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The impact of students' misperceptions on test performance: A 3p model and self-determination theory approach

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Abstract: This research investigates the complex relationship between students' misperceptions about their teachers and exams, test anxiety, and their overall test performance, framed through a newly proposed Presage, Process, Product (3P) model and Self-Determination Theory (SDT). Specifically, it explores how students' misperceptions formed during the presage phase disrupt Basic Psychological Needs (BPN) for autonomy, competence, and relatedness, negatively influencing their test-taking strategies and performance outcomes. The study adopts a theoretical approach, proposing a conceptual framework rather than collecting empirical data, to illustrate the potential dynamics between misperceptions, test anxiety, and academic achievement. A key feature of the new 3P model is the two-way interaction between the process and product phases, illustrating how the test-taking behaviors (process) influenced by misperceptions and anxiety can cyclically affect performance outcomes (product). For example, students who experience anxiety may revisit questions due to self-doubt, changing correct answers to incorrect ones, which further exacerbates their anxiety and harms overall performance. This cyclical interaction highlights the need to break the negative feedback loop to improve test results. By examining the multifaceted impact of pre-test beliefs, such as overconfidence and perceived difficulty, this research offers insights into how these misperceptions affect test performance by fostering anxiety and maladaptive test-taking strategies. The newly proposed PPP model highlights the operational variability of test-taking strategies across different phases, emphasizing the need for teachers to correct students' misperceptions to enhance performance. This study provides actionable insights for educators to address psychological needs, mitigate anxiety, and promote better academic outcomes. Future research should test the conceptual framework through empirical investigations to further validate its applicability in educational settings.

Keywords: *Basic psychological needs, Self Determination theory, Students misperceptions, test anxiety, the PPP model.*

1. Introduction

Students' academic performance is influenced by a complex interplay of factors, including their perceptions of teachers and exams. However, these perceptions are not always accurate, with many students forming misperceptions that can negatively impact their test preparation, behavior during exams, and final scores. These misperceptions, rooted in prior experiences, social influences, or misunderstandings, can distort how students engage with the test-taking process, often leading to poorer outcomes.

To explore the relationship between misperceptions and test performance, this research utilizes the Presage, Process, Product (3P) model. The model offers a framework for understanding how presage factors—students' initial misperceptions about their teachers and the exam—affect the process of test-taking and ultimately the product, or test scores. Misperceptions at the presage stage may lead to ineffective preparation, heightened anxiety, and maladaptive test-taking strategies, all of which detrimentally impact performance.

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In addition, this research integrates Self-Determination Theory (SDT), particularly focusing on the Basic Psychological Needs (BPN) of autonomy, competence, and relatedness. SDT posits that the fulfillment of these needs is essential for optimal motivation and academic performance. Misperceptions about teachers and exams can frustrate these needs—limiting a student's sense of control (autonomy), reducing their confidence in their abilities (competence), and weakening their connection to the learning environment (relatedness). This frustration can lead to increased anxiety, reduced motivation, and diminished performance.

This research seeks to illuminate the mechanisms through which misperceptions about teachers and exams impact students' test-taking behaviors and outcomes. The findings aim to offer educators strategies to address these misperceptions, ensuring that students' basic psychological needs are met and that their test performance can improve as a result.

Despite the extensive research on factors influencing test performance, there is limited understanding of how students' misperceptions about their teachers and exams specifically impact their test-taking behaviors and outcomes. Existing studies have largely focused on test anxiety, preparation strategies, and performance, but they often overlook the critical role that these misperceptions—formed in the presage phase—play in shaping students' overall test experience. Furthermore, while Self-Determination Theory (SDT) has been applied to understand motivation in educational settings, its specific connection to students' basic psychological needs (BPN) of autonomy, competence, and relatedness in the context of test performance remains underexplored.

Few studies have examined how the frustration of these psychological needs, driven by misperceptions, affects students' test-taking process and performance. Additionally, there is a lack of research that integrates the 3P model with BPN to provide a comprehensive framework for understanding how presage factors, psychological needs, and test outcomes are interrelated. This research aims to address these gaps by investigating the nuanced ways in which misperceptions formed before testing (presage) disrupt students' basic psychological needs, influencing their test-taking process and final performance (product).

2. Literature Review

The impact of students' misperceptions about their teachers and exams on test performance is a multifaceted issue that involves various psychological and educational dynamics. Understanding how these misperceptions influence academic outcomes can help in developing strategies to improve student performance and educational equity.

Chen, et al, (2020) found that teachers with greater subject matter knowledge and knowledge of students' misconceptions are more effective in improving students' performance on multiple-choice test items. While this research is more concerned with the internal psychological dynamics of students, particularly how misperceptions affect their autonomy, competence, and relatedness. Thus, my research contributes to a different aspect of the test-taking process, focusing on psychological factors rather than teacher expertise, providing a unique lens to understand test performance.

