



| Research Article / Araştırma Makalesi |

A Multiple Case Study of the Motivational Effects of a High-Stakes Examination

Yüksek Riskli Bir Sınavın Motivasyonel Etkilerine İlişkin Bir Çoklu Durum Çalışması

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Keywords

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Abstract

Purpose: The purpose of this qualitative multiple-case study is to understand whether success on the High School Entrance Examination (HSEE) has a motivational effect on subsequent high-stakes exams by viewing it from the perspective of the High Performance Cycle Model (HPC).

Design/Methodology/Approach: Two rounds of interviews were conducted with eight dyads, each consisting of an eighth-grade student and a parent. The first interview took place approximately two months before the HSEE exam and the second approximately six months after the exam. Interview data were subjected to matrix analysis.

Findings: The research results show that consistent with the assumption of the HPC model, three participating students who scored highest on the HSEE expressed a desire to begin preparing for the university exam because they experienced an increase in their self-efficacy. It can be concluded that, consistent with the assumptions of the HPC model, a high score on the HSEE may provide students with self-renewing test motivation.

Highlights: Based on the findings, it is recommended that students be given behavioral and learning goals rather than performance goals, and the HPC model should be used for students' holistic development so that they can demonstrate their potential.

Öz

Çalışmanın amacı: Bu nitel çoklu durum çalışmasının amacı, Yüksek Performans Döngüsü Modeli (YPD) perspektifinden bakarak Liselere Giriş Sınavı'ndaki başarının, öğrencinin gelecekte gireceği yüksek riskli sınavlara yönelik motivasyonu üzerinde etkisi olup olmadığını anlamaktır.

Materyal ve Yöntem: Her biri bir sekizinci sınıf öğrencisi ve bir veliden oluşan sekiz çift katılımcı ile iki tur görüşme yapılmıştır. İlk görüşmeler LGS sınavından yaklaşık iki ay önce, ikincisi ise sınavdan yaklaşık altı ay sonra gerçekleştirilmiş ve görüşme verileri üzerinde matris analizleri yapılmıştır.

Bulgular: Araştırma sonuçları, YPD modelinin varsayımına uygun olarak, LGS'de en yüksek puanı alan üç katılımcı öğrencinin, öz yeterliliklerinde bir artış yaşadıkları için üniversite sınavına hazırlanmaya başlama arzusunu dile getirdiklerini göstermektedir. YPD modelinin varsayımına uygun olarak, LGS'deki yüksek puanın öğrencilere kendini yenileyen bir test motivasyonu sağlayabileceği sonucuna varılabilir.

Önemli Vurgular: Bulgulara dayanarak, öğrencilere performans hedefleri yerine davranış ve öğrenme hedefleri verilmesi ve YPD modelinin, öğrencilerin potansiyellerini gösterebilmelerini sağlamak üzere, bütünsel gelişimleri için kullanılması önerilmektedir.

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INTRODUCTION

In the present study, we focused on the effects of a typical example of high-stakes exams, the High School Entrance Examination (hereafter HSEE), on students' motivation to take high-stakes exams in subsequent years. Based on our very close observations, we can say that the stress eighth graders feel at this stage of their lives is very high and not at all unreasonable. They know that if they do poorly on this test, they will not even be accepted to certain private high schools. Moreover, there is a high probability that they will be assigned to religious high schools, where students are taught in single-gender classrooms, due to the Turkish Ministry of Education's address-based assignment system. This is a real risk, not an exaggeration, and some eighth graders are aware of how much is at stake for them. Amrein and Berliner (2002, p. 1) define high-stakes tests as "tests from which results are used to make significant educational decisions about schools, teachers, administrators, and students." Given the consequences of the poor performance on the HSEE noted above, we can rightly apply the term "high-stakes test" to the HSEE. There is another reason why the HSEE deserves a high-stakes title. For example, if students do not take the other high-stakes exams because they are sick on the day of the exam, or if they do not like the result of the exam, they can always take it again. This is not the case with HSEE. Students cannot receive the results of a whole year's work just because they got sick on the day of the exam. The fact that students and parents are aware of this situation makes HSEE one of the most worrisome high-stakes exams. The fact that exams have such negative effects on students is not only a problem in Turkey. McDonald (2001) concluded that fear of exams and exam situations is widespread and appears to be becoming more common, possibly because of the increasing frequency and importance given to such exams in educational systems.

One can also look at the HSEE from another angle. The Turkish education system is full of ceaseless high-stakes multiple-choice tests. Four years after the HSEE, Turkish students who want to enroll in a college must take the Higher Education Institutions Examination and then, if they want to work in public service, the Public Personnel Selection Examination. If they want to apply for a master's or doctoral program, they must take the Academic Personnel and Postgraduate Education Entrance Examination; or the Medical Specialist Examination if they are already medical doctors. In short, from the perspective of eighth graders, there is no end in sight for high-stakes multiple-choice tests in their near future. Some of our acquaintances are well aware that the HSEE is not the last, but only the first of a series of tests that will seal the fate of their children. Based on our anecdotal observations, we can say that most parents view the year leading up to the HSEE as the time when their children lay the groundwork for the test motivation and sense of self-efficacy they will need in the years to come. Parents often expect the HSEE experience to make their children more confident in the face of their future high-stakes tests.

