringing the healthcare for Jessica into alignment with her motive for a tube-free future [17].

Common knowledge [13] was key to how these alliances were built. In Edwards' [13] vocabulary, it was a process that depended on asking and giving reasons, revealing values, and recognising what matters to others. Kate had to learn what mattered to the legal team, the consultants recognised what mattered to their more hesitant colleagues. Relational expertise underpinned coming to know the motive orientations of others, reaching joint interpretations of the problem in order to develop a joint response. Over time, the object (how Jessica could feed orally) expanded – including noticing Jessica enjoyed the bath, and the possibility that this could be used to help her feeding. While the idea was a particular contribution of the nurse, this inspiration was possible because of all the information and insight that had been shared, including by Kate, about how Jessica was at home. These collaborations enabled the transition to oral feeding, but were also the focus of agency themselves. The coalitions were not a given, and were themselves sites of struggle, contestation and power differentials.

Also noteworthy are the many cultural tools that mediated this process. These included the BRAN analysis (recommended by another parent), creative adaptation of a bucket to bring bath-time to meal-times, stories provided by other parents on the Graz website, and the presentation of an achievable future horizon through the co-presence of a child who was thriving having recently completed a rapid-wean. This highlights the social contingency of the whole transformation. Kate was able to act agentically because some tools were available, yet at the same time agency was required in making other tools available. Kate's social environment was not simply saturated with all the necessary tools simply at hand.

Kate's standpoint, her positioning in wider social relations, cannot be ignored as a factor making this possible, including chance encounters on a beach, living in an urban area close to relevant healthcare services, and the fact she had a friend who could help her understand how to persuade the legal team. The healthcare system presented huge inertia, favouring the status quo of continued tube-feeding, but the tube-wean would not have been accomplished without it. Believing in Jessica, and buttressed by stories from others, weight given to professional opinion and institutional standing, Kate took a stand, fiercely committed to the endpoint of Jessica feeding orally.

### **Elena, Izzie, and family**

*When Izzie was 13 months, she'd had her surgery and I felt we could start to address her feeding (she used an NG tube). We were attending a clinic, but we weren't get-*



ting anywhere. They were happy with her weight gain, and when they offered her food or a bottle, Izzie didn't want it. They just said "You're doing a good job Elena, keep it up. See you next month".

My mother-in-law pushed it. She happened to meet someone through her work whose son had feeding issues and had weaned off his tube. She asked for the details of their speech therapist, Sarah, and passed them onto me, I thought I'd try her out, get a second opinion. Sarah saw us after a few weeks. My mother-in-law came with me, because I felt I couldn't think straight right then, I needed someone with an honest opinion to help me out. She's the best person for that.

We went to the appointment. I've never seen anything like it! Within 10 minutes, Izzie was holding food. That was 'oh my god!' because Izzie had never had that relationship with food. Sarah had a Cookie Monster puppet, and started singing to Izzie, singing "Everybody eating, eating". She started feeding these biscuits to the puppet. There's mess everywhere but he's eating. Izzie grabbed the food and started to feed the puppet. Me and my mother-in-law were like "Am I seeing this?! Are we dreaming?!"

Then Sarah was asking us about Izzie's story, and we noticed Izzie grabbed a biscuit and put it in her mouth. That was it! I knew I had to see Sarah. Within six weeks, Izzie was off her tube.

We'd go each week, and she reduced Izzie's formula bit by bit, replacing it with water so Izzie had to eat: she was hungry. She had to get comfortable with her mouth, chewing — she didn't know how to use those mouth muscles. Sarah would give me a list each week, what we could and couldn't offer. Like the pouch food, that was great because it was high in fat, so it kept her going and made her feel full. We needed her to associate that feeling with food.

We let Izzie have her say. Izzie's personality is she wants to do things her way, so we always started with the tube, and gave her the option afterwards. Gradually, more water meant more hunger for Izzie, and soon she was eating solids.

Within six weeks, we were hardly using the tube, and Sarah said "Today is the day. Take that tube out of Izzie's nose". I didn't know if I could do it. Sarah said "No, you have to do it. She's ready, this is good". She made me physically throw it in the bin. I'd replaced her tube heaps of times. This was different. This was like 'this is it'.