Students often approach tests with one of two contrasting perceptions: overconfidence in their ability to perform well, or frustration and anxiety due to past negative experiences with difficult exams, challenging courses, or perceived shortcomings in their teachers' instruction. These divergent perceptions can significantly influence their test preparation, strategies, and overall performance. Foster, et al., (2017) claim that students are overconfident in predicting their performance on exams, and their accuracy in predicting future exams does not improve across future exams. Weber and Bizer (2006) found that participants performed worse when they were informed in advance about the difficulty of an exam, particularly those with high levels of test anxiety. This finding highlights the critical role of teachers in addressing students' basic psychological needs, especially the need for relatedness and competence. By fostering a supportive environment that builds students' confidence and sense of connection, teachers can help mitigate the negative effects of anxiety and promote better test

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performance. Embse et al., (2018) argue that perceived difficulty of the test and the high-stakes nature or consequences of the test is related to higher test anxiety.

These studies suggest that students' misperceptions about their teachers and exams can negatively impact test performance, particularly through inaccurate teacher expectations, exposure to stereotypes, and students' overconfidence.

2.1. Test Anxiety

During exams, students may worry about recalling information, experience physiological symptoms such as increased heart rate and sweating, and feel a strong desire to leave the exam room. These cognitive and physical responses are typical indicators of test anxiety (Cassady & Johnson, 2002; Pekrun, 2001). Test anxiety is characterized by concerns about potential failure or negative outcomes in evaluative settings (Zeidner, 2007). Students prone to test anxiety often respond with heightened anxiety in these situations, leading to its classification as a situation-specific trait (Spielberger & Vagg, 1995). Research suggests that about one in three students experiences some degree of test anxiety (Quek et al., 2019), highlighting the prevalence of this issue.

Meta-analyses consistently reveal a negative relationship between test anxiety and academic performance. Test anxiety has been linked to poorer academic outcomes from primary school through higher education (Hembree, 1988; Richardson et al., 2012), and across subjects such as mathematics and language learning (Caviola et al., 2021; Teimouri et al., 2019). Students with test anxiety tend to underperform on a range of assessments, including classroom tests, aptitude exams, and IQ tests (von der Embse et al., 2018). Correlations between test anxiety and performance typically range from −.20 to −.30, underscoring the significant threat that test anxiety poses to academic success.

Despite the well-documented impact of test anxiety, its precise relationship with academic achievement remains unclear. The interference hypothesis is the most widely accepted explanation, proposing that test anxiety disrupts effective task processing and knowledge retrieval during exams (Eysenck et al., 2007; Mandler & Sarason, 1952; Wine, 1971). Test-anxious students often become preoccupied with worries about their knowledge gaps or potential failure (Wine, 1971; Zeidner, 2007). These irrelevant thoughts interfere with attention and consume working memory resources that would otherwise be available for performing the task (Ashcraft & Kirk, 2001; Beilock & Carr, 2005; Beilock et al., 2004; Eysenck & Calvo, 1992; Ng & Lee, 2015), or for retrieving knowledge from long-term memory (Rosen & Engle, 1997; Unsworth et al., 2013). As a result, the thoughts triggered by test anxiety hinder efficient task performance and knowledge recall, ultimately reducing academic achievement.

Research testing the interference hypothesis has produced mixed results. If test-anxious students truly struggle under pressure (Beilock & Carr, 2001), they should perform worse in evaluative settings compared to their non-evaluative performance. Support for this idea comes from studies showing that participants perform worse on problem-solving tasks when task instructions induce situational anxiety (Beilock & Carr, 2005; Beilock & DeCaro, 2007; Beilock et al., 2004). However, studies inducing short-term anxiety (state anxiety) immediately before a task may not reflect the mechanisms affecting students with chronic (trait) test anxiety. Research on trait test anxiety has shown that highly anxious students often underperform on non-graded quizzes or take-home tests, even without evaluative pressure (Cassady, 2004a; Covington & Omelich, 1987; Naveh-Benjamin et al., 1981). These findings suggest that cognitive interference alone may not fully explain why test-anxious students perform poorly academically.

2.2. Self-Determination Theory (SDT)

Self-Determination Theory (SDT) is an influential framework for understanding human motivation, development, and well-being, particularly in relation to learning. It comprises two main components: the first addresses the roles of intrinsic and extrinsic motivations in shaping human behavior, while the second focuses on Basic Psychological Needs (BPN) (Noels, 2013). SDT posits that motivation is largely driven by the satisfaction of three fundamental psychological needs: autonomy, competence, and

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relatedness. The fulfilment of these needs is essential for psychological growth and performance, particularly in the realm of language learning. These needs are discussed in more detail below.

