Self-efficacy in mentoring processes: an integrative literature review

Autoeficácia em processos de mentoria: revisão integrativa da literatura

Autoeficacia en los procesos de mentoría: una revisión integradora de la literatura

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Rafael Lima Dalle Mulle
Master in Science, Psychology
Institution: Universidade de São Paulo, Faculdade de Filosofia, Ciências e Letras de Ribeirão Preto, Programa de Pós-Graduação em Psicobiologia
Address: Ribeirão Preto, São Paulo, Brazil
E-mail: rafael.mulle@usp.br

João Roberto Lopes de Azevedo
Master of Science, Psychobiology
Institution: Universidade de São Paulo, Faculdade de Filosofia, Ciências e Letras de Ribeirão Preto, Programa de Pós-Graduação em Psicobiologia
Address: Ribeirão Preto, São Paulo, Brazil
E-mail: jrlazevedo@usp.br

Fabiana Maris Versuti
PhD in Education for Science
Institution: Universidade de São Paulo, Faculdade de Filosofia, Ciências e Letras de Ribeirão Preto, Departamento de Psicologia
Address: Ribeirão Preto, São Paulo, Brazil
E-mail: fabiana_versuti@usp.br

ABSTRACT
The objective of this manuscript was to conduct an Integrative Literature Review on strategies for investigating and assessing self-efficacy in mentoring and e-mentoring processes. An electronic search of publications was conducted in the indexing bases: PubMed, BVS, SciELO and Scopus, between the period 2012 and 2022. The selected articles were organized into eight categories of analysis. The compilation of the findings indicated the existing interest in investigating these constructs around the world, in different areas of knowledge, with different audiences and different ways of measuring self-efficacy. It is relevant to resume the care needed for positive outcomes, given the focus of this literature review,
of mentoring actions, both in relation to the design of the actions themselves, and in relation to the characteristics of those involved in them. Therefore, the sharing of experiences, in a scenario designed for this to occur in an appropriate manner, generates, in the individual who receives it, the improvement of the perception of his own capacity to successfully achieve his objectives and goals.

**Keywords:** Integrative Literature Review. Mentoring. Self-Efficacy. Teaching-Learning Processes.

**RESUMO**
O objetivo deste trabalho foi realizar Revisão Integrativa de Literatura sobre estratégias de investigação e avaliação de autoeficácia em processos de mentoria/mentoring e e-mentoring. Realizou-se a busca eletrônica de publicações nas bases indexadoras PubMed, BVS, SciELO e Scopus, entre o período de 2012 e 2022. Os artigos selecionados foram organizados em oito categorias de análise. O compilado dos achados apontou o existente interesse de investigação destes construtos, ao redor do mundo, em diferentes áreas do conhecimento, com diferentes públicos e formas distintas de mensuração da autoeficácia. Faz-se relevante retomar os cuidados necessários para desfechos positivos, diante do foco dessa revisão de literatura, das ações de mentoria, tanto em relação ao delineamento das próprias ações, quanto em relação às características daqueles envolvidos nelas. Portanto, a partilha de experiências, em um cenário delineado para que isso ocorra de forma adequada, gera, no indivíduo que as recebe, o aprimoramento da percepção de sua própria capacidade de alcançar, de forma bem-sucedida, seus objetivos e metas traçadas.


**RESUMEN**
El objetivo de este trabajo fue realizar una Revisión Bibliográfica Integradora sobre estrategias de investigación y evaluación de la autoeficacia en los procesos de mentoring/mentoría y e-mentoring. Se realizó una búsqueda electrónica de publicaciones en las bases de indexación PubMed, BVS, SciELO y Scopus, entre el período 2012 y 2022. Los artículos seleccionados fueron organizados en ocho categorías de análisis. La compilación de los hallazgos señaló el interés existente en investigar estos constructos, en todo el mundo, en diferentes áreas del conocimiento, con diferentes públicos y diferentes formas de medir la autoeficacia. Es relevante retomar el cuidado necesario para resultados positivos, dado el foco de esta revisión bibliográfica, de las acciones de mentoría, tanto en relación al diseño de las propias acciones, como en relación a las características de los involucrados en ellas. Así, el intercambio de experiencias, en un escenario diseñado para que esto ocurra de forma adecuada, genera, en el individuo que las recibe, la mejora de la percepción de su propia capacidad para alcanzar con éxito sus objetivos y metas.

**Palabras clave:** Revisión Bibliográfica Integradora. Mentoría. Autoeficacia. Procesos de Enseñanza-Aprendizaje.
1 INTRODUCTION

Educational relations, in the sense of teaching-learning processes, have been changing. These transformations are due to various factors, including historical, social, cultural and contextual factors, etc. In order to exemplify this scenario, Souza, Iglesias and Pazin-Filho (2014), in their work, highlighted the need to discuss transformations in the field of education and new ways of approaching knowledge, in order to move forward from traditional stationary models. This movement, the authors argue in their work, therefore opens up space for the search for innovative strategies, translated into a reflective, critical and transformative teaching-learning process, beyond the technical elements of each learning object. The aim of this work was to conduct an integrative literature review on strategies for investigating and evaluating self-efficacy in mentoring and e-mentoring processes.

2 THEORETICAL FRAMEWORK

Among the possibilities, one that stands out is mentoring. Mentoring is defined as a relationship, limited in time, established between a more experienced individual who accompanies and assists in the development of someone less experienced, being an important figure in transition phases (Girão, 2013), being that this relationship has been the subject of research over the years in the scientific literature (Silva et al., 2021). Mentoring relationships can also take place virtually and are known as e-mentoring. According to Chong et al. (2020), e-mentoring, as a tool, has the potential to provide accessible and longitudinal support for mentees. Mullen and Klimaitis (2021) argue in their review study that the definition of mentoring can be plural as can its practice, both of which are changing and expanding over time.

It is understood that mentoring relationships, due to the exchange of experience, can be applied in different contexts. An example of this can be seen in the work carried out by Moreira et al. (2020), which describes the experience of a mentoring program developed in the Medicine course at the Federal
University of Rio Grande do Norte, with the aim of enhancing students' personal and professional development through integrative activities that take into account cognitive, affective, social and ethical aspects. The findings of the study indicated that the possibility of exchanging experiences and help with different issues related to the course and professional development were the main motivators for their participation in mentoring activities.

In addition to the different contexts in which this type of relationship can be used, mentoring is shown to enhance the development of different aspects of the individuals involved. In an earlier study, Simões and Alarcão (2011) reviewed the literature on the effectiveness of mentoring processes in promoting the socio-emotional and instrumental development of young people. In the end, they found 6 articles, the main finding of which was that, in various environmental settings, mentoring can have a positive impact on the socio-emotional competences of those who take part in its intervention processes. Another construct that appears in the latest literature in relation to mentoring is self-esteem. Marino et al. (2020) conducted a study with the aim of reporting on the effects of the Italian Mentor-UP program on the self-esteem of mentees and their connection to school. As a result, they found that the application of structured, trained and supervised mentoring led to a significant improvement in the self-esteem of the mentees over a period of seven months, while the control group showed a drop in the levels of the construct over the same period.

Another study that investigated mentoring programs was by Silva and Freire (2014). Among the assumptions discussed by the authors, two stand out. The first is in relation to the components for the effectiveness of the programs, which are defined as fundamental dimensions: recruitment, selection, initial training, compatibility, follow-up/monitoring and completion. The second is that individuals participating in mentoring programs have shown improvements in academic performance and perceived self-efficacy. From this, it is possible to see evidence of a link between mentoring programs, academic performance and self-efficacy.

Therefore, there is a movement in the scientific literature to investigate the potential of the mentoring strategy in different contexts and its relationship with
relevant variables in the teaching-learning processes, understanding learning as a basic psychological process (Souza et al., 2019). In this sense, one variable that stands out is self-efficacy, which is a key construct in Albert Bandura’s Social Cognitive Theory (Feist, Feist and Roberts, 2015). Self-efficacy is defined as the individual’s own perception of their ability to learn certain content or perform a certain task, in the sense of exercising a certain amount of control over their own functioning and over events external to them (Bandura, 1977, 2001). In the teaching-learning process, students with higher levels of self-efficacy show greater academic motivation, since they perceive that they are capable of learning through their efforts, as well as perceiving that they are responsible for their own learning (Ganda; Boruchovitch, 2018).

According to Barros and Batista-dos-Santos (2010), self-efficacy has four main sources: direct experience, vicarious experience, social persuasion and physical and emotional states. Although direct experience is the strongest source for developing the perception of self-efficacy, vicarious experiences are also a sustainable source for developing an individual’s self-efficacy. Vicarious experiences are those that come from social models, i.e. those that individuals identify with and can act as a model of success in a given context. The individual who observes the model therefore increases their self-efficacy beliefs in order to develop the skills to master similar activities in a successful way.

In order to explore the construct of self-efficacy in the context of teaching-learning processes, studies have been carried out at different stages of formal education (Iaochite et al., 2016). A study conducted in this context (Casiraghi; Boruchovitch; Almeida, 2020) aimed to reflect on the relevance of self-efficacy beliefs and learning strategies for empowering university students with a view to their academic success. They point out that these two constructs (i.e. how students organize their studies and how they perceive themselves capable of achieving their goals) are decisive for the quality of learning in higher education. Martins and Santos (2020) corroborate this in their study which aimed to correlate the use of learning strategies and self-efficacy beliefs in students entering Brazilian higher education. The results showed a moderate correlation between the values of the learning strategies and academic self-efficacy scales.
Rossi et al. (2020) carried out an investigation to verify the correlation between indicators of self-efficacy and motivation to learn in Brazilian high school adolescents. By breaking down motivation to learn into intrinsic and extrinsic motivation, the results of the study showed a positive correlation between general perceived self-efficacy and intrinsic motivation, as well as a negative correlation between general perceived self-efficacy and extrinsic motivation.

3 METHODOLOGY

3.1 INTEGRATIVE LITERATURE REVIEW

Integrative Literature Reviews (ILR) are literature search strategies that aim to analyze trends, synthesize results, identify, select and evaluate studies with different methodological characteristics. In ILRs, it is possible to define the information to be extracted from the selected studies, in addition to categorizing the studies themselves. The studies are then evaluated and their results interpreted (Martins, 2018).

3.2 SOURCES OF INFORMATION AND SEARCH STRATEGY

Based on the guiding question "What are the strategies for evaluating/investigating self-efficacy in mentoring and/or e-mentoring processes?", an electronic search was carried out for publications in the PubMed, VHL, SciELO and Scopus indexing databases, between 2012 and 2022, by crossing the keywords/descriptors: (mentoria OR mentoring OR e-mentoring) AND (autoeficácia OR self-efficacy). The choice to use a broader string was made so that the literature review could include as many ways of investigating the construct as possible and which had been published in the indexing databases previously highlighted. The search for papers was carried out in March 2023, with organization and selection taking place between March and April of the same year.
3.3 ELIGIBILITY CRITERIA

The following inclusion criteria were defined: (1) studies whose objectives include evaluating/researching self-efficacy in mentoring and/or e-mentoring processes; (2) studies that explain the use of the mentoring strategy; (3) studies that present self-efficacy as the primary result of their investigation; (4) articles written in Portuguese, Spanish or English; (5) published between 2012 and 2022; (6) only articles published in full in journals. Exclusion criteria were: (1) articles that were not freely available in their entirety; (2) articles that were not made available in their entirety through USPnet VPN or open access; (3) literature review or overview articles.

3.4 STUDY SELECTION AND DATA EXTRACTION

Duplicate articles were only added once when they were identified in different indexing databases. The titles and abstracts were then read, taking into account the established inclusion and exclusion criteria, in order to select the articles for full examination. Finally, the sample of articles used in this current integrative literature review was defined. The following information was extracted from the selected articles: title, year, authors, indexing bases and location. The aforementioned information was organized using Google Spreadsheet and Google Docs, the latter being the software used to draw up the outline of this review. Finally, the papers were organized in the web application "Rayyan", in order to organize the selection of studies – as well as organizing their information. It is important to note that this study followed the recommendations contained in the PRISMA guidelines (Moher et al., 2010) for selecting articles and extracting data. It is understood that these guidelines offer more refined search strategies, allowing a more detailed presentation of the selected studies.
3.5 CATEGORIES OF ANALYSIS

The articles were organized into eight categories of analysis: (1) year of publication of the studies, (2) location where the studies were conducted, (3) methodological design of the studies, (4) participants in the studies, (5) definitions of mentoring and self-efficacy presented by the studies, (6) description of self-efficacy instruments, (7) technology mediation in mentoring processes and (8) outcomes of the studies (mentoring and self-efficacy). The categories were chosen by the authors after reading the selected papers.

4 RESULTS AND DISCUSSIONS

The review of the scientific literature provided access to 55 articles in PubMed, 370 studies in BVS, 02 studies in SciELO and 213 studies in Scopus.

Figure 1. Flowchart of the integrative literature review and selection of selected articles.

<table>
<thead>
<tr>
<th>Articles found, excluding duplicates (n = 620)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Studies excluded after reading title and abstract (n = 560)</td>
</tr>
<tr>
<td>Reasons: does not focus on mentoring relationships, although it mentions them; focuses on other relationships (coaching, tutoring and preceptorship, for example); research proposals (not yet done); does not investigate self-efficacy; evaluates self-efficacy, but not in mentoring relationships.</td>
</tr>
<tr>
<td>Studies selected for full reading (n = 60)</td>
</tr>
<tr>
<td>Studies excluded after full reading (n = 25)</td>
</tr>
<tr>
<td>Reasons: studies with secondary self-efficacy results; studies with no clear objective of measuring self-efficacy in mentoring processes; studies in which mentoring was a minority part of larger actions.</td>
</tr>
<tr>
<td>Final sample of studies (n = 35)</td>
</tr>
</tbody>
</table>

Source: Prepared by the authors themselves.
In order to organize the publications surveyed in this integrative review, Table 1 was elaborated and is available at the end of this paper (Appendix A). The results will be presented below, following the analysis criteria developed.

4.1 YEAR OF PUBLICATION OF THE STUDIES

In the papers collected for this integrative literature review, it can be seen that there is no tendency in the distribution of publications, with a homogeneous distribution of publications in relation to the years. Of particular note are the years 2014, in which there was no publication included in this current literature review, and 2022, in which there was the highest concentration of papers (n = 6; 17.1%) published, which may indicate a growing interest in investigating the central theme of this current work. However, it is important to point out that studies on mentoring and self-efficacy have been conducted in the scientific literature for longer than this time range includes, since mentoring, despite being a contemporary strategy, is not recent (Silva, et al. 2021) and self-efficacy was first postulated by Bandura (1977).

4.2 LOCATION WHERE THE STUDIES WERE CONDUCTED

The majority of the studies were carried out in the United States of America (n = 15; 42.9%), demonstrating that the scientific literature there has invested a significant amount of effort in investigating the variable of self-efficacy in mentoring actions, whether in the construction, validation or even evaluation of existing programs. In addition to the USA, another North American country in which studies have been conducted, albeit in smaller numbers, is Canada (n = 3; 8.6%). However, it is important to note that despite this tendency, there are articles from different parts of the world, including, in addition to North America, the continents of Europe (n = 6; 17.1%), Asia (n = 6; 17.1%), Africa (n = 1; 2.9%) and Oceania (n = 1; 2.9%). Finally, relevant information to be highlighted is in relation to the papers which, in their writing, did not specify the location of their
studies (n = 3; 8.6%). This finding corroborates Marino et al's (2020) assertion that mentoring is widely investigated in the USA.

4.3 METHODOLOGICAL DESIGN OF THE STUDIES

With regard to the methodological design of the selected manuscripts, the vast majority of them reported using a quantitative method to investigate (n = 28; 80%) self-efficacy in relation to mentoring actions, regardless of the context of application. The other studies used either quanti-quali or mixed methods to conduct their investigations (n = 3; 8.6% and n = 3; 8.6%, respectively). Among the studies surveyed for this literature review, there were no studies that used an exclusively qualitative design. One study (2.9%) did not clarify the type of methodological design used. The selected studies, in terms of methodological design, conducted their research using mostly quantitative methods, which was also evidenced in the scientific literature, according to Iaochite and colleagues (2016), in relation to publications on self-efficacy in the educational field.

4.4 PARTICIPANTS IN THE STUDIES

The scope of the studies included works with different age groups, areas of activity, focus of mentoring actions, etc. It is worth highlighting a trend that was observed: some of the studies had as participants those individuals involved in some educational context, whether they were teachers or students at different educational levels. This indicates that mentoring actions, as well as the perception of one's own ability, have a relevant place in teaching-learning processes, whether in relation to students or teachers, including those involved in academic or research activities. Other target audiences of the selected works were businesspeople or budding entrepreneurs, health professionals (e.g. nurses and doctors), medical patients, individuals involved in social actions (e.g. young people at risk and those involved in social justice actions) and bank employees. In terms of the target audience of the mentoring actions, the plurality of the groups identified seems to confirm what was said by Mullen and Klimaitis (2021), who
argue that mentoring practices can take place in different ways, depending on the context (and the individuals involved) for which they were developed and in which they are conducted.

4.5 DEFINITIONS OF MENTORING AND SELF-EFFICACY

Among the 35 (thirty-five) articles selected, it was observed that, in relation to the definition of mentoring, eleven papers (31.4%) presented a clear and contextualized definition of this type of relationship. Ten articles (28.6%) presented a partial definition of mentoring, meaning that the authors of these specific articles sought to present a definition of the relationship based on a description of its characteristics or the characteristics of the individuals involved in it. Of the total number of articles selected, fourteen (40%) did not present a definition of mentoring. With regard to the self-efficacy construct, in the parameters for presenting a definition of the variable, the movement was somewhat different to that shown with the definition of mentoring. In other words, 80% of the studies (n = 28) clearly presented a definition of the self-efficacy variable, based on the scientific literature. This topic highlights the fact that the individual's perception of their own abilities to achieve a certain goal benefits from clarity about the context in which they are inserted. Finally, for this category of analysis, it is important to identify the articles that presented both a clear definition of mentoring and self-efficacy. Ten (28.6%) of the 35 articles met this criterion.

4.6 DESCRIPTION OF SELF-EFFICACY INSTRUMENTS

With regard to the measurement/research strategies for the self-efficacy variable, it can be seen that in 45.7% of cases the instrument was developed or adapted by the authors, while in 14.3% of cases it was not specified. It should be noted that only papers in which the authors presented the instrument by name and by its characteristics were identified as specified, i.e. papers which only presented the bibliographic reference (of validity) of the instrument, for example, were not identified as specified. The aspect of adapting or developing the
instrument raises the question of how closely the authors used other variables of interest (e.g. mental health indicators) when constructing batteries or surveys for their studies. It is also possible to infer that, due to the characteristic definition of self-efficacy (based on the perception of the individual's ability), the adaptation or development of items to assess it in a given context was understood to be possible and simple to carry out, in order to meet the objectives of the study. In 40% of cases, a psychometrically adapted instrument was detailed for measuring self-efficacy. Once again, taking into account the contextual characteristics of self-efficacy, it is possible to observe the plurality of instruments used in the studies surveyed. The authors ensured that their measurement of self-efficacy was limited to the area of knowledge of interest in their work. These findings pointed to three obvious scenarios: (1) the use of self-efficacy scales, (2) the adaptation of scales and (3) the development of questionnaires or surveys. Iaochite et al. (2016), in their literature review, point out that the use of scales was the most frequent way of measuring self-efficacy, which confirms the findings of this current review, in relation to the type of assessment instruments. However, it is worth noting that the findings of this ILR also pointed to a significant movement towards the adaptation or development of instruments by the authors (or the lack of a complete description of the instrument used).

4.7 TECHNOLOGY MEDIATION IN MENTORING PROCESSES

In general, most of the studies did not report the use of any technological resource in the mentoring activities which were the focus of the investigation (n = 30; 85.7%). Of the studies that reported the use of digital technologies (n = 5; 14.3%), only the work by Kim et al. (2013) was conducted before the last 5 years, which may indicate a more recent use of digital technologies to mediate mentoring relationships. Among the resources used, the use of videoconferences (or video calls) to hold meetings between mentors and mentees stands out. One of the articles selected (Stephenson-Hunter et al., 2021), despite reporting the use of digital resources in mentoring relationships, did not explain which resource was used for this purpose. Despite the small number of studies that reported the
use of this mediation, it is important to note that all of them showed effects of mentoring relationships on self-efficacy or pointed to some relationship between the variables. Pointing this out does not mean that technological mediation improves the mentoring strategy, but it does point out that technological resources have the potential to guarantee the development of mentoring towards a certain goal (Chong et al., 2020; Moreira et al., 2020). This indicator can also be interpreted in a broader way, understanding that mentoring has the potential to generate an effect on teaching-learning processes, in the sense of the occurrence of transformations in the field of education, in the search for innovative strategies, translated into a reflective, critical and transformative teaching-learning process, beyond the technical elements of each learning object (Souza et al., 2014).