After this brief contextualization, we can turn to the topic that piques our curiosity. High-stakes testing is far from an underdeveloped area of research, but our review of the relevant literature revealed that its self-renewing effect on student motivation is still a mystery. Can we hope that this year-long severe stress, which obviously diminishes the quality of life of thirteen-year-old Turkish girls and boys, at least gives them a challenge-seeking attitude and a strong sense of self-efficacy? Given the research showing that even teachers can have both positive and negative evaluations of high-stakes exams (Jones & Egley, 2004; Shepard & Dougherty, 1991), we had to put aside all our preconceptions about this test to see, from a scientific and objective standpoint, whether the test could have a motivational effect. We were familiar with the motivational theories commonly used in student motivation research (e.g., self-determination theory, self-efficacy theory, achievement orientation model, or goal orientation theory), but the perspective of another model, the HPC model, which assumes that a specific and difficult goal will lead a person to set higher goals, clearly indicated that this would indeed be the case. To find answers to our questions, we designed a multiple-case study in collaboration with eight dyads of study participants to see how students' motivation for future exams evolved as a function of exam scores. To be more explicit, the purpose of this multiple-case study was to look through the lens of the High Performance Cycle (HPC) model developed by Latham and Locke (2007) to understand whether the specific and difficult goal of scoring high on the HSEE can motivate students to set higher educational goals. When we compared our pre- and post-exam interviews in which we asked questions prepared according to the HPC model, we found that, as predicted by the HPC model, students who scored high on the exam were eager to succeed on their future high-stakes exams due to their increased self-efficacy perceptions.

We would like to clarify one point: The present study is not about the general characteristics of the HSEE (its validity and reliability or what it does or does not offer students in the context of educational equity) but about the motivational effects of a high-stakes exam. Therefore, we did not dwell at length on the details of the HSEE. We could have chosen another high-stakes exam as the setting for our study, rather than the HSEE. We chose the HSEE because we were very familiar with it, and it was taking place right before our eyes. We hoped that the results of our study would not only satisfy our desperate curiosity about our real problem but also provide some important insights into the literature on student motivation with respect to its intersection with high-stakes testing. Below are the details of the theoretical framework we chose to organize our research and discover the aspects of the phenomenon that interested us.

Theoretical Framework

Edwin Locke and Gary Latham's Goal-setting theory, which is at the core of the High Performance Model (HPC), posits that a specific and difficult goal leads to higher performance compared to vague or easy goals or the nonexistence of a goal. In other words, the more difficult the specific goal is for employees to achieve, the more they perform their tasks (Latham & Locke, 2018;

Locke & Latham, 2015). Based on their experience with goal-setting studies, Locke and Latham (1990) developed the HPC model, which reflects their understanding of the self-repeating process of setting higher and higher goals.

In one of the versions of the model (Latham & Locke, 2007, p. 292), the process described above begins with the "demands" dimension, which includes an employee's specific and high goal on one or more meaningful and growth-facilitating tasks and his or her confidence in the ability to achieve that goal, in other words, his or her sense of self-efficacy.

The next dimension of the model is a group of variables called "mediators." This dimension explains how the contents of the demands dimension affect high performance. The mediators dimension includes (1) "direction," as the goal causes employees to concentrate on goal-relevant activities; (2) "effort," as the goal causes them to increase their efforts; (3) "persistence," as the goal causes them to show persistence in the face of difficulties; and (4) "task-specific strategies," as the goal causes them to develop plans and methods, they deem necessary.

The third dimension of the model is "moderators." This dimension includes four components that moderate the relationship between high goals and high performance: (1) "ability," which employees need to achieve their goals; (2) "commitment," without which employees are unable to overcome the obstacles to achieving their goals; (3) "feedback," as employees need it to adjust their efforts and strategies; and (4) "situational constraints," as their magnitude determines goal achievement.

A specific, high goal mediated and moderated by the above variables leads employees to high performance. Because it explains a cyclical process, the model does not end at this point. Employees are rewarded for their high performance and feel satisfied by the rewards. The feeling of satisfaction increases employees' sense of self-efficacy and commitment to their organization, thus their willingness to take on even higher challenges.

The HPC model does not consider job satisfaction as a direct cause of high performance but as a result of high performance. The model goes further and posits that job satisfaction is one of the reasons for the recursive nature of the HPC model because it causes employees to become committed to their employing organizations. This means that job satisfaction cannot produce high performance without commitment (Latham & Locke, 2007; Locke & Latham, 1990). Commitment to the organization is important in the HPC model because it influences employees' willingness to stay with their organization and set higher and higher goals (Latham et al., 2002).

Because of its inductive nature, the content of the HPC model differs in the publications of the two theorists (Latham, 2007; Latham et al., 2002; Latham & Locke, 2007; Locke & Latham, 1990; Locke & Latham, 2002). In the present study, we based our theoretical framework on one of these theorists (Latham & Locke, 2007) that we found most useful. These two theorists did not mention the moderator "task complexity" in their two most recent publications (Latham & Locke, 2018; Locke & Latham, 2015), so we preferred not to include it in our theoretical framework. To clarify what we mean by HPC in the context of the phenomenon we are interested in, we have presented in Figure 1 a hypothetical example based on the HPC model presented by Latham and Locke (2007, p. 292).

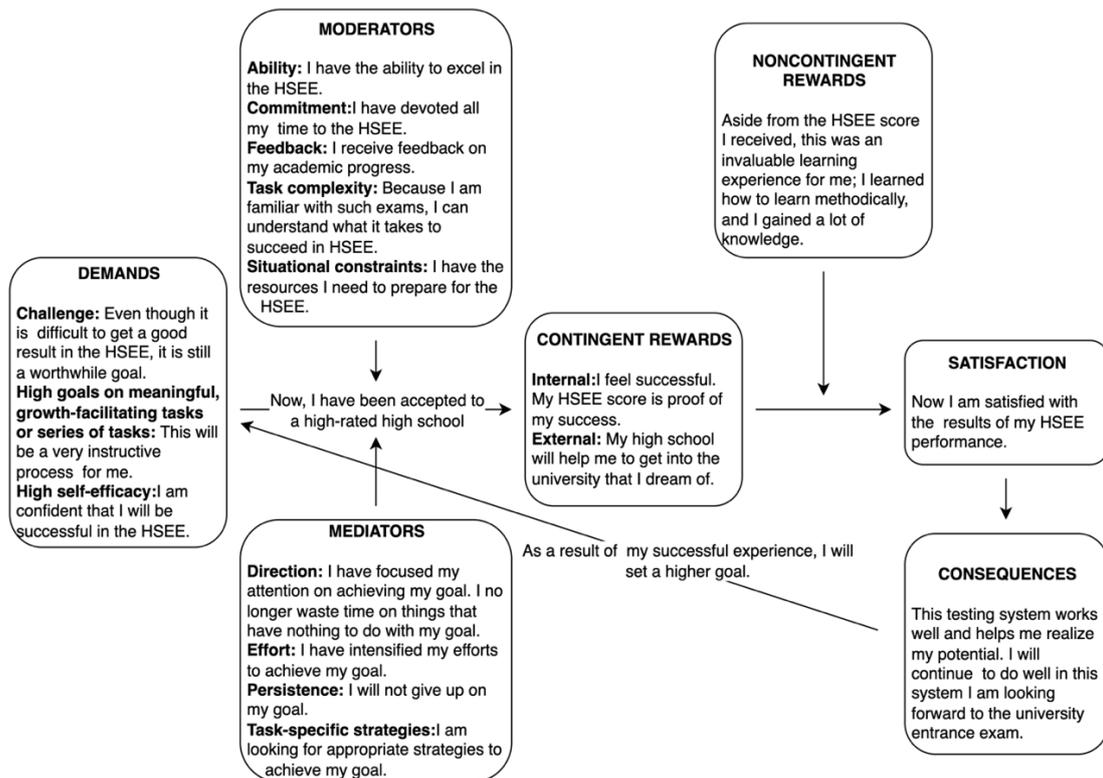


Figure 1. Hypothetical example of the motivation development process of an HSEE test taker.

Edwin Locke and Gary Latham developed their HPC model in 1990, based on the results of 400 studies conducted up to that time (Latham & Locke, 2018). The literature review by Latham et al. (2002), which focused on studies conducted within a decade of the HPC model's appearance, also showed evidence for the existence of the relationships that the model posits.

METHOD/MATERIALS

We designed our study as a multiple case study with embedded units of analysis (Yin, 2003). To guide our data collection and analysis, we followed the advice of Yin (2003) and developed the following theoretical proposition: "A high score on the HSEE is a specific and difficult goal, and achieving this goal increases willingness to undertake the following high-stakes tests."

Informants

Given the ideal balance between depth and breadth of findings, we concluded that for the literal replication of the verification of this proposition across cases, eight test-takers would be enough. In forming our informant group, however, we went beyond the test-taker level and used a dyad-level design in which each dyad consisted of an eighth-grade test-taker and his or her parent. In this design, our units of analysis, in other words, our cases were the test takers. Their parents were not our cases, but they were still our informants, providing us with valuable data about our cases.

We felt it necessary to conduct a cross-case analysis of three variables that we thought might influence the findings. These variables were (a) parent teaching experience to see the motivational effect of a teacher-parent, (b) the sector of school to see the motivational effect of schools' orientations, and (c) gender of HSEE test-takers. Accordingly, four test-takers had a teacher-parent, and four did not; four test takers were from private middle schools who knew they had the option to continue their education at private high schools even if they scored poorly on the HSEE, and four were from public middle schools. Table 1 presents the main characteristics of each case. In this table, we coded the participating students with the first eight letters of the Greek alphabet according to their HSEE scores. The term "HPC trio," which we will use throughout this study, refers to the first three highest-scoring students (Alpha, Beta, Gamma) who appeared to enter the high-performance cycle. Please note that the school sector (public/private) here refers to the participating students' middle schools and should not be confused with the high schools to which they were accepted based on their HSEE scores.

Table 1. An overview of the cases and the abbreviations we created for each participant.

		Parents' Teaching Experience	
		Having a teacher-parent	Not having a teacher-parent
Test-takers' school type	Public school	Gamma (Girl) (3rd)	Zeta (Boy) (6th)
		Delta (Boy) (4th)	Theta (Girl) (8th)
	Private school	Alpha (Girl) (1st)	Eta (Boy) (7th)
		Beta (Boy) (2nd)	Epsilon (Girl) (5th)

In our informant group, three of the parents were friends with one of us (A.Ö.), so we had the opportunity to develop a deeper understanding of the dyads. However, we were aware of the backyard research problems (Creswell, 2014) that can arise in such situations, so we selected the remaining dyads from those we did not know before beginning the present study.

Data Collection and Analysis

We began data collection only after obtaining the necessary permissions for data collection. Using Zoom software, one of us (A.Ö.) conducted digitally recorded semi-structured interviews with each participant and their parents once before (in April 2021) and once after the HSEE (from December 2021 to the end of January 2022). We performed data analysis in the following steps:

1. Transcription: Since I was not involved in the data collection, I (G. Ö.) transcribed the interviews using MAXQDA transcription mode and MacOS speech recognition software so that I could familiarize myself with the content of the interviews.