- **Autonomy** refers to the ability to make decisions based on personal values and goals. When learners are given the freedom to make choices that align with their own motivations, they experience heightened levels of intrinsic motivation and engagement. This idea implies that people are less likely to be motivated when they are forced into actions they do not fully understand or support. However, when learners choose their own actions, their engagement and persistence are likely to increase.
- **Competence** involves the need to feel capable and effective in completing tasks. A sense of competence arises when learners perceive that they have the skills and abilities necessary to succeed. Achieving a balance is essential—tasks that are too difficult can discourage learners, while tasks that are too easy may not provide a sense of challenge or mastery. Success in challenging but attainable tasks builds confidence and skill development.
- **Relatedness** describes the need to feel connected to others and to belong within a group or community. This includes establishing meaningful relationships, as well as giving and receiving care and support. Human beings are inherently social, and feeling connected to others fosters engagement and a positive learning environment. Feedback and social interaction are key components in fulfilling this need.

This research explores how the satisfaction of these three needs—autonomy, competence, and relatedness—affects students' motivation in language learning, and particularly how teachers can support these needs in the classroom to enhance learning outcomes.

2.3. The Role of Teachers in Supporting BPN in Language Learning

Teachers play a vital role in creating classroom environments that satisfy students' BPN, which leads to improved outcomes, such as greater motivation, increased effort, and more sustained language learning (Alamer, 2022; Noels, 2013). Within an SDT framework, the role of teachers extends beyond delivering content to creating the conditions necessary for intrinsic motivation to thrive. Noels (2013) emphasized the importance of fostering autonomy, competence, and relatedness to promote student engagement across different cultural and educational contexts, including EFL and ESL environments.

Dincer et al. (2019) conducted a study grounded in SDT that examined the relationship between self-determination and classroom engagement among Turkish EFL learners. The research revealed that students' perceptions of autonomy-support from their teachers significantly predicted their need satisfaction. This, in turn, was a strong predictor of self-determined engagement in the classroom. The study also highlighted the crucial role of a positive social atmosphere in promoting student participation and improving academic outcomes.

Further evidence of the teacher's influence on student motivation comes from Marsh and Alamer (2024), who used advanced statistical models to demonstrate that teachers' efforts to foster relatedness and autonomy have a significant impact on students' intrinsic motivation. Their exploratory SEM (Structural Equation Modeling) method confirmed that students who perceive their teachers as supportive experience higher motivation. However, when it comes to relatedness specifically, the model showed a minimal impact on students' intention to discontinue language study, suggesting that the effect of relatedness may vary across contexts and learners.

Although most studies agree that teacher support in fostering autonomy and competence significantly impacts student outcomes, the findings regarding relatedness have been more mixed. For instance, Hajovsky et al. (2019) found that teacher-student relationships, such as closeness or conflict with male or female students, did not have a direct effect on academic achievement. Nonetheless, other research indicates that students are more likely to pursue their education when they feel supported and comfortable with their teachers, emphasizing the role of teacher-student bonds in fostering a positive approach to learning.

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2.4. Teacher Involvement and Classroom Dynamics

Effective teachers not only convey content but also cultivate a classroom environment where students feel autonomous, competent, and connected. Teacher involvement and classroom management play a significant role in fostering intrinsic motivation and improving academic performance. When teachers maintain positive social relationships and provide students with choices, they help nurture an environment where students are empowered to take responsibility for their own learning. (Alamer, 2022; Noels, 2013).

3. Methodology

This research adopts a theoretical approach to explore the relationship between students' misperceptions about their teachers and exams, test anxiety, and the fulfillment of Basic Psychological Needs (BPN) through the lens of the Presage, Process, Product (PPP) model and Self-Determination Theory (SDT). The research does not involve empirical data collection but instead proposes a conceptual framework for understanding these dynamics.

3.1. The PPP Model in Relation to Misperceptions and Test performance

The Presage-Process-Product (PPP) model has long been used to conceptualize learning and test-taking strategies (TTS) within educational contexts. Originally conceptualized by Al Fraidan (2011, 2024), the PPP model offers a structured approach for understanding how students interact with test tasks, drawing on both their prior knowledge and cognitive strategies to navigate assessments. This framework, in relation to misperceptions and test anxiety, provides a unique lens to examine how these psychological and emotional factors influence students' performance on tests. Misperceptions, whether about the teacher, the exam's difficulty, or past experiences, can skew the "presentation" phase and ripple through the "process" and "product" stages, ultimately impacting student outcomes.

3.2. The Three Phases of the PPP Model

The PPP model consists of three primary stages:

1. Presage: The test task is presented to the students. It involves the environment in which students perceive the test, including instructions from teachers and their own interpretations. Misperceptions formed at this stage, such as overconfidence or frustration due to previous experiences with difficult exams, may lead students to begin the task with skewed expectations. Additionally, test anxiety might arise during the presentation phase, as students anticipate potential failure or success based on prior experiences.

2. Process: At this stage, students apply their test-taking strategies to complete the task. If misperceptions are present, students may apply ineffective strategies, such as focusing too much on certain questions, second-guessing themselves, or allowing anxiety to impair their working memory. Test-anxious students may especially struggle here, as their anxiety could hinder their ability to process information and make rational decisions. The process phase can also be iterative; students might return to previous questions, alter answers, or make changes that may not always improve performance.