When I got home, before I even went inside, I rang my husband, saying "You'll never believe this. We have no tube". He said "Are you kidding?" I said "No. I had to throw it out". I took pictures of Izzie in the back seat of the car, a big smile on her face. I sent it to everyone. We were all crying. It was a great moment. It was anniversary of my Dad passing away. I thought 'that's him'. So now we truly celebrate that day.

We kept seeing Sarah, introducing different textures, homemade cooking and things like that. Izzie had always been part of our mealtimes, sitting with us, watching us put food in our mouths. That was our time for bonding, but it also really helped when it came to the weaning. Any meal, Izzie was always part of it.

Below is an extract from a speech Elena gave at a tube-feeding picnic event

Pretty much from the day Izzie was born, up until just before Christmas, she was with a feeding tube. [crying] Um, it gets a bit emotional, as you all know. It was the hardest point in our lives. [children's entertainer comes over to hug her] Thank you! It was super-hard, but we're super proud of what we achieved. [applause] Our main focus was we hoped to get her off that feeding tube. I think the message is really that for the majority of us it is only temporary and that's what we have to think about. There is the light at the end of the tunnel. We put our heart and soul and everything into it. With patience and a lot of strength from family and friends supporting us as well, and our intuition of what our child needed, we followed that through. And since just before Christmas she hasn't had a feeding tube. She's been eating everything. I'm super-proud to be a part of this picnic. We should be super-proud that we are leading the way, doing things like this where we can all get together — talk to the people next to you, get their stories, and see you next year!

Elena's story highlights a number of everyday items that became significant as tools of agency. This often involved repurposing towards the endpoint of Izzie weaning off the tube: a children's puppet was a tool to link food and play; food pouches were a means to make oral ingestion of food safe; the dustbin became a material and symbolic artefact, accentuating both the significance and finality of Elena's action in removing the tube. Finally, Elena took up the platform of the picnic, drawing on cultural conventions of speech-giving, contributing to making the cultural tools of agency visible and available to others.

Like with Kate and Jessica, the process for Elena and Izzie started with a chance encounter. Elena's story points to the risks of getting trapped in a clinical acquiescence, where tube-feeding is perpetuated because those involved settle for the status quo of sufficient weight gain. The 'given' future was not one where Izzie was feeding by mouth.

Elena foregrounds the contributions of others in making Izzie's tube-free future possible. However, Elena's own contributions do not disappear. Elena acted with relational agency in taking her mother-in-law to the first appointment, using their special relationship as a means to exert control over her own behaviour (having the courage to attend), and to delegate when she felt unable to think clearly herself. What might appear to be surrenders to others are not that at all. Elena followed Sarah's advice, but according to her instincts of what would work for Izzie — not pushing her (here we see acts of resistance against the past). Although it was hard to do, it was *Elena* who pulled the NG tube out for the last time and threw it away. Sarah was instrumental in making this possible. From her clinical standpoint, she stood for the same endpoint, sharing a belief in Izzie and a readiness to take steps towards her tube-free future.

In her speech at the tube-feeding picnic, Elena publicly claimed her accomplishments. Her language (our, we, us) tells a story of a shared journey, of multiple contributors, whilst acknowledging her own instincts, efforts, and the difficulties she faced.

Elena narrates a truly 'collective' [42] account of transformation for Izzie. The mention of others (friends,

wider family, her father in spirit) does not come at the expense of her own contribution. This is precisely how the dynamics of agency worked in Izzie's tube-weaning, where the effects of diverse cultural tools (cookie monsters, feeding pouches, diluting practices, the symbolism and materiality of the bin) were amplified by individual actions connecting with the actions of others. This nexus of the personal and social manifests in Elena's envisioned future actions in a wider public sphere, joining others in solidarity, 'leading the way' for families with children who tube-feed, now an expanded, collective, endpoint.