2. Matrix Analysis: This step consists of the following sub-steps:

- a. Following the matrix models of Miles et al. (2014), we created our matrix model, which we call "Multiple-Variable Case-Ordered and Conceptually Clustered Matrix." In our matrix model, although each case was selected based on his or her unique characteristics, we ordered each of our cases into rows according to the two most obvious common characteristics, gender, and school sector (hence the term "Multiple-Variable Case-Ordered" in the name of our matrix model). We placed interview questions in columns and clustered the question columns that focused on the same subdimension into result columns (hence the term "Conceptually Clustered" in the name of our matrix model). To make the analysis process more manageable, we created seven separate matrices (for the subdimensions of demands, moderators, mediators, contingent rewards, noncontingent rewards, consequences, and a final one we needed, cross-case questions). In these matrices, there were three rows for each dyad. The first row contained a summary of the pre-HSEE interviews, the second row contained a summary of the post-HSEE interview, and the

third row contained a summary of the results we extracted from the two rows above. In each cell of the first two rows, the statements of the participating student and then those of his parents were summarized in two short sentences. As a validation measure at this stage, we, the two researchers, created the results row (i.e., the third row) independently to draw conclusions from the pre- and post-HSEE summaries and then compared the results we arrived at. Figure 2 shows all the rows before the removal of the rows used to create the third row. The average number of words in each researcher's files that contained these matrices was about 15,000.

Cases	Moderators								
	Ability		Commitment		Feedback		Task Complexity	Situational Constraints	
	Q6	Q7	Q8	Q9	Q10	Q11	Q12	Q13	
PreHSEE Interview	case/parent	case/parent	case/parent	case/parent	case/parent	case/parent	case/parent	case/parent	case/parent
PostHSEE Interview	case/parent	case/parent	case/parent	case/parent	case/parent	case/parent	case/parent	case/parent	case/parent
Zeta	Conclusion	Conclusion	Conclusion						

Figure 2. The three rows that we used to draw a conclusion for each dyad (only the first case)

- b. After agreeing on the findings, we had taken from the statements of the dyads, we removed the pre-HSEE and post-HSEE lines, and by doing so, we could see the overall landscape of each dimension at a glance using seven separate matrices. Figure 3 illustrates how we saw the subdimension of the moderator variables when we removed the lines pre-HSEE and post-HSEE.

Cases	Moderators								
	Ability		Commitment		Feedback		Task Complexity	Situational Constraints	
	Q6	Q7	Q8	Q9	Q10	Q11	Q12	Q13	
Zeta	Conclusion	Conclusion	Conclusion	Conclusion	Conclusion	Conclusion	Conclusion	Conclusion	Conclusion
Delta	Conclusion	Conclusion	Conclusion	Conclusion	Conclusion	Conclusion	Conclusion	Conclusion	Conclusion
Beta	Conclusion	Conclusion	Conclusion	Conclusion	Conclusion	Conclusion	Conclusion	Conclusion	Conclusion

Figure 3. Multiple-Variable Case-Ordered and Conceptually Clustered Matrix (only the first three cases)

- c. Member Checking. We conducted a final round of phone calls with participants to confirm our case-level findings and verify our results against their assessments. We performed these confirmation calls, which lasted, on average, fifteen minutes each, only with participating students. If a participating student's statement contradicted his or her parent's statement, we read the conclusion we had created through abductive reasoning, and if the participating student did not object to it, we accepted that conclusion as correct. After the completion of each confirmation interview, we thanked the students for their participation and offered to help them shape their future academic plans if they needed it.
- d. We performed our cross-case analyses using the final forms of our matrices. We then reflected on the results of our cross-case analyses, discussed our conclusions, and wrote the findings section.

Credibility and Ethics

We conducted two rounds of semi-structured interviews with study participants. The second round of interviews helped us in two ways: First, we had completed the first round a month before the HSEE so as not to negatively impact our study participants; the second round allowed us to collect data on participating students' motivations immediately before the HSEE. Second, we had the opportunity to obtain participants' retrospective, and thus calmer, view of the motivational process they underwent. In addition, the second round served to cross-check the data we had collected in the first round of interviews.

As commonsense realist qualitative researchers (see Mark et al., 2000, for a detailed account of this stance), we, the two researchers, hold as axiomatic that there is an external world and its reality shaped by invisible underlying mechanisms. Our biases impede our efforts to access this reality. Considering the potential benefits of properly discovering and disclosing this external reality, it is nevertheless worthwhile to take steps -absolutely scientific and honestly limited- that will allow us to get closer to this

external reality. We need to explain at this point that as nonpositivist researchers, we also believe that using ostensibly objective language (writing in the third person singular/plural or passive voice) and objectifying study participants and researchers do not improve the validity of our study. We, the two researchers, conducted the present study, and we cannot deny its responsibility through disingenuous rhetoric. Finally, we should note that we, the authors of the present study, both have teaching experience in middle school English education and, as we mentioned earlier, were parents of an eighth-grade student at the time of data collection and analysis. These experiences allowed us to delve deeper into the phenomenon that is the subject of our study and to develop an emic perspective. However, we were aware that these experiences could also be the cause of our bias. Therefore, following our epistemological axioms, we had to take the following measures to improve the validity and reliability of our case study:

1. We diversified our study participants with respect to a number of variables that we thought might affect our findings.
2. We recruited a parent informant for each case to triangulate interview data with our cases.
3. We began data collection and analysis 4½ months before the HSEE and ended it six months after the HSEE; thus, our interaction with our study participants spanned ten months.
4. We used a clearly described theoretical framework for our data collection and analysis.
5. We conducted our analyses separately to see if we achieved thematic similarity.
6. We called participating students to confirm our case-level findings and benefited from their assessments of the accuracy of our analysis.