3. Product: The final output or performance on the test. The student's answers or responses reflect the culmination of both their initial perceptions (presage) and their cognitive efforts (process). If the student entered the test with heightened anxiety or misperceptions, these may manifest in incorrect answers, even if the student possessed the necessary knowledge to perform well. Al Fraidan (2011, 2024) also highlights a dual-way interaction between the product and process stages. Students may retrospectively modify their answers due to doubt, further underscoring how presage factors (e.g., misperceptions) can exert lasting effects on performance.

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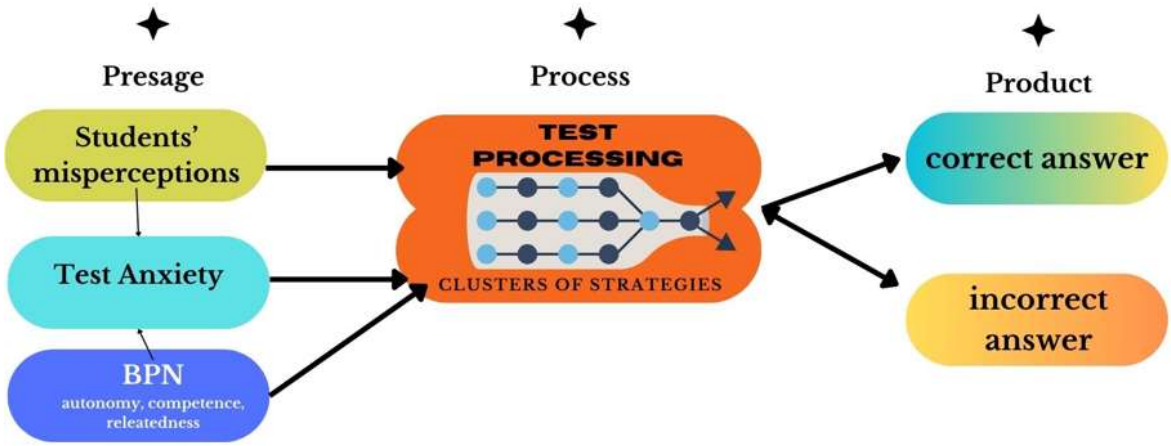

Figure 1.
The new proposed model based on Al Fraidan (2011, 2024) PPP model.

3.3. The Proposed PPP Model

The proposed PPP (Presage, Process, Product) model, as depicted in the figure, integrates a comprehensive approach to understanding the complexities of test-taking strategies (TTS), particularly how students' perceptions, anxiety, and psychological needs influence their performance.

3.4. Presage Stage: Misperceptions and Test Anxiety

In the Presage stage, the process begins with misperceptions that students may have about their abilities, the test, or even the teachers. These misperceptions can lead to test anxiety, as students may experience heightened stress due to their lack of understanding or incorrect assumptions. Misperceptions often manifest as concerns about test difficulty, personal preparedness, or negative expectations of failure. This, in turn, triggers test anxiety, which can further impair performance.

In this stage, fulfilling students' Basic Psychological Needs (BPN)—namely autonomy, competence, and relatedness—becomes crucial. Teachers need to actively engage with students to mitigate these misperceptions by offering clear guidance, support, and feedback. Addressing BPN can help reduce the impact of test anxiety by giving students a stronger sense of control, confidence, and social connection, thereby creating a more positive emotional environment.

3.5. Process Stage: Test-Taking Strategies and Their Interaction with the Presage Stage

The Process stage revolves around the actual application of test-taking strategies (TTS), which students employ when navigating through exams. These strategies—such as time management, elimination techniques, and mental recall—are influenced by the psychological and emotional conditions set in the Presage stage.

This stage reflects a clustering of processes that occur in real time as students engage with the test. The choices made here are often affected by the anxiety and misperceptions formed in the Presage stage, meaning that students' mental state has a direct impact on how effectively they can apply their test strategies. For instance, a student with high test anxiety may second-guess their correct answers or rush through questions without fully applying the strategies they have learned.

3.6. Product Stage: The Two-Way Interaction

The Product stage involves the answers that students eventually submit during the test. However, this is not a simple, linear endpoint—there is a two-way interaction between the Process and Product stages. Even after producing an answer (whether correct or incorrect), students often revisit their choices.

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- If a student provides a correct answer, they might still return to the Process stage to confirm or change it. In some cases, anxiety may cause them to second-guess themselves and change a correct answer to an incorrect one.
- Similarly, if a student answers a question incorrectly, they may also return to the Process stage, reviewing their previous strategies, and attempting to revise their answers. With more confidence or strategic thinking, they may change the wrong answer to the correct one.