### Irene, Connor, and family

*When he was 10 months old, Connor had several surgeries coming up, so we made the decision to have his NG tube changed to a PEG. We initially thought it might be for months, but it turned out to be for two years. We understood he needs it, it's there for nutrition, so what are we going to do as parents for him to develop an interest in food and to establish oral feeding?*

*We knew we had to tick off the medical boxes, ensuring he was safe. I relied on his medical team for that. For instance, his cardiology team to tell me they are happy with his heart function, his cleft team to say we need to leave it a while longer because there's surgeries coming up. Our plan forward was to keep offering him food, to help him have a positive relationship with food.*

*Intellectually I knew the tube has its purpose, but emotionally I couldn't wait until it came out. I felt that type of thinking was focusing on something unproductive. To get the tube removed, whenever the time comes, we need A, B and C in place. My job was to get those steps done. We can't remove the tube until he has proven he can eat a full diet, that he's hydrated orally. Can we give him his medicine orally? Has he suffered an illness and we haven't used the tube? Do his medical team support it? Are there no surgeries on the horizon? The professionals deal with his medical stuff, the rest is up to me. Realising that was when I felt empowered.*

*Our journey has been a collaboration between our paediatrician and his team, my husband and how we operate as a family, my research, networking, blogs, and talking to other parents. That's how I found out other children with cleft palate can still eat a full diet without a tube. I knew there's nothing stopping him to eat, it's simply a lack of practice and instruction. So we had to get him knowing what to do with food, touching food and more importantly, swallowing safely.*

*Yes, we had access to feeding clinics, but he was with me 24/7, and I had the power to cultivate a positive relationship with food. We set him up to thrive, not to fail. We made it fun, gave him the foods he enjoys, let him lead that. We made sure the foods supported him in terms of how his mouth was for instance he handled solid whole foods much better than purée. We all sat down together for meals. At morning tea, I'd pack a few extra snacks — making adjustments like that to expose Connor to the idea that this is eating, this is a social thing, this is what we do. Taking him to coffee shops and restaurants so he could see*

*others eating. Our other children got on board, emphasise their chewing and theatrics "Ooh yummy this is going in my mouth". He was captivated. The kids didn't feel silly. That was our intensive therapy! He started grabbing food or opening his mouth and letting us feed him. Even if most of the time he wasn't eating, it was exposure, and it was his choice. I wasn't concentrating on getting rid of the tube, just on taking the pressure off and providing him positive experiences.*

*Eighteen months after his PEG was put in, the cleft team said they didn't want to do any surgery for at least a year or more. This gave us a window — one of the things on my list, tick! By this time, he was eating a full diet, but we were still using the tube occasionally. I said, right, let's shut it down and pretend it's not there, and see if we can really show he's eating a full diet, he's empowered making choices about his food, we are listening to him.*

*I said let's try for 3 months. I taped the tube down. It was a real personal restraint for me not to use it because it is convenient, it does guarantee your child is getting everything they need nutritionally. I had to say, "Irene when things get tough, you've got to resist the temptation to use the tube." Three months was a realistic timeframe for me, without adding any pressure. Six weeks wasn't enough data for me to feel comfortable removing it.*

*Those three months we did really well, but he hadn't gotten sick, so I didn't feel it was time to remove the tube. From then we went on a monthly basis. Let's assess the data and Connor's progress each month. Two months later he got croup, and his appetite dropped but he was still drinking water. He had a slight fever and we were able to squirt some Panadol in his mouth, and he swallowed it. Tick! He recovered and went right back to eating grapes, watermelon, biscuits and so on. There's my data, there's my evidence.*

*We got to six months since we taped over his tube. I felt he was ready. I was just waiting for when I felt comfortable. I didn't want to have any regret, I knew I had to feel 100%. I had my tube removal kit ready, the medical team told me how to do it. People were saying "He's not using the tube, you should take it out". My sister-in-law is a doctor and thought it posed a risk of infection. I noted the information but really had to minimise external opinions and pressures. It was a personal thing. As a mother when you feel it is right, that's when it is right.*

*The 24<sup>th</sup> November was a day no different from any other. Connor was asleep. We went to bed. It was 10.15pm. I said "It's time. We're going to take it out." I had everything ready, I felt empowered. It felt right. I had everything on hand. It took 90 seconds. It was a good time — he was asleep, relaxed and as his body had overnight time to close off the site. Next day, he ate normally and we've never looked back.*

*Transformative agency by double stimulation (TADS) [35–37] is especially helpful in understanding the agency involved in Connor coming to feed orally. Irene's story strongly highlights conflicts of motives. Most fundamental was a conflict between wanting to remove the tube and wanting to ensure Connor got all the nutrition he needed. Irene's solution to this was guided by an auxiliary motive to work on establishing the conditions for even-*

tual removal, part of which involved developing a positive relationship with food for Connor. When so many other aspects of Connor's medical difficulties were beyond her control, this was described by Irene as 'empowering'. These conditions were a combination of criteria she delegated to others (the professionals), and those she developed and applied herself (his not needing the tube when he got sick, and her own feelings of being ready).

