

Contributions of P. Ya. Galperin to research developed in Brazilian Postgraduate Programs

As contribuições de P. Ya. Galperin nas Pesquisas de Pós-Graduação realizadas no Brasil

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ABSTRACT

Piotr Yakovlevitch Galperin was a Russian psychologist whose ideas are applied as theoretical assumptions for educational research in many countries around the world. His name is mainly connected to the Theory of Planned Stage-by-Stage Formation of Mental Actions, PSFMA. In this article, we assume the heuristic value of these ideas for comprehension of the psychological basis for learning in educational contexts to find demands for the XXI Century. The Objective of this study was to investigate how Galperin's ideas are applied in dissertations and theses developed in postgraduate programs in Brazil. The research is a bibliography review using the state of the question

RESUMO

Piotr Yakovlevitch Galperin foi um psicólogo russo cujas ideias aplicam-se como pressupostos teóricos para pesquisas educacionais em muitos países ao redor do mundo. Seu nome está ligado principalmente à Teoria da Formação Planejada de Ações Mentais e de Conceitos. Assume-se, neste artigo, o valor heurístico dessas ideias para a compreensão das bases psicológicas da aprendizagem em contextos educacionais para atender às demandas do século XXI. O objetivo deste estudo foi investigar como as ideias de Galperin são aplicadas em dissertações e teses desenvolvidas em programas de pós-graduação, no Brasil. A pesquisa é uma revisão bibliográfica aplicando o método do estado da questão. Os dados

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method. Data were gathered from three reliable databases: Brazilian Digital Library, CAPES Catalogue, and the Institutional Repositories (1987-2021). The method of content analysis was used for data analysis, according to pre-determined categories. The results show a prevalence of empirical research based on the methodology of formative experiments carried out at different educational levels. The objects of studied most investigated are the formation of skills and of scientific concepts. Ideas proposed by L. S. Vygotski, A. N. Leontiev, N. F. Talízina and V. V. Davidov were articulated with Galperin's references in the theoretical basis of many works, evidencing an important dialogue with CHT's scholars. This study points out the growing interest in Galperin's ideas, specifically his theory of the formation of mental actions and concepts, which can be attributed to comprehensive dialogues with the CHT that has an expressive predominance in Brazilian research.

Keywords: Galperin's Theory. Brazilian research. Bibliographic review.

foram coletados em três bases de dados confiáveis – Biblioteca Digital Brasileira, Catálogo CAPES e Repositórios Institucionais (1987-2021). Para a análise dos dados, empregou-se o método de análise de conteúdo, segundo categorias pré-determinadas. Os resultados revelam uma prevalência de estudos empíricos, baseados na metodologia de experimentos formativos realizados em diferentes níveis de ensino. Os objetos de estudos mais investigados são as formações de habilidades e de conceitos científicos. As ideias propostas por L. S. Vygotski, A. N. Leontiev, N. F. Talízina e V. V. Davidov articulam-se com as referências de Galperin na base teórica de muitos trabalhos, evidenciando um importante diálogo com os estudiosos da THC. Este estudo aponta o crescente interesse pelas ideias de Galperin, especificamente pela sua teoria da formação de ações mentais e conceitos, o que pode ser atribuído a amplos diálogos com a THC que predomina expressivamente na pesquisa brasileira.

Palavras-chave: Teoria de Galperin. Pesquisas brasileiras. Revisão bibliográfica.

1 Introduction

Piotr Yakovlevich Galperin (1902-1988) was one of the most notable exponents of Russian psychology. He was a member of the Járkov School – founded by Vygotski, Luria and Leontiev – and Professor at Moscow State University. His name is connected to the Theory of Planned Stage-by-Stage Formation of Mental Actions, PSFMA Theory, proposed by the author in 1952, for which P. Ya. Galperin is renowned around the world. However, his research is broader to embrace a significant diversity of subjects that are part of the research programme developed in his professional trajectory (FARIÑAS, 2013; NÚÑEZ, 2009; NÚÑEZ; OLIVEIRA; RAMALHO, 2021; OBUKHOVA, 2010; POLDOSKIY, 2012; ZHDAN, 2018).