We would also like to address a delimitation of our study: We ended our data collection six months after the HSEE. We were able to extend the data collection phase until our participants' next high-stakes examination that is their university entrance examination. We chose not to do this because, in this case, we might have encountered many other confounding variables that would have affected our participants' test motivation, apart from the self-renewing motivational effect of the HSEE. However, there is a limitation that arises from this delimitation. Because we did not extend the data collection phase until our participants' next high-stakes examination, our findings of the self-renewing motivational effect of the HSEE remain limited to the self-reports of our cases and the perceptions of their informant parents.

Limitations

We must point out to our readers the three limitations of our research. We conducted the first round of interviews during the distance learning period caused by the pandemic. This may cause students to experience different psychological difficulties than in previous years. A second limitation of the study was that none of the students addressed the problem of not having the necessary opportunities to prepare for the HSEE. This means that our study does not reflect the motivational barriers that may be caused by families' lack of financial resources. The third limitation to consider in interpreting the results is that we attempted to overcome the lack of field observations by involving parents to cross-check the reports of our cases (i.e., eighth graders). However, our study is still based on the dyad perspective.

FINDINGS

Three of the participating students in our study (we will refer to them from now on as the "HPC trio" and add "HPCT" to their codes) achieved higher success in the HSEE than the other five participants, and they felt motivated to study to succeed in the university exam, consistent with the prediction of the HPC model. For other participating students, the opposite was the case. For example, Delta's score was only a few points lower than Gamma's, but he could not feel the joy of success and motivation to study that Gamma felt after the HSEE. Before we begin to present the findings of our research under the subdimensions of the HPC model, it is appropriate to provide some details about the HPC trio.

Alpha. With a discount of 80%, she was admitted to the science department of a private high school known for its successful students. She was pleased with her exam performance and looked forward to her university exam.

Beta. With a discount of 80%, he was admitted to the science department of a private high school known for its successful students. We felt that he earned his success through his high cognitive potential rather than through hard work. He did not rate his HSEE score as a great success because he believed his potential was far beyond that. However, he was also aware that he had achieved an obvious success. Since he discovered his potential during the HSEE process, he would like to achieve even greater success in the university exam, this time through hard work.

Gamma. She was admitted to a high-profile public high school. Her motivation development process was the typical example of the HPC model. She is quite indifferent to her cognitive potential because she has discovered that she can achieve her dreams as a diligent test taker and brims with self-confidence because of this discovery. She looks forward to taking the exams in the future.

Demands

In our study, the demands dimension consisted of three subdimensions: (1) challenge, (2) growth facilitating tasks, and (3) high self-efficacy. We obtained data on these subdimensions mainly from pre-HSEE interviews.

Challenge. There were only two participating students (Gamma and Alpha) who perceived HSEE as a challenge in which they had to succeed, and these two students had great test anxiety. Beta, the other member of the HPC trio –although he did not call the test a challenge– felt anxiety before the exam because his mother had a high expectation of success, meaning that Beta felt he had to succeed.

We noticed one factor that contributed to Alpha and Gamma's (but not Beta's) tendency to see the HSEE as a challenge: competitiveness. Alpha ("The competitive environment at the test preparation center was more enjoyable.") and Gamma ("To outdo the others and achieve something good in the future.") differed from the other six participating students in this characteristic. In contrast, Theta, for example, described the impact of competition on herself, saying, "For example, when I'm studying something, let's say I'm trying hard, but when I see someone doing better than me, it completely ruins my morale."

Growth Facilitating Task. All students except Delta stated that this exam gave them skills that will give them an advantage in future exams, such as a greater sense of responsibility and the ability to study regularly and hard. What caught our attention was that not a single participating student indicated that this exam gave them qualities such as a general culture, a broader perspective, or curiosity in learning. We believe that the HSEE has no meaning to the participating students other than access to a high school that will enable them to succeed in the university exam.

High Self-Efficacy. In our pre-HSEE interviews, we saw that the HPC trio and two other participating students who scored relatively high were anxious about the upcoming HSEE. Alpha had some sense of self-efficacy, but described her high level of anxiety by saying, "I got so nervous that I remember dropping my pen from my hand four or five times during a practice test." Gamma's sense of self-efficacy for the exam was low, and her anxiety was very high. Beta, on the other hand, had a strong sense of self-efficacy but also felt some anxiety because his mother had a high expectation of success from him. As a result, we did not see a relationship between high self-efficacy and the success of the participating students in the first high-stakes exam of their lives. On the other hand, as a result of the HSEE, we saw an increase in self-efficacy perception only in the HPC trio, and thanks to this increase, they entered the high-performance cycle.

Moderators

In our study, the moderators dimension consisted of five subdimensions: (1) ability, (2) commitment, (3) feedback, (4) task complexity, and (5) situational constraints. We obtained data on these subdimensions mainly from pre-HSEE interviews.

Ability. The participating students and their parents did not mention any problems related to intelligence and ability. They all tended to think that studying a lot would be the most important factor for success at HSEE.

Commitment. Alpha and Gamma had long dreamed of the success of the HSEE and were able to dedicate themselves to this goal and organize their daily lives accordingly. In contrast, none of the other six participating students had long dreamed of great success in the exam, nor had they dedicated themselves to this goal. For Eta, the only goal of achieving a high score on the HSEE was "a computer and a proper cell phone," which his family would give him as a reward. Beta, the other member of the trio, showed such commitment to the HSEE in part, not entirely, but he realized that he could do more when he achieved high success in the exam thanks to his high intellect. At this point, one possibility occurred to us: an achievement made can trigger a desire to achieve a higher level of success –this time by putting in effort– even if one does not invest much emotional and behavioral commitment to that achievement.

Feedback. All participants indicated that they were able to get the feedback they needed from their teachers or parents on the appropriateness of their work pace and methods.

