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FACULTY OF PSYCHOLOGY AND EDUCATIONAL SCIENCES

APPLIED COGNITIVE PSYCHOLOGY DOCTORAL SCHOOL

Ph.D. THESIS

**IDENTITY-BASED MOTIVATION: PROCESSES AND
CORRELATES IN THE ROMANIAN EDUCATIONAL SYSTEM**

AUTHOR: Ph.D. CANDIDATE ANTONESEI (FLOREA) ANDREEA

SCIENTIFIC ADVISOR: PROFESSOR Ph.D. OANA-MARIA NEGRU-SUBTIRICA

CLUJ-NAPOCA

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Appendix 1. Statement Attached to the Doctoral Thesis

ACKNOWLEDGEMENTS

All I am today and all I have achieved is God's blessing through the people around me!

First, I am deeply grateful to prof. dr. habil. Oana Negru-Subțirică for the opportunity to enroll for my Ph.D., for her constant support and mentoring, and for all that I have learned during my research. Her enthusiasm, dedication, rigorous supervision, and discipline have nurtured my interest in continuing research and our collaboration in the future. I appreciate that under her guidance we worked as a team with other Ph.D. students, whom I thank.

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None of what I have accomplished over these years would have been possible without my husband's encouragement, patience, and continued support. Although I have often stolen from our time together, he delighted me every morning and evening, giving me the balance to continue this arduous research effort. What I am today I owe to my parents, my grandmothers, and my sister, whom I will always carry in my heart and to whom I will forever be grateful. Not least, I also thank my friends for their encouragement, support, and understanding all these years.

Notes

(1) This is to certify by Antonesei (căs. Florea) Andreea that:

(a) The thesis includes the original research work of Antonesei (Florea) Andreea towards the Ph.D.;

(b) Parts of the thesis have been already published, in press, or submitted for publication; appropriate citations for these publications were included in the thesis. Other co-authors have been included in the publications, if they contributed to the exposition of the published text, data interpretation etc.

(c) The thesis was written according to the academic writing standards (e.g., appropriate scientific acknowledgements and citations have been made in the text by the author of the thesis). All the text of the thesis and its summary was written by Antonesei (căs. Florea) Andreea who assumes the all responsibility for the academic writing;

Also:

- A software was used to check for the academic writing; the thesis has passed the critical test;

Antonesei (căs. Florea) Andreea

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Keywords: identity-based motivation; effort beliefs; academic achievement; mastery goal; adolescence; intervention; cross-lagged; longitudinal; latent profile analysis; longitudinal measurement invariance;

CHAPTER I. THEORETICAL FOUNDATIONS AND LITERATURE REVIEW

1.1. Introduction and Research Problematic

Education has been shown to play a significant role in students' daily lives and the development of their identity, as they spend a considerable amount of time at school or engaged in learning activities and completing homework assignments. Nevertheless, students frequently fail to perceive school as being meaningful in the present or the future. School tasks are often challenging and not inherently enjoyable for students, as they are required to invest effort and apply their knowledge and skills to learn new concepts and develop their abilities.

Each student has a subjective perspective on the difficulty of school tasks, and many students struggle to cope with the unknown and challenges that come with learning. Some students withdraw from the learning process as they perceive difficult tasks as obstacles in learning new things and developing competencies. They interpret the encountered difficulties as a sign of their low abilities, believing that challenging tasks are only meant for high-achieving students. In contrast, other students interpret difficult school tasks as opportunities for academic growth. They recognize the pivotal role of education in their prospects, which motivates them to engage more deeply and exert greater effort in overcoming these challenging tasks (Fisher & Oyserman, 2017).

The identity-based motivation theory explains that the way students define themselves through education has a motivational and self-regulatory role in school behavior, and provides students with a specific framework to interpret school difficulties (Oyserman et al., 2017). Previous and current educational experiences dynamically influence students' feeling that school is an important part of their identity, and the belief that education serves as a pathway from their current selves to their future selves (Oyserman, 2024; Oyserman & Horowitz, 2023).

The values of the educational system are deeply embodied in students' beliefs about the meaning of education, and their attitudes toward school (Negru-Subtirica, 2024). The Romanian educational system presents limited opportunities for students to explore their educational identities, which hinders their ability to perceive the significance of school for their future. The emphasis is heavily placed on achieving high grades, resulting in an implicit division among students into two groups: high-achieving individuals who can tackle challenging tasks, and low-achieving students who, despite their efforts, struggle to manage the school difficulties (Damian et al., 2016; Negru-Subtirica & Damian, 2018).

Previous findings in identity-based motivation theory sparked our interest in studying how students perceive the role of school, in an educational context (e.g. Romania) that does not encourage self-reflection and expression of one's beliefs, and that does not support the development of educational identity (Negru-Subtirica, 2024). In this sense, we aimed to explore the motivational impact of educational identity and of the way students interpret difficult school tasks.

1.2. Relevance of the Research

The issues of motivation and meaning of school represent some of the most significant challenges for students and education systems around the world (OECD, 2017). Students have been shown to perceive school as meaningful when they believe that their future depends on their educational pathways (Fisher & Oyserman, 2017; Oyserman et al., 2017) and when the school provides them with opportunities to explore and develop their identity (Oyserman, 2013, 2015; Reber, 2019). However, challenges can arise when students struggle with difficult learning tasks.

Previous research revealed that students place a high value on difficult schoolwork if this is perceived as being congruent with their educational identity and relevant to their future (Landau et al., 2014; Nurra & Oyserman, 2018). This research project aims to improve our

understanding of the factors that influence how students perceive the difficulty of their schoolwork and how these perceptions affect their motivation. A key focus of the studies within this thesis is to explore how school can effectively enhance students' motivation to engage with difficult school tasks.

Therefore, we are particularly interested in examining the longitudinal cross-lagged relations between GPA and how students perceive difficult and easy school tasks. We sought also to explore the possible role of beliefs about the effort in the previous interactions. This research may provide future strategies to engage students in a pathway of school success and support the alleviation of school failure, particularly for those who seem to be locked in it.

Further, we aimed to determine whether students could be categorized into groups based on their levels of identity-based motivation (plausibility of academic possible selves and difficulty mindsets). Classifying students on their levels of identity-based motivation, along with the identification of the vulnerable groups, may be an important tool for adapting and implementing an intervention in the Romanian educational context characterized by high educational inequalities. All these findings may increase our understanding of the relation between students' academic possible selves and their interpretation of school difficulties.

In addition, we aimed to test an identity-based motivation (*Pathways-to-Success*; Oyserman., 2015) intervention in the Romanian school context, where educational commitments are often inflexible and students have limited opportunities to explore academic opportunities or to reconsider their unsatisfactory school choices (Negru-Subtirica, 2024; Negru-Subtirica et al., 2018). Previous experimental research has demonstrated that the intervention enhances the plausibility of academic possible selves and fosters the difficulty-as-importance mindset while reducing the difficulty-as-impossibility mindset (Oyserman et al., 2002, 2006, 2007, 2021). Linking identity-based motivation theory (Oyserman et al., 2021) and educational identity processes (Crocetti, 2017), we sought to explore whether the

intervention could improve students' feeling of the significance of their academic experience. Our goal was to develop adaptive difficulty mindsets and strengthen educational identity processes among middle school students.

Regarding the contributions of our research, it is noteworthy that the present study was the first to examine the identity-based motivation theory in relation to effort beliefs (Blackwell et al., 2007), classroom mastery goal structure (Kaplan & Maehr, 1997), and identity processes (Crocetti., 2017). In addition, we used as a novelty in the research on the identity-based motivation theoretical model, a person-centered approach that allowed us to group students based on the similarities regarding the levels of plausibility of academic possible selves and the two difficulty mindsets. Additionally, a novel aspect of this research was the use of a person-centered approach within the identity-based motivation theoretical model, allowing us to group students based on similarities in the plausibility of their academic possible selves and their difficulty mindsets.

Given that previous research on the Pathways-to-Success intervention was conducted in a North American context, testing this intervention within the Romanian educational system may provide valuable insights for developing and culturally adapting future school-focused interventions. Not least, to ensure the longitudinal validity of the instruments in the Romanian context, we tested for the first time the longitudinal psychometric proprieties properties of difficulty and ease mindsets scales, effort beliefs scales, and the four PALS subscales (mastery goal orientation, classroom mastery goal structure, academic efficacy, and skepticism about the relevance of school for future).

Overall, our studies use a complex methodological approach that provides several theoretical and empirical contributions to identity-based motivation theory, improving our understanding of how students' perceptions of difficulty influence their academic trajectories.

1.3. Identity-Based Motivation Theory

Identity-based motivation is a theoretical framework that explores the influence of educational identity on motivation and self-regulatory effort in achieving distant academic goals (Horowitz et al., 2018). This theory posits that students make sense of their educational experiences and difficult tasks, set academic goals, and take action through the lens of the actual self (who they are in the present) or through their possible selves (who they might become in the future). School can provide educational experiences that support the development of successful academic selves for students, helping them understand the importance of school tasks in achieving their educational goals (Oyserman et al., 2006). The components of identity-based motivation theory academic possible selves, strategies to attain academic possible selves (measured together through the plausibility of academic possible selves), and the difficulty mindsets (Oyserman, 2015).

Academic Possible Selves

Academic possible selves represent the way students perceive themselves in the context of education, encompassing their aspirations, goals, and concerns about their schooling (Oyserman, 2013). These have a motivational role in enhancing school-related behavior, influencing choices, shaping the perceived meaning of school, affecting how students interpret the difficulty in school, and ultimately impacting effort and performance (Destin & Oyserman, 2010; Elmore & Oyserman, 2012). The academic self motivates students to take actions that are consistent with their identities and provides them with a specific way to interpret the difficulties they encounter in pursuing academic goals (Oyserman, 2015).

Plausibility of the Academic Possible Selves

Plausibility of academic possible selves refers to the extent to which students establish concrete and detailed strategies for their academic goals. This aspect has a self-regulatory impact on students' behavior and their attitude toward school, predicting academic

achievement, self-regulatory effort, class participation, and reducing behavioral problems (Horowitz et al., 2018; O'Donnell & Oyserman, 2023). Plausibility outlines a pathway that connects students' current selves to their possible selves through school. Each step along this pathway, represented by current school tasks and school-focused choices, is essential as it is linked to the past and shapes future academic pathways (Landau et al., 2014).

Difficulty-as-Importance and Difficulty-as-Impossibility Mindsets

The *difficulty mindsets* describe how students perceive difficult school experiences and tasks, having a significant motivational and self-regulatory role in goal-directed behavior (Tepper & Lewis, 2021). Students typically interpret task difficulty through two distinct mindsets. The *difficulty-as-importance mindset*, emphasizes the value of the task for students' academic development (e.g. To be a good student, I have to tackle both easy and difficult school tasks). This mindset helps students to interpret difficult academic tasks as usual aspects of the learning process, that help them achieve their goals. In contrast, the *difficulty-as-impossibility mindset* makes students focus on their low chances of success, taking into account their lack of abilities to address a challenging task (e.g. This task seems to be difficult. I know I cannot solve it.) (Oyserman et al., 2017). This mindset can impede students' academic development, preventing them from achieving their school-focused goals (Fisher & Oyserman, 2017). When students prioritize solving difficult tasks, even if they are unsure about their chances of success, they are more likely to engage in solving them. Conversely, if they focus on their perceived inability, they may lose motivation and disengage from difficult schoolwork.

Previous research indicated that culture and educational context influence students' identity-based motivation (Yan & Oyserman, 2018). The focus of the current thesis was on analyzing how the Romanian educational context shapes the development of identity-based motivation among middle and high school students.

CHAPTER II. THESIS OBJECTIVES AND METHODOLOGY

The present thesis sought to gain a deep understanding of students' identity-based motivation, reflected in how they perceive the difficulty associated with schoolwork. This thesis contains four original studies. Our overall aim was to explore the predictors and outcomes of the difficulty mindsets, with a particular focus on academic achievement, effort beliefs, educational identity, and mastery orientation goals. To address this goal, we structured the thesis around three main objectives each centered on one of three lines of research, aimed at providing evidence for future school-focused interventions.