This two-way interaction highlights the non-linear nature of the test-taking experience, where students oscillate between evaluating and re-evaluating their answers. The dynamic interaction between process and product also explains why students may sometimes make unwise decisions under pressure, even when they have the right knowledge and strategies.

3.7. BPN as a Crucial Link Between the Stages

Throughout all these stages, the provision of BPN—autonomy, competence, and relatedness—by teachers plays a pivotal role in reducing the impact of misperceptions and test anxiety. By fulfilling students' psychological needs early on (in the Presage stage), teachers can help students enter the Process stage with a clearer mind and greater confidence, allowing for more effective strategy implementation and fewer negative interactions between process and product.

In sum, the new PPP model highlights the importance of addressing misperceptions and anxiety in the Presage stage and demonstrates how these early influences carry over to the Process stage, affecting students' test-taking strategies. The dynamic, two-way interaction between the Process and Product stages shows that test-taking is not a static, linear experience. Providing students with BPN across all stages is essential for promoting positive outcomes and minimizing anxiety-driven errors.

3.8. Investigating the Complexities of the PPP Model

The interplay between the three phases of the PPP model, especially in light of misperceptions and test anxiety, offers several avenues for investigating how these elements impact student performance.

3.8.1. Misperceptions and the Presentation Phase

Misperceptions that arise during the presentation phase can have profound consequences on how students approach the test. Overconfidence, for example, may lead students to allocate their time poorly, underestimating difficult questions and overestimating easy ones. Conversely, students who expect the test to be more challenging than it is might panic early on, experiencing heightened anxiety, which limits their cognitive resources. To investigate this, researchers could conduct pre-test surveys assessing students' perceptions of the test and the teacher. Comparing these perceptions with actual test performance would reveal the extent to which misperceptions predict test anxiety and strategy misalignment in the process phase.

3.8.2. Test Anxiety and the Process Phase

Test anxiety primarily manifests during the process phase, where students attempt to recall information, solve problems, and make decisions under pressure. Cognitive interference theory suggests that anxiety diverts attention from the task at hand, leading to poor performance. Investigating the role of anxiety during this phase could involve real-time monitoring of students' physiological symptoms (e.g., heart rate) and cognitive patterns (e.g., through think-aloud protocols). Researchers could also explore how anxiety-prone students differ in their use of strategies compared to those with lower levels of anxiety, examining whether misperceptions exacerbate anxiety-induced processing difficulties.

3.8.3. Two-way Interaction between Process and Product

Al Fraidan's (2011) notion of a two-way interaction between the process and product phases adds another layer of complexity. During the process phase, students often revise their answers in response

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to doubts or perceived mistakes. This interaction could be affected by both presage and process factors, particularly anxiety and misperceptions. For instance, a student who misinterprets a question in the presentation phase might change a correct answer to an incorrect one during the process phase due to anxiety or second-guessing. To investigate this dynamic, researchers could use item-level analysis to trace changes in answers and examine how these changes correlate with test anxiety and initial misperceptions.

3.8.4. Examining Multifunctionality in TTS

The PPP model highlights the multifunctionality of TTS across all three phases, suggesting that strategies are operationalized differently depending on how students perceive and approach the test. Misperceptions could influence which strategies students choose, with anxiety causing them to prioritize avoidance or guessing over more productive strategies like elimination or logical reasoning. To study this, researchers could apply a mixed-methods approach, using both qualitative data (e.g., interviews and think-aloud protocols) and quantitative performance data (e.g., accuracy and timing on test questions) to examine how students' strategy use shifts in response to misperceptions and anxiety.

3.8.5. Intervention Studies

To explore how modifying the presentation phase might alleviate misperceptions and reduce test anxiety, interventions could be designed to provide students with accurate test information and reduce stress triggers. For example, teachers might offer more detailed instructions or practice exams that mirror the actual test's difficulty. Comparing pre- and post-intervention results would help determine how reducing misperceptions impacts the process and product phases of the PPP model. Additionally, interventions focused on reducing test anxiety (e.g., relaxation techniques) could be studied to see how they alter students' strategy use during the process phase and their overall test performance.

3.8.6. Role of Psychological Needs

The Self-Determination Theory (SDT) framework can further elaborate the complexities of the PPP model by examining how fulfilling students' basic psychological needs—autonomy, competence, and relatedness—might mitigate the negative effects of misperceptions and test anxiety. If students' feelings of competence are undermined by misperceptions, they may enter the test already defeated, impacting the process and product phases. Examining how interventions aimed at enhancing these psychological needs influence the three stages of the PPP model would provide valuable insights into the multifaceted nature of test performance.

The PPP model serves as a robust framework for investigating the interrelationships between presage factors (e.g., misperceptions and anxiety), test-taking strategies (process), and performance outcomes (product). Understanding how these elements interact offers both theoretical insights and practical implications for educators seeking to mitigate the negative impacts of test anxiety and misperceptions. Future research could focus on exploring these complex relationships through a combination of real-time cognitive monitoring, psychometric assessments, and targeted interventions designed to improve students' test-taking experiences and outcomes.