According to Podolskiy (2020b), the PSFMA Theory is a detailed system of assumptions on the mechanisms and conditions of complex and multifaceted changes associated with the emergence of new images, actions, and concepts for a

person. Methodologically, this theory represents a fundamental understanding of how individuals master the universal human experience. In the epistemological sense, the PSFMA Theory provides a generalized and detailed description of the psychological regularities for the internalization process, providing a whole system of psychological conditions that can ensure the action and concept acquisition by the experimenter (students and teachers) in a mental plan, according to socially valuable predetermined properties that create opportunities for learning quality. Considering the necessary criticism inherent to scientific activity, solid research has brought PSFMA Theory significant relevance to face urgent school demands in the 21st century (ENGENESS; LUND, 2020; SOLOVIEVA; QUINTANAR, 2020; HAENEN, 2001).

The PSFMA Theory has been used to support students' formation by providing a comprehensive way of learning throughout an orientation to the conscious engagement in the study activity, enabling them to achieve important skills such as the ability of learning to learn and contributing to the development of a critical and reflective personality, which is necessary to regulate their learning process (NÚÑEZ; FARIÑAS; RAMALHO, 2020). Besides, the PSFMA Theory provides situated learning that guides students to make meaning for scientific knowledge in dialogue with their experiences, leading them to better reasoning, acting, and critical thinking, which are demands in a transformative and creative didactical perspective (SOLOVIEVA; QUINTANAR, 2020).

Galperin's books and papers have been translated into publications in many countries around the world, of which we mention: Germany, Poland, Hungary, Bulgaria, Romania, China, Finland, the Netherlands, Japan, and Cuba. In Brazil, his ideas have been mainly part of the scope of educational research as a contribution to the advancement of understanding of the Cultural-Historical Theory (CHT) proposed by L. S. Vygotski. The CHT has a notorious influence in studies that investigate educational and didactical issues, supporting alternative answers to various questions raised to challenge behaviorist, cognitivist, and constructivist psychological perspectives. After visiting Brazil, Meshcheryakov & Obukhova (2007)

reported that ideas related to CHT have significant diffusion in this country (see also Sakai, 2021; Nobre, 2019; Gonçalves; Núñez, 2017).

The increasing interest in Galperin's ideas constitutes the main justification for conducting this study of the state of the question involving academic productions. As Ortiz Torres (2018) argues, this type of study is important as the research on an issue is growing and the volume of information is increasing; thus, the investigations may acquire density and the systematizing of what has been produced is needed, as is the identification of emerging aspects necessary for the continuity of the growth and the developments of new productive research.

2 Methods

This study consists of an investigation of the state of question type (FERREIRA, 2002; NÓBREGA-TERRIEN; TERRIEN, 2004) considered from the perspective of a bibliographic review with the objective of analyzing the insertion of Galperin's ideas in dissertations and theses produced in postgraduate programs in Brazil.

Romanowski & Ens (2006) and Ortiz Torres (2018) highlight regular procedures in the bibliographic research, applying the state of the question as a method, such as: 1. choice of descriptors; 2. definition of databases to be consulted; 3. definition of criteria for data selection; 4. collection of data to constitute a corpus; 5. analysis of content; 6. data organization and analysis by categories.

2.1 Choice of descriptors

We adopted as descriptors or key words the following expressions in Brazilian Portuguese, translated into the parentheses: Galperin; Teoria da Assimilação (Assimilation Theory); Teoria da Formação Planejada de Ações Mentais e de Conceitos (Theory of Planned Stage-by-Stage Formation of Mental Actions); Base Orientadora (Guiding or Orienting Basis); EBOCA (SCOBA - Scheme for a Complete Orienting Basis of an Action). These expressions seemed representative to find academic productions related to the research objective.

2.2 Definition of the databases

We used three databases for search, as described below:

- a) Biblioteca Digital Brasileira de Teses e Dissertações (BDTD - Brazilian Digital Library of Theses and Dissertations) – this database has been constituted and maintained by a large collaboration involving 127 Brazilian institutions of research and formation, which freely publicize thousands of dissertations and theses, allowing a wide divulgation of research produced in Brazil. The BDTD has its data provided by the postgraduate programs since 1987. (Link: <https://bdtd.ibict.br/vufind/>)
- b) Catálogo de Teses e Dissertações da CAPES (Theses and Dissertations Catalogue - CAPES). CAPES is a governmental agency for regimenting, funding, and evaluating all postgraduate programs in Brazil. The CAPES Catalogue aims to facilitate access to Brazilian dissertations and theses produced in the postgraduate programs, providing data and information about them and being responsible for the veracity of such data. It was launched in 2002 and brings together all the dissertations and theses defended in Brazil or by Brazilians abroad. Link: <http://catalogodeteses.capes.gov.br/catalogo-teses/#!/>
- c) Repositories of Higher Education Institutions – many of the dissertations and theses produced in new research institutions that are not yet part of the BDTD or CAPES Catalogue are stored in their institutional databases. For data collection, there are unlisted IES because their institutional repositories were not found or not available in the period of investigation.