This motive set up new modes of action Irene could undertake every day, in a process of warping [38]. She anchored forward by taking Connor to cafes, offering him food. Each instance of these practices pulled the family towards those conditions. In Stetsenko's [45] language, Irene found a way to commit to a desired (tube-free) future, despite the current necessity of the tube. The primary tool of agency here was Irene's checklist.

When Connor was feeding without the tube, new 'kegde anchors' were placed in the form of additional tests that would produce the 'data' Irene needed. Tests when Connor got croup and fever provided means to pull forward again. During this period, Irene resolved a different conflict of motives: the motive to feed orally versus the motive to use the tube because it made things easy. Her solution here was to tape over the tube, the tape acting as a physical barrier, and a symbolic one, reminding her to resist the temptation to use the tube. Irene also used fixed time periods as auxiliary tools in what was otherwise an open-ended and temporally ambiguous process – initially three months, then a monthly data-check. There are echoes of the waiting experiment here, where a clock is used to make decisions in a situation with no clear temporal end [37; 41].

The final conflict of motives came when others thought it was time to remove the tube, and Irene felt the need to wait. The auxiliary motive here was one of finding the moment when all doubt was gone for Irene. This had no temporal anchor, but involved Irene having everything ready for when the moment arose.

Irene was central to the process as mother and primary caregiver, and she determined the moment of the tube's final removal. However, her story repeatedly highlights the importance of others – her family, Connor's medical team, members of the public in cafes, children excitedly modelling chewing, and the blogs and parent networks which gave Irene the confidence to remove the tube before Connor's palate surgery was finished. Connor himself was highly involved, with Irene letting Connor lead aspects of the process, especially around what, how and how much to eat.

## Conclusion

Agency is a potent concept to understand transformative change, continuing the spirit of Vygotsky and his colleagues in contributing towards more equitable and just futures. Contemporary Vygotskian ideas enable agency to be understood in connection with change at a nexus of the individual and social, transcending the concept's unfortunate association with individualism. This paper has taken up Stetsenko's transformative activist

stance (TAS) [42–53], Sannino's transformative agency by double stimulation (TADS) [35–41]; and Edwards' relational agency [13–17]. Three cases were analysed, in which parents of children with feeding difficulties rejected the status quo of enduring tube-feeding, instead committing to and realising a future in which their child could feed orally, without a tube.

The analysis highlights how valuable the three approaches to agency are in understanding the dynamics of transformation in everyday life. Each upholds the dynamic hallmarks of cultural-historical theory, showing how it is possible to recognise the inherently social nature of change without erasing each mother's contributions. Analysis of Kate's story revealed the importance of relational agency, building coalitions of professionals and others in order to overcome inertia in the health-care system, where the given future was one of indefinite tube-feeding for Jessica. Elena's story highlights the diverse forms that cultural tools of agency can take, showing how the contingency on such tools renders similar change for other families precarious, given their availability is not guaranteed to all. Irene's story highlights how conflicts of motives can be overcome through auxiliary motives and processes of anchoring forward.

These are not stories of solipsistic heroes. The agentic contributions of the three mothers were enabled and amplified by the involvement of others. They were also contingent on these families' positioning in wider social structures through which particular social connections were available, so that alliances could be forged, support from extended family, friends and community to be activated. The three cultural-historical frameworks each reveal how agency arose through actions mediated by cultural tools. Agency belongs in this active realm, not a possession of the three mothers. At the same time, agency depended on Kate's, Elena's and Irene's commitment to *realise* (ie. make real) the future that ought to be. The cases embody commitment precisely as Stetsenko outlines:

What the notion of commitment suggests is that a person not so much expects or anticipates the future, but rather, *actively works* to bring this future into reality through one's own deeds, often against the odds, that is, even if a particular version of what is to come in the future is not anticipated as likely and instead, requires struggle and striving to achieve it. This applies in cases when a person struggles for one's vision of 'what ought to be' in spite of the powerful forces that might be pulling in other directions [42, p. 19].

