MASTERARBEIT | MASTER'S THESIS

Titel | Title

Testing the Conscientiousness x Interest Compensation Model: How Long Do People Persist in a Never-Ending Experiment?

verfasst von | submitted by

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angestrebter akademischer Grad | in partial fulfilment of the requirements for the degree of

Master of Science (MSc)

Wien | Vienna, 2025

Studienkennzahl lt. Studienblatt | Degree programme code as it appears on the student record sheet:	UA 066 840
Studienrichtung lt. Studienblatt | Degree programme as it appears on the student record sheet:	Masterstudium Psychologie
Betreut von | Supervisor:	Univ.-Prof. Dr. Veronika Job Sutnar

Zusammenfassung

Hintergrund: Frühere Studien zur Persistenz haben sich hauptsächlich auf abstrakte, langfristige Ziele, anstatt auf kontrollierte, spezifische Aufgaben konzentriert und haben dabei überwiegend die Persistenzdauer gemessen. Allerdings bedeutet längeres Durchhalten nicht immer eine höhere Produktivität. Diese Studie beschäftigt sich mit dem CONscientiousness × Interest Compensation (CONIC) Modell und untersucht, wie Persistenz – gemessen an der aufgewendeten Zeit und der Aufgabenleistung – durch Gewissenhaftigkeit und situationales Interesse beeinflusst wird und wie diese beiden Komponenten sich gegenseitig im Rahmen einer kontrollierten Aufgabe kompensieren.

Methoden: Skalen zur Gewissenhaftigkeit und zu situationalem Interesse wurden bearbeitet, bevor die TeilnehmerInnen eine nicht endende Stroop-Aufgabe absolvierten, die sie jederzeit beenden konnten. Die Verweildauer sowie die Leistung bei der Aufgabe wurden dabei gemessen und es wurde eine multiple Regressionsanalyse durchgeführt, um festzustellen, wie viel der Varianz der Persistenz durch die Prädiktoren des Modells und den Interaktionsterm erklärt wird. Für jene Analyse wurde eine Stichprobe von N = 178 (*M* = 29,74 Jahre, *SD* = 11,62) verwendet.

Ergebnisse: Die Regressionsanalyse ergab lediglich eine minimale Erklärungskraft der Prädiktoren für Persistenz und andere leistungsbezogene Parameter. Keines der Modelle war signifikant ($R^2_{angepasst}$ Werte nahe null) und abweichend von den Annahmen wurden keine signifikanten Effekte von situationalem Interesse, Gewissenhaftigkeit oder ihrer Interaktion auf das Kriterium festgestellt.

Schlussfolgerung: Die Ergebnisse stützen die Annahmen des Modells nicht, was jedoch auf methodologische Faktoren wie eine geringe Stichprobengröße zurückzuführen sein könnte. Zukünftige Forschung sollte durchgeführt werden, da es sich hierbei um die erste Pilotuntersuchung handelt, die Aufgaben-Persistenz in einem querschnittlichen und aufgabenorientierten Kontext untersuchte.

Stichworte: *Persistenz, Selbstkontrolle, CONscientiousness × Interest Compensation-Modell, Gewissenhaftigkeit, Interesse, Stroop-Task*

Abstract

Introduction. Previous studies on persistence have primarily focused on abstract long-term goals rather than controlled, specific tasks and mainly measured persistence time, although persisting longer does not always equate to higher productivity. This research addresses the CONscientiousness × Interest Compensation (CONIC) model to assess how persistence, measured by time-on-task and task performance, is influenced by conscientiousness and interest and how these two constructs compensate for each other in terms of a controlled task.

Method. Scales on conscientiousness and situational interest had to be completed before participants took an infinite Stroop task they could end at any time. Time spent on the task and performance were measured and a multiple regression analysis was conducted in order to determine how much variance in persistence can be explained by the predictors of the model and their interaction term. A sample of $N = 178$ ($M = 29.74$ years, $SD = 11.62$) was used for this analysis.

Results. Regression analyses yielded minimal explanatory power of the predictors regarding persistence and other performance-related outcomes. All models revealed nonsignificant results ($R^2_{adjusted}$ values near zero) and diverging from the hypotheses, no significant effects of situational interest, conscientiousness, or their interaction on the criterion were observed.

Conclusion. The results did not support the model's assumptions, which, though, could be due to methodological factors such as small sample size. Future research should be conducted as this was the first pilot investigation to examine task-persistence in a controlled context.

Keywords: *persistence, self-control, CONscientiousness × Interest Compensation Model, conscientiousness, interest, Stroop Task*

Introduction

Imagine you are studying for a certification exam, requiring hundreds of hours of dedicated work. Every evening after a long day, you sit down with your books and notes, often feeling exhausted or overwhelmed. Not only is the material very complex, but progress also seems slow. Although you experience moments when the temptation to rest or pursue more enjoyable activities is strong, you persist, driven by the thought that performing well on this exam will significantly advance your job path. This scenario emphasizes the importance of persistence as a key component regarding self-control when managing demanding tasks in everyday life. The present study addresses the predictive value of personality traits and task related interest on persistence, with reference to the CONscientiousness x Interest Compensation Model.

Where does persistence originate and why should we care?

Self-control, functioning as the primary theme of various constructs in motivational research, is defined as "the ability to be in command of one's behavior […] and to restrain or inhibit one's impulses. In circumstances in which short-term gain is pitted against long-term greater gain, self-control is the ability to opt for the long-term outcome" (American Psychological Association, 2018). This skill facilitates resisting immediate temptations when striving for long-term goals (Barnes et al., 2007) and is affiliated with positive functioning, involving factors such as goal-setting or intrinsic motivation (Gordeeva et al., 2016).

Some aspects of self-control that have been investigated thoroughly are impulse control (Ainslie, 1975; Hofmann et al., 2009), including ego depletion (Vonasch et al., 2017; Baumeister & Vohs 2007; Inzlicht & Friese, 2019), and affect regulation. Persistence, though, is a not yet well-evaluated topic in psychology (Hagger et al., 2010; Duckworth et al., 2014).

According to the American Psychological Association (2018), persistence is officially defined as the "continuance or repetition of a particular behavior, process, or activity despite cessation of the initiating stimulus". Also, the APA refers to it as "the quality or state of maintaining a course of action or keeping at a task and finishing it despite the obstacles (such as opposition or discouragement) or the effort involved" (American Psychological Association, 2018). Persistence is portrayed as a multidimensional construct including facets such as stamina, ambition or conscientiousness (Howard & Crayne, 2019). In accordance with this, it is not very surprising that beneficial effects in multiple areas such as academic effort (Rieger

et al., 2022), entrepreneurial management (Zwilling, 2013) and general performance (Vollmeyer & Rheinberg, 2000; Grant, 2008) are observed.