In this work, our intention was to use the BDTD and CAPES databases in a complementary way, added by data found in some institutional repositories, which allowed us to obtain a more complete cut-out of the Brazilian academic productions in dissertations and theses.

2.3 Definition of the criteria for data selection

Initially, the selection included dissertations and theses available in the

databases - including the first and most recent studies developed in Brazil (2003 to 2021) - that used the Galperin's theory as a foundation in their theoretical matrix, as well as those in which this theory was used in a complementary way.

2.4 Collection of data to constitute the corpus

Using the presented descriptors and criteria (items 1 and 3), we found a total of 73 dissertations (Master level) and 32 PhD theses, totaling 105 academic productions using Galperin's ideas at graduate level, which in some extent reveals what has been produced in Brazilian research on this author's ideas. To constitute the corpus of the study, we selected from the 105 works the dissertations and theses in which Galperin's ideas are applied as a main reference of the theoretical matrix. We found 58 dissertations (Master level) and 25 PhD theses, a total of 83 academic productions.

2.5 Analysis of content

Data analysis was performed according to the content analysis method (BARDIN, 2016; FRANCO, 2003; AMADO, 2000). This method of analysis is based on qualitative and quantitative procedures, from which the frequencies or occurrences of categories are privileged, but they are defined from the qualitative analyses of the texts. According to Bardin (2016), content analysis comprises two basic procedures:

a) Exploration of the material. Procedures were carried out by reading the titles and abstracts of the 83 academic productions to get an overview of their general features.

b) Data processing and interpretation. It refers to the generation of inferences on the corpus, obtaining results that have allowed us to reach the objectives of the investigation. The categories for interpretation of data were constituted considering the responses for such features: i) exhaustive - which means that all elements of the replies can be included in them; ii) mutually exclusive - each element can only be part of a single category, iii) objective - they must be defined in a precise manner that avoids doubts, and iv) relevant - they must be appropriate to the research objectives (ORTIZ TORRES, 2018).

For the analysis, data was grouped and characterized considering 3 steps: STEP 1. Initially, the dissertations and theses were categorized in a group in which the Galperin's ideas are applied as main reference of the theoretical matrix, a total of 83 academic productions.

STEP 2. The 83 productions were characterized according to the following categories: type of academic production (Master or PhD), Brazilian Region where the research was developed, year of production, educational level of the participants (Primary, Elementary, Middle or High School, Higher Education), subjects related to the study, type of study. Besides, we characterized them according to specific categories related to the Galperin's ideas: study object, subsystems of the Galperin's theory, formative experiment, references from Galperin and references from authors related to the CHT.

STEP 3. A characterization of specific references that support the academic productions - Galperin's works used in the study (book and/or paper), and references from other authors who are part of the Galperin's School.

2.6 Data organization and analysis by categories

In this phase of the research, the Microsoft Excel® software was used to initially organize information from each academic production. The data set was analyzed using the MODALISA software 6.0, developed by professors at the University of Paris VIII, which made it possible to elaborate tables and to perform quantitative and qualitative analyses based on descriptive statistics - distribution of frequencies or percentages from data presented in tables according to the research objective (HAIR et al., 2009). Analyses were individually performed by different researchers who shared and negotiated their results to reach a consensus in a conclusive moment of the research which increased the reliability of the findings (FLICK, 2009).

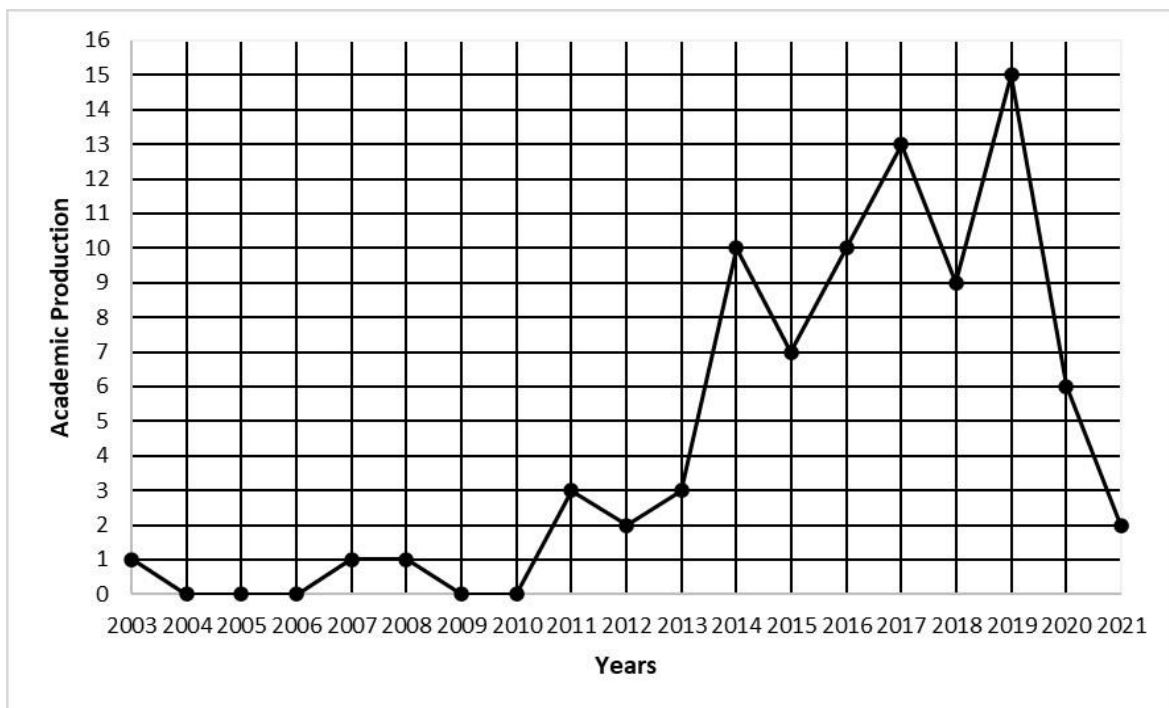
3 Results

We organize the presentation of the results starting with different questions that lead us towards the general objective of the research. We believe that questions provide clearer evidence supporting the further discussion.

3.1 How has the academic production based on Galperin's ideas performed over the years in Brazil?

To answer this question, we plot a graphic with the number of works produced in each year, since 2003, when the first academic production was identified; see Figure 1.

Figure 1 – The academic productions (Master and PhD levels) produced per year



Source: Elaboration of the authors (2022).

According to Figure 1, it is possible to observe a growth in the number of academic productions using Galperin's ideas as the main theoretical framework in Brazil in the 2007-2019 period. The interruption of this growth in the 2020 and 2021 years does not necessarily reflect a decrease in this

type of academic production, but it may be related to the difficulty of updating productions in the databases, or even because the activities in postgraduate programmes were drastically impaired due to the COVID-19 pandemic, and many graduate students had extended the deadline to conclude their research.

3.2 How are the academic productions distributed in Brazilian regions, and what are their associated levels of formation?

Characterization of academic productions according to the Brazilian regions, indicating at what level of formation the work was produced, are shown in Table 1.

Table 1 – Academic production by Brazilian region and level of formation

Brazilian Region	Doctorate Theses	Master Dissertation	Total
Midwest	3		3
Northeast	17	14	31
North	2	28	30
Southeast	3	7	10
South		9	9
Total	25	58	83

Source: Elaboration of the authors (2022).

According to Table 1, although there are academic productions in all Brazilian regions, there is a predominance of these productions in the Brazilian Northeast, with 31 works (approximately 37%), and the Brazilian North, with 30 works (approximately 36%). It is also possible to verify that studies at the master's level prevail, with 58 productions (70%), compared to PhD studies, which correspond to 25 productions (30%).

3.3 What are the levels of schooling/formation and subjects addressed in the academic productions?

The academic productions were carried out at all levels of schooling/formation in the Brazilian educational system, with emphasis on the following levels: 30 productions related to higher education (36%), 23 related to high school (27%), and 19 related to middle/secondary school (22.8%), as shown in Table 2.

Table 2 – Academic productions involving different subjects and educational levels

Subject	PE	ES	MS	HS	HE	NA	Total
Biology				2	3		5
Sciences	1	2	3		2		8
Physical Education					1	1	2
Physics				10	4		14
History			1	1			2
Computing				1			1
English					1		1
Portuguese		3	1				4
Mathematics		2	13	5	7		27
Pedagogy				1			1
Educational Psychology					1		1
Chemistry				3	9	2	14
Multidisciplinary			1		2		3
Total	1	7	19	23	30	3	83

Note. PE: Primary Education; ES: Elementary School; MS: Middle School; HS: High School; HE: Higher Education; NA: Not Applicable.

Source: Elaboration of the authors (2022).

In Table 2, the data indicate that studies were conducted mainly with adults (higher education), young people, and adolescents (middle/secondary and high school). There is a diversity of subjects addressed in the academic productions, and we highlight subjects related to the natural sciences and mathematics: Mathematic - 27 works (32.5%), Physics - 14 works (16.8%), Chemistry - 14 works (16.8%).

3.4 What are the main objects of study in research?

The objects of study were identified in the academic productions to provide an overview of the concerns implied in the studies (see Table 3).

Table 3 – Objects of study addressed in the academic productions

Objects of study	Frequency
Skills Formation	43
Formation of Concepts	33
Problem Solving	21
New ICT / Virtual Environments for Education	9
Reading and Writing	7
Experimental Activity	5
Deaf, Hearing Impairment	2
Creativity	2
Visual Impairment	2
Special Education	2
State of Art	2
Down's Syndrome	1
Blindness, Visual Impairment	1
Deaf-blind, Hearing-visual Impairment	1
Trisomy	1
Total	132

Source: Elaboration of the authors (2022).

From Table 3, it is observed that the academic productions address a diversity of objects of study with different frequencies, being the formation of skills, with 43 productions (51.8%), and the formation of concepts, with 33 (39.7%) productions, the most searched objects. It is important to highlight that, despite the low frequency, there is a very pertinent theme that seemed to point to a relevant object of study, special education, which corresponds to 10 productions (12.0%), involving questions about visual impairment, hearing impairment, and Down syndrome, among others. The most addressed objects of study, the formation of scientific concepts and the formation of skills, are part of the core of

Galperin's theory: the formation of mental actions and scientific concepts. The amount of study objects (132) is higher than the total number of productions (83); this is justified because some productions have more than one study object. Thus, the calculation of the percentage was performed considering the total productions (83), not the total of objects of study (132).

3.5 What types of studies and methodologies have been mainly applied?

In Galperin's theory, methodologies based on experimental studies occupy an important place (LONGAREZI, 2021), mainly the methodology of the formative experiment. In addition, we characterize the studies that use the formative experiment, verifying to what extent the subsystems of Galperin's theory are explicitly used in the experiment.

Table 4 – Methodologies and type of study in the academic productions

Formative Experiment	Empirical	Status of the Question – Bibliographic Review	Theoretical	Total
No	14	2	9	25
Yes	57	0	1	58
Total	71	2	10	83

Source: Elaboration of the authors (2022).

In Table 4, we can observe that, in the dissertations and theses, the empirical studies prevailed with 71 (85.5%) productions, of which 58 (81.6%) use the methodology of the formative experiment. Other types of research were identified, such as theoretical studies with 10 (12.0%) productions. In a lesser extension, we found two studies characterized as the state of the question (2.4%).

For a better characterization of the formative experiments, we made an analysis based on the identification of the subsystems of Galperin's theory (GALPERIN, 2000): the conditions or orientation basis, the qualitative indicators for actions, and the stages for the formation of mental actions and concepts.

Table 5 – Subsystems used in formative experiments applied in academic productions

Subsystem of the theory in the formative experiment	Frequency
The studies are organized and developed according to the three subsystems of the theory	10
The studies are organized and developed according to the orientation subsystem and the qualitative parameters of the actions	03
The studies are organized and developed according to the orientation subsystem and the stages for formation	34
The study is organized and developed as a didactic sequence based on the subsystems of orientation and qualitative parameters of the actions	01
The studies are organized and developed as a didactic sequence based on the orientation subsystem.	10

Source: Elaboration of the authors (2022).