First, we explored longitudinal changes in difficulty and ease mindsets. Second, we aimed to identify profiles of identity-based motivation, defined by the plausibility of academic possible selves and difficulty mindsets. Third, we tested the effect of an identity-based motivation intervention on difficulty mindsets and educational identity processes. The findings of the preceding three studies can offer valuable insights into identity-based motivation theory, with a particular emphasis on the role of difficulty mindsets in students' academic motivation, self-regulation, and the meaning they assign to school. Our secondary objective was to examine the psychometric proprieties of the scales we used in both cross-sectional and longitudinal studies, particularly for the scales that had not been previously validated in the Romanian context. The first three studies were conducted around the main objective, while the secondary objective was approached in the first and the fourth study.

Who Is in Charge? The Longitudinal Interplay of Academic Achievement, Difficulty Mindsets, and Effort Beliefs in a Grade-Driven Cultural Context.

Study1 was conducted around the first main objective of this thesis. This four-wave longitudinal study explored how difficulty and ease mindsets change during three school years, investigating the impact of grades and effort beliefs. We collected data from a large sample of 1036 Romanian adolescents (Time 1). Our objectives were to: (1) explore the

bidirectional cross-lagged relations among the study variables; (2) examine the bidirectional indirect relations between GPA and difficulty and ease mindsets, as well as between GPA and effort beliefs; (3) investigate the possible processes of school success and failure influenced by students' difficulty and ease mindsets.

In this research, we performed cross-lagged analyses to explore the relations between the study variables. To investigate the possible indirect effects, we used the mediation analysis. This study can enhance our understanding of how academic achievement can be shaped by the dynamic relations between the way students perceive difficult and easy schoolwork, and their beliefs about the connection between effort and performance. The results were analyzed in relation to the specifics of the Romanian educational system where we conducted the research, which emphasizes the importance of high grades and divides students into two groups: high achievers, who can tackle difficult tasks, and low achievers, who can only handle easy tasks (Negru-Subtirica, 2024).

Identity-Based Motivation Profiles and Their Links with Sources of Educational Inequalities

Study 2 addressed the second main objective of the thesis. We used a person-centered approach to describe how the three components of identity-based motivation are configured within students. The study objectives were to: (1) identify the identity-based motivation profiles that students belong to, (2) analyze if the profile membership can be predicted by students' gender, the belonging of a type of community (rural versus urban), and their academic track (work- versus university-bound), and (3) explore if the identity-based motivation profiles are linked to mastery goal orientation and classroom mastery goal structure.

We conducted a study on a large sample of 940 high-school students of Romanian ethnicity. Latent profile analysis was performed to determine whether students can be

grouped based on their levels of plausibility of academic possible selves and difficulty-as-importance and difficulty-as-impossibility mindsets. In addition, we used multinomial logistic regression to assess the predictive power of demographic factors on profile membership. A better understanding of this research objective outlines how societal inequalities influence the membership of students in various identity-based motivation profiles. The automatic BCH method in Mplus 8.8 (Muthén & Muthén 1998-2017) was used to predict distal outcomes from the profile membership. By integrating identity-based motivation theory (Oyserman., 2024) with achievement goal theory (Ames, 1992; Dweck, 1986; Midgley et al., 2001; Nicholls, 1984), we explored if academic possible selves and mastery orientation could work together in students' academic pathways, potentially increasing their meaning of school for the future.

Strengthening Educational Identity: Linking an Identity-Based Motivation Intervention to Educational Identity Processes

Study 3 was conducted to address the third main objective of the thesis. The aim of this research was to explore changes in difficulty mindsets and educational identity construction through the implementation of the *Pathways-to-Success* intervention (Oyserman, 2015). We conducted an experimental study with a pre-post intervention assessment. The sample included of 182 early adolescents (7th grader students), with 100 in the experimental group and 82 in the control group. The intervention consisted of 11 sessions, implemented as an after-school program at the beginning of the second semester, occurring twice a week for 50 minutes each session.

The objectives of the study were therefore to: (1) explore if the identity-based motivation intervention could increase the difficulty-as-importance mindset and reduce the difficulty-as-impossibility mindset; (2) investigate how the intervention influences educational identity processes (commitment, in-depth exploration of commitment, and

reconsideration of commitment); (3) explore if, in the Romanian educational system, students from urban areas would benefit more from the intervention than students from rural areas. We used repeated measure ANOVAs for the variables that were not significantly different at the pretest (difficulty mindsets and reconsideration of commitment), as well as one-way ANCOVAs controlling for baseline scores for the variables that were different at the pretest (commitment and in-depth exploration). This study aimed to explore whether an identity-based intervention can lead to changes in difficulty mindsets and educational identity processes.

The Longitudinal Measurement Invariance

The secondary objectives of the thesis have been addressed by testing the longitudinal measurement invariance of difficulty and ease mindsets: *Difficulty-as-importance*, *Difficulty-as-impossibility*, *Ease-as-possibility*, *Ease-as-triviality Scales* (Fisher & Oyserman, 2017) and effort beliefs: *Positive effort beliefs* and *Negative effort beliefs*; (Blackwell et al., 2007)) in Study 1, and four PALS subscales, *Mastery goal orientation*, *Classroom mastery goal structure*, *Academic efficacy*, and *Skepticism about the relevance of school for future* (in Study 4. *Longitudinal Measurement Invariance of Four Patterns of Adaptive Learning Scales in Romanian Adolescents*).

Both studies were conducted across four waves, on a sample of 1036 Romanian students (Time 1) from twelve schools, encompassing grades 5 through 12, including individuals from both middle school (44.9%) and high school (55.1%), with a ($M_{\text{age}} = 15.33$ years; $SD_{\text{age}} = 2.01$; 59,7% female).

We performed first the confirmatory factor analyses to ensure that the data fit with the theoretical measurement models. Then, we performed longitudinal measurement invariance, to examine if the observed differences over time arise from changes in the constructs and not from alterations in the psychometric properties of the instruments.

CHAPTER III. ORIGINAL STUDIES

3.1. Study 1. Who Is in Charge? The Longitudinal Interplay of Academic Achievement, Difficulty Mindsets, and Effort Beliefs in a Grade-Driven Cultural Context¹

Cultural and educational contexts scaffold students' meaning of school for their future, which in turn shapes their beliefs and attitudes at school. Students' beliefs about the significance of easy and difficult tasks, as well as the perceived relation between effort and performance influence their self-regulatory efforts. These factors, in turn, impact student academic performance. An educational system that pressures students to get the best grades may drive them on a pathway of success or failure, creating a high-achieving and low-achieving student divide. The current study employed a cross-lagged four-wave longitudinal design on a diverse sample of Romanian adolescents (*N Time 1* = 1036). We examined academic achievement in the dynamic of difficulty mindsets and effort beliefs. Results showed that positive effort beliefs mediate the positive bidirectional relation between GPA and difficulty-as-importance mindset, as well as the positive relation between GPA and ease-as-possibility mindset. In turn, the positive relation between GPA and positive effort beliefs was mediated by both difficulty-as-importance and ease-as-possibility mindsets. The negative relations between GPA and difficulty-as-impossibility and ease-as-triviality mindsets were mediated by positive effort beliefs. The difficulty-as-impossibility mindset was a mediator in the positive relation between positive effort beliefs and GPA, and in the negative bidirectional relations between GPA and negative effort beliefs. These findings suggest that academic achievement both predicts and results from the dynamic relation between difficulty mindsets and effort beliefs.

¹ Study 1 manuscript in preparation for publication.

Currently, there is a lack of longitudinal research on how the relations of academic achievement and mindsets that reflect how students interpret difficult school tasks on the one hand, and their beliefs about the role of effort, on the other hand, unfold over time. This research examined a large sample of students through a four-wave longitudinal design spaced six months apart. We investigated academic achievement in the context of difficulty mindsets and effort beliefs, in a cultural and educational setting that is marked by the paramount role of performing to perfection in school (e.g., Romania; Damian et al., 2016; Negru-Subtirica & Damian, 2018; Negru-Subtirica et al., 2022).

We aimed to test cross-lagged relations between academic achievement, difficulty and ease mindsets, and effort beliefs in an educational context marked by the paramount role of academic achievement for access to better schooling (e.g. Romania). This four-wave longitudinal study explored how difficulty and ease mindsets change during three school years, analyzing the role of grades and effort beliefs. Capitalizing on identity-based motivation theory we examined a nuanced pattern of associations. We hypothesized direct and indirect effects to explain the dynamic relations among difficulty and ease mindsets, GPA, and effort beliefs.

Methods

Participants and Procedure

A number of 1036 adolescents participated at Time 1 ($M_{\text{age}} = 15.33$ years; $SD_{\text{age}} = 2.01$; 59,7% female), 1188 at Time 2 ($M_{\text{age}} = 15.24$ years; $SD_{\text{age}} = 2.03$; 57,6 % female), 1023 at Time 3 ($M_{\text{age}} = 15.16$ years; $SD_{\text{age}} = 2.05$; 56.9% female) and 777 at Time 4 ($M_{\text{age}} = 14.97$ years; $SD_{\text{age}} = 1.97$; 57.1% female). The total sample of participants comprised 1285 Romanian students.

Measures

Interpretation of Difficulty and Ease Scales. These scales were used to appraise

difficulty mindsets (Fisher & Oyserman, 2017). The interpretation of difficulty encompasses the *Difficulty-as-importance Mindset Scale* and the *Difficulty-as-impossibility Mindset Scale*. The interpretation of Ease encompasses the *Ease-as-Possibility Mindset Scale* and the *Ease-as-triviality Mindset Scale*.

Academic Achievement. To measure academic achievement, participating schools reported students' actual grade point averages (GPAs) for the previous semester (for the first two waves) or in the last year (for the last two waves, as starting with the 2022-2023 academic year, the GPA was calculated only for the entire school year). The Romanian school system assigns grades ranging from 1 (minimum) to 10 (maximum).

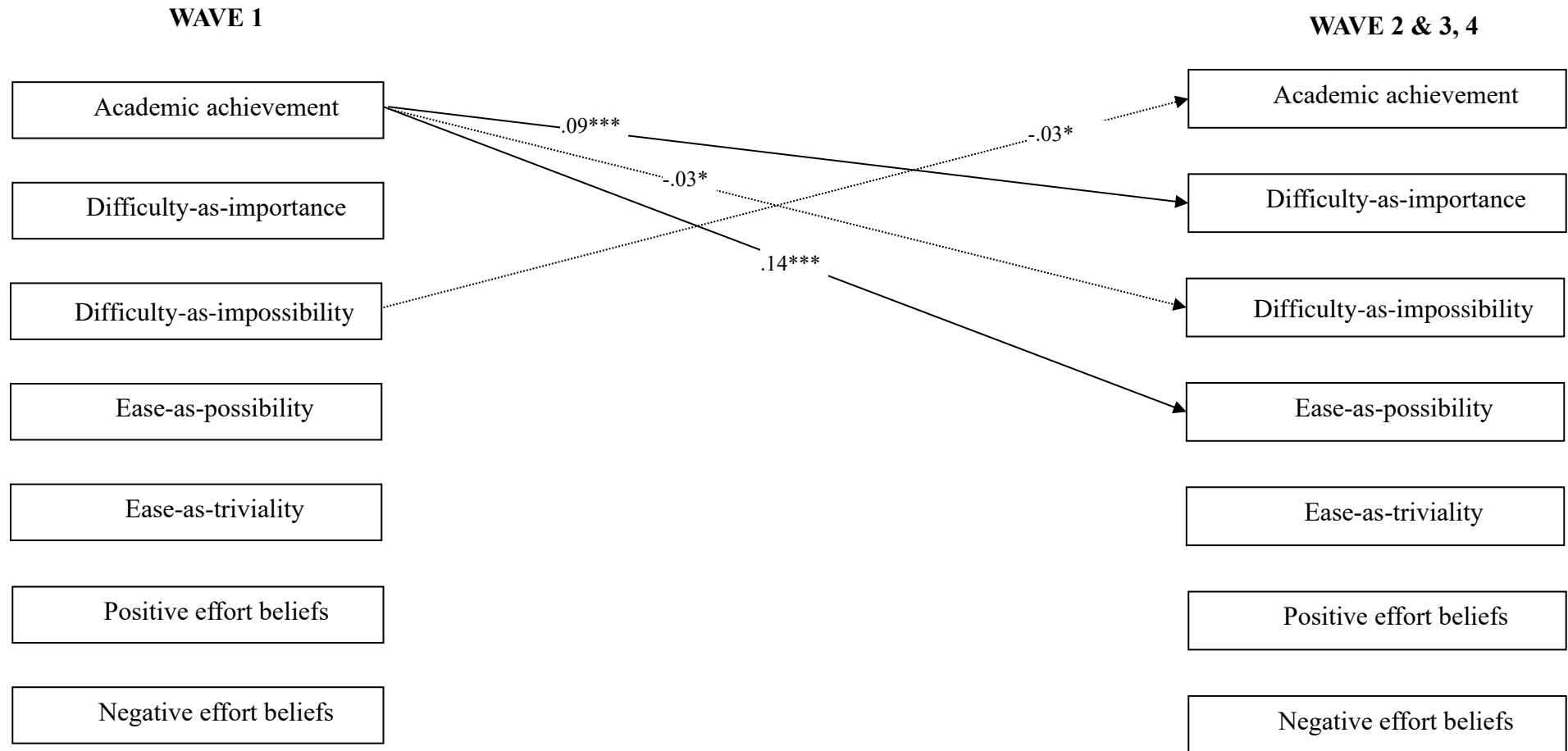
The Effort Beliefs Scale. These scale measures students' beliefs that increased effort could or could not enhance abilities (Blackwell et al., 2007) and contains two subscales. *Positive Effort Beliefs Scale* and *Negative Effort Beliefs Scale*.