Prior Research on Persistence

Primary psychological research on persistence dates back almost 100 years (Ryans, 1938). Since then, studies investigating the underlying factors of persistence aiming at identifying concrete traits and factors that influence the construct have been undertaken. Whereas maladaptive perfectionism, involving fear of failure and excessive self-criticism, can hinder persistence, adaptive perfectionism is defined by high standards and a significant desire for achievement, and therefore associated with greater persistence and increased performance (Stoeber & Otto, 2006).

Furthermore, individuals who believe in development of intelligence through effort demonstrate higher levels of persistence compared to those who view intelligence as static (Dweck, 2006). Also, Schunk & DiBenedetto (2021) demonstrated that self-efficacy is positively connected to persistence.

Persistence is commonly assessed through time-on-task. The underlying thought is that the earlier people disengage, the less persistent they are (Battle, 1965). Yet, measuring only time-on-task does neither inform about the behavior's effectiveness nor about maladaptive goal pursuit. Howard and Crayne (2019) dealt with this issue by investigating the maladaptive dimension of persistence: inappropriate persistence. As it wastes time and resources, this is – in contrast to persistence in general – portrayed as harmful and includes a behavior often observed in individuals with certain psychological disorders: continuing to pursue goals that are either unrewarding or even unattainable. This dimension closely aligns with the principle of an action crisis, a critical phase in goal pursuit where individuals experience internal conflict between persisting and considering disengagement (Brandstätter & Schüler, 2013). Brandstätter and Schüler (2013) conduct research on this phase, in which individuals immerse themselves in a cognitive cost-benefit analysis, weighing potential rewards of persisting against potential challenges and costs. In terms of that, sunk costs, which are the resources already invested in achieving a specific goal, can distort decision-making by causing individuals to overemphasize past investments rather than drawing their focus on future benefits. Similarly, the tendency to intensify efforts despite diminishing returns, which is called escalated commitment, plays a significant role when it comes to understanding why individuals continue

to pursue unachievable goals.Therefore, the authors state that while persistence can often be beneficial, there are times when continuing a task may not be advantageous (Brandstätter & Schüler, 2013).

A contemporary approach: the CONscientiousness × Interest Compensation (CONIC) Model

The CONscientiousness × Interest Compensation Model represents a recent persistence model that predicts how the interactive relationship of conscientiousness and personal interest is associated with persistence. A study by Rieger et al. (2022) demonstrated that high levels of conscientiousness and intrinsic interest are linked to greater persistence in making academic effort, since these traits strengthen goal pursuit. In predicting persistence outcomes, higher expressions of one component are described to compensate for lower expressions of the other one. The model assumes that if both variables were low, persistence would not occur. It proposes a framework for understanding how both, personality attributes and subjective interest, affect persistence (Rieger et al., 2022).

Conscientiousness

"Conscientiousness is defined as the propensity to follow socially prescribed norms for impulse control, to be goal directed, to plan, and to be able to delay gratification" (Roberts et al., 2009, p. 369). It is one of the five dimensions of the Big 5 Inventory (BFI, John, 1990). According to BFI-2, the major revision of the BFI, conscientiousness can be divided into its subcomponents: organization, productiveness and responsibility (Soto & John, 2017). The trait is associated with an individual's ability to pursue long-term goals and to regulate impulses (Roberts et al., 2009). High levels of conscientiousness have been shown to be linked to positive outcomes in various life domains, including academic and occupational success, as well as overall well-being (Judge & Bono, 2001). Additionally, conscientiousness is considered quite consistent from adolescence through adulthood which makes it one of the most stable personality traits over the lifespan (Caspi et al., 2005).

Interest

According to Hidi and Renninger (2006), interest is related to goals, attention, and learning. Literature distinguishes between two subcategories of interest: individual and situational interest (Rotgans, 2015).

Individual interest relates to a firmly stable evaluative orientation towards certain areas such as science or sports (Eccles & Wigfield, 2002) and a lasting tendency to engage again with particular content in the long run (Hidi & Renninger, 2006). This type of interest is developed gradually and reflects a persistent inclination to revisit and engage with specific topics (Rotgans, 2015).

Situational interest, though, is a transient form of interest which emerges in response to external stimuli and environmental factors like puzzles, real-world challenges or unexpected phenomena (Rotgans, 2015). Linnenbrink-Garcia et al. (2013) describe "catch" and "hold" as two key components of situational interest. "Catch" describes the exhibition of initial attention in an activity, while "hold" means to maintain engagement over time, advancing cognitive and emotional involvement. The authors found that situational interest significantly enhances student engagement and learning outcomes (Linnenbrink-Garcia et al., 2013). Immediate involvement and enjoyment is promoted, which leads to better retention and deeper understanding of material (Schiefele et al., 1992).

Compensation Effect

The Conscientiousness × Interest Compensation (CONIC) model describes how conscientiousness and individual interest interact and compensate for each other (Rieger et al., 2022). Song et al. (2020) explain the model's compensatory mechanism by highlighting that high levels of conscientiousness can offset lower levels of individual interest, and vice versa. This interaction, which is illustrated in Figure 1, implies that, for instance, a student with either high conscientiousness or high interest can compensate for the lack of the other when persistence is necessary. In 2022, Rieger et al. investigated how conscientiousness and individual interest influence students' persistence in academic effort. In a longitudinal study with high school students both components, individual interest and conscientiousness, independently predicted academic persistence. Over and above that, their combined effect was particularly strong. Whereas conscientiousness had a positive effect ($\beta = .30$) on academic effort, individual interest had an even stronger positive effect ($\beta = .45$). The interaction between conscientiousness and individual interest showed a combined effect of $\beta = .55$, suggesting that those students who were both highly conscientious and deeply interested in their studies would exhibit the greatest persistence levels. The study reports an overall R^2 value of .34 for the model (Rieger et al., 2022).

Current research

While most prior research on persistence has primarily centered on long-term goals (Feng & Papi, 2020; Allen, 1999; Wu et al., 2020) and relied on self-report, there is limited research on situational task persistence using specific tasks. Hence, this study aims to address this gap by examining task persistence under the CONIC model.

Since persisting longer does not always mean being more productive, it is useful to measure not just the time spent on a task, but also variables like the number of correct trials, correct trials per minute and performance compared to others. Therefore, this research considers a range of factors: time before disengagement, number of correct trials, and correct trials per minute.

The four core hypotheses are summarized in Table 1. Each hypothesis is tested with the four different dependent measures (time-on-task, performance, performance by time, and combined score).