4. Discussion

This research aimed to investigate the complex dynamics between students' misperceptions about their teachers and exams, and how these misperceptions influence test-taking behaviors and ultimately impact test performance. By applying the Presage, Process, Product (3P) model and drawing on the framework of Basic Psychological Needs (BPN) from Self-Determination Theory (SDT), we explored the interaction between students' pre-test beliefs, psychological needs, and test outcomes. The findings provide valuable insights into how students' misconceptions and unmet psychological needs can hinder their performance, confirming and extending the findings of previous research.

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In alignment with previous studies (Foster et al., 2017; Weber & Bizer, 2006), the current research PPP model suggests that students often form misperceptions regarding the difficulty of exams and the expectations of their teachers. These misperceptions, as highlighted by Weber & Bizer (2006), can be rooted in prior experiences, and when students anticipate an exam to be excessively difficult, it may result in heightened test anxiety. This anxiety subsequently interferes with their ability to effectively process and recall information, as demonstrated in previous literature on cognitive interference (Eysenck et al., 2007; Wine, 1971). The present research model suggests that students who entered the exam with negative expectations may perform worse than those with more accurate perceptions, as claimed by Embse et al. (2018) who found that the relationship between perceived difficulty and test anxiety.

Additionally, this research expands on Foster et al. (2017)'s claim that students tend to overestimate their capabilities before exams leading to more strategies clustering as suggested by the proposed PPP model. This suggestion is consistent with Chen et al. (2020), who emphasized the importance of teacher intervention to correct students' misperceptions early on. Teachers play a crucial role in guiding students toward more accurate perceptions of exam expectations, which can mitigate the negative impact of both overconfidence and anxiety.

Moreover, the integration of the 3P model allowed us to trace the effect of misperceptions through the stages of test preparation, test-taking strategies, and final performance. As the model suggests, misperceptions during the presage phase significantly influenced students' behavior during the test-taking process. Students who perceived their teachers as overly strict or exams as excessively challenging were more likely to experience anxiety during the process stage, which is likely to impair their ability to apply effective test-taking strategies, a finding supported by Cassady & Johnson (2002) and Pekrun (2001) in their work on test anxiety. The cyclical nature of the process and product stages, as identified in the 3P model, which is claimed in this research, with anxious students revisiting questions multiple times due to self-doubt—often changing correct answers to incorrect ones—echoing Beilock & Carr (2001)'s findings on performance degradation under pressure.

In terms of Self-Determination Theory (SDT), this research suggests that students' basic psychological needs (autonomy, competence, and relatedness) were frequently frustrated by misperceptions. For instance, students who believed their teachers were unsupportive or unfair struggled to feel a sense of relatedness in the academic environment. This frustration weakened their overall motivation and self-efficacy, consistent with previous findings by Embse et al. (2018) and Richardson et al. (2012). Additionally, misperceptions that undermined students' sense of competence led to heightened anxiety and decreased performance (Ashcraft & Kirk, 2001; Beilock et al. 2004).

The research also builds on the work of Al Fraidan (2011, 2024), extending the PPP model by demonstrating how misperceptions in the presage stage can influence students' use of test-taking strategies (TTS) during the process stage. Students who perceived the test as overly difficult were more likely to employ maladaptive strategies such as skipping questions or spending excessive time on particular items. This finding is in line with the literature on test anxiety, which shows that anxious students often become fixated on certain tasks at the expense of overall test management (Covington & Omelich, 1987; Wine, 1971).

Further examination of test-taking strategies reveals their multifunctionality across different phases, as highlighted by Al Fraidan (2024). According to Al Fraidan's (2024) PPP model, test-taking strategies are operationalized differently based on students' perceptions of the test and their anxiety levels. For example, anxiety often prompts students to choose avoidance strategies or rely on guessing, rather than employing more effective methods like elimination or logical reasoning. Future research could benefit from a mixed-methods approach, incorporating qualitative data such as interviews and think-aloud protocols, along with quantitative performance data to better understand how students' strategy use shifts in response to anxiety and misperceptions during test-taking.

Lastly, the research offers practical implications for educators, echoing the suggestions by Embse et al. (2018) and Chen et al. (2020) that interventions aimed at correcting students' misperceptions early in

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the academic process could lead to more effective test preparation and better performance. By providing clear, accurate expectations and addressing students' psychological needs, teachers can help mitigate the detrimental effects of anxiety and misperceptions, fostering a more conducive environment for academic success.

5. Conclusion

This research highlights the significant role that students' misperceptions about their teachers and exams play in shaping their test-taking behavior and overall performance. By applying the Presage, Process, Product (3P) model and incorporating the framework of Basic Psychological Needs (BPN) from Self-Determination Theory (SDT), we have tried to show how these misperceptions can lead to increased anxiety, ineffective test-taking strategies, and ultimately poorer academic outcomes. The suggested PPP model is consistent with existing research on test anxiety, cognitive interference, and the role of teachers in shaping students' perceptions, confirming that misperceptions about exams and teachers can disrupt the testing process from the presage stage onward.