Task Complexity. Six of the eight participating students, including the HPC trio, said they were familiar with the upcoming HSEE thanks to the practice tests they had taken during the year they were preparing for the exam. Epsilon and Theta talked about the problems of not being able to adapt to the next generation of math questions.

Situational Constraints. None of the participating students expressed that they did not have the opportunities they needed to be successful at HSEE. Participating students expressed a number of barriers that may have affected their success, but we believe that dedication is the critical factor, and these barriers were not of the kind that a student who is fully committed to her HSEE goal cannot overcome. In fact, participating students also tended to view their motivation to study as the most important factor and did not need to mention these barriers unless we asked about them.

Mediators

In our study, the mediators dimension consisted of four subdimensions: (1) direction, (2) effort, (3) persistence, and (4) task-specific strategies. We obtained data on these subdimensions mainly from pre-HSEE interviews.

Direction. Our cross-case analysis clearly showed that the four students (HPC trio and Delta) who aligned their daily lives with the exam and were able to turn away from non-goal relevant activities were able to achieve high scores, although none of them were happy with this situation. We also saw that the extent to which the participating student can tolerate being restricted in her favorable non-goal relevant activities was also an important factor. Gamma and Alpha had this tolerance. Alpha recalled, "Whenever I asked for something, they said 'after HSEE.' It was hard for me to be restricted in reading books. Still, I'm grateful to my family for that."

Effort. Our findings showed that all participating students studied much more in the year of exam preparation than in the years before the exam. Six months after the HSEE, Eta, who obviously does not like to study, illustrated this trend by saying, "If I'd known I wouldn't take the exam, I wouldn't have studied as much as I did in eighth grade. I'm not studying again right now."

However, the level of difficulty varied from student to student. Some began to struggle over 300 questions, but others began to feel that strain with as few as 100 questions (participating students and parents tended to express daily study with the number of questions solved). Epsilon described her efforts by saying, "I am not a person who can study much; I could solve at most 100 questions, which is the maximum. I can't even remember when I did that. I knew it was a mistake, but I couldn't fix it." In contrast, Gamma's father described his daughter's efforts by saying, "... For example, she never dropped below 250 questions a day. Other than those 250 questions, I had her complete a practice test every day." Alpha and Gamma clearly put in more effort than the other participating students.

Persistence. Our findings suggested that the participating students who showed persistence during the HSEE preparation were Alpha and Gamma. Beta, the other member of the trio, seems to have achieved his success through some degree of persistence, though not entirely. When we looked at the other participating students, we found that although the other three students, who had lower scores, showed no persistence at all, Epsilon and Delta, who had relatively higher HSEE scores, showed some degree of persistence.

Task-Specific Strategies. We have not seen any effects of the participating students' tendencies on whether they developed task-specific strategies on the other subdimensions.

Before turning to the reward dimensions, we should note that we have seen that the factors determining the HSEE performance of participating students are their ability to sit and study for long periods of time, to spread preparation throughout the day, and to endure withdrawal from activities other than exam preparation, and to maintain this pace consistently for a year. These behaviors manifest themselves in the subdimensions of commitment, effort, direction, and persistence.

Contingent Rewards

In our study, the contingent (score-based) rewards dimension consisted of two subdimensions: (1) internal contingent rewards and (2) external contingent rewards. We obtained data on these subdimensions from post-HSEE interviews.

Internal Contingent. Of the HPC trio, we observed that only Gamma and Alpha felt a distinct sense of pride in their performance. Alpha said, "I felt proud when I realized that I had achieved a good result. Without this feeling, there's nothing left." We saw that the expectation of the participating student was decisive in this subdimension of the HPC model. Beta, for example, did not feel the pride and sense of achievement because, believing in his great potential, he had hoped for a very high score, but the three participating students who scored lower than him were able to experience this feeling, albeit to some extent.

External Contingent. We did not see any relationship between participating students' feelings of pride and achievement based on their HSEE scores and their assessment of whether the high school to which they were admitted would give them an advantage on the university exam or whether they entered the performance cycle. Even the students who did not feel pride and achievement based on their scores seemed satisfied with their high schools, except for only one student, Theta.

Noncontingent Rewards

This subdivision, whose data we obtained from post-HSEE interviews, is included in the HPC model as a dimension in itself, separate from the score-based rewards. We did not see any relation between the participating students' perceptions of their non-score-based rewards and whether they entered the performance cycle. Beta and Epsilon, who were not satisfied with their test scores, talked about their noncontingent (score-independent) rewards of HSEE. Alpha, on the other hand, said, "If I didn't get a good score, I'd say, 'So what did I learn from this!' and thought I had suffered a great loss." At this point, immediately after Alpha's statement about the "great loss," we should point out that the participating students were also aware that they were deprived of

development opportunities in other areas of interest because they had to prepare intensively for the exam. To give just one or two examples: They complained about not having time to read books (Alpha and Gamma), learn computer programming (Beta), or play basketball (Epsilon), and almost all participating students complained about not being able to spend time with their friends.

Before turning to the consequences subdimension, we must note that we have not seen any relationship between external contingent and noncontingent rewards and getting into the cycle. Only Alpha and Gamma felt the pride and sense of achievement, that is, the internal reward. Beta, the third member of the trio, discovered his potential, which can also be seen as a kind of intrinsic reward. This means that for the participating students, it was the intrinsic rewards that caused them to get into the cycle.

Consequences

In our study, the consequences dimension consists of two subdimensions: (1) commitment to the organization (we adopted this as the commitment to the exam system) and (2) willingness to accept future challenges. We obtained data on this subdimension from post-HSEE interviews.