Results

The complex cross-lagged direct effects results are available in Figure 1.1 and Figure 1.2. The results of indirect effects are presented in the Figure 2.1 and Figure 2.2. Overall, the findings indicate that positive effort beliefs mediate the relation between GPA and difficulty and ease mindsets. Difficulty and ease mindsets were mediators between GPA and effort beliefs. The exploratory hypotheses were confirmed. The results are accessible in the Figure 3 and Figure 4. We found success and failure processes for both easy and difficult schoolwork. In addition, the results indicate that difficulty-as-importance and ease-as-possibility mindsets and positive effort beliefs increase motivation and support academic success. Also, by decreasing difficulty-as-impossibility and increasing positive effort beliefs, students can escape from a cycle of school failure when students encounter difficult schoolwork. When students meet easy schoolwork, the cycle of failure can be broken by increasing positive effort beliefs and ease-as-possibility mindset.

Figure 1. 1.

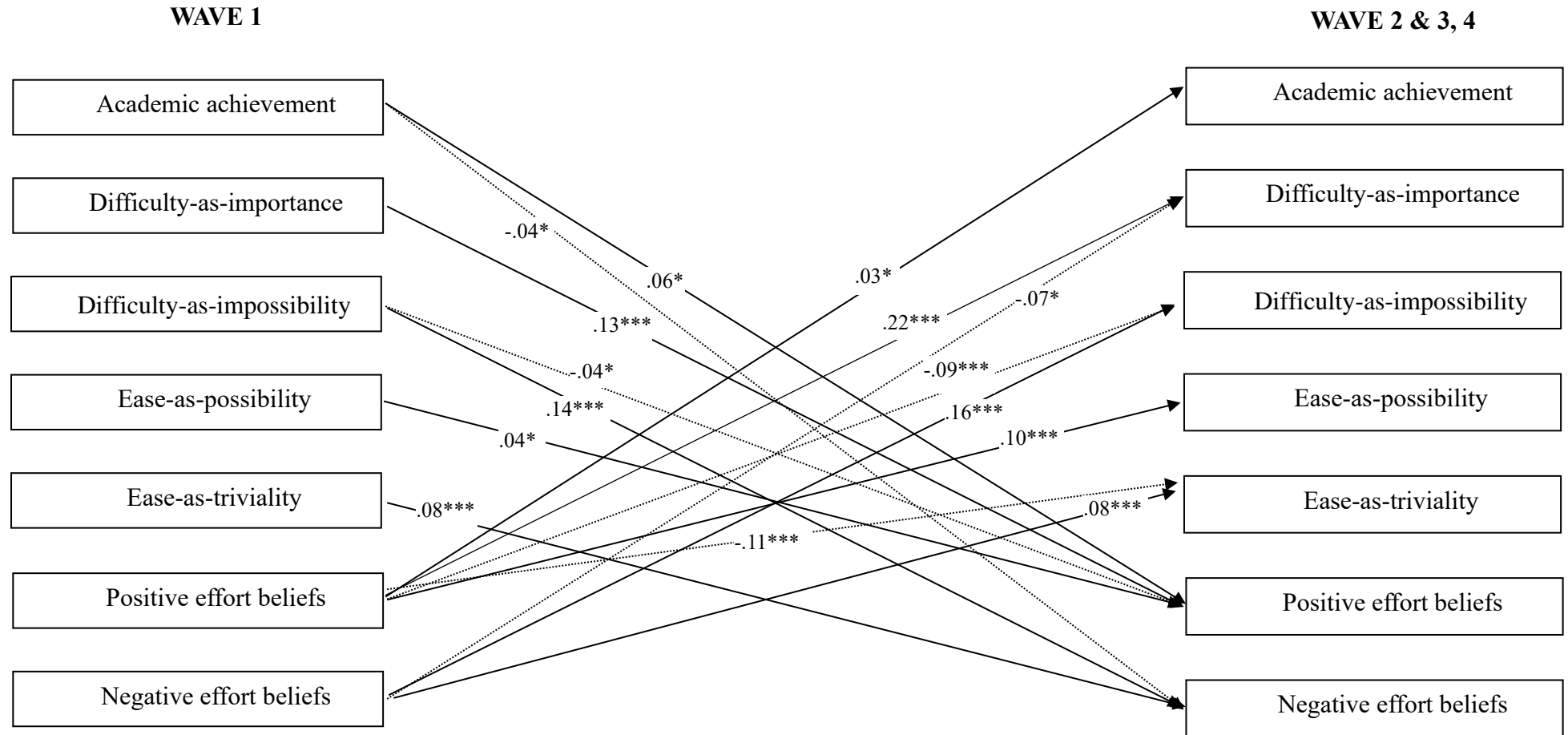
Cross-Lagged Model Between Difficulty and Ease Mindsets and Academic Achievement (Model 3)



Note: For ease of visualization, we split the figure representing the cross-lagged model into two parts: Figure 1.1. illustrating the cross-lagged relations between academic achievement and difficulty and ease mindsets. Figure 1.2. depicting the relations between effort beliefs and academic achievement and difficulty and ease mindsets. Significant longitudinal relations ($p < .05$) are illustrated. The positive effects were marked by plain arrows and the negative effects were marked by dotted arrows. We only report two time points and the cross-lagged paths are the average of the standardized coefficients. The same direct relations are identified across all waves. See Table 4 for all coefficients. * $p < .05$, ** $p < .01$, *** $p < .001$.

Figure 1. 2.

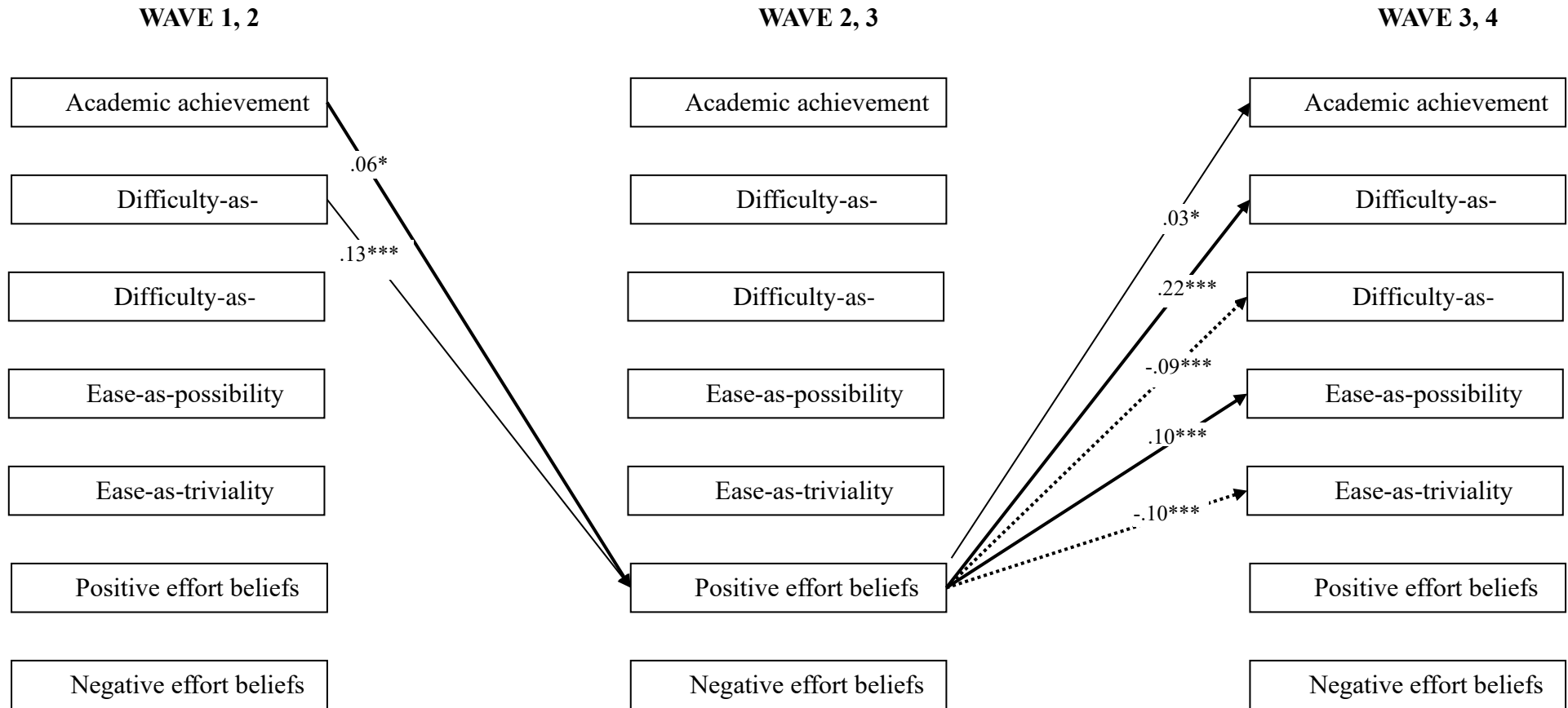
Cross-Lagged Model Between Effort Beliefs and Academic Achievement and Difficulty and Ease Mindsets (Model 3)



Note: Significant longitudinal relations ($p < .05$) are illustrated. The positive effects were marked by plain arrows and the negative effects were marked by dotted arrows. We only report two time points and the cross-lagged paths are the average of the standardized coefficients. The same direct relations are identified across all waves. See Table 4 for all coefficients. See Table 4 for all coefficients. $^*p < .05$, $^{**}p < .01$, $^{***}p < .001$.

Figure 2.1.

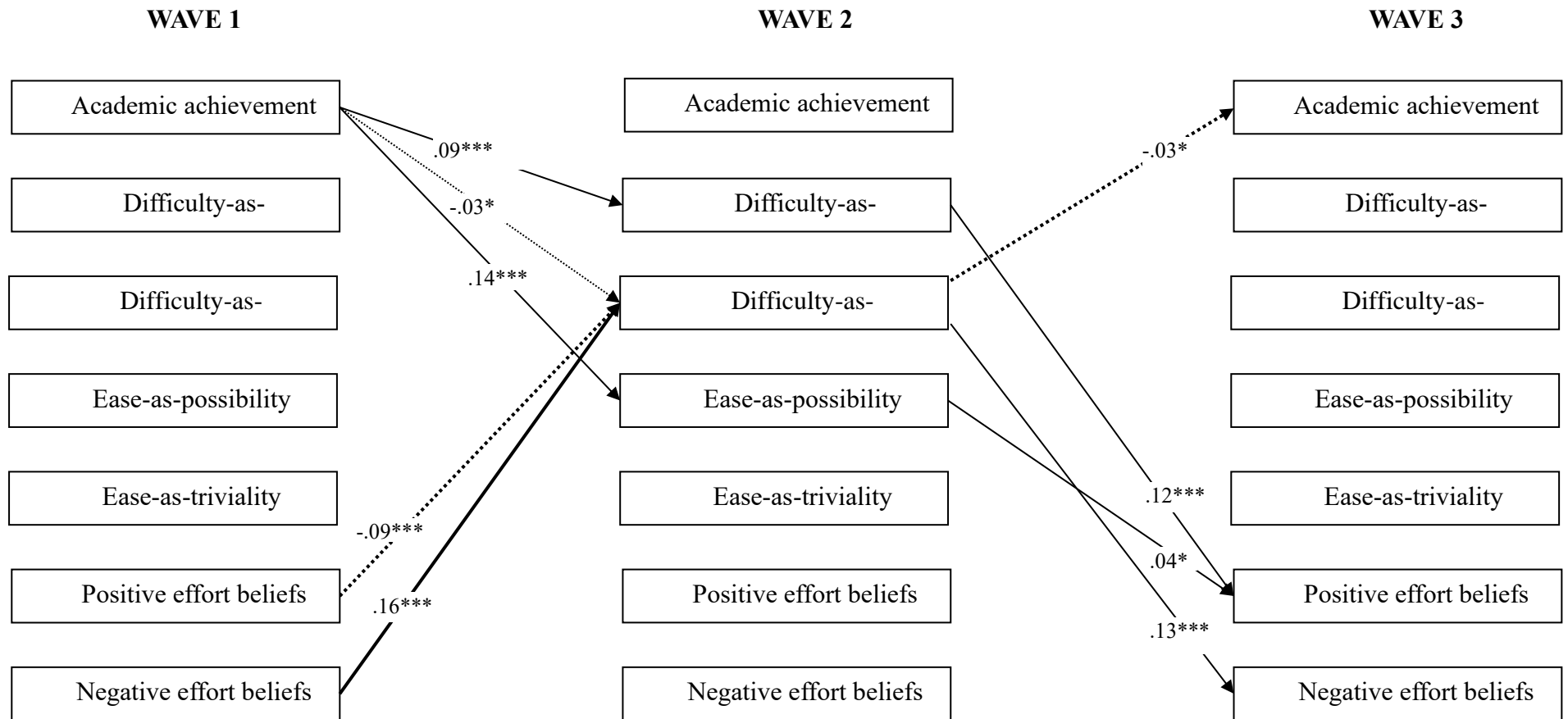
Indirect Cross-Lagged Model Between Academic Achievement, Difficulty and Ease Mindsets (Effort Beliefs as Mediators).



Note: To enhance visualization, we divided the figure depicting the indirect cross-lagged model into two separate parts. Figure 2.1 illustrates the cross-lagged relations between Academic achievement and effort beliefs, with difficulty and ease mindsets serving as mediators. Figure 2.2 shows the relations between academic achievement and effort beliefs, with the difficulty and ease mindsets acting as mediators. The same indirect relations are identified between waves 2 and 4. Cross-lagged paths are the average of the standardized coefficients. Are illustrated only the significant ($p < .05$) longitudinal positive effects (plain arrows) and longitudinal negative effects (dotted arrows). Thick arrows represent the indirect effect of GPA on each of the difficulty and ease mindsets. $^*p < .05$, $^{**}p < .01$, $^{***}p < .001$.

Figure 2.2.

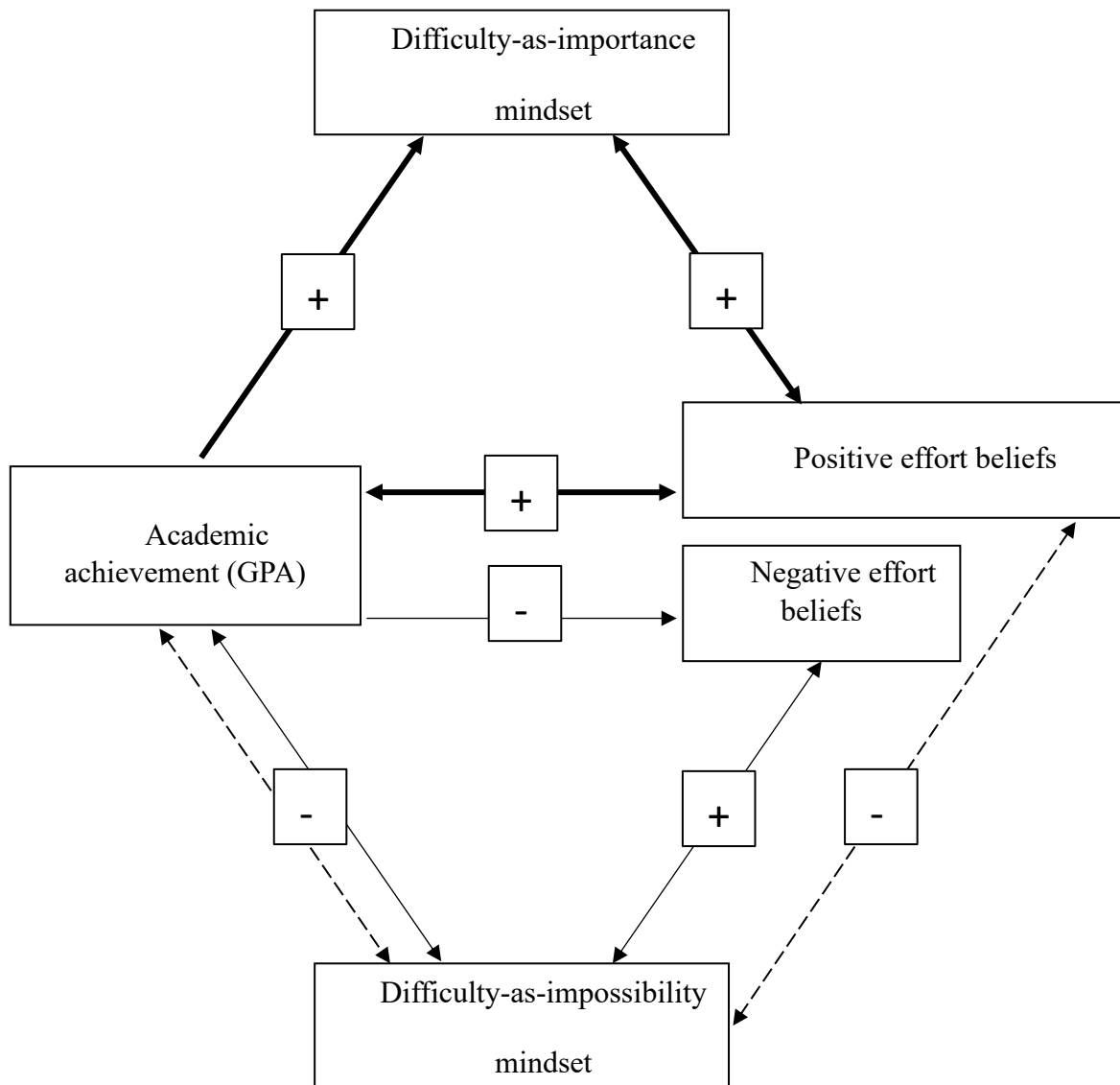
Indirect Cross-Lagged Model Between Academic Achievement, Effort Beliefs (Difficulty and Ease Mindsets as Mediators).



Note: Are illustrated only the significant ($p < .05$) longitudinal positive effects (plain arrows) and longitudinal negative effects (dotted arrows). The same indirect relations are identified between waves 2 and 4. Cross-lagged paths are the average of the standardized coefficients. Thick arrows represent the indirect effect of ease mindsets on GPA. * $p < .05$, ** $p < .01$, *** $p < .001$.

Figure 3

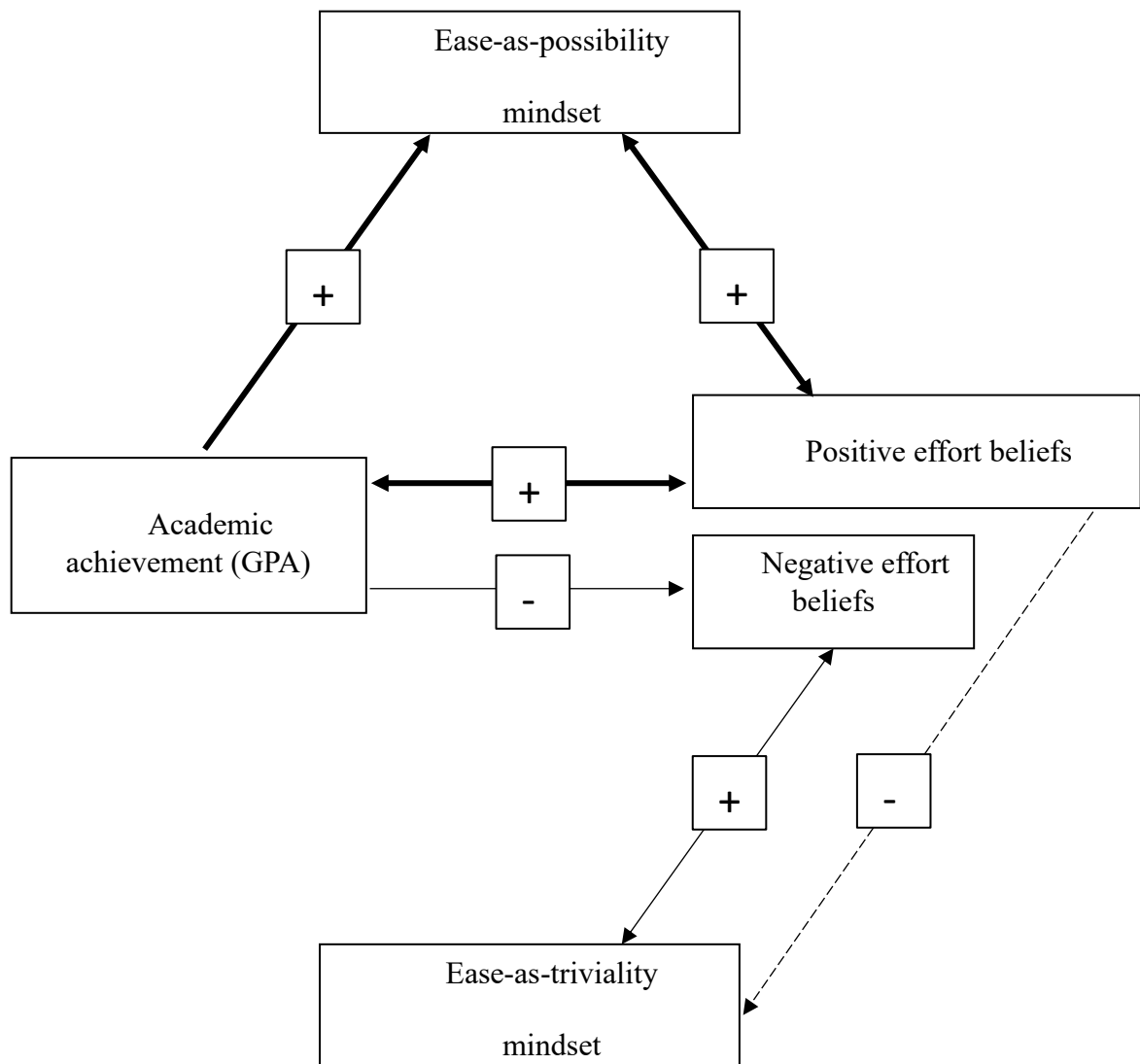
The Processes of School Success and Failure when Students Encounter Difficult Schoolwork.



Note. The thick arrows underline the process of school success. The thin arrows highlight the cycle of school failure. The broken line arrows depict how the cycle of school failure can be interrupted by strengthening positive effort beliefs and diminishing the difficulty-as-impossibility mindset.

Figure 4

The Processes of School Success and Failure when Students Encounter Easy Schoolwork.



Note. The thick arrows underline the process of school success. The thin arrows highlight the cycle of school failure. The broken line arrows depict how the cycle of school failure can be alleviated when students develop positive effort beliefs.

Discussions and Conclusion

Direct and indirect educational experiences help students develop specific beliefs about the significance of both easy and difficult schoolwork as well as about effort-performance links (Oyserman et al., 2017). In cultural contexts where school promotes getting good grades as the main indicator of success, students tend to strive for high grades and focus less on the importance in the future of developing competencies and knowledge (Negru-Subtirica, 2024). High-achievement predicts a successful pathway for students, while low-achieving students seem to be helpless to get out of the cycle of school failure.

The present study makes a contribution to the identity-based motivation theory, exploring the longitudinal relations between GPA, difficulty and ease mindsets, and effort beliefs, in a cultural and educational context characterized by the standards of performing to perfection in school (e.g., Romania; Damian et al., 2016; Negru-Subtirica & Damian, 2018; Negru-Subtirica et al., 2022). The results indicate that when students engage in both difficult and easy schoolwork, their previous performance serves as a critical indicator of how they should interpret the degree of difficulty and the connection between effort and performance.

The findings outline a process for both school success and school failure, emphasizing the ways in which school can enhance student success and reduce failure. Increased difficulty-as-importance mindset and ease-as-possibility mindset along with positive effort beliefs sustain students' performance. In contrast, decreasing difficulty-as-impossibility along with increasing positive effort beliefs may be an appropriate strategy to disrupt the cycle of failure when students deal with both easy and difficult schoolwork increasing students' chances to engage in a pathway of school success.

Cultural Insights of Results

The Romanian educational system emphasizes the importance of achieving high grades. Additionally, the school culture fosters the belief that only high-performing students can tackle challenging tasks (Damian et al., 2016; Negru-Subtirica & Damian, 2018). The values and standards of the system are deeply embodied in students' beliefs about the meaning of school, their mindsets, attitudes, and academic behavior (Negru-Subtirica, 2024). Students strive for high grades, which influence their educational identity and personality development, leading also to increased perfectionism oriented to the self (Damian et al., 2016; Negru-Subtirica & Damian, 2018; Negru-Subtirica et al., 2022; Pop et al., 2016).

Our findings indicate that, in the Romanian culture, GPA shapes students' beliefs about how to interpret both easy and difficult schoolwork and about the relation between effort and performance. As a result, grades tend to classify students into two distinct classes: under-performing and high-performing. Contrary to our expectation, the difficulty-as-importance mindset did not directly predict GPA, while the difficulty-as-impossibility mindset did. These findings suggest that in the Romanian educational context, when students face challenging and complex tasks, they are more likely to view these tasks through the lens of their chances of success. In addition, it is important to note that positive beliefs about effort mediate the relations between difficulty-as-importance mindset and GPA. This means that for Romanian students who agree that solving difficult schoolwork is important, achieving good grades depends on their belief that increasing their effort will lead to success. These results align with the previous research on identity-based motivation theory, which shows that difficulty mindsets are influenced by educational and cultural context (Yan & Oyserman, 2018).

3.2. Study 2. Identity-Based Motivation Profiles and Their Links with Sources of Educational Inequalities²

This study used a cross-sectional design to explore how components of identity-based motivation (plausibility of academic possible selves and difficulty-as-importance and difficulty-as-impossibility mindsets) are configured within students. We also examined how students' gender, type of community (rural versus urban), and academic track (work- versus university-bound) predict identity-based motivation profile membership. Last, we analyzed how identity-based motivation profiles are linked to student mastery goal orientations and classroom mastery goal structure. Participants were 940 adolescents of Romanian ethnicity ($M_{age} = 17.31$ years; $SD_{age} = 1.16$; 52.6% girls; 69.3% rural) who completed an anonymous self-report questionnaire in 2021. Selected from eight high schools, from 9th to 12th grade, students were enrolled in university- (47.2%) and respectively work-bound (52.8%) academic tracks. The latent profile analysis revealed four profiles: Low, Medium, Over-medium, and High identity-based motivation. Most high school students were part of low IBM profile, vulnerable groups being represented by boys, students living in rural communities, and students enrolled in work-bound tracks. Students who belonged to high identity-based motivation profiles were more likely to be mastery-oriented and perceive their classmates as being mastery-oriented. Results indicate that when students find current school tasks as meaningful for their future, they are more likely to invest in their academic possible selves and mastery goals.

² Study 2 is currently under review for publication.

Finding motivation in school is one of the biggest challenges for students nowadays. When students assume that learning should be easy and quick, they spend too little time engaged in difficult academic tasks or reflecting on their academic self (Oyserman & Dawson, 2021). Previous research indicates that students are more likely to invest effort in future-focused actions if they have a sense of self-continuity (Oyserman & Horowitz, 2023). Adaptive academic development may be facilitated when students are motivated by their academic possible selves and focus on mastery goals. To address this concern, we analyzed how identity-based motivation components are grouped within the same student, exploring how three key sources of educational inequalities: gender (girls versus boys), type of community (urban versus rural), and academic track (university- versus work-bound) can predict profile membership.

Methods

Participants and Procedure

The sample comprised 940 adolescents ($M_{age} = 17.31$ years; $SD_{age} = 1.16$; age range = 15–20 years; 52.6% girls). Participants were Caucasian and of Romanian ethnicity and lived in rural (69.3%) and respectively urban (30.7%) communities in North-Eastern Romania. Students were selected from eight high schools, from 9th to 12th grade, and were enrolled in university- (47.2%) and respectively work-bound (52.8%) academic tracks. We signed collaboration protocols with all participating schools, and we obtained active adolescent and parental consent. Students completed an anonymous self-report questionnaire at school.

Measures

School-focused Possible Identity Plausibility Score. This was measured with the Possible Selves Questionnaire (Oyserman et al., 2004), which is composed by four expected (e.g., “Next

year I expect to be...”) and four feared possible identities (e.g., “Next year, I want to avoid to be...”), and eight linked strategies, four for each type of possible selves (e.g., “What am I doing now to be that way next year?/ What am I doing now to avoid being that way next year?”). In line with existing recommendations (Horowitz et al., 2020), to score plausibility we used a graph to code students’ answers, from 0 (e.g., No academic possible identities or one unclear and general academic possible identity with no strategy associated.), to 5 (e.g., Four or more academic possible selves with four or more strategies associated.).

The Interpretation of Difficulty Scales. *These scales* were used to appraise difficulty mindsets (Fisher & Oyserman, 2017). It encompasses the *Difficulty-as-importance Mindset Scale* and the *Difficulty-as-impossibility Mindset Scale*.

The Mastery Orientation Goal Scale (from *Patterns of Adaptive Learning Scales*, Midgley et al., 2000). This scale was used to assess if students are actively involved in learning at school to develop their competence and understanding.

The Classroom Mastery Goal Structure Scale (from *Patterns of Adaptive Learning Scales*, Midgley et al., 2000). This scale measured the extent to which the classmates perceive that the purpose of engaging in school-focused tasks is to develop competencies and understanding.

Results

Statistically significant positive correlations were found between the plausibility of school-focused possible selves and the interpretation of difficulty-as-importance, while the correlation between the plausibility of school-focused possible selves and the interpretation of difficulty-as-impossibility was negative. We found a negative significant correlation between the two difficulty mindsets.

Latent Profile Analysis

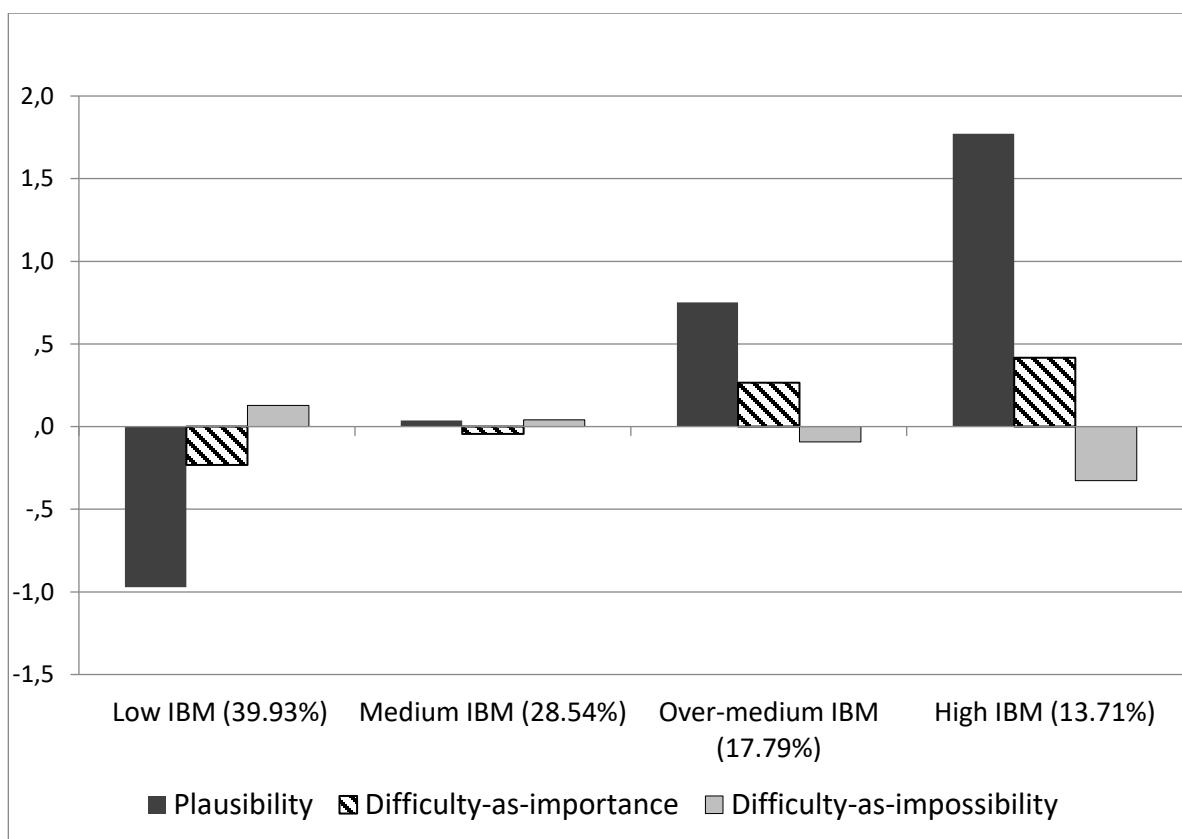
The 4 profiles are graphically presented in Figure 1. Most of the students belonged to the low identity-based motivation profile.

Girls, urban communities, and university-bound students are more likely to be in high profiles of identity-based motivation than boys, rural communities, and work-bound students.

Results showed that students belonging to higher IBM profiles had statistically significant higher levels of mastery goal orientation and classroom mastery goal structure, than students belonging to lower IBM profiles.

Figure 1.

Z Score Identity-Based Motivation Profiles (the Final 4-Profile Solution).



Discussions and Conclusion

According to the identity-based motivation theory, students who are motivated by their educational identity are more likely to engage and persist in difficult school tasks (Oyserman, 2015). The motivation to invest constant effort in school activities indicates a feeling of self-continuity that derives from the perception that school is part of the pathways from the present to their future (Oyserman & Dawson, 2021). Identity-based motivation is strongly influenced by various sources of inequality (Oyserman et al., 2011) that need to be investigated in different cultural and educational contexts (Florea & Negru-Subtirica, 2024). Linking identity-based motivation theory and achievement goal theory, we stressed that identity and mastery orientation work together in students' academic lives, possibly enhancing their beliefs that school is meaningful for their future.

Our results showed that the low identity-based motivation profiles were the most prevalent. The prevalence of low identity-based motivation among high-school students in a rigid educational context (e.g., the Romania) may suggest that students do not perceive current school tasks as meaningful for their future (Florea & Negru-Subtirica, 2024; Negru-Subtirica, 2024). Students may not be used to taking an active role in learning, envisioning both near and far plausible academic selves, and persisting in difficult academic tasks (Oyserman & Horowitz, 2023). Also, students might be discouraged by difficult school tasks, interpreting that these are for good students (Damian et al., 2016; Negru-Subtirica & Damian, 2018).