4.8 OUTCOMES OF THE STUDIES (MENTORING AND SELF-EFFEICACY)

In general, the articles pointed to improvements in the self-efficacy indicators of individuals who take part in mentoring activities, regardless of the context in which they are conducted. Only the study by Kim et al. (2013) did not show a significant increase in self-efficacy indicators in individuals participating in mentoring actions, when compared to a control group (which did not participate). The scientific literature in the area corroborates this finding, in the sense that an individual with greater self-efficacy has higher motivation indicators in learning contexts, as they perceive themselves as being capable of learning, thus impacting the quality of learning and expanding their learning strategies, which indicates the relevance of developing good self-efficacy indicators in educational or teaching-learning contexts (Ganda and Boruchovitch, 2018; Casiraghi, et al., 2020; Martins and Santos, 2020; Rossi et al., 2020).

Furthermore, the findings of the articles allow us to observe the potential relationship between the constructs that are the focus of this literature review. Firstly, with regard to the relationship between mentoring and self-efficacy, it can be seen that these are directly correlated with educational aspects. Thus, having a mentor at some point in life appeared to have a positive effect on individuals'
self-efficacy. This can also be seen in other contexts of application, such as health, business or career contexts, social actions and academic or scientific research contexts. This finding, when analyzed against the totality of the studies surveyed, indicates the potential and relevance not only of the mentoring strategy and the self-efficacy construct, but also the possibilities of bringing them closer to other objects of study (Liu et al., 2019), in different areas of research. A relevant aspect to note is that, given the evidence from the selected articles, not only the mentees showed a benefit or increase in their self-efficacy, but also the individuals who acted as mentors (Weiler et al., 2013; Anderson et al., 2018).

Another topic that was highlighted in the articles deals with aspects of quality in mentoring relationships. Firstly, there is the aspect that mentoring actions are more beneficial when they are based on reflective actions, according to Lejonberg and colleagues (2018). The same authors also point out that, to this end, mentoring actions must be clear and well-defined. This summary is in line with what has been highlighted in the scientific literature, as can be seen from the work of Silva and Freire (2014), who highlight fundamental dimensions of the effectiveness of mentoring programs, namely: recruitment, selection, initial training, compatibility, follow-up/monitoring and completion. In the same vein, LoCasale-Crouch et al. (2012) pointed out in their study that the time spent with a mentor, participation in professional development activities facilitated by the mentor and the quality of the mentor’s interactions with novice teachers were related to their perceptions of ability. Another correlated aspect is the characteristics of mentors, which are perceived to be associated with higher levels of self-efficacy in mentees, or vice versa. Cavell et al. (2020) pointed out, based on the Big 5 Personality Traits, that the quality of the compatibility of the mentoring relationship was higher when mentors were more confident in their own abilities at the start of the mentoring relationship. This reinforces the need to investigate the characteristics of those involved in mentoring relationships in order to develop their self-efficacy. Linked to the above, a theme that emerged in the studies surveyed was in relation to the identification of the mentee with the mentor. St-Jean et al. (2018) pointed out that in cases where mentees showed low identification with their mentors, no differences were identified in the self-
efficacy indicators assessed in the study. This element recalls the discussion raised by Barros and Batista-dos-Santos (2010) regarding vicarious experience and its effect on self-efficacy, whereby an individual's identification with their role model increases their own self-efficacy beliefs in order to develop competencies to master similar activities in an appropriate way. This process depends on the individual identifying significantly with their chosen model, in relation to the experiences they are going through and also in relation to their own personal characteristics.

5 CONCLUSION

The compilation of findings pointed to the existing interest in investigating these constructs around the world, in different areas of knowledge, with different audiences and different ways of measuring self-efficacy. It is important to reiterate the care needed for positive outcomes, given the focus of this literature review, of mentoring actions, both in relation to the design of the actions themselves and in relation to the characteristics of those involved in them. Therefore, sharing experiences, in a setting designed for this to happen properly, generates in the individual who receives them an improved perception of their own ability to successfully achieve their objectives and goals.

As for the limitations of this present work, it is first pointed out that the categories of analysis were developed by the authors themselves. This was done in order to cover the most relevant aspects covered by the selected studies themselves and to elucidate findings regarding the clarity of the constructs investigated, the measurement strategies, the support of digital technologies and the mapping of research participants. Another limitation of this review was that the sample sizes of each study selected were not presented. This is also justified by the choice, at this time, to present the plurality of research contexts, reinforcing the applicability of mentoring actions to different audiences.

Finally, this ILR reinforces the discussion, in the scientific literature, of teaching-learning strategies that go beyond traditional models and have an effect on the way in which individual learners develop a perception of their own abilities
to achieve their different goals throughout life. In addition, the very characteristics of mentoring and self-efficacy open up the possibility of reflecting on the insertion of this strategy and this variable in different contexts of application and investigation, justifying the development of actions that take into account, in essence, the specificities of each scenario, as well as justifying the creation or adaptation of strategies for measuring self-efficacy that encompass the specific capacities to be developed and investigated.

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REFERENCES

ADAKA, Terfa; ADIGUN, Olufemi; LALU, James et al. Effect of mentorship on regular teachers’ selfefficacy towards implementation of inclusive education at basic education level. Specijalna edukacija i rehabilitacija, v. 21, n. 4, p. 233–253, 2022.


DE FÁTIMA, Maria; MARTINS, M. Estudos de Revisão de Literatura Estudos de Revisão de Literatura. [s.l.: s.n.], 2018. Disponível em: https://www.arca.fiocruz.br/bitstream/handle/icict/29213/Estudos_revisao.pdf?sequence=2&isAllowed=y.


KIM, Son Chae; OLIVERI, Dee; RIINGEN, Michelle et al. Randomized Controlled Trial of Graduate-to-Undergraduate Student Mentoring Program. *Journal of Professional Nursing*, v. 29, n. 6, p. e43–e49, 2013.


REGINA; SILVA; THERESA, Maria. Mentoria em programação: aprendendo ao ensinar e ensinando ao aprender. 2021.


# APPENDIX A

Table 1. Authors, year, location, Area of Knowledge (AoK), research method, participants, definitions of mentoring and self-efficacy, self-efficacy measures, technology mediation and findings of the publications

<table>
<thead>
<tr>
<th>Authors/year</th>
<th>Location</th>
<th>Research method</th>
<th>Participants</th>
<th>Definition of constructs</th>
<th>Self-efficacy measures</th>
<th>Technology mediation</th>
<th>Findings of the publications</th>
</tr>
</thead>
<tbody>
<tr>
<td>Adaka et al., 2022</td>
<td>Nigeria</td>
<td>Quantitative</td>
<td>Basic Education teachers</td>
<td>Yes</td>
<td>Yes</td>
<td>Without technological mediation</td>
<td>Successful mentoring training program on the self-efficacy of regular teachers in service in relation to the effective implementation of inclusive education at the basic level of education. The number of mentors, mentoring encounters and the quality of mentoring were significantly correlated with indicators of academic self-efficacy.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Psychiatry Faculty Members</td>
<td></td>
<td></td>
<td>Without technological mediation</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Autistic performance arts professionals</td>
<td>No</td>
<td>Yes</td>
<td>Survey adapted by the authors</td>
<td></td>
</tr>
<tr>
<td>Sim et al., 2022</td>
<td>USA</td>
<td>Quantitative-qualitative</td>
<td>Faculty Members</td>
<td></td>
<td></td>
<td>Without technological mediation</td>
<td>The number of mentors, mentoring encounters and the quality of mentoring were significantly correlated with indicators of academic self-efficacy.</td>
</tr>
<tr>
<td>Buckley et al., 2022</td>
<td>United Kingdom</td>
<td>Quantitative-qualitative</td>
<td>Autistic performance arts professionals</td>
<td>No</td>
<td>Yes</td>
<td>Video, audio, text messages or phone calls; e-mails; online questionnaire</td>
<td>Occupational self-efficacy indicators increased among mentees after participating in the mentoring program.</td>
</tr>
<tr>
<td>Guenaga, et al., 2022</td>
<td>Spain</td>
<td>Quantitative</td>
<td>Spanish Elementary School students</td>
<td>No</td>
<td>Yes</td>
<td>Instrument adapted by the authors</td>
<td>In the female mentees' groups, the item &quot;Whatever happens, I'm capable of dealing with it&quot; was significantly higher than in the control group. In the case of male mentees, the item that stood out, in relation to the control group, was &quot;I can find a way to solve any mathematical challenge I want, even if someone opposes me&quot;. No significant differences were identified between female and male mentees.</td>
</tr>
<tr>
<td>Author(s)</td>
<td>Country</td>
<td>Methodology</td>
<td>Target Group</td>
<td>mediation</td>
<td>Teacher in Training</td>
<td>Sense of Efficiency Scale</td>
<td>Results</td>
</tr>
<tr>
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<tr>
<td>Nikoçeviq-Kurti, 2022</td>
<td>Kosovo</td>
<td>Quantitative</td>
<td>Teachers in training</td>
<td>No</td>
<td>Yes</td>
<td>Without technological mediation</td>
<td>The findings indicated that higher levels of self-efficacy of student teachers are positively associated with the level of experience with mentoring relationships during their professional training. The quality of the relationship between mentors and mentees was positively associated with mentees’ self-efficacy. Student age significantly moderated the association between mentor relationship quality and self-efficacy.</td>
</tr>
<tr>
<td>Lee et al., 2022</td>
<td>South Korea</td>
<td>Quantitative</td>
<td>Low-income students</td>
<td>No</td>
<td>Yes</td>
<td>General Self-Efficacy Scale</td>
<td>Students’ professional self-efficacy improved significantly after participating in the program.</td>
</tr>
<tr>
<td>Stephenson-Hunter et al., 2021</td>
<td>USA</td>
<td>Mixed method</td>
<td>Undergraduate students</td>
<td>No</td>
<td>No</td>
<td>Instrument developed by the authors</td>
<td>Having a mentor during youth was associated with increased academic self-efficacy (college self-efficacy).</td>
</tr>
<tr>
<td>McClain, et al., 2021</td>
<td>USA</td>
<td>Quantitative</td>
<td>College students</td>
<td>Partially</td>
<td>Yes</td>
<td>No description of specific strategies</td>
<td>Results demonstrated the existence of a transfer of perceived capacity (self-efficacy) from mentors to mentees, based on the sharing of their past experiences with which the mentee was able to associate their current experiences.</td>
</tr>
<tr>
<td>Varghese &amp; Finkelstein, 2021</td>
<td>Not specified</td>
<td>Studies 1, 2 and 3; quantitative</td>
<td>General populace and members of an e-mentoring program</td>
<td>Partially</td>
<td>Yes</td>
<td>Not specified</td>
<td>Without technological mediation</td>
</tr>
<tr>
<td>Akyavuz &amp; Asici, 2021</td>
<td>Turkey</td>
<td>Quantitative</td>
<td>University students</td>
<td>Yes</td>
<td>Yes</td>
<td>Leadership Self-Efficacy Scale</td>
<td>Participation in the Volunteer Mentoring Management Program had no significant effect on student mentors’ self-efficacy for leadership. The quality in the mentoring relationship compatibility was higher/better when mentors were more confident (self-efficacy) at the beginning of mentoring relationships. Study participants’ self-efficacy significantly increased in all 15 geriatric skills after participating in telementoring actions.</td>
</tr>
<tr>
<td>Cavell et al., 2020</td>
<td>Not specified</td>
<td>Quantitative</td>
<td>Aggressive children</td>
<td>Partially</td>
<td>Yes</td>
<td>Mentor Self-Efficacy Scale</td>
<td>Use of videoconferencing</td>
</tr>
<tr>
<td>Jafari et al., 2020</td>
<td>USA</td>
<td>Quantitative</td>
<td>Health professionals (geriatry)</td>
<td>No</td>
<td>No</td>
<td>Survey developed by the authors</td>
<td></td>
</tr>
</tbody>
</table>