Table 1

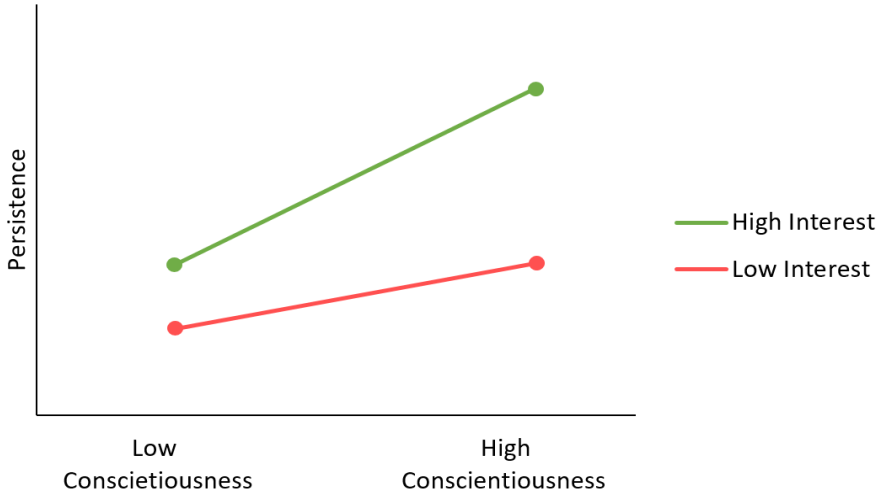
Summary of Hypotheses

ID	Test	Hypothesis
1	Main effect	Situational interest positively predicts persistence.
2	Main effect	Conscientiousness positively predicts persistence.
3[1]	Interaction	Situational interest and conscientiousness interact.
3a	Interaction	Minimal persistence is observed when situational interest and conscientiousness are low.
3b	Interaction	Maximal persistence is observed when situational interest and conscientiousness are high.

Note. [1]see figure 1 for hypothesized pattern.

Figure 1

Graphic Illustration of Predicted Pattern with Regard to the CONIC Model



Method

Sample

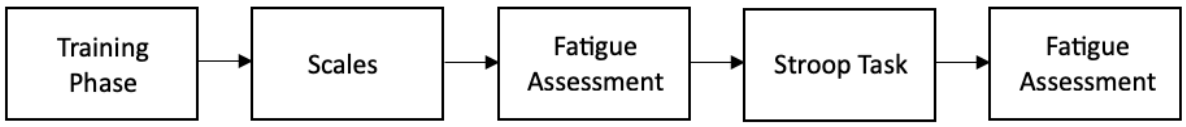
In this study a sample size of $N = 200$ was aimed for. Following Lakens (2022), this amount of participants is justified given the exploratory nature of this research. While a larger sample could increase power, this size is appropriate for gathering initial data in a new research area, where the goal is to identify patterns and refine hypotheses. As Lakens (2022) suggests, sample size justifications should be context-specific, balancing practical constraints and research objectives. The final sample was $N = 178$ with a mean age of 29.74 years ($SD = 11.62$) ranging from 14 to 78. Regarding gender, approximately 65% reported to identify as female, whereas 33% identified as male. Furthermore, about 0.6% reported a non-binary identity and almost 1.7% selected “prefer not to say”.

Procedure

The entire study was conducted online on participants’ private devices using SoSci Survey and lab.js. First, participants had to complete two demographic items asking about their sex and age. After that, they were introduced to a Stroop Task and could absolve a training session before completing a five item situational interest assessment with regard to the task they had just practiced. This scale was followed by a twelve item scale assessing their conscientiousness scores before participants completed a six item scale measuring their willpower belief (limited vs nonlimited). After that, they were required to complete a single-item fatigue assessment. Following this block of measures, the individuals absolved a Stroop task, with each correct response earning an entry into a lottery. The more correct answers they provided, the more entries they accumulated, increasing their chances of winning a 50-euro voucher, meaning that the longer participants engaged with the task and the more accurate their responses, the higher their chances of winning the lottery. The participants could end the task at any time by pressing “p” on their keyboard. Finally, the same fatigue item had to be completed once again. Afterwards, participants were thanked and they could disclose their e-mail addresses in order to be informed about a possible win of the voucher. Figure 2 functions as an illustration of the whole procedure.

Figure 2

Graphic Illustration of the Experimental Procedure



Measures

Conscientiousness Measure

The twelve conscientiousness items were extracted from the Big Five Inventory (BFI-2) (Soto & John, 2017). An example item is "I am efficient and get things done quickly." (1 = strongly disagree, 5 = strongly agree). Higher agreement led to a higher conscientiousness score. Negatively coded items were reversed prior to analysis. Cronbach's α ranged from .85 to .90 in the German version (Rammstedt et al., 2024).

Situational Interest Measure

Regarding situational interest, a German translation of five items of the Situational Interest Scale (SIS) was used (Chen et al., 1999). From each of the five dimensions (novelty, challenge, attention quality, instant enjoyment and exploration intention), the item with the highest factor loading was extracted in order to keep the scale concise due to time constraints. An example item is "It is an enjoyable activity to me" (Chen et al., 1999, p.160). Participants could express their agreement to the respective statements on a five-point likert scale from 1 (very untrue) to 5 (very true). Higher agreement scores represented greater situational interest (Chen et al., 1999).

Fatigue Scale

Participants were asked how tired, exhausted, or fatigued they were. They could answer that question using a slider with a span from 0 (not fatigued) to 100 (very fatigued) (Matthews et al., 2023).

Never-ending Stroop Task

The actual main task was a Stroop Task (Stroop, 1935). This widely used

neuropsychological assessment measures how well individuals can suppress interference when focusing on one aspect of a stimulus while ignoring conflicting information from another feature (Scarpina & Tagini, 2017). Participants were shown color words written in mismatched colors (e.g., the word "green" presented in blue ink) and had to focus on the color of the text while neglecting the word's meaning.

Before taking the actual task, participants first practiced without their results being noted in order to become familiar with the task. The task could be ended any time by the participants themselves by pressing the “p” button on their keyboards.

Persistence Scores

Persistence was quantified through the following four measures:

Time-on-task: This measure captured the total duration of task engagement, defined as the time elapsed from task initiation until the participant voluntarily disengaged in seconds. It served as an indicator of the participant’s overall task endurance.

Total number of correct trials: The cumulative number of accurate responses provided by the participant over the course of the task was recorded, serving as a measure of task performance and accuracy.

Correct trials per minute: This metric tracked the number of correct responses within consecutive one-minute intervals, enabling the assessment of the participant’s performance consistency throughout the task.

Persistence score: To create a comprehensive measure of persistence, a combined persistence score was developed by integrating the three scores above. Each variable was z-standardized to allow for comparability. The persistence score was then calculated using the following formula:

$$\text{Persistence Score} = (Z_{\text{Time}}) + (Z_{\text{Total Correct Trials}}) + (Z_{\text{Correct Trials per Minute}})$$

Willpower Belief Measure

Willpower beliefs were assessed using a German translation of a six item scale by Job et al. (2010). Participants could express their agreement to nonlimited willpower belief statements on a six-point likert scale which ranged from strongly disagree (1) to strongly agree (6). Higher values represented greater agreement with the nonlimited willpower belief. Also,

reliability was sufficient with $\alpha = .89$ (Job et al., 2010).