According to Table 5, it was found that 34 (58.6%) academic productions applied formative experiments to investigate the formation of skills and concepts, and they were structured based on two subsystems of Galperin's theory: orientation basis and stages for formation. Only 10 (17.2%) productions are structured considering the three subsystems of the theory, and they can be considered as a system in which the methodology is studied and structured as a whole. Besides, 10 (17.2%) productions are structured as didactic sequences using the orientation basis. The subsystem of indicators for the qualitative parameters of actions to be formed appears with low frequency in the formative experiments (3 productions).

3.6 Which of Galperin's works are most often used as the main reference in the dissertations and theses analyzed?

Identifying and characterizing the references most present in academic productions can provide information about Galperin's ideas that predominate in the theoretical matrices of the analyzed works. They may also point to some absences of important ideas from Galperin's thinking that may be relevant to understanding his theory, especially in studies based on the PSFMA Theory. We identified 365 of Galperin's works used as references in dissertations and theses. From these works, 241 were written in Spanish, 93 in English, and 31 in Portuguese. The absence of literature consulted in Russian, both by and about Galperin, drew attention.

All references to Galperin's ideas identified in the dissertations and theses correspond to books and papers. The highest number of citations refers to papers: 331 citations (90.68%). The book citations correspond to 34 works (9.32%), as shown in Table 6.

Table 6 – Type of references on Galperin cited in the analyzed productions

Type of Reference	Frequency	%
Book	34	9.3
Paper	331	90.7
Total	365	100

Source: Elaboration of the authors (2022).

Galperin cited only one book, *Introduction to Psychology*, which has a Spanish version but no English or Portuguese versions. This book provides important information on the philosophical and epistemological foundations of Galperin's Theory, in addition to presenting important discussions about mental actions, orientation, and their role in the human psyche.

Regarding Galperin's papers, as shown in Table 7, the most cited are in Spanish. These papers discuss essential questions of Galperin's theory about the formation of concepts and mental actions, such as the types of guidance/orientation related to the teaching approaches, among other aspects of the theory.

Table 7 – Most consulted papers written by P. Ya. Galperin in the academic Productions

Article	Frequency	Language
Study of the intellectual development of the child	46	English and Portuguese
On the formation of concepts and mental actions	43	Spanish and Portuguese
Types of orientation and types of formation of actions and concepts	49	Spanish and Portuguese
Mental actions as a basis for the formation of thoughts and images	44	English
The direction of the learning process	32	Portuguese

Source: Elaboration of the authors (2022).

3.7 What are other references written by scholars of the Cultural-Historical Theory used in the academic productions?

Poldoskiy (2020a) and Núñez, Ramalho & Oliveira (2020) consider that it is necessary to understand the PSFMA theory within the wider framework of the contributions made by other authors related to the CHT and the Galperin’s School. Thus, we identified references from these authors in the dissertations and theses, according to the role they played in the study: used only in the theoretical matrix; and used in the theoretical matrix and in the analysis of the results (Table 8).

Table 8 – References of authors related to the CHT in the academic productions

Author	Used only in the configuration of the theoretical matrix	Used in the theoretical matrix and in the discussion of results	Total
N. F. Talízina	13	31	44
L. S. Vygotski	19	17	36
M. I. Majmutov	10	9	19
V. V. Davidov	13	4	17
A. N. Leontiev	8	8	16
Total	63	69	132

Source: Elaboration of the authors (2022).

In Table 8, we verify the frequency of the references to the authors related to the historical-cultural approach most cited in the academic productions, highlighting: N. F. Talízina, with 44 citations (33.3%), L. S. Vygotski, with 36 (27.2%), M. I. Majmutov, with 19 (14.4%), V. V. Davidov, with 17 (12.8%), and A. N. Leontiev, with 16 (12.1%).

In the analysis, the most cited references by these authors were:

- N. F. Talízina: *Psicología de la Enseñanza* (1988) (Psychology of Teaching); *Manual de Psicología Pedagógica* (2000) (Texts of Pedagogical Psychology); *La Formación de las Habilidades del Pensamiento Matemático* (2001) (The Formation of Mathematical Thinking Skills);
- L. S. Vygotski: *A formação social da mente: o desenvolvimento dos processos psicológicos superiores* (2007) (The Social Formation of the Mind: The Development of Higher Psychological Processes); *Pensamento e Linguagem* (2015) (Thinking and Language); *A Construção do Pensamento e da Linguagem* (2009) (The Construction of Thought and Language);
- A. N. Leontiev: *Atividade, Consciência e Personalidade* (1978) (Activity, Consciousness and Personality); *O Desenvolvimento do Psiquismo* (2004) (The Development of the Psyche);
- V. V. Davidov: *La Enseñanza escolar y el desarrollo psíquico* (1988) (School Education and Psychic Development); *La concepción de la actividad de estudio de los escolares* (1987) (The Conception of the Study Activity of School Children);
- M. I. Majmutov: *La Enseñanza Problemática* (1983) (The Problematic Teaching).

4 Discussion

Although the ideas of P. Ya. Galperin include a wide range of general psychology issues, to the point of being considered a research program or a genetic psychology (NÚÑEZ; RAMALHO; OLIVEIRA, 2020; POLDOSKIY, 2012; OBUKHOVA, 2010), in general, the academic productions analyzed are based and developed on the PSFMA Theory. It could be representative of the most recognized of Galperin's ideas in the "Western" world (FARIÑAS, 2016).

We found academic productions based on Galperin's ideas in all Brazilian regions, but the Brazilian Northeast and North can be underlined with higher frequencies of works, mainly attributed to two research groups, in these regions, coordinated by Cuban researchers formed in the Galperin's School. The dissertations and theses were conducted with students who were attending various levels of formation according to the Brazilian educational system, with an emphasis on Higher Education, especially in courses of formation for teachers, and Middle and High School.

In regard the subjects addressed in research, Mathematics (focusing on problem solving), Physics, and Chemistry are the prevailing ones. This scenario seems to be associated with the Brazilian tradition of studying the formation of scientific concepts and development of skills under diverse perspectives, which leads to the search for other lenses for understanding these processes in schools and in academic contexts. In this sense, the contributions coming from L. S. Vygotski, A. N. Leontiev, V. V. Davidov e N. F. Talízina, in articulation with Galperin's ideas, configure a relevant theoretical referential for researchers.

A diversity of objects of study is addressed in the dissertations and theses. As mentioned earlier, the formation of skills, especially problem solving, and the formation of scientific concepts predominant in the works. However, it is important to point out that, with lower frequencies, objects of study related to special education are presented as a field of application of the theory, for example, research involving students who are deaf, blind, have Down syndrome, or other impairments. These investigations aim to produce knowledge about forms of learning that contribute to the development of students with disabilities, especially the use of several mediator artifacts articulated to types of orientations and stages of formation of mental actions and concepts.

Regarding Galperin's references, which were consulted and used as theoretical support for research, it was found 33 different works that reflect his main ideas, written predominantly in Spanish and, to a lesser extent, in

English. We did not find a significant number of works consulted in Portuguese, certainly because there is a low availability of these works in this language.

Only one book written by P. Ya. Galperin appears in the references consulted: *Introduction to Psychology*. This book is considered essential to understanding the foundations of Galperin's work as a Genetic Psychology. However, there are other books, no less important, that were not used as references, such as: *Psychological Activity as Objective Science*, a collection of relevant Galperin's papers, and *Psychology: 4 Lectures*, containing his lectures at the University of Moscow. In these lectures, we can find important clarifications of P. Ya. Galperin's theory, such as subsystems and relations with the school context. The low frequency of the use of the latter books can be a consequence of the availability of the first book only in Russian and the second book only recently being translated to English.

In the dissertations and theses, we found a dialogue of Galperin's ideas with those of other authors, such as Vygotski, Leontiev, Talízina and Davidov, which can avoid the exclusive use of his theory to understand learning. This is important because these articulations can reinforce Galperin's ideas as a psychological theory applied in the school context, considering that it gains new heuristic possibilities. The authors above enrich our understanding of the processes of mental actions and concept formation and improve Galperin's theory, what is necessary for every living theory. However, we believe that there is still a need to intensify these dialogues with other authors, such as: Poldoskiy (2012), Reshetova (2017), Sálmina (2010), Obukhova (2010), among others.