Commitment to the Testing System. A striking finding of our study was that all participating students viewed the high school entrance exam as a necessary practice. Two of the participating students criticized the level of difficulty of the exam, and five students criticized that the exam did not take into account the students' abilities, but no one questioned the necessity of the exam. Gamma, who was the most diligent, persistent, and dedicated participant in our study, had a different perspective on this exam than any of the other participants. She saw the exam as a mechanism to achieve equity in access to qualified education:

I think that's good. Before I took HSEE, I wished that these exams didn't exist, that everyone could get into schools without exams, but now I think that without HSEE, the children of those in the upper ranks would get into good high schools, and we wouldn't. At least this test selects us. There's no unfairness here. It's fair.

Willingness to Accept Future Challenges. We found that after the HSEE experience, in the ninth grade, there were only three participating students who started planning to work hard and became more willing to take the upcoming (university) exam, and these were the students with the highest scores (the HPC trio). Although Beta did not score as highly as he had expected, he had achieved a significant high. So, his willingness to take his high score even higher by working even harder this time is in line with the basic logic of HPC.

The HSEE experience had no impact on three of the remaining five students. The experience had a diminishing effect on the goals of two students with relatively big dreams. Zeta summed it up well, "We have seen the difficulty of the exam. When we're little, we dream, we dream. I want to be an architect, I want to be a doctor; but when we learn how difficult these things are, we begin to shrink the goals."

We would like to point out one more thing: Delta, whom we did not include in the HPC trio, scored close to Gamma. Beta, whom we included in the HPC trio, was dissatisfied with his HSEE result, as was Delta. Why did we include Beta in the HPC trio and not Delta? We did it because Beta differs from Delta in one very important respect: Beta's dissatisfaction stemmed from the fact that he believed his score was below his potential, even though he had achieved a very high level of success. We attribute his dissatisfaction to the fact that his mother set the bar extremely high. The mother, a math teacher, complained that her son, who was in the top 2%, was not ambitious enough. She said, "He never had any desire to be in the 1% or to do all the questions in full. No, I am afraid he lacks that part. He's a laid-back kid." Beta did not speak negatively about his exam performance or the school he attended; he only spoke about exam questions he could not solve. Delta's assessment of his exam performance was more severe:

Aslı Özaslan: How did you manage to keep it up without giving up?

Delta: Actually, I did not manage to do it. I did not. I wish I had done it. Although I got into a science high school, I did not get into a good high school. This is the reason why I think like this.

For this reason, unlike Beta, Delta was not able to develop motivation for the university examination and stated that he had downgraded the university goals he had before the HSEE. According to HPC logic, one must first feel clear success to enter the performance cycle. Private high schools in Turkey attract students who score very highly in the HSEE with very high discount rates and, thanks to these students, advertise themselves as a school that has achieved great success in the university exam. Let us take a look at Beta's statement: "The private school I attend now gave me an 80% discount. I took 40% of that school's scholarship exam before the HSEE. They gave me double the discount." Beta realized that he was a student who was pursued by the private schools because he would succeed in the university exam and that his success was due to his exam preparation between the scholarship exam of this school and the HSEE. He was upset that he had gotten a few math questions wrong on the exam, but he was also aware that thanks to his current score, he was a student who was being pursued.

Our cross-case analysis revealed that there were only three participating students who became more willing to take the university exam after HSEE and made intensive study plans for the university exam beyond what was required by their schools and embarked on intensive study plans for the university exam. These three participating students, i.e., the HPC trio, were the ones with the highest HSEE scores in the research group. Based on our results, we can conclude that, just as the HPC model predicts, a high score on the HSEE may provide students with self-renewing test motivation.

In Table 1, in addition to the codes of the cases, you can see how high their test scores place them among the other cases. One of the dimensions of variation we felt was necessary in selecting participants was the teaching experience of the parents. This dimension of variation may appear to readers to have an impact on students' self-renewing test motivation. However, considering that Delta, who also had a teacher-parent, had no desire to tackle the subsequent high-stakes exam work, we can say that there is no direct relationship between having a teacher-parent and entering the performance cycle, and that this relationship can only be possible through the increase in self-efficacy that comes from feeling of clear success in the HSEE; therefore, this dimension of variation is not crucial for self-renewing motivation.

DISCUSSION AND IMPLICATIONS

A Turkish proverb says that "The beaten wrestler cannot get enough of wrestling." What is meant by this proverb is that people who are defeated feel compelled to continue the match to prove themselves. The HPC model asserts the opposite, that the victorious wrestler cannot get enough of wrestling. Our research has shown that the HPC model's prediction is more accurate, at least in the context of the HSEE. Three participating students whose self-efficacy perceptions increased as a result of the HSEE expressed a desire to begin preparing for the university exam, their next high-stakes exam.

The concept of self-efficacy is almost central to the logic of the HPC model. Our study confirms the accuracy of this understanding. Moreover, the results of our study show that, just as the model predicts, satisfaction is not the cause of high performance but the result of it. In HPC logic, satisfaction with rewards leads to commitment to the organization, and this commitment is considered a key variable because it leads people to set organizationally relevant goals (Latham, 2007). This is the reason why the model includes a satisfaction component. However, Latham et al. (2002) noted that additional research is needed to deepen "understanding of how the consequences of high performance affect satisfaction and subsequent organizational commitment." (p. 201). In the case of Gamma, we have seen that she made a great effort and was able to enter the high school of her choice, thanks to the examination system that protected her from injustice. Based on this result, we can say that high performance can promote trust in the organization (in our study, the central examination system) as a mechanism that ensures equity and the necessary environment for the development of self-efficacy perceptions and hope for the future.