Data Analysis

17 people who persisted for less than a minute on the Stroop task were excluded from the analyses, which led to a final sample of $N = 178$. Furthermore, variables with missing values were noted and Stroop task times were converted into minutes.

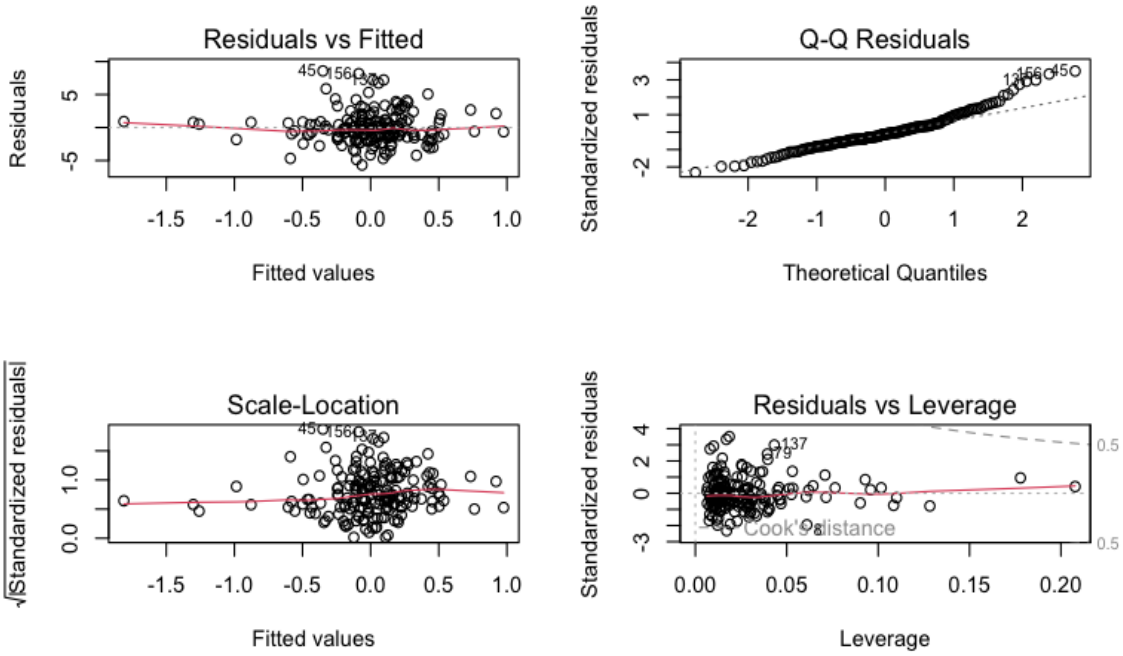
In order to test the hypotheses, an interaction analysis was conducted in R. In terms of that, a multiple regression analysis, including an interaction term was carried out following this formula:

$$\text{Persistence} = \beta_0 + \beta_1 \times \text{Interest} + \beta_2 \times \text{Conscientiousness} + \beta_3 \times (\text{Interest} \times \text{Conscientiousness}) + \varepsilon$$

Before the regression analysis was carried out, assumptions were tested. Multicollinearity was assessed using Variance Inflation Factor (VIF) values. High VIF values were noted but justified due to interaction terms. Homoscedasticity was tested using the Breusch-Pagan test and results indicated no significant violation ($p = .46$). Normality of residuals was evaluated using the Shapiro-Wilk test, revealing slight deviations from normality at extreme points ($W = .95$, $p < .000$). Independence of residuals was verified through Durbin-Watson statistics, showing no significant autocorrelations ($p = .28$). Finally, outliers were examined using Cook's Distance, identifying seven influential data points. Despite minor deviations from the assumptions, the regression analysis was conducted as these deviations are unlikely to significantly affect the results given the robustness of linear regression to such violations, especially in larger sample sizes. Figure 3 portrays the diagnostic plots, evaluating key assumptions.

Figure 3

Diagnostic Plots for Assumption Checks



Note. The "Residuals vs. Fitted" plot shows no significant patterns, supporting linearity and homoscedasticity. The "Q-Q Residuals" plot reveals minor tail deviations, suggesting slight non-normality. The "Scale-Location" plot confirms consistent residual spread, and the "Residuals vs. Leverage" plot flags a few influential points with high leverage.

Results

Descriptive Statistics of Key Variables

Table 2 portrays the means and standard deviations for all independent and dependent variables. Regarding the conscientiousness scale, the minimum was 1.8 and the maximum was 5. Situational interest, though, showed a minimum of 1 and a maximum of 5 whereas willpower belief's minimum was 1.5 and its maximum was 6.

Table 2

Descriptives of Variables

Variable	Mean	SD
Conscientiousness	3.65	0.72
Situational interest	3.40	0.71
Willpower belief	3.90	0.96
Fatigue 1	45.23	27.11
Fatigue 2	48.59	27.24
Persistence score	0.00	2.46

Note. Descriptive statistics include means and standard deviations. Conscientiousness and situational interest scales ranged from 1 to 5 and willpower belief scale ranged from 1 to 6 with higher scores indicating a tendency towards the nonlimited willpower belief. Fatigue scores represent averages at two time points ranging from 1 to 100.

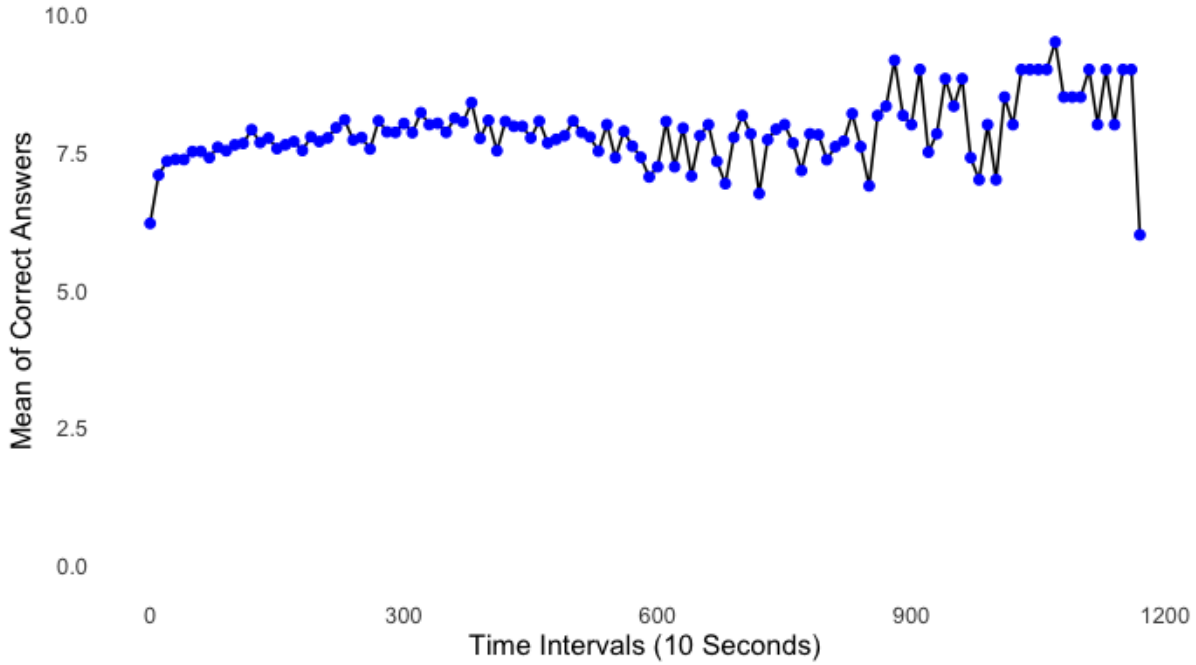
To examine changes in performance over time, the mean number of correct responses per 10-second interval was computed across all participants and visualized in Figure 4. This illustration displays the average number of correct responses for each time interval across the entire duration of the task.