**Note:** The table above provides a summary of studies that have investigated the relationship between mentorship and self-efficacy, with a focus on the use of specific instruments and their methods of mediation. The findings across these studies suggest a strong association between mentorship and increased self-efficacy, particularly among low-income students and university students. The use of technology in mentorship programs is also shown to be effective in enhancing self-efficacy levels. Further research is needed to explore the long-term effects and mechanisms underlying these findings.
<table>
<thead>
<tr>
<th>Study</th>
<th>Country</th>
<th>Type</th>
<th>Sample Description</th>
<th>Questionnaire Developed by Authors</th>
<th>Self-Efficacy Mediation</th>
<th>Participant Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chelberg &amp; Bosman, 2020</td>
<td>USA</td>
<td>Quantitative</td>
<td>Native university students</td>
<td>No</td>
<td>Yes</td>
<td>Questionnaire developed by the authors Without technological mediation Participants noticed gains in their self-efficacy and reported learning skills for greater academic success, in addition to developing a sense of belonging, throughout the semester. Mentoring actions had a significant effect on self-efficacy (specifically for recognizing opportunities). However, the effect only occurs in mentees with low orientation towards learning goals. Regarding their self-efficacy, three groups of mentors were identified: (1) those with high self-efficacy indicators, but with a decrease in these indicators over time; (2) mentors with relatively high and stable self-efficacy over time; (3) those with high self-efficacy indicators, with these indicators increasing over time. Self-efficacy for research and mentoring relationships were negatively related to mental health indicators (anxiety and depression). Self-efficacy showed a positive relationship with outcome expectation indicators. Mentees interest in being mentored was positively related to self-efficacy indicators. Self-efficacy showed a positive relationship with outcome expectation indicators. Teachers who completed courses in reading content during the preparation programs and received mentoring during the first year showed a higher rate of self-efficacy. Students in closed triads and dyads (mentoring relationship) reported similar levels of scientific self-efficacy, while students in open triads reported, on average, lower scientific self-efficacy than students in dyads.</td>
</tr>
<tr>
<td>St-Jean &amp; Tremblay, 2020</td>
<td>Canada</td>
<td>Quantitative</td>
<td>Entrepreneurs</td>
<td>Yes</td>
<td>No</td>
<td>Not specified Without technological mediation</td>
</tr>
<tr>
<td>Boat et al., 2019</td>
<td>USA</td>
<td>Quantitative</td>
<td>Mentees: at-risk teenagers Mentors: undergraduate students</td>
<td>No</td>
<td>Yes</td>
<td>Adapted version of the Personal Efficacy Beliefs Scale Without technological mediation</td>
</tr>
<tr>
<td>Liu et al., 2019</td>
<td>China</td>
<td>Quantitative</td>
<td>Graduate students</td>
<td>No</td>
<td>Yes</td>
<td>Research Self-Efficacy Scale Without technological mediation</td>
</tr>
<tr>
<td>Pham et al., 2019</td>
<td>Taiwan</td>
<td>Quantitative</td>
<td>Health professionals</td>
<td>Yes</td>
<td>Yes</td>
<td>Instrument developed by the authors Without technological mediation</td>
</tr>
<tr>
<td>Feng et al., 2019</td>
<td>USA</td>
<td>Quantitative</td>
<td>Teachers</td>
<td>Partially</td>
<td>Yes</td>
<td>Instrument developed by the authors Without technological mediation</td>
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<tr>
<td>Joshi et al., 2019</td>
<td>USA</td>
<td>Quantitative</td>
<td>Undergraduate students</td>
<td>No</td>
<td>Yes</td>
<td>Not specified Without technological mediation</td>
</tr>
<tr>
<td>Study Authors</td>
<td>Country</td>
<td>Study Type</td>