Our results suggest that for participating students, intrinsic rewards were critical for entry into the high-performance cycle and that there were no discernible effects of external contingent and noncontingent rewards on entry into the cycle. This finding suggests that the extent to which the reward components of the model work depend on the context in which they are used; in some contexts, some reward components may be dysfunctional. However, the HPC literature does not provide a detailed interpretation of the meaning and functions of the three different reward factors included in the model.

Our research findings seem to contradict in a certain point the findings of Martin and Marsh (2006), who showed that five factors –control, confidence (self-efficacy), planning, low anxiety, and persistence– predict academic resilience. In our study, however, two members of the HPC trio (Alpha and Gamma) were the most diligent (and thus resilient) students, but they were also the ones who expressed the greatest anxiety. This contradictory conclusion may be due to the fact that Martin and Marsh (2006) conducted their study in an educational setting, but not in the context of high-stakes testing. This fact suggests that high-stakes testing is a separate dimension in education and leads to different internal experiences than the other dimensions. There is also another possibility: if we consider that trait (i.e., inherent) anxiety has been shown to be a significant predictor of TEOG (the predecessor version of high school entrance examination, which was implemented four years before the LGS) success (Çakır & Gazioglu, 2021) and grade point average (McEwan & Goldenberg, 1999), Alpha's mother's statement that "she is already a very anxious child" suggests that anxiety is not a problem in high-stakes exams and may even be an advantage. Thus, we would like to point out that although we recognize the value of simplicity in models to explain human behavior, we believe that future research focused on enabling the HPC model to account for personality differences such as anxiety and competitiveness can significantly increase its explanatory power. Latham and Locke's (2007) assessment that "Missing from the HPC is an emphasis on personality" (p. 292) suggests that the inventors of the model noticed this deficiency long before we did.

We believe that the HPC model does not go deep enough in explaining human motivation to explain why people need to set themselves bigger goals. After all the hardships, why does the HPC trio continue to work now, this time with a heartfelt desire? We cannot explain it simply by saying, "because they experienced an increase in self-efficacy." At this point, an explanation, for example, from Maslow's self-actualization or evolutionary psychology, can help us develop a much deeper understanding of

increasing human motivation. We recommend investigating psychological phenomena of increased self-efficacy and setting higher goals with designs such as phenomenology and phenomenography and using the results to deepen the perspective of the HPC model.

In the context of the meaning of the goal, we propose a recommendation: The goal set for students in the HSEE is a performance goal. Performance goals direct attention to intended outcomes, such as cost-related performance (Latham & Locke, 2018). However, there are also two other types of goals defined in the related literature: Behavioral goals, which focus on behaviors that lead to an intended outcome, such as behaviors that increase effectiveness, and learning goals, which include goals related to the acquisition of knowledge or skills, such as identifying effective strategies (Latham & Seijts, 2016). In the present study, the participating students—even those who did not achieve the score they wanted—were happy with acquiring the ability to study longer hours than in previous years and strengthen their academic skills. In other words, our participants enjoyed developing academic skills. We believe that this mastery orientation in students should not be overlooked. Çakır and Gazioglu (2021), in their study of variables predicting success in the TEOG test (the predecessor version of HSEE), found that students' mastery approach orientation (i.e. motivation to develop skills and competencies) is the strongest predictor of TEOG score, and, in relation to our argument here, they have presented this finding in support of a considerable number of field studies on mastery orientation showing that mastery orientation is highly beneficial to students' academic motivation. Given these benefits, we believe it is necessary to give students behavioral and learning goals rather than performance goals.

The aim of our study was to understand whether HSEE initiates a high-performance cycle. Therefore, we could not address the difficulties that students and their families suffered for at least a year. But even those who finally felt the pride and joy of success told us in detail about their anxiety, sadness, and developmental lag outside of their test-solving skills. This finding is consistent with the findings of Aydın and Yazıcı (2022) who, based on data from interviews with a group of Turkish secondary school teachers about the HSEE exam, found that some teachers believed that the HSEE exam increased anxiety and stress even in high-achieving students. Educational systems obsessed with high-stakes tests can cause students to fall behind in some developmental areas that are much more important than solving test questions. At this point, we would like to issue a warning: Locke and Latham (1990) have argued that the problem with the educational system in the United States is that students are expected to do much less than they are capable of and that the HPC model can be used to address the shortcomings of that system. We do not question the veracity of this claim. On the other hand, as researchers who know very well what a high-stakes exam is, we must express that the HPC model should be used for the holistic development of students so that they can demonstrate their potential. Neither Locke and Latham's recommendation above nor our study should be taken as a call to use the HPC model in high-stakes exams.

In conclusion, our research findings on the effects of HSEE on participating students' test motivation are consistent with the underlying assumption of the HPC model that increased self-efficacy resulting from the achievement of a specific and difficult goal has a self-renewing effect. In the context of a high-stakes examination, the HPC model is explanatory, but with some of the modifications we recommend, its explanatory power can be enhanced. We hope that using the HPC model to achieve the behavioral and learning goals of self-development rather than the performance goals of high-stakes exams can jump-start students' motivation to realize their potential throughout their lives.

Disclosure Statement

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Statements of publication ethics

We hereby declare that the study has no unethical issues and that research and publication ethics have been carefully followed.

Researchers' contribution rate

The study was conducted and reported with equal collaboration of the researchers.

Ethics Committee Approval Information

Data collection began after (1) the Ethics Committee of Necmettin Erbakan University gave its approval (Number: 2021/133), (2) the Provincial Directorate of National Education and two private schools gave their approval, and (3) parents signed informed consent and (4) parental consent after being informed of their rights as participants in the present study. Participating students were also informed of their rights prior to the interviews.

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