Participants exhibited relatively consistent performance throughout the task, with a slight upward trend in the mean number of correct responses over time. The early intervals reflect slightly lower averages, while performance stabilizes in the middle intervals. In the final intervals, minor fluctuations can be observed with a performance downfall in the last ten

seconds.

Figure 4

Means of Correct Trials Across All Participants in 10-Second Intervals

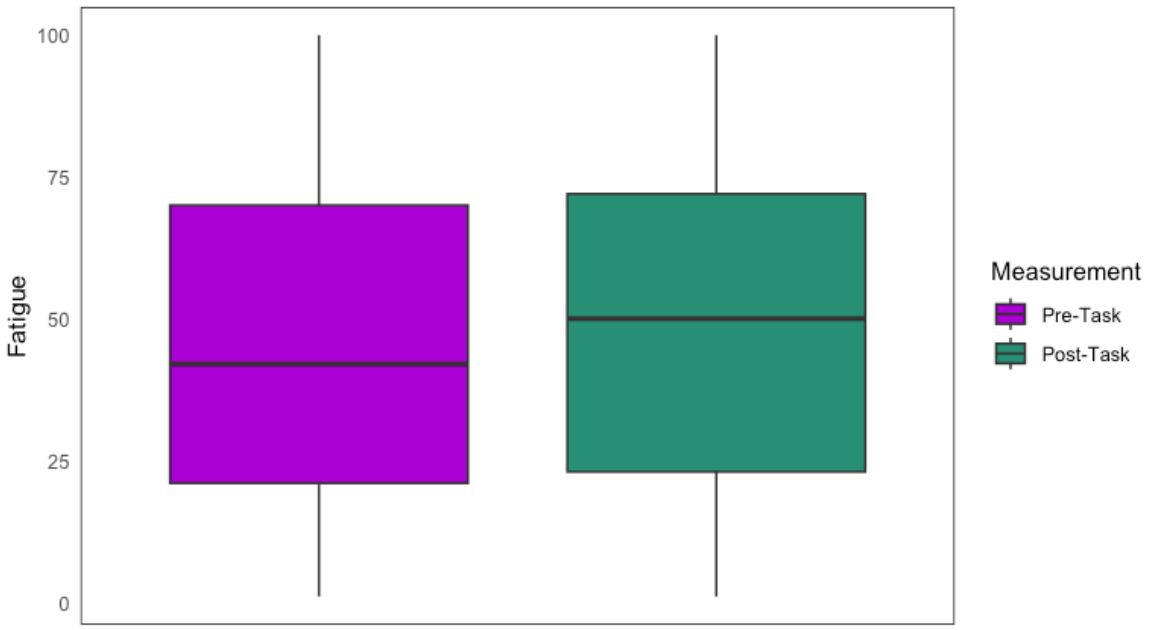


Note. X-axis denotes time in intervals of 10 seconds. Y-axis represents mean number of correct trials across all participants. Each point on the graph corresponds to mean number of correct answers within one 10-second interval.

With reference to fatigue measures, pre-task fatigue and post-task fatigue were compared to evaluate whether these two measures differed significantly from each other. It was expected that fatigue2's mean would be higher than fatigue1's. In order to check this assumption, a paired sample Welch's t-test was conducted. In alignment with prior assumptions, post-task fatigue was significantly higher than pre-task fatigue (t = -2.12, p = .04, d = 0.16, 95%-CI: [0.01, 0.31]). Figure 5 demonstrates the difference between fatigue measures in two boxplot diagrams.

Figure 5

Boxplots of Fatigue Measures



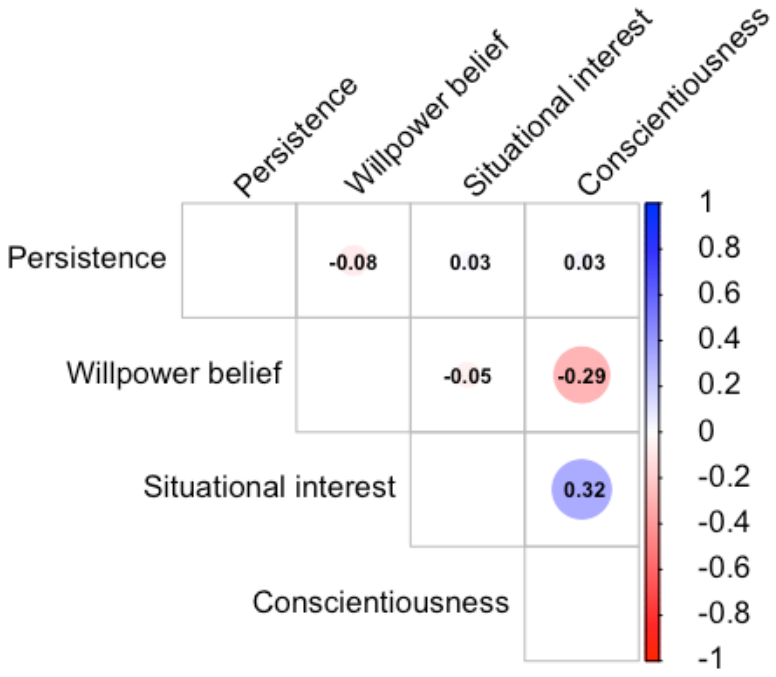
Note. Fatigue was reported using a slider ranging from 0 (not fatigued) to 100 (very fatigued).

Correlation Analysis

In order to assess the relationships between the variables of interest, a Pearson correlation analysis was conducted. Willpower belief and conscientiousness showed small negative correlations (r = -.29) and situational interest and conscientiousness correlated negatively with only a small correlation coefficient of r = .32. All of the predictors showed only negligibly small correlations with the dependent variable. The results are presented in the following correlation matrix (Figure 6).