Vulnerable groups were represented by boys, rural, and work-bound students who were more likely to belong to these profiles. Previous research suggested that the community in which students live can influence their motivation, helping them connect education to future careers and

maintain their commitment to academic goals despite inherent challenges (Aelenei et al., 2017; Destin & Oyserman, 2009; Oyserman et al., 2017). Identity-based motivation may be influenced by school and social contexts, as it provides a sense of meaning of current school tasks in attaining education-dependent careers (Yan & Oyserman, 2018). These results are relevant for rigid educational systems characterized by limited educational choices and strong academic tracking in high school (Negru-Subtirica, 2024).

The present study found that students belonging to higher identity-based motivation profiles have higher levels of mastery goal orientation and classroom mastery goal structure, than students belonging to lower identity-based motivation profiles. These results indicate that identity-based motivation is closely interwoven with a mastery goal approach. Understanding, learning, and developing competencies often demand overcoming difficulties, as these reflect a gap between a current and a possible identity. Identity-based motivation may increase students' confidence that they can develop their competencies, supporting them in setting mastery goals (Oyserman & Horowitz, 2023). Previous studies showed that a mastery orientation is predicted by a preference for challenging tasks (Guo et al., 2023). Furthermore, our results are in line with the findings of Yan and Wang (2021), who also showed that a mastery approach orientation is predicted by high difficulty-as-importance and low difficulty-as-impossibility mindsets. Also, when classmates aspire to academic possible selves, prefer challenging tasks, and see future difficulties as essential steps to progress, they have an appropriate cognitive frame for setting mastery goals (Guo et al., 2023; Oyserman & Horowitz, 2023). Linking the two theories that address school-related goals, we can infer that students engage in mastery goals at school when they believe that these are important for their future, supporting their long-term academic goals.

3.3. Study 3. Strengthening Educational Identity: Linking an Identity-Based Motivation Intervention to Educational Identity Processes³

School learning can be tough and not always enjoyable, often presenting challenging situations. When students are encouraged to envision a future that depends on their educational pathway, they may understand that what they are doing now in school is meaningful for their future. Using an experimental design with a pre-post intervention assessment, we addressed educational identity construction by implementing the *Pathways-to-Success* intervention. We aimed to link identity-based motivation (difficulty-as-importance and difficulty-as-impossibility mindsets) and educational identity processes (commitment, in-depth exploration, and reconsideration). 182 Romanian middle-schoolers participated in the study. The intervention strengthened the difficulty-as-importance mindset in the experimental group ($n = 100$), while in the control group, it decreased ($n = 82$). The difficulty-as-impossibility mindset increased in both groups, indicating that students doubt themselves when facing difficulties. The intervention alleviated the decline in educational commitment. In-depth exploration significantly increased in the experimental group. Reconsideration of commitment decreased for the control group and increased for the experimental group. Students from urban areas benefited more from the intervention than students from rural areas.

³ Study 3 was published as an original study:

Florea, A., & Negru-Subtirica, O. (2024). Strengthening educational identity: linking an identity-based motivation intervention to educational identity processes. *Identity*, 1–15.
<https://doi.org/10.1080/15283488.2024.2387600>

When students encounter difficulties in their academic path, they may be discouraged and give up on current school tasks, fail to make adaptive plans for future, and abandon their dreams, if they don't understand the meaning of school for their future. Self-regulatory behavior, sustained effort, and perseverance are not supported in educational systems where only the academically proficient students succeed and where school difficulties are a sign of personal failure (Yan & Oyserman, 2018). Moreover, students may use maladaptive strategies to make sense of the difficulties they encounter (O'Donnell et al., 2023). Hence, the meaning they give to the difficulties associated with their educational pathway may contribute to their identity formation, helping or hindering them in forming adaptive and long-lasting educational identities. To address these pressing concerns, the current study sought to link identity-based motivation theory (Oyserman et al., 2021) and educational identity processes (Crocetti, 2017), by implementing the *Pathways-to-Success* intervention (Oyserman, 2015).

The *Pathways-to-Success* intervention aims to (a) connect adult possible selves with actual selves through school, (b) cue identity-congruent strategies to attain far and near academic possible selves, and (c) provide a mindset to interpret the difficulty of school tasks as being normative and as a sign of importance for the future self and not as a sign of impossibility (Oyserman, 2015; Oyserman & Destin, 2010). Students learn that each step of their own pathway is important because it builds on their past, hence linking their past, present, and future selves in school settings. Also, students are guided to interpret school effort as worthwhile and are motivated to invest in daily school activities even if these are sometimes difficult (Oyserman, 2015).

Therefore, the intervention facilitates the exploration of educational identity and teaches students to interpret difficulties associated with their own educational path as indicators of importance for achieving the proposed goal and not of impossibility in attaining this goal. The intervention tackles the questions of “why” (because it is important for your future) and “how” (by engaging in common school tasks that are important for you now but also for who you want to become) for school-focused goals.

Methods

Participants and Procedure

The participants were Caucasian and of Romanian ethnicity ($N = 182$; $M_{age} = 13.35$ years, $SD_{age} = 0.55$), 54.4% were girls, 44% lived in rural areas and 56% in urban areas. Students were 7th grade middle school students from six schools in North-Eastern Romania (experimental group $n = 100$ with 34% students from rural areas, control group $n = 82$ with 56.11% students from rural areas). The recruitment was based on membership in a classroom.

The intervention was implemented by the first author of this study, according to the intervention manual (Oyserman, 2015). It comprised 11 sessions and was applied twice a week for 6 weeks, as an after-school program, each session lasting 50 minutes. The control group did not participate to any activities besides the two assessments. All students completed baseline pretest before the intervention and then a posttest at the end of the second semester, two months after the end of the intervention, using an anonymous self-report questionnaire at school.

Measures

Educational Identity. We used the Utrecht-Management of Identity Commitments Scale for educational identity (U-MICS; Crocetti et al., 2008; Romanian validation: Crocetti et al.,

2015) to assess the educational identity processes. The three scales were: commitment, in-depth exploration, and reconsideration of commitment.

Difficulty Mindset. We used the Interpretation of Difficulty Scales (Fisher & Oyserman, 2017) to measure difficulty mindset. The two scales were: *Difficulty-as-Importance Scale* and *Difficulty-as-Impossibility Scale*.

Results

First, the impact of the intervention on difficulty-as-importance mindset was marginally significant. Difficulty-as-importance mindset increased for experimental group and decreased for the control group. For the difficulty-as-impossibility mindset the impact of the intervention was not significant. However, for difficulty-as-impossibility we observed an increase between the two measuring points for both groups.

Second, results showed that the intervention had no significant impact on reconsideration of commitment. There was an increase in reconsideration of educational commitment between the two measuring points for the experimental group and a decrease for the control group.

Third, the results of the one-way ANCOVA revealed that when controlling for the baseline level, commitment was statistically significant higher for the experimental group than the control group. The comparison between the main scores for educational commitment indicated that it decreased for both groups, the effect being smaller for the experimental group. The results also showed that there was a statistically significant difference between the experimental and control groups for in-depth exploration when controlling for the pretest level. In-depth exploration increased more for the experimental than the control group.

Fourth, the results of the one-way ANCOVA, revealed that for students living in urban

areas, educational commitment and in-depth exploration increased in the experimental compared to the control group, while in rural areas the impact of the intervention was reversed.

Discussions and Conclusion

The findings show that the intervention increased the difficulty-as-importance mindset, this being one of its main aims (Oyserman, 2015). Our results align with previous findings that showed that this mindset increases when students perceive academic possible selves as being certain, education as being relevant for the present and for the future, and when they explore school-focused goals and strategies (Destin & Oyserman, 2009; Nurra & Oyserman, 2018; Oyserman et al., 2015). It seems plausible that middle-school students are not used to interpret school difficulties as having positive value for their academic future (Yan & Oyserman, 2018).

The intervention did not reduce the interpretation of school difficulties as being a sign of failure or personal incompetence. As the difficulty mindsets and beliefs about the role of school in the future might be culturally dependent (Yan & Oyserman, 2018), we infer that the difficulty-as-impossibility mindset might be influenced by the culture of the Romanian educational system. Nevertheless, when encountering educational difficulties students might be dominated by their commonly used difficulty mindset, which in our case could be the difficulty-as-impossibility. These results may indicate that students started to understand the nuances of difficulties in school tasks, a fact that may lead to changes in educational identity processes.

It is important to note that even if educational commitment declined over time, the *Pathways-to-Success* intervention alleviated this decline. These results might be explained by the fact the intervention supports students in finding chronological steps to the future, showing them that current school tasks and behavior (e.g., daily homework, learning for the next day, asking

for support, paying attention in class) are essential in attaining near and far possible selves. This might guide the belief that current school tasks are important for the future.

For in-depth exploration, the intervention had a positive effect on the experimental group, when controlling for pretest. Overall, the *Pathways-to-Success* intervention bolstered educational exploration and self-reflection regarding what kind of life students dream of, what are the steps to get there, and what is the role of education on their pathway to the future.

For reconsideration of commitment, the impact of the intervention was not significant. By linking present selves with future selves through school, the experimental group may have become aware that they need to change their goals to find meaning in their school life.

In urban areas, commitment and in-depth exploration identity processes were significantly higher for the experimental than for the control group, while in rural areas the impact of the intervention was reversed. Hence, students' context of living might foster different values regarding the role of education in the future and shape their goals, aspirations, or fears (Oyserman et al., 2018). In urban areas, students might aspire to successful careers that depend on education, similar to people in their immediate social environment. In disadvantaged communities (e.g. rural) with low educational levels, high unemployment, or nonprofessional jobs, students may have fewer models, and the school not seem to be valuable for their future (Oyserman & Fryberg, 2006). Our findings may indicate that the positive meaning of school tasks is declining in the Romanian middle school students, as they might be discouraged by difficult school tasks, so the identity-based motivation may need to tap into more basic components of the self. This study can be used as a starting point by researchers interested in testing this intervention in diverse cultural contexts.

3.4. Study 4. Longitudinal Measurement Invariance of Four Patterns of Adaptive Learning Scales in Romanian Adolescents⁴

This study explored the longitudinal measurement invariance of four scales from the Patterns of Adaptive Learning Scales (PALS). Conducted across four waves, the research involved a sample of 1285 adolescents of Romanian ethnicity ($N_{Time 1} = 1036$), with a mean age of 15.25 years, $SD_{age} = 2.03$, and 57.2% female. The students were drawn from twelve schools, encompassing grades 5 through 12, including individuals from both middle school (44.9%) and high school (55.1%). To understand how motivation and goal orientation change over time, the scales need to measure equivalent constructs. We used confirmatory factor analyses and found longitudinal measurement invariance for the four PALS: mastery goal orientation, classroom mastery goal structure, academic efficacy, and skepticism about the relevance of school for future success. These results suggest that the PALS scales are appropriate tools for examining Romanian adolescents' goal orientation and motivation in both cross-sectional and longitudinal studies.

Keywords: Patterns of Adaptive Learning Scales; longitudinal measurement invariance; Romania;

⁴ Study 4. Manuscript accepted for publication in *Cognition, Brain, Behavior. An Interdisciplinary Journal*

Florea, A., & Negru-Subtirica, O. (2025). Longitudinal measurement invariance of four patterns of adaptive learning scales in Romanian adolescents.

The Patterns of Adaptive Learning Scales (PALS) are developed in achievement goal theory, being designed to measure educational goal orientation constructs (Midgley et al., 1998; 2000). Over time, the PALS has been confirmed to be a valid and reliable instrument for measuring achievement goal orientation (e.g., Alivernini et al., 2018; Meece et al., 2006). When conducting longitudinal studies, researchers need to ensure that any observed changes over time are attributed to actual changes in the studied constructs, rather than to variations in the instrument's psychometric properties (Millsap & Cham., 2012).

Testing the longitudinal measurement invariance in a large sample of Romanian adolescents, allows researchers to effectively use the PALS subscales in longitudinal studies, facilitating the assessment of changes over time in specific educational and cultural contexts.

Methods

Participants and Procedure

The study's participants comprised 1285 Caucasian adolescents of Romanian ethnicity ($M_{age} = 15.25$, $SD_{age} = 2.03$; age range = 11–19 years; 57.2% female). They were enrolled across twelve schools, with 44.9% in middle school and 55.1% in high school.

Measures

All measures were extracted from Patterns of Adaptive Learning Scales, (Midgley et al., 2000).

The Mastery Orientation Goal Scale. Was used to evaluate students' engagement in learning to enhance their competence and understanding.