Educators can play a pivotal role in alleviating these misperceptions by addressing students' psychological needs for autonomy, competence, and relatedness, and by providing more accurate information about test expectations. Interventions targeting these areas could lead to a reduction in test anxiety and improved test performance. Future research should further explore the interaction between psychological needs and test preparation behaviors, as well as the efficacy of targeted interventions aimed at reducing misperceptions and their negative impact on academic achievement.

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References

[1] Alamer, A. (2022a). Basic psychological needs, motivational orientations, effort, and vocabulary knowledge: A comprehensive model. *Studies in Second Language Acquisition*, 44, 164–184. https://doi.org/10.1017/S027226312100005X

[2] Alamer, A. (2022b). Basic psychological need satisfaction and continued language learning during a pandemic: A structural equation modelling approach. *Journal for the Psychology of Language Learning*, 4. https://doi.org/10.52598/jpll/4/1/1

[3] Al Fraidan, A. (2011). *Test-taking strategies of EFL learners on two vocabulary tests*. Germany: Lap Lambert Publications ISBN 978-3-8454-7030-6.

[4] Al Fraidan, A. (2024). Beyond the Bubble: Unveiling the Multifaceted Landscape of Test Wiseness and Their Operationalization Among English Language Majors. *Theory and Practice in Language Studies*, 14(6), 1735-1744. https://doi.org/10.17507/tpls.1406.14

[5] Ashcraft, M. H., & Kirk, E. P. (2001). The relationships among working memory, math anxiety, and performance. *Journal of Experimental Psychology: General*, 130(2), 224–237. https://doi.org/10.1037/0096-3445.130.2.224

[6] Beilock, S. L., & Carr, T. H. (2001). On the fragility of skilled performance: What governs choking under pressure? *Journal of Experimental Psychology: General*, 130(4), 701–725. https://doi.org/10.1037/0096-3445.130.4.701

[7] Beilock, S. L., & Carr, T. H. (2005). When high-powered people fail. *Psychological Science*, 16(2), 101–105. https://doi.org/10.1111/j.0956-7976.2005.00789.x

[8] Beilock, S. L., & DeCaro, M. S. (2007). From poor performance to success under stress: Working memory, strategy selection, and mathematical problem solving under pressure. *Journal of Experimental Psychology: Learning, Memory, and Cognition*, 33(6), 983–998. https://doi.org/10.1037/0278-7393.33.6.983

[9] Beilock, S. L., Kulp, C. A., Holt, L. E., & Carr, T. H. (2004). More on the fragility of performance: Choking under pressure in mathematical problem solving. *Journal of Experimental Psychology: General*, 133(4), 584–600. https://doi.org/10.1037/0096-3445.133.4.584

[10] Caviola, S., Toffalini, E., Giofrè, D., Ruiz, J. M., Szucs, D., & Mammarella, I. C. (2021). Math performance and academic anxiety forms, from sociodemographic to cognitive aspects: A meta-analysis on 906,311 participants. *Educational Psychology Review*, 34, 363–399. https://doi.org/10.1007/s10648-021-09618-5

[11] Cassady, J. C. (2004a). The impact of cognitive test anxiety on text comprehension and recall in the absence of external evaluative pressure. *Applied Cognitive Psychology*, 18(3), 311–325. https://doi.org/10.1002/acp.968

[12] Cassady, J. C., & Johnson, R. E. (2002). Cognitive test anxiety and academic performance. *Contemporary Educational Psychology*, 27(2), 270–295. https://doi.org/10.1006/ceps.2001.1094

[13] Chen, C., Sonnert, G., Sadler, P., & Sunbury, S. (2020). The Impact of High School Life Science Teachers' Subject Matter Knowledge and Knowledge of Student Misconceptions on Students' Learning. *CBE Life Sciences Education*, 19. https://doi.org/10.1187/cbe.19-08-0164

[14] Covington, M. V., & Omelich, C. L. (1987). "I knew it cold before the exam": A test of the anxiety-blockage hypothesis. *Journal of Educational Psychology*, 79(4), 393–400. https://doi.org/10.1037//0022-0663.79.4.393

[15] Dincer, A., Yeşilyurt, S., Noels, K., & Lascano, D. (2019). Self-Determination and Classroom Engagement of EFL Learners: A Mixed-Methods Study of the Self-System Model of Motivational Development. *SAGE Open*, 9. https://doi.org/10.1177/2158244019853913

[16] Embse, N., Jester, D., Roy, D., & Post, J. (2018). Test anxiety effects, predictors, and correlates: A 30-year meta-analytic review. *Journal of Affective Disorders*, 227, 483–493. https://doi.org/10.1016/j.jad.2017.11.048

[17] Eysenck, M. W., & Calvo, M. G. (1992). Anxiety and performance: The processing efficiency theory. *Cognition & Emotion*, 6(6), 409–434. https://doi.org/10.1080/02699939208409696

[18] Eysenck, M. W., Derakshan, N., Santos, R., & Calvo, M. G. (2007). Anxiety and cognitive performance: Attentional control theory. *Emotion*, 7(2), 336–353. https://doi.org/10.1037/1528-3542.7.2.336

[19] Hajovsky, D.B., Oyen, K.A., Chesnut, S.R., & Curtin, S. (2019). Teacher–student relationship quality and math achievement: The mediating role of teacher self-efficacy. *Psychology in the Schools*. https://doi.org/10.1016/j.jsp.2017.04.001

[20] Hembree, R. (1988). Correlates, causes, effects, and treatment of test anxiety. *Review of Educational Research*, 58(1), 47–77. https://doi.org/10.3102/00346543058001047

[21] Foster, N., Was, C., Dunlosky, J., & Isaacson, R. (2017). Even after thirteen class exams, students are still overconfident: the role of memory for past exam performance in student predictions. *Metacognition and Learning*, 12, 1-19. https://doi.org/10.1007/S11409-016-9158-6

[22] Mandler, G., & Sarason, S. B. (1952). A study of anxiety and learning. *The Journal of Abnormal and Social Psychology*, 47(2), 166–173. https://doi.org/10.1037/h0062855

[23] [23] Marsh, H., & Alamer, A. (2024). When and how to use set-exploratory structural equation modelling to test structural models: A tutorial using the R package lavaan. *British Journal of Mathematical and Statistical Psychology*, 00, 1–18. https://doi.org/10.1111/bmsp.12336

[24] Naveh-Benjamin, M., McKeachie, W. J., Lin, Y., & Holinger, D. P. (1981). Test anxiety: Deficits in information processing. *Journal of Educational Psychology*, 73(6), 816–824. https://doi.org/10.1037//0022-0663.73.6.816

[25] Ng, E. L., & Lee, K. (2015). Effects of trait test anxiety and state anxiety on children's working memory task performance. *Learning and Individual Differences*, 40, 141–148. https://doi.org/10.1016/j.lindif.2015.04.007

[26] Pekrun, R. (2001). Test anxiety and academic achievement. In *International encyclopedia of the social & behavioral sciences* (pp. 15610–15614). Elsevier. https://doi.org/10.1016/B0-08-043076-7/02451-7

[27] Quek, T. T.-C., Tam, W. W.-S., Tran, B. X., Zhang, M., Zhang, Z., Ho, C. S.-H., & Ho, R. C.-M. (2019). The global prevalence of anxiety among medical students: A meta-analysis. *International Journal of Environmental Research and Public Health*, 16(15), Article 2735. https://doi.org/10.3390/ijerph16152735

[28] Richardson, M., Abraham, C., & Bond, R. (2012). Psychological correlates of university students' academic performance: A systematic review and meta-analysis. *Psychological Bulletin*, 138(2), 353–387. https://doi.org/10.1037/a0026838

[29] Rosen, V. M., & Engle, R. W. (1997). The role of working memory capacity in retrieval. *Journal of Experimental Psychology: General*, 126(3), 211–227. https://doi.org/10.1037/0096-3445.126.3.211

[30] [30] Spielberger, C. D., & Vagg, P. R. (1995). *Test anxiety. Theory, assessment, and treatment.* Taylor & Francis.

[31] Teimouri, Y., Goetze, J., & Plonsky, L. (2019). Second language anxiety and achievement. *Studies in Second Language Acquisition*, 41(2), 363–387. https://doi.org/10.1017/S0272263118000311

[32] Unsworth, N., Brewer, G. A., & Spillers, G. J. (2013). Working memory capacity and retrieval from long-term memory: The role of controlled search. *Memory & Cognition*, 41(2), 242–254. https://doi.org/10.3758/s13421-012-0261-x

[33] von der Embse, N., Jester, D., Roy, D., & Post, J. (2018). Test anxiety effects, predictors, and correlates: A 30-year meta-analytic review. *Journal of Affective Disorders*, 227, 483–493. https://doi.org/10.1016/j.jad.2017.11.048

[34] Weber, C., & Bizer, G. (2006). The effects of immediate forewarning of test difficulty on test performance. *The Journal of General Psychology*, 133, 277–285. https://doi.org/10.3200/GENP.133.3.277-285

[35] Wine, J. (1971). Test anxiety and direction of attention. *Psychological Bulletin*, 76(2), 92–104. https://doi.org/10.1037/h0031332

[36] Zeidner, M. (2007). Test anxiety in educational contexts. In P. A. Schutz & R. Pekrun (Eds.), *Emotion in education* (pp. 165–184). Elsevier. https://doi.org/10.1016/B978-012372545-5/50011-3

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