Figure 6

Correlation Matrix



Note. Pearson correlation coefficients for relationships between persistence score, willpower belief, situational interest and conscientiousness. Brighter colors and bigger circles represent stronger correlations. Blue represents positive correlations and red implies negative correlations.

Hypotheses Testing

Two sets of regression analyses were conducted evaluating the predictive power of different predictors on all of the measured performance outcomes, on the one hand, and specifically on persistence score, on the other hand, in order to test the hypothesis.

Predicting Performance Outcomes

A multiple linear regression analysis assessing the predictive power of the independent CONIC-model variables situational interest, conscientiousness and the interaction term on four performance-related outcomes: time on task ("Time"), number of correct trials ("Performance"), performance per minute ("Performance/minute") and persistence score ("Score") was carried out. None of the predictors demonstrated statistically significant relationships with any of the performance outcomes and the adjusted R^2 values across all models were near zero, indicating that the predictors accounted for little to no

variance in performance outcomes. Table 3 displays the beta coefficients and adjusted R^2 values of all predictors and outcome variables included in this analysis.

Table 3

Regression Results Using Independent Variables as Criteria & CONIC-Variables as Predictors

Predictors	Time	Performance	Performance/minute	Score
Interest	.02	.05	-.01	.03
Conscientiousness	.06	.04	-.03	.03
Interest * Conscientiousness	.03	.04	-.03	.08
$R^2_{adjusted}$	- .00	-.00	-.01	-.00

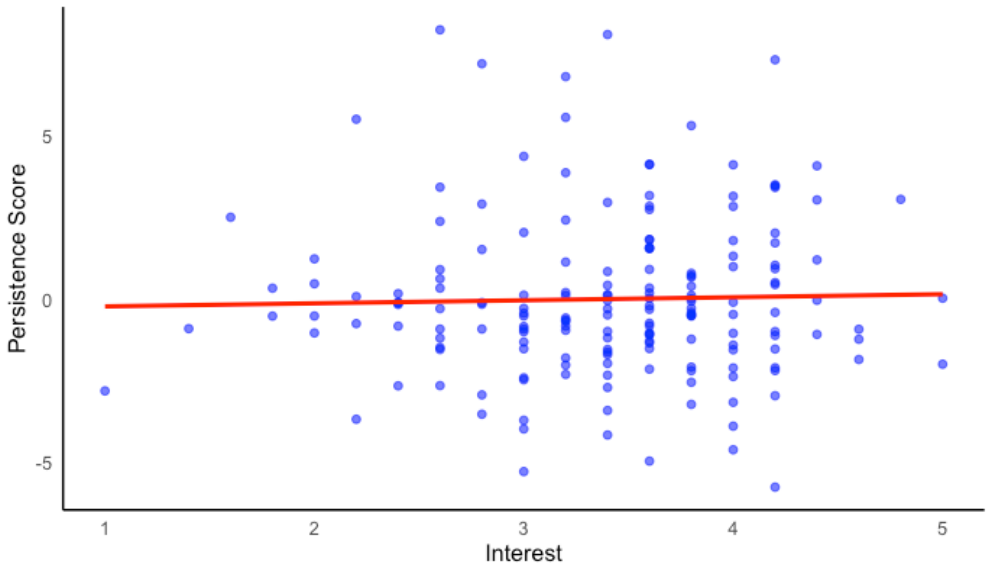
Note. Standardized beta coefficients (β) are reported. None of the p-values for the predictors reached the traditional significance threshold ($p < .05$). Adjusted R^2 values indicate the proportion of variance explained, accounting for model complexity.

Hypothesis 1 - Situational Interest Positively Predicts Persistence

The first hypothesis assumed a positive predictive effect of the independent variable situational interest on the dependent variable persistence score. Contrary to this assumption, the relationship was nonsignificant and the hypothesis is therefore not supported ($\beta = .03$, $R^2 = -.00$). Also, the effects on the other performance related outcomes were negligibly small with $\beta = .02$, $R^2 = -.01$ for time on task, $\beta = .05$, $R^2 = -.00$ for number of correct trials and $\beta = -.00$, $R^2 = -.01$ for number of correct trials per minute. Figure 7 portrays the relationship in a graphic way.

Figure 7

Relationship Between Interest and Peristence Score

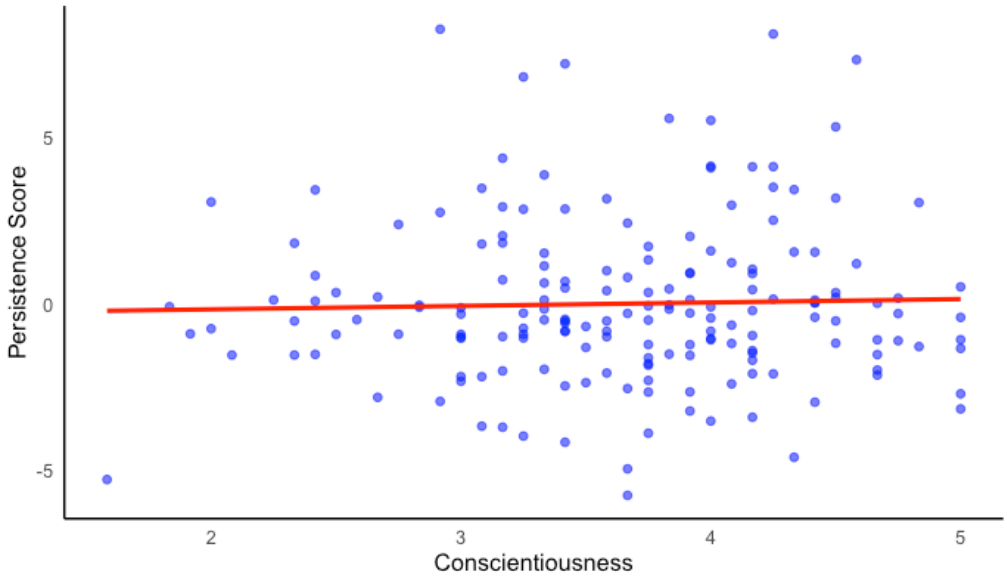


Hypothesis 2 - Conscientiousness Positively Predicts Persistence

As demonstrated in Figure 8, the second hypothesis - assuming a positive predictive effect of conscientiousness on persistence score - could not be supported either since the effect was nonsignificant and only minimal (β = 0.03, R^2 = -.00). In alignment with that, the effects on the three other outcome variables time on task (β = .06, R^2 = -.00), number of correct trials (β = .04, R^2 = -.00) and number of correct trials per minute (β = -.02, R^2 = -.00) could also not support the assumption of significant effects.

Figure 8

Relationship Between Conscientiousness and Peristence Score

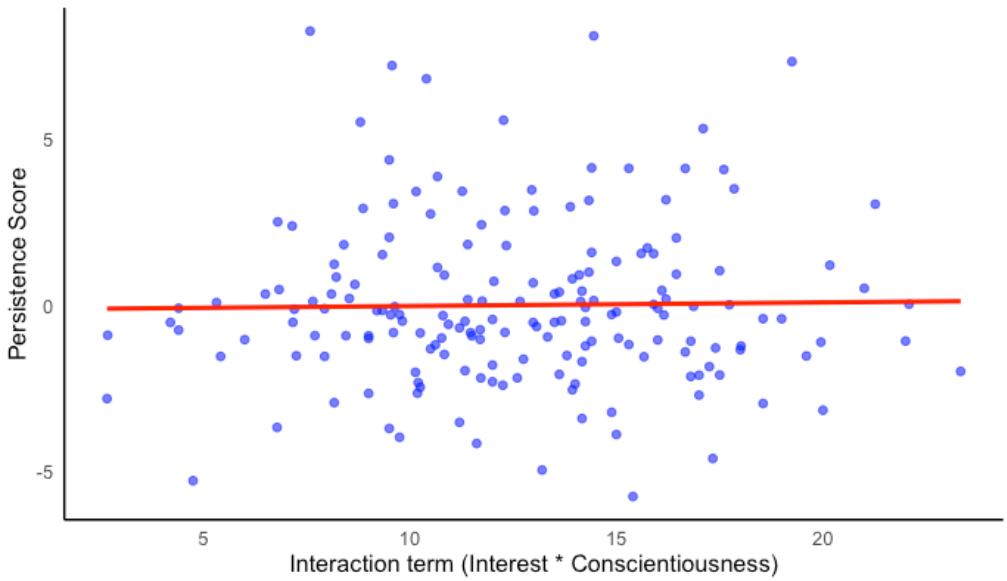


Hypotheses 3, 3a and 3b - Interaction Effect of Conscientiousness and Interest on Persistence

Hypothesis 3 presumes an interaction effect between conscientiousness and interest. Pearson's correlation coefficient of r = .32, though, indicated only minimal correlations between the two variables and, as displayed in Figure 9, there was no significant effect of the interaction term on the criterion persistence score (β = .02, R^2 = -.01). Furthermore, no significant effects on the other performance related outcomes time on task (β = .03, R^2 = -.00), number of correct trials (β = .04, R^2 = -.00) and number of correct trials per minute (b = -.03, R^2 = -.00) could be found.

Figure 9

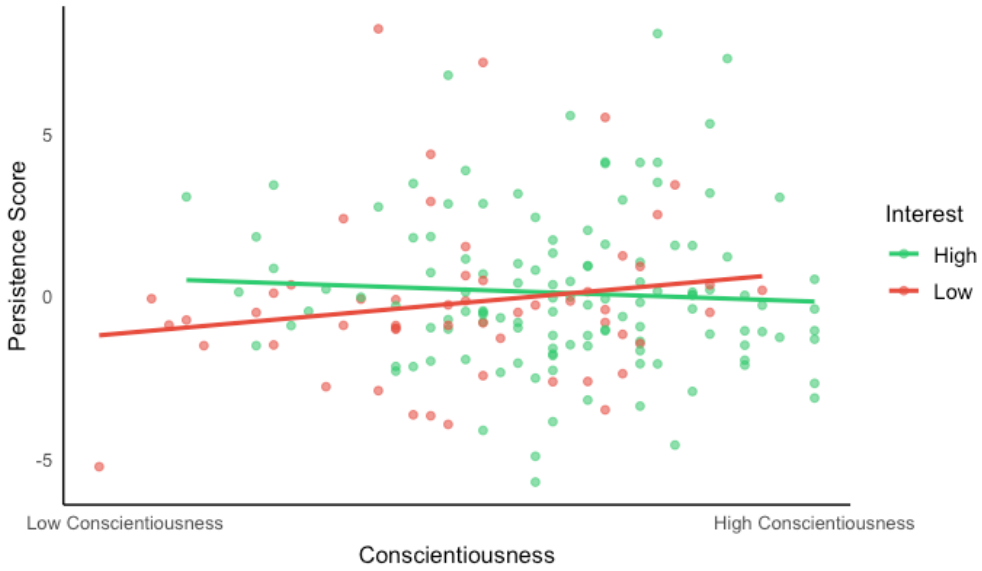
Relationship Between Interaction Term and Peristence Score.



The two additional interaction hypotheses assuming minimal persistence to be observed when situational interest and conscientiousness are low (3a) and maximal persistence to be observed when situational interest and conscientiousness are high (3b), were not supported as the interaction effect between situational interest and conscientiousness did not exhibit the expected pattern illustrated in Figure 1, but instead followed the pattern displayed in Figure 10. The slopes for both "High Interest" and "Low Interest" conditions are nearly flat across levels of conscientiousness, indicating no notable interaction effect on persistence scores. While the "High Interest" condition exhibits a slight positive trend, the differences between the two lines remain nonsignificant.

Figure 10

Interest's and Conscientiousness's Interaction Effect on Persistence



Adding Willpower Beliefs to Predict Persistence Score

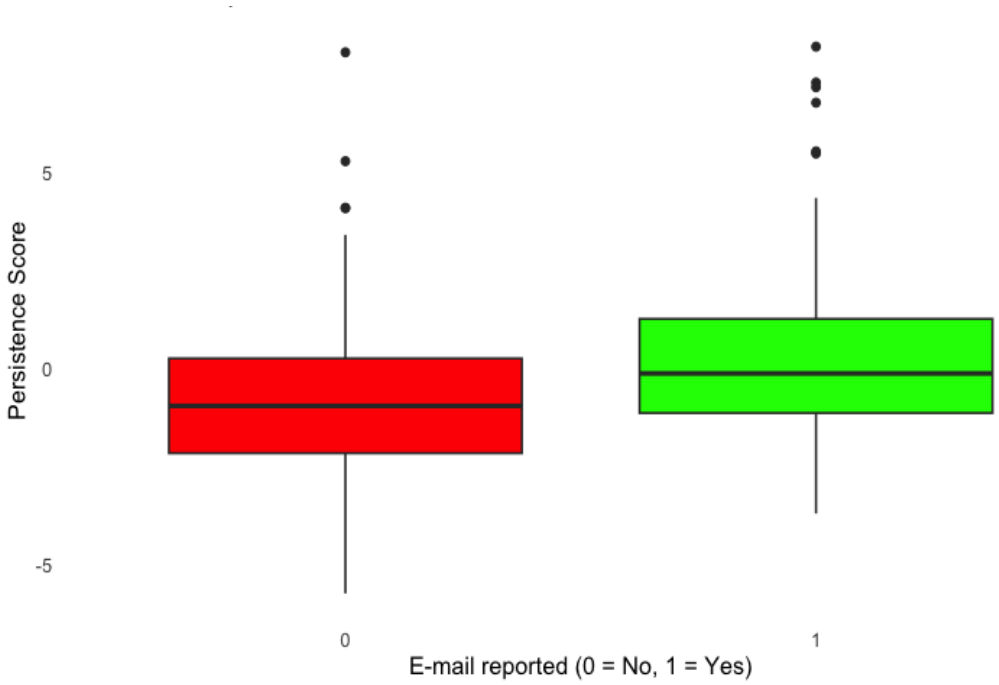
Furthermore, a multiple regression analysis that used persistence score as the criterion and included willpower belief as an additional independent variable was executed. Willpower belief showed a nonsignificant relationship (β = -.08, 95%-CI: [-.60, .20]) with persistence score and the model's overall adjusted R^2 was .02 (95%-CI: [.00, .05]), suggesting that the predictors explained only 2% of the variance in the persistence score. Finally, p-values were all nonsignificant ($p > .05$).