<td>Participants</td>
<td>Partially</td>
<td>Yes</td>
<td>Instruments</td>
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<tr>
<td>Anderson et al., 2018</td>
<td>USA</td>
<td>Studies 1 and 2: quantitative</td>
<td>Members of social justice trainings for youth</td>
<td>Partially</td>
<td>Yes</td>
<td>Instruments developed by the authors</td>
</tr>
<tr>
<td>De Witt Jansen et al., 2018</td>
<td>Northern Ireland</td>
<td>Mixed method</td>
<td>Health professionals</td>
<td>No</td>
<td>No</td>
<td>Questionnaire developed by the authors</td>
</tr>
<tr>
<td>St-Jean et al., 2018</td>
<td>Canada</td>
<td>Quantitative</td>
<td>Startup entrepreneurs</td>
<td>Partially</td>
<td>Yes</td>
<td>Not specified</td>
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<tr>
<td>Lejonberg, et al., 2018</td>
<td>Norway</td>
<td>Quantitative</td>
<td>Teachers</td>
<td>Yes</td>
<td>Yes</td>
<td>Not specified</td>
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<tr>
<td>Gassaway, et al., 2017</td>
<td>Not specified</td>
<td>Quantitative</td>
<td>Patients with spinal cord injury</td>
<td>Partially</td>
<td>Yes</td>
<td>General Self-efficacy Scale</td>
</tr>
<tr>
<td>Jyoti &amp; Sharma, 2017</td>
<td>India</td>
<td>Quantitative</td>
<td>Bank employees</td>
<td>Partially</td>
<td>Yes</td>
<td>Not specified</td>
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<tr>
<td>Author(s)</td>
<td>Country</td>
<td>Methodology</td>
<td>Participants</td>
<td>Technology</td>
<td>Instrument/Scale Provided by</td>
<td>Mediation</td>
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<tr>
<td>Deane et al., 2017</td>
<td>New Zealand</td>
<td>Quantitative</td>
<td>Elementary school students</td>
<td>Partially Yes</td>
<td>Instrument adapted by the authors</td>
<td>Without technological mediation</td>
</tr>
<tr>
<td>Parsa et al., 2016</td>
<td>Iran</td>
<td>Quantitative</td>
<td>Academic employees</td>
<td>Yes Yes</td>
<td>Occupational self-efficacy scale</td>
<td>Without technological mediation</td>
</tr>
<tr>
<td>Marlow et al., 2015</td>
<td>USA</td>
<td>Mixed method</td>
<td>Individuals on parole</td>
<td>No No</td>
<td>Abstinence Self-Efficacy Questionnaire</td>
<td>Without technological mediation</td>
</tr>
<tr>
<td>St-Jean &amp; Mathieu, 2015</td>
<td>Canada</td>
<td>Quantitative</td>
<td>Entrepreneurs</td>
<td>Yes Yes</td>
<td>Not specified</td>
<td>Without technological mediation</td>
</tr>
<tr>
<td>Kim et al., 2013</td>
<td>USA</td>
<td>Quantitative</td>
<td>Graduate-to-undergraduate students</td>
<td>Yes Yes</td>
<td>Baccalaureate Student Self-Efficacy Questionnaire</td>
<td>Phone calls, emails, text messages or social media interactions</td>
</tr>
<tr>
<td>Weiler et al., 2013</td>
<td>USA</td>
<td>Quantitative</td>
<td>College students</td>
<td>Partially No</td>
<td>Community Service Self-Efficacy Scale</td>
<td>Without technological mediation</td>
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<tr>
<td>Marinac &amp; Gerkovich, 2012</td>
<td>USA</td>
<td>Quantitative</td>
<td>Mid-career investigators</td>
<td>No No</td>
<td>Instrument developed by the authors</td>
<td>Without technological mediation</td>
</tr>
<tr>
<td>Study</td>
<td>Country</td>
<td>Design</td>
<td>Participants</td>
<td>Application</td>
<td>Instrument</td>
<td>Mediation</td>
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<tr>
<td>Chopin et al., 2012</td>
<td>USA</td>
<td>Quantitative</td>
<td>Business graduate students</td>
<td>Yes</td>
<td>Yes</td>
<td>Without</td>
</tr>
<tr>
<td>LoCasale-Crouch et al., 2012</td>
<td>USA</td>
<td>Not specified</td>
<td>Beginner teachers</td>
<td>Yes</td>
<td>No</td>
<td>Without</td>
</tr>
<tr>
<td>Ismail et al., 2012</td>
<td>Malaysia</td>
<td>Quantitative-qualitative</td>
<td>Higher education students</td>
<td>Yes</td>
<td>Yes</td>
<td>Without</td>
</tr>
</tbody>
</table>

Source: Prepared by the authors themselves.