The Classroom Mastery Goal Structure. This scale assesses students' perceptions of their classmates' engagement in school-focused tasks as being aimed at developing competencies and understanding.

The Academic Efficacy Scale. This instrument evaluates students' beliefs in their capacity to accomplish class assignments if they invest enough time and effort.

The Skepticism About the Relevance of School Future Success. This scale was used to assess students' perceptions about the relation between their performance and their future success

Results

For the *Mastery orientation goal scale*, *Classroom mastery goal structure*, and *Skepticism about the relevance of school for future*, the CFA results indicated an excellent fit. The CFA for *Academic efficacy* scale indicated an acceptable fit. Results of longitudinal analyses indicated that all four measures of PALS present longitudinal measurement invariance.

Discussions and Conclusion

The Patterns of Adaptive Learning Scales (PALS) are very used instruments designed to measure the attitude and goals behind learning behavior (Midgley et al., 1998; 2000). The current study aimed to investigate the longitudinal measurement invariance of the four PALS subscales among Romanian adolescents in middle and high schools across four measurement waves. To our knowledge, no prior studies have examined longitudinal measurement invariance within the Romanian educational context of the four PALS subscales.

To understand how achievement goals and other motivational patterns vary in time, psychometric measures are needed to estimate equivalent constructs over time. In this endeavor, we tested for the longitudinal measurement invariance, which indicates that observed differences in time arise from changes in the primary construct and not from alterations in the psychometric properties of the instruments. The results confirmed the longitudinal measurement invariance for the four PALS subscales.

Longitudinal Measurement Invariance of PALS

Previous research has demonstrated PALS validity and reliability across samples from diverse age and culture groups (Midgley et al., 2000; Zhao et al., 2020; Urdan & Schoenfelder, 2006; Urdan & Kaplan, 2020). However, little research has shown longitudinal measurement invariance (Hernandez et al., 2013; Lee et al., 2017).

First, the confirmatory factor analysis showed that the PALS subscales demonstrate strong validity in the Romanian context. To our knowledge, no studies have assessed the psychometric properties of the skepticism scale since the initial validation studies. In the Romanian educational context, earlier studies have tested the validity of achievement goal orientation (Gherasim et al., 2011) and academic efficacy (Macovei, 2018). Our results align with previous findings on PALS validation, demonstrating that our data support the measurement model within a large sample of middle school and high school students (Midgley et al., 2000).

Second, the findings of this four-wave study demonstrate longitudinal measurement invariance for the analyzed PALS subscales. Earlier studies conducted on samples of undergraduate and graduate students focused only on the longitudinal measurement invariance of mastery and performance goal orientation subscales of PALS. Our findings align with previous research, showing that the measure of mastery goal orientation presents longitudinal invariance. Current research tested, for the first time, the longitudinal measurement invariance of classroom mastery goal structure, academic efficacy, and skepticism about the importance of school scales, on a sample of middle school and high school students. Our findings lay the groundwork for future research into evaluating the over-time change in goal orientation, specifically in the

mastery goal orientation and the classroom mastery goal structure, as well as in academic efficacy and skepticism about the importance of school.

Relevance of Studying the Psychometric Properties of PALS

Existing research showed that the scales analyzed in the current study are interrelated and strongly linked with academic outcomes, motivation, school engagement, and school belonging, reflecting the meaning that students attribute to education and how they perceive their school abilities (Kenny et al., 2010; Lee & Bong., 2023; Morris et al., 2020; Walker & Greene, 2009). Personal and classroom mastery goal focus, academic efficacy, and skepticism about the relevance of school for the future are fostered by teachers and the overall school climate, and direct and indirect educational experiences (Bong, 2008; Friedel et al., 2007; Hemi et al., 2024; Kaplan & Maehr, 1999; Lee & Bong., 2023; Midgley & Urdan, 2001; Givens Rolland, 2012). Given the importance of high mastery focus and academic efficacy as well as the impact of low skepticism on students' development, it is necessary to understand their predictors and longitudinal outcomes. The four PALS scales can provide insights into the meaning that students from specific educational and cultural contexts assign to the school, their confidence in their academic abilities, and the role of education future. The present study extends a growing body of research that supports the psychometric properties of PALS (Alivernini et al., 2016; Meece et al., 2006; Patrick & Ryan, 2008; Midgley et al., 2000). In addition, the findings lay the groundwork for future research into evaluating the over-time change in goal orientation, specifically in the mastery goal orientation and the classroom mastery goal structure, as well as in academic efficacy and skepticism about the importance of school.

CHAPTER IV. GENERAL DISCUSSION AND CONCLUSIONS

4.1. Theoretical Contributions

The studies presented in this thesis contribute to our understanding of identity-based motivation theory. We specifically investigated how Romanian students perceive the meaning of difficulties related to their school life. Previous research indicates that students' past, recent, and current educational experiences shape how they view their present and future academic selves, as well as their interpretation of the difficulties they encounter in the imagined, planned, or current school tasks (Oyserman & Horowitz, 2023).

We have analyzed the difficulty mindsets in a specific educational context (i.e., Romania) through diverse methodological approaches: cross-sectional, longitudinal, and experimental. The identity-based motivation theory was analyzed in relation to effort beliefs (Blackwell et al., 2007), mastery orientation goal, classroom mastery goal structure (Kaplan & Flum, 2010; Kaplan & Maehr, 2007), and educational identity processes (Crocetti et al., 2008). Our studies were conducted within the Romanian educational context, where school places significant pressure on students to attain the best grades. In this environment, academic and life decisions are primarily based on students' academic performance. In addition, they are frequently implicitly classified as either low-performing or high-performing students. As a result, students often underestimate the meaning of education and the importance of current school tasks for their future (Negru-Subtirica, 2024).

The comprehensive approach of our studies has allowed us to better understand the motivational impact of the way students perceive their educational identity and the difficulty associated with schoolwork. Therefore, our research has yielded significant theoretical and

empirical contributions to the field of identity-based motivation theory, along with important contributions for practice.

Academic Achievement and Difficulty Mindsets

Study 1 (*Who is in charge? The longitudinal interplay of academic achievement, difficulty mindsets, and effort beliefs in a grade-driven cultural context*), was conducted based on the previous findings concerning the interpretation of the difficulty of school tasks. Prior longitudinal studies showed a unidirectional link from grades to difficulty mindsets (Burbidge et al., 2024). Additionally, experimental research discovered that difficulty mindsets influenced performance in difficult school tasks, and in a test of fluid intelligence (Elmore et al., 2016; Oyserman, et al., 2018; Smith & Oyserman, 2015). To our knowledge, the difficulty and ease mindsets have not been previously examined together longitudinally. Given that previous studies showed that difficulty mindsets affect self-regulatory effort and performance (Oyserman et al., 2017), this study brought additional theoretical and empirical contributions exploring the impact of effort beliefs in the cross-lagged relations between GPA and difficulty and ease mindsets, respectively.

The findings evidenced that: (1) grades are both predictors and outcomes of difficulty and ease mindsets and effort beliefs; (2) the difficulty and ease mindsets, along with effort beliefs, are motivational factors that influence each other reciprocally (3) effort beliefs mediate the relation between difficulty and ease mindsets and GPA, and conversely, difficulty and ease mindsets mediate the relation between effort beliefs and GPA. From a theoretical perspective, we linked the identity-based motivation theory (Oyserman et al., 2024) and the implicit theory of intelligence (Dweck et al., 1986), showing that students' academic achievement depends on both their perception of the difficulty and ease of tasks and their beliefs about the link between effort

and performance. Successful school pathways are fostered by the motivation-increasing difficulty and ease mindsets along with positive effort beliefs. The undermining motivation difficulty and ease mindset along with negative effort beliefs may lead students toward a pattern of school failure. This study brings important theoretical contributions, by demonstrating that the bidirectional relations between the difficulty-as-impossibility mindset and positive effort beliefs could be a key factor in preventing or halting academic decline when students encounter difficult schoolwork.

Profiles of Identity-Based Motivation

Study 2 (*Identity-based Motivation Profiles and Their Links with Sources of Educational Inequalities*) brings also important empirical contributions by exploring, for the first time, the identity-based motivation theory using a person-centered approach. First, we were interested in exploring how students can be grouped by their levels of plausibility of academic possible selves and the difficulty mindsets (the identity-based motivation components). Our results confirmed that the components of identity-based motivation work together as associative knowledge networks at the personal level (Oyserman & Horowitz, 2023).

Second, previous research showed that the social and cultural context has a strong impact on identity-based motivation (Destin & Oyserman, 2009; Fisher et al., 2017; Oyserman et al., 2011; Oyserman, 2013; Oyserman & Destin, 2010). To the best of our knowledge, this is the first study that links multiple sources of educational inequalities to different groups of students defined by similar configurations of identity-based motivation components. A person-centered approach facilitates a more nuanced understanding of the social factors that influence identity-based motivation, thereby enabling the identification of vulnerable groups of students who are prone to disengaging from challenging academic tasks.

Third, we contributed to the existing body of knowledge by establishing a novel link between all components of identity-based motivation and mastery orientation goals, a connection that had not been previously approached in research. Previous research explored the association between difficulty and ease mindsets and mastery goals (Yan & Wang, 2021). Mastery orientation goal reflects students' tendency to engage in learning activities to understand and develop competencies (Kaplan & Maehr, 2007). A mastery focus was previously linked to a preference for difficult tasks (Guo et al., 2023). The findings of the present study demonstrated, in accordance with the hypothesized predictions, that students who place a high value on school activities were more inclined to adopt a mastery-oriented approach.

Fourth, the present study contributes to the existing body of knowledge by proposing an additional theoretical link with classroom mastery goal structure. The results of the present study are consistent with those of previous research, which also demonstrated that social and classroom contexts influence both students' academic possible selves and difficulty mindsets (Elmore & Oyserman, 2012; Oyserman et al., 2018; Smith & Oyserman, 2015). Our study showed that a shared context, common classroom goals, aspirations, and attitudes in front of difficulty can enhance both identity-based motivation and mastery orientation (Oyserman & Horowitz, 2023).

Identity-Based Motivation and Educational Identity Processes

In Study 3 (*Strengthening educational identity: linking an identity-based motivation intervention to educational identity processes*) we tested the *Pathways-to-Success* intervention aimed at increasing identity-based motivation. The theory of identity-based motivation explains the motivational role of educational identity for academic behavior and the way students make sense of difficult schoolwork (Oyserman & Horowitz, 2023). The main objectives of the intervention are to: (a) increase the perceived connection between current selves and adult

possible selves through school, (b) find appropriate strategies to attain distant and near academic possible selves, and (c) improve the difficulty-as-importance mindset and decrease difficulty-as-impossibility mindset (Oyserman, 2015; Oyserman & Destin, 2010).

The intervention enhances, in essence, students' perceived feeling of the meaning of school for the future, encouraging them to engage in their educational pathways, even when school tasks sometimes are difficult. Thus, we anticipated that the intervention might have a significant impact also on educational identity processes (commitment, in-depth exploration of commitment, and reconsideration of commitment). In this study, we linked, for the first time, the identity-based motivation theory (Oyserman, 2024) and the three-factor model of identity (Crocetti et al., 2008). Our goal was to explore the development of educational identity by implementing the intervention (Oyserman, 2015) within the Romanian educational context, which has been experiencing a decreasing trend in educational commitments and the perceived role of school for the future (Damian et al., 2016; Negru-Subtirica, 2024; Negru-Subtirica & Damian, 2018).

The most important findings showed that, for the intervention group, the difficulty-as-importance and in-depth-exploration increased, and the decline in educational commitment was alleviated. These results underline that the perception of school as meaningful for the future can be improved by helping students explore their educational identity and assuring them that challenging school tasks are obstacles to overcome in pursuit of their desired future.

A particularity of our findings is that, contrary to our expectations based on previous research (Oyserman et al., 2021), the difficulty-as-impossibility mindset increased for both groups. These findings may be explained by previous research that showed that the difficulty mindsets are strongly influenced by school culture (Yan & Oyserman, 2018). Our findings

indicate that Romanian students tend to interpret the difficulty of schoolwork mainly through the difficulty-as-impossibility mindset. Our findings might confirm that these mindsets have different motivational effects on students' educational identities (Elmore et al., 2016).