These parents were not responding to or adapting *under* given circumstances [48]. Their actions were not defined by a response to the tube. They involved taking a stand, acting towards an end. Stetsenko's [42] concept of the collectividual is helpful in holding onto the importance of individual contributions without negating the social contingency of these actions and the tools that mediate them.

Cultural-historical theory helps us to identify the means through which more equitable and inclusive futures for children with feeding difficulties might be realised. These cases of accomplished transformation are presented as a call to action, highlighting struggles that



do not, and should not need to be. Each shows how transformation to oral feeding can be possible in situations where there were many forces holding a tube-fed a status quo in place. These include: understandable but entrapping risk-avoidance in healthcare; a sense that because the tube enables weight gain, the problem is solved; a reliance on serendipity; and patchy availability of relevant tools of agency. Consistent with Vygotsky's pioneering thinking about disability and difference, this analysis is not about fixing a deficit in the child, but about social deficits, the struggles families engage in despite them, and the need for wider social action to address these deficits. It is also about courage, transgressive visions of

the future, and the means people use to progress towards desired futures.

Theory can play a role in bringing about more desirable futures by pointing to the need for change, signposting a world in which sites of struggle against the status quo are refashioned into sites where transformation is envisioned, collectively committed to, and actions towards it taken. By revealing struggles such as those of Kate, Elena and Irene, and elucidating the tools of agency deployed in striving that produces positive change, cultural historical theory can be taken up as Stetsenko [43] says is needed: made dangerous again in the struggle for a better world.

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## Изменяя мир для детей с нарушениями приема пищи: культурно-исторический анализ трансформирующей субъектности

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Как добиться позитивных изменений — ключевая задача культурно-исторической концепции. Остается актуальной важность рассмотрения изменений сквозь призму переплетения индивидуального и социального. Определенные возможности для этого открывает концепция субъектности/агентности (agency), средства, с помощью которого люди могут не просто справляться с проблемами или адаптироваться к текущему положению вещей, но прилагать усилия к тому, чтобы создавать будущее, которое должно стать реальностью. Данная работа опирается на идеи трансформирующей позиции активизма (TAS) А. Стеценко, трансформирующей субъектности посредством метода двойной стимуляции (TADS) А. Саннино и социальной субъектности (relational agency) А. Эдвардс, прослеживая возникновение и проигрывание субъектности у родителей детей с нарушениями приёма пищи. Это дети, которые не в состоянии питаться самостоятельно, через рот, поэтому для их кормления необходимо прибегать к специальной трубке (зонду). Каждая семья усиленно конструировала, а затем воплощала в жизнь будущее, в котором их ребенок мог есть самостоятельно, без трубки. Родители действовали из позиции субъектности и руководствовались теми способами, которые согласовывались со значимыми культурными средствами. Эти средства — краеугольный камень будущего, в котором есть больше пространства для инклюзии, равенства и заботы, как для детей, так и для их родителей. В статье подчёркивается значимость современных культурно-исторических подходов к субъектности для понимания и инициирования изменений на стыке индивидуального и социального.

**Ключевые слова:** субъектность (agency), трансформация, культурные средства, родительство, кормление, Выготский, отучение от трубки, зависимость от кормления через трубку, зондовое питание, вовлечение потребителей медицинских услуг в принятие решений (health consumer engagement).

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**КУЛЬТУРНО-ИСТОРИЧЕСКАЯ  
ПСИХОЛОГИЯ И ДЕЯТЕЛЬНОСТНЫЙ  
ПОДХОД В ОБРАЗОВАНИИ**



Программа опирается на лучшие достижения научной школы Л.С. Выготского, А.Н. Леонтьева, А.Р. Лурии, международное признание которой предполагает осмысление ее теоретико-методологических положений, применение ее достижений в различных областях социальной практики.

Программа направлена на широкое приобщение магистрантов к традициям этого подхода, овладение ими средствами научного анализа и способами деятельностного проектирования в различных направлениях социальной практики, осуществления психодиагностической и психокоррекционной работы с различными группами детей и взрослых, психологической экспертизы и консультирования, психотерапевтической помощи и др.

Высокое качество подготовки будущих специалистов в области теории и практики культурно-исторической психологии обеспечат высококвалифицированные профессора и преподаватели, многие из которых продолжают лучшие традиции научной школы Л.С. Выготского как в России, так и за рубежом.

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