There is a preference for empirical studies structured through formative experiments in the analyzed productions. This type of methodology is based on a tradition developed by Vygotski, (2004), Zankov (1984), Davidov (1988), Galperin (2000), as argued by Núñez (2009). In a general sense, the formative experiments are based on two subsystems of Galperin's Theory: the orientation and formation in stages. The subsystem of qualitative parameters

of actions as indicators of the quality of processes and the actions formed has limited use. The academic productions are mainly focused on the guidance subsystem in some way, what is consistent with Western tendency for research. But the studies are still very tied to the classical views of orientation as a functional dimension of the action and fundamentally constitute themselves as applications of these ideas.

Formative experiments derived from Galperin's theory can be interpreted in different ways that, in general, are not systematically explored or explained in many works. According to some authors presented below, formative experiments are considered as:

- Different ways of organizing the contents of the themes and disciplines, which should be consistent with a type III orientation (RESHETOVA, 2017; DAVIDOV, 1988);
- Forms of monitoring the learning process using quality parameters that contribute to the control and regulation, according to its objectives and possibilities, which are related to the planning of specific and diverse task systems taking into account the subjectivities and training stages (FARIÑAS, 2016; GABAY, 2012);
- The materialization of the orientations elaborated by the students in study cards as a mediator in the stage of resolution of activities, which allows the individualities in this stage to be reached (SÁLMINA, 2010).

Finally, it is important to point out issues that could constitute other objects of study in research: the initial and continuous motivation of the students; the affective relations they could establish with the objects of study under the differentiated formative experiences; attention to the singularities; the differentiated learning rhythms of students according to the stages and type of orientation.

5 Conclusion

The increase in academic productions, especially at the Master level, that take as reference the theory proposed by P. Ya. Galperin reveals the interest in theoretical advances in research towards articulation with references based on ideas proposed by L. S. Vygotski and A. N. Leontiev. As occurred with the introduction of Vygotski's ideas in Brazil, over the past few years, in the case of P. Ya. Galperin's ideas, we believe there is a need for continuous advances in the understandings of them and the search for updating applications and articulations according to the specificities of the disciplines and the objects of study addressed in the context of Brazilian schools.

Significant numbers of academic productions have not yet used important references that show advances in the current discussions of Galperin's theory in the face of current educational challenges. This requires critical reflections on the theory. Most studies still focus on the application of Galperin's theory as a reference to develop formative experiments in different disciplines, especially in Mathematics and Natural Sciences. From deep studies on new references, it is suggested to perform a more qualitative characterization of the research results addressed in this study, based on meta-analysis, to better understand the contributions of the academic productions and to discuss perspectives necessary to improve the meanings given to Galperin's Theory.

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Las aportaciones de P. Ya. Galperin en Investigación de Posgrado realizada en Brasil

RESUMEN

Piotr Yakovlevitch Galperin fue un psicólogo ruso cuyas ideas se aplican como fundamentos teóricos a la investigación educativa en muchos países del mundo. Su nombre está ligado principalmente a la Teoría de la Formación Planificada de Acciones Mentales y Conceptos. Este artículo asume el valor heurístico de estas ideas para comprender las bases psicológicas del aprendizaje en contextos educativos para enfrentar las demandas del siglo XXI. El objetivo de este estudio fue investigar cómo se aplican las ideas de Galperin en disertaciones y tesis desarrolladas en programas de posgrado en Brasil. La investigación es una revisión de literatura aplicando el método del estado de la cuestión. Los datos fueron recolectados de tres bases de datos confiables: Biblioteca Digital Brasileña, Catálogo CAPES y Repositorios Institucionales (1987-2021). Para el análisis de los datos se utilizó el método de análisis de contenido, según categorías predeterminadas. Los resultados revelan un predominio de estudios empíricos, basados en la metodología de experimentos formativos realizados en diferentes niveles educativos. Los objetos de estudio más investigados son la formación de habilidades y conceptos científicos. Las ideas propuestas por L. S. Vygotsky, A. N. Leontiev, N. F. Talízina y V. V. Davidov se articulan con las referencias de Galperin en la base teórica de muchos trabajos, evidenciando un importante diálogo con los estudiosos de la THC. Este estudio apunta al creciente interés en las ideas de Galperin, específicamente en su teoría de la formación de acciones mentales y conceptos, que se puede atribuir a extensos diálogos con la THC, que predomina significativamente en la investigación brasileña.

Palabras clave: Teoría de Galperin. Investigación brasileña. Revisión bibliográfica.

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