Another particularity of our results is that the reconsideration of commitment increased for the experimental group while it decreased for the control group. These findings must be interpreted in light of the characteristics of the Romanian educational system, where students have few opportunities to explore educational opportunities and very low chances to change their educational pathways in middle school (Negru-Subtirica et al., 2017, 2018). Our results might outline the positive valence of reconsideration of commitment, as its growth in the experimental group may be a consequence of students' perception of the importance of school for their future. This could lead students to believe they need to focus more on the school fields that are relevant to their desired future. The increase in the reconsideration of commitment may be also a consequence of the fact that students are less discouraged by school difficulties as they perceive them as important steps to their future. Overall, our study brings theoretical evidence for the complex motivational and self-regulatory role of difficulty mindsets in the development of educational identity.

The results of the first three studies of this thesis also provided empirical evidence of the existence of vulnerability of some categories of students in the Romanian educational system (boys, students from rural areas, and students enrolled in work-bound academic tracks). These students tend to doubt the meaning of school for their future and to be discouraged by difficult tasks. Another vulnerability is represented by the significant influence of grades that can trap students in a cycle of academic failure. Our results showed that overall, an increase in difficulty-

as-importance mindset, and a decrease in difficulty-as-impossibility mindset may have a positive impact on students' motivation and academic achievement.

4.2. Methodological Contributions

In the current thesis, we employed a diverse methodological approach to analyze data from our studies, with the overarching goal of understanding identity-based motivation processes and correlates. Our research makes several methodological contributions to the study of identity-based motivation. First, in a longitudinal design, we applied a cross-lagged panel model to explore the longitudinal interactions between GPA, difficulty mindsets, and effort beliefs. Second, in a cross-sectional design, we used latent profile analysis, to identify identity-based motivation profiles of students. Third, an experimental design was used to test the impact of a school-based intervention focused on developing identity-based motivation, on difficulty mindsets, and educational identity. Fourth, following our secondary objectives, we tested, through confirmatory factor analysis and longitudinal measurement invariance, the psychometric properties of the used instruments, which were not previously tested in the Romanian context.

Study 1 brings important methodological contributions to the literature on identity-based motivation, as to date, few studies analyzed together the ease and difficulty mindsets. To our knowledge, this is the first time that both mindsets have been utilized in a longitudinal study, providing insight into how students perceive the difficulty of school tasks. Moreover, we analyzed the cross-lagged relations between GPA and both difficulty and ease mindsets. This approach allowed us to understand the dynamic and complex relation between academic outcomes and how students perceive the difficulty of the task. Furthermore, using the mediation analysis, we tested for the first time the possible indirect effect of effort beliefs in the

bidirectional relation between difficulty and ease mindsets and GPA. Also, we explored the possible indirect effect between GPA and effort beliefs through difficulty and ease mindsets. These analyses provide a deeper understanding of the interaction between the perception of the degree of difficulty and the beliefs about the effort-performance link, in the context of academic achievement. Another important methodological contribution of this study on identity-based motivation research is the use of school-reported grades (GPA). This allowed us to test the difficulty and ease mindsets in relation to academic achievement within an ecological educational context.

Study 2, brings important methodological contributions to the literature, by exploring the identity-based motivation theory through a person-centered approach. This method allowed us to examine how the identity-based motivation components coexist within a student. This analysis allows us to identify groups of students with similar configurations of identity-based motivation, distinguishing them from those who have different configurations. Our results support the identity-based motivation theory, showing that high plausibility of academic possible selves is associated with high levels of difficulty-as-importance mindset and low levels of difficulty-as-impossibility mindset. This method also allowed us to identify the vulnerable groups that are associated with low identity-based motivation profiles. In addition, this approach provides evidence that students belonging to high identity-based motivation profiles are associated with high mastery orientation goals and a mastery approach in their classroom.

In Study 3 we used an experimental methodological approach to study the link between identity-based motivation theory (Oyserman, 2024) and the three-factor model of identity (Crocetti et al., 2008). To our knowledge, this study explored for the first time the relation between the two theoretical approaches of educational identity. This design allowed us to analyze

whether an intervention focused on the development of identity-based motivation, can also have an impact on educational identity processes. The intervention was expected to bring a positive change in both difficulty mindsets and educational identity. Moreover, this intervention was tested for the first time in the Romanian cultural and educational context, which is characterized by high educational inequalities and a decreasing sense of the importance of school for the future (Negru-Subtirica., 2024).

Another significant methodological contribution of the present thesis is the analysis of the psychometric properties of the scales utilized in our studies, which had not previously been assessed in the Romanian context. We tested the factor structure using CFA and the longitudinal measurement invariance of the *Difficulty-as-importance mindset*, *Difficulty-as-impossibility mindset*, *Ease-as-possibility mindset*, *Ease-as-triviality mindset Scales* (Fisher & Oyserman, 2017), and *Effort beliefs Scale* (Blackwell et al., 2007) in Study 1, and of the four PALS subscales (Midgley et al., 2000), *Mastery goal orientation*, *Classroom mastery goal structure*, *Academic efficacy*, and *Skepticism about the relevance of school for the future Scales* in Study 4 (*Longitudinal Measurement Invariance of Four Patterns of Adaptive Learning Scales in Romanian Adolescents*). Findings highlighted that the longitudinal data support all the theoretical measurement models.

All four studies were carried out in the Romanian educational context, comprising large samples with great diversity of participants. The students were enrolled in middle and high school (grades 5th to 12th). Students came from both urban and rural communities. All of these, increase the generalizability of our results that offer a foundation for future cultural analyses in the theory of identity-based motivation.

4.3. Recommendations and Practical Implications

The present thesis helped in gain a better understanding of the impact of students' identity-based motivation on their academic experience (including GPA, mastery focus, effort beliefs, and educational identity processes). Examining students' academic motivation within an ecological context, allows us to interpret our findings in light of the characteristics of the Romanian educational settings and culture and offer future recommendations and practical implications.

As indicated by previous research, a variety of factors, including culture, school context, past experiences, and current educational context, have been shown to have a significant influence on identity-based motivation (Oyserman, 2024). The cultural and educational values and norms that are promoted by an educational system are deeply embedded in school educational practices such as teaching and learning. On the one hand, these findings are discouraging because students' beliefs and attitudes about school, as well as the feeling of the meaning of school for the future, can be strongly influenced by the shortcomings of educational systems in which students learn (Negru-Subtirica, 2024; Yan & Oyserman, 2018). On the other hand, the fact that identity-based motivation is not stable and is influenced by context is an encouraging tool for practice (Oyserman et al., 2015).

The findings from the current empirical research can be a source of useful recommendations for: (1) educational systems that can develop effective evidence-based educational policies; (2) schools that can promote specific values through their educational practices; (3) teachers who can provide students with specific ways to interpret the meaning of school for the future, the difficulty of tasks, and the effort-performance relationship; and (4) school counselors who can implement evidence-based prevention and intervention programs to

improve students' motivation and provide them with an appropriate way to make sense of their educational experiences.

The educational system needs to develop and implement evidence-based educational policies and interventions to increase students' academic motivation. In addition, there is a need for both initial and ongoing training for teachers and school counselors. These training programs can support the development of students' educational identities, increase school success and decrease school failure, and reduce segregation and educational inequalities for vulnerable student groups.

Schools can motivate students by promoting a school culture that prioritizes the development of knowledge and skills over grades. Complex and difficult tasks should be seen as opportunities to learn new things and achievement as the result of effort. In addition, schools could actively encourage the exploration of educational identity. Remedial and educational programs for at-risk and underachieving groups of students should focus on increasing the difficulty-as-importance mindset and decreasing the difficulty-as-impossibility mindset.

Furthermore, our findings highlight that teachers can support students' identity-based motivation by emphasizing the importance of school for their future. Teachers should signal through their teaching practices that school is the way to the future and that current school activities are important for both the present and the future (Oyserman, 2015). In addition, they should encourage and repeatedly cue the difficulty-as-importance and ease-as-possibility mindsets, and discourage the difficulty-as-impossibility and ease-as-triviality mindsets. Finally, teachers can help students interpret their academic performance by considering the balance between effort and performance. These tools can motivate students to engage in and persist with difficult academic tasks in the future.

Finally, school counselors can support student motivation by implementing the *Pathways-to-Success* intervention, an evidence-based intervention designed to increase identity-based motivation. In addition, they should teach students to use motivation-increasing mindsets, help them question the use of motivation-decreasing mindsets, and promote the belief that enhanced effort leads to increased performance.

4.4. Limitations and Future Research

The studies in the present thesis bring valuable contributions to the study of identity-based motivation. However, further research should take into account its limitations.

First, even if our longitudinal study highlighted the relationship between difficulty mindsets and GPA, showing the mediating role of effort beliefs, the results do not contain sufficient causal evidence regarding the direction of the identified relationships. Future experimental research should address this gap. Second, Study 3 linked the two theoretical frameworks of educational identity (identity-based motivation theory and educational identity processes), but we did not investigate the direct association between the difficulty mindsets and educational identity. This limitation should be addressed in future cross-sectional and longitudinal research. Third, the intervention study had only two measurement points, with approximately 3 months between pretest and posttest. This period may be too short to capture the expected changes, in a rigid educational system that does not support the development of educational identity and self-reflection (Negru-Subtirica, 2024). Future research can be conducted over a longer period of time, with at least 6 months between waves. Fourth, our studies were conducted in middle and high school contexts. Future research should consider the development of identity-based motivation from elementary school through middle and high school. In addition, analysis of the development of the relationships identified in our studies from

elementary to high school may provide useful information for future school interventions focused on the development of identity-based motivation. Fifth, because our findings indicated strong relationships between identity-based motivation and effort beliefs, mastery focus, and academic achievement, future studies should test the effect of the Pathways-to-Success intervention on these aspects.

4.5. Concluding Remarks

Summarizing the results of the four studies, this thesis enhanced our understanding of identity-based motivation theory processes and correlates in the Romanian educational context. The main aim of our thesis was the exploration of predictors and outcomes of difficulty mindsets, which has been addressed in the first three studies. Additionally, we addressed in Study 1 and Study 4 our secondary objective of analyzing the psychometric properties of the instruments we used in the current thesis.

Our findings emphasized, in Study 1, the longitudinal cross-lagged relations between academic achievement and difficulty and ease mindsets, as well as the role of effort beliefs in previous interactions. GPA is an important predictor for both difficulty and ease mindsets and effort beliefs. The dynamic relation between students' mindsets about the degree of difficulty of school tasks, and their beliefs about the effort-performance link, has a strong motivational impact, contributing to increase or decrease in GPA.

Study 2 indicated that students can be classified according to their levels of identity-based motivation (difficulty mindsets and plausibility of academic possible selves). The majority of students fall into low identity-based motivation profiles, which were overrepresented by vulnerable groups (boys, students from rural areas, and those who were enrolled in work-bound

academic tracks). Students from high identity-based motivation profiles were more mastery-oriented and also perceived their classmates as being mastery-oriented as well.

Study 3 highlighted that in the Romanian context, an intervention aimed at developing identity-based motivation improved difficulty-as-importance mindset and in-depth exploration of educational identity, and reduced the decline in educational commitment.

Overall, our studies showed that a high difficulty-as-importance mindset and a low difficulty-as-impossibility mindset were associated with other motivational constructs such as mastery orientation goals, classroom mastery goal structure, and positive effort beliefs. The findings of the current thesis bring additional empirical evidence on academic motivation in the Romanian cultural and educational context, highlighting the following points: (1) Grades serve as a strong predictor of students' future academic success, shaping their difficulty mindsets and beliefs about effort; (2) Low identity-based motivation profiles are most common among Romanian students, which may reflect their perception of school as having limited meaning for their futures; (3) Students interpret the difficult schoolwork more through the difficulty-as-impossibility mindsets than through the difficulty-as-importance mindset, a fact that might reflect their strong focus on achieving good grades. The studies in this thesis provided a more nuanced understanding of the motivational and self-regulatory role of students' educational identity and difficulty mindsets, supporting future research in the area of identity-based motivation and providing important insights for evidence-based school interventions designed to enhance students' motivation, educational identity, and academic achievement.

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