Exploratory Analyses

Since no significant interactions were found, an exploratory analysis investigating whether those people who had reported an e-mail address and those who had not disclosed one was conducted. Regarding this pattern, a Welch's t-test was computed, comparing the mean persistence scores of those people who had disclosed an e-mail address and those who had not. The group that had reported an e-mail address, reached significantly higher persistence scores than the one who had not reported one (t = -2.1, p = .04, d = 0.37, 95%-CI: [0.05, 0.68]). Figure 12 portrays the difference in persistence scores in two separate boxplots, one for each group.

Figure 12

Boxplots of Group Differences Regarding E-Mail Disclosure



Note. Mean in persistence score of email disclosed group: 0.3 (SD = 2.3). Mean in persistence score of no email disclosure group: -0.6 (SD = 2.7).

Discussion

Summary

The current research examined the roles of conscientiousness, situational interest and their interaction in predicting task persistence in terms of a never-ending Stroop task. With regard to the Conscientiousness x Interest Compensation (CONIC-) model, the independent and combined compensatory effects of these predictors were assessed. Contrary to the expectations, the findings did not support the theory. Neither conscientiousness nor situational interest, alone or in interaction, significantly predicted persistence, questioning the explanatory strength of the CONIC model in this context.

Challenging the CONIC Model: Context Matters for Persistence

Not only do the results of this study diverge from the predictions of the CONIC model, but they also stand in contrast to earlier research findings (Rieger et al., 2022; Song et al., 2020). The CONIC model assumes a compensatory relationship between conscientiousness and individual interest, meaning that high levels of one component can offset low levels of the other one. However, this study was unable to find any significant predictive effects of conscientiousness, situational interest, or their interaction on task persistence. Regarding predictions of persistence across varying contexts, these findings raise questions about the reliability of the compensatory mechanism outlined by the CONIC model.

Nevertheless, the inability to support the hypotheses in this study does not necessarily indicate that no relationship exists. Rather, the lack of significant findings may be due to certain limitations and methodological factors, especially considering the exploratory nature of this pilot study, which tested the model in the context of task persistence for the first time.

Firstly, unlike prior studies that drew their focus on intrinsic or individual interest (e.g., Rieger et al., 2022), this study assessed situational interest – a temporary form of engagement initiated by specific environmental factors (Rotgans, 2015). While the temporary and context-dependent nature of situational interest may impact the stability and enduring qualities of individual interest, which previous studies have shown to be efficient in compensating for low conscientiousness (Rieger et al., 2022), this study deals with a more

practical dimension of task-related behavior. Particularly, it represents the first valid test of the Conscientiousness × Interest Compensation (CONIC) model addressing actual task performance. The incorporation of a specific task facilitates the representativeness and generalizability to everyday scenarios that require persistence. Instead of primarily focusing on abstract processes, such as completing a degree over a longer period of time, this study concentrates on everyday activities, making it more relatable to private obligations or tasks in work settings. Secondly, in contrast to the longitudinal design that Rieger et al. (2022) used in their study in order to examine persistence over an extended period, this research uses a cross-sectional design. Also, it is the first to specifically test the Conscientiousness × Interest Compensation (CONIC) model exclusively in relation to persistence aiming at examining task persistence as a distinct construct, rather than focusing on broader constructs of overall performance or self-control (Rieger et al., 2022; Song et al., 2020). Lastly, this study was the first to control for inappropriate or maladaptive persistence (Brandstätter & Schüler, 2013; Howard & Crayne, 2019) since it measured persistence not only by time-on-task (Rieger et al., 2022), but also included performance metrics such as the number of correct trials.

Limitations and Practical Implications Regarding Future Research

This study holds some limitations which especially need to be taken into consideration when future studies within the same theoretical framework are conducted. First of all, an important limitation is the small sample of only $N = 178$. Moreover, a significant difference in people disclosing an e-mail address and those not reporting one was found. Regarding this, it can be assumed that differences in the extrinsic motivational effectiveness of the voucher across people might have occurred. This exploratory finding suggests that, especially in low-reward contexts or when intrinsic motivators like interest are absent, high external motivators, such as incentives or gamified elements are necessary. Finally, there is no standardized scale for situational interest. The study extracted only five items with highest factor loadings of the Situational Interest Scale (SIS) by Chen et al. (1999) in order to ensure that the questionnaires remain concise and manageable for participants, which was important to minimize fatigue and maintain engagement. However, by narrowing the scale's scope, potentially limiting its ability to capture the full range of situational interest and reducing its sensitivity to individual differences, this decision may have negatively impacted the results.

Building on this exploratory research, it would be highly valuable to conduct further

studies since persistence remains a not very well investigated construct, which is, though, connected to positive traits such as stamina and ambition (Howard & Crayne, 2019). Its positive effects in domains such as academics (Rieger et al., 2022), entrepreneurial management (Zwilling, 2013), and general performance (Vollmeyer & Rheinberg, 2000; Grant, 2008) highlight the benefits of conducting more research addressing the limitations, utilizing more diverse and representative samples and taking extrinsic motivators into account.

Conclusion

In summary, this study tested the (compensatory) relationship between situational interest, conscientiousness, and task persistence in terms of the Conscientiousness x Interest Compensation (CONIC-) model. Although the findings did not confirm the hypotheses and do not support the model's assumptions, this does not necessarily imply that the model is invalid or cannot be confirmed, as this study functioned as a pilot investigation testing the pattern in a cross-sectional, task-oriented way for the first time and results may have been influenced by methodological or experimental factors. Besides the need for larger sample sizes, exploratory findings suggest that when conducting research on persistence, a stronger emphasis on external motivators is required. Taking persistence's positive effects in academics, management and general performance into account, further studies on this construct should be performed to investigate and test the model in different methodological settings.

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