How Does a Peer Mentor's Socially Congruent Teaching Style Influence Student's

Academic Engagement: A Moderated Mediation Analysis

Antje Janshen

S3660273

Department of Psychology, University of Groningen

PSB3E-BT15: Bachelor Thesis

Supervisor: Dr. Simon Dalley

Second evaluator: Ana Figueiredo Leal, Msc

In collaboration with: Yara Alfattouhi Aljundi, Adrian Dedinca, Tiitu Salmi

A thesis is an aptitude test for students. The approval of the thesis is proof that the student has sufficient research and reporting skills to graduate, but does not guarantee the quality of the research and the results of the research as such, and the thesis is therefore not necessarily suitable to be used as an academic source to refer to. If you would like to know more about the research discussed in this thesis and any publications based on it, to which you could refer, please contact the supervisor mentioned.

Abstract

Peer mentoring has been proposed to have beneficial effects on the academic engagement of students. While the peer mentor's socially congruent teaching style has been proposed to explain this effect, little research has examined how such congruence exerts its effects on student engagement. Using Self-Determination Theory, the present study predicts, firstly, that the relationship between social congruence and academic engagement is mediated by perceived trust in the peer mentor across different levels of attachment anxiety. Secondly, it is predicted that this mediation pathway is attenuated with increasing levels of attachment anxiety. Ninety-six first-year psychology students, who currently take part in a course implementing the peer mentoring system, were recruited via convenience sampling and filled out an online survey. Bootstrap analysis revealed that perceived trust in the peer mentor did not mediate the relationship between social congruence and students' academic engagement across different levels of attachment anxiety. However, a significant main effect of social congruence on academic engagement was found. Moreover, a significant interaction effect was found such that students higher in attachment anxiety did not demonstrate as much perceived trust in the peer mentor as students lower in attachment anxiety. We conclude that social congruence is a consistent predictor of academic engagement, which makes peer mentoring an interesting concept to incorporate into the curriculum. Future research should clarify the role of trust and investigate different potential facilitators of social congruence, such as liking or respect, as well as establish the role of peers in achieving higher academic engagement.

Keywords: peer mentoring, social congruence, trust, self-determination theory, attachment anxiety

How Does a Peer Mentor's Socially Congruent Teaching Style Influence Student's

Academic Engagement: A Moderated Mediation Analysis

Peer mentoring, in which a more experienced student functions as a source of academic and social support to other students, has been shown to have positive effects on the academic engagement of students (Bowman-Perrott et al., 2014; Hodgson et al., 2013; Sinclair et al., 2019). Previous research has suggested that this positive impact is related to the peer mentors' greater social congruence with students (Loda et al., 2020). However, little research has explored which psychological mechanisms underpin the positive influence of social congruence. Recent theory and research suggest that interpersonal trust is not only an important mechanism through which teachers influence student engagement (Leighton et al., 2017; Amemiya et al., 2019) but that it may be facilitated through a socially congruent teaching style (Loda et al., 2020). Accordingly, the primary aim of this study is to elucidate a process by which perceived trust in the peer mentor can mediate the relationship between a peer mentor's socially congruent teaching style and their student's academic engagement. A secondary aim is to examine whether attachment anxiety, a variable associated with lower interpersonal trust (Simpson et al., 1999; Hazan & Shaver, 1987; Bao et al., 2022), can attenuate the mediating effect of perceived trust in the peer mentor on academic engagement.

Social congruence is defined as sharing similar social roles (Lockspeiser et al., 2006). Thus, it can be argued that students and peer mentors are socially congruent since they share the social role of being a student. Peer mentors demonstrate social congruence by showing genuine interest in the student's life and academic challenges (Schmidt & Moust, 1995). A trusting relationship with a peer who is no authority figure might promote self-disclosure of problems and misunderstandings in class, enabling the peer mentor to counteract these misunderstandings (Topping, 2005). Sharing social congruence with the student enables the peer mentor to feel more empathetic toward the student's difficulties, challenges, and

expectations (Lockspeiser et al., 2006). Hence, peer mentoring might represent a powerful tool for enhancing the learning experience of students (Loda et al., 2020). Previous research has shown that because of high social congruence between students and peer mentors, students feel more comfortable taking intellectual risks and, therefore, participate more in class (Loda et al., 2019). On a theoretical level, peer mentors and students share greater social congruence than faculty mentors and students because faculty mentors occupy a role of authority that clearly differentiates them from their students (Pomeroy, 1999). Therefore, students might not build a trusting relationship with the faculty mentor leading to less self-disclosure in class (Topping, 2005). Loda et al. (2020) completed a qualitative analysis of social congruence in a peer mentoring context in which they conducted semi-structured interviews with students, peer mentors, and lecturers. They established that social congruence fosters a trusting relationship between student and peer mentor (Loda et al., 2020). Therefore, we suggest that social congruence might exert its influence on the interpersonal level via perceived trust in the peer mentor and is an important factor in establishing a relationship between tutor and student (Loda et al., 2020).

In the current study, we follow the definition of student trust proposed by Hoy & Tschannen-Moran (2003), in which trust is defined as the willingness of an individual to be vulnerable based on the certainty that the mentor is benevolent, reliable, competent, honest, and open. When investigating the traits that have been established to constitute trust (Hoy & Tschannen-Moran, 2003), a relationship between social congruence and perceived trust in the peer mentor can be identified since these traits have been shown to be present in socially congruent mentors (Loda et al., 2020; Yew & Yong, 2013). The relationship between social congruence and perceived trust in the peer mentor can be explained using the literature on fluency heuristics (Whittlesea & Leboe, 2000; Gigerenzer & Gaissmaier, 2011). Interactions with individuals who are similar or socially congruent to us are easier to process (Gigerenzer

& Gaissmaier, 2011). Therefore, when an individual shares similar beliefs and attitudes, it may be easier to trust this individual because the information is more easily accessible (Clerke & Heerey, 2021). Previous research has proposed that people tend to use their own thoughts and behavior to interpret other people's behavior (Gordon, 1992). Accordingly, if students attribute their own perceptions of their peer mentor's trustworthiness to them being similar, it might lead to the emergence of more trust between student and mentor (Jenkins et al., 2008). Therefore, it can be argued that the fluency in the processing of interpersonal interactions that increases due to high social congruence between students and peer mentors might function as a heuristic for the emergence of trust in the peer mentor.

As a guiding framework, the Self-Determination Theory (SDT) is utilized, which is a metatheory of human motivation, emotion, and development that accounts for factors fostering or diminishing the development of an individual (Ryan & Deci, 2000). This theory states that three basic human needs (autonomy, competence, and relatedness) must be satisfied for an individual to increase motivation and engagement (Ryan & Deci, 2000). Relatedness refers to the level of social connectedness one desires and the capability to maintain a relationship. Moreover, it is characterized by the feeling of connectedness and belongingness (Ryan & Deci, 2000). Trust has been proposed to function as a proxy for the relatedness need (Van der Werff et al., 2019). Accordingly, high social congruence between student and mentor leads to higher trust in the mentor, which in turn also leads to the satisfaction of the relatedness need. With all the above in mind, we reason that higher social congruence between the student and peer mentor leads to more perceived trust in the peer mentor.

Several studies linked trust between the mentor and student with a variety of positive outcomes (Bowman-Perrott et al., 2014; Northey et al., 2015; Amemiya et al., 2019). Specifically, higher levels of trust have been associated with more academic engagement

(Amemiya et al., 2019). Academic engagement in the form of class participation is characterized by specific behaviors such as raising a hand in class, asking questions in class, and participating in discussions (Brown et al., 2017). Research has provided evidence for the importance of students' academic engagement and demonstrated correlations between student engagement and positive outcomes such as deep learning and academic success (Bowman-Perrott et al., 2014, Northey et al., 2015). Since higher academic engagement has been shown to facilitate learning, it is highly desirable to increase participation in class (Nayir, 2017).

The SDT framework can be utilized to explain the relationship between perceived trust in the peer mentor and academic engagement. As previously established, trust in the peer mentor functions as a proxy for the relatedness need (Van der Werff et al., 2019). While all three basic needs are supposed to influence developmental processes, relatedness has been shown to be of particular relevance in education (Ryan & Deci, 2000; Trenshaw et al., 2016). Specifically, relatedness has been proposed to provide a foundation for the satisfaction of autonomy and competence needs in the classroom context (Reeve et al., 2012). Therefore, the satisfaction of the need of relatedness through trust in the peer mentor also promotes the satisfaction of autonomy and competence (Reeve et al., 2012). For example, through the satisfaction of the relatedness need, an open learning environment is created in which students feel comfortable taking intellectual risks. This allows the students to autonomously work, learn and achieve their goals which in turn promotes the satisfaction of autonomy and competence (Reeve et al., 2012). Therefore, when high perceived social congruence leads to a trusting relationship between student and peer mentor, it is not only promoting the satisfaction of the need for relatedness but also the need for autonomy and competence. Once all basic needs are satisfied, the student experiences optimal conditions for engaging actively in class (King, 2015). Research supported this explanation by linking the satisfaction of the basic needs with an increase in motivation and engagement (Ryan & Deci, 2000; Martin &

Dowson, 2009; King, 2015). Considering all of the above, we assume that trust mediates the relationship between social congruence and students' academic engagement such that with increasing perceived social congruence between mentor and student, there will be more perceived trust in the peer mentor, and, following from this, higher in-class engagement.

However, we expect the predicted mediation pathway from social congruence, through perceived trust in the peer mentor to academic engagement, to be weaker for some students than others. In this regard, we hypothesize that attachment anxiety will attenuate the relationship between social congruence and perceived trust in the peer mentor. Attachment styles are supposed to emerge early in childhood and influence an individual's perceptions and behaviors in interpersonal relationships (Bowlby, 1969). Previous research has established two attachment dimensions in the form of anxiety and avoidance (Brennan et al., 1998). Individuals high in attachment anxiety tend to have a negative view of the self. These individuals tend to be preoccupied with thoughts about relationships with others, a constant need for approval, and extreme fear of rejection (Brennan et al., 1998). Allen et al. (2010) established in their study that individuals high in attachment anxiety tend to have difficulties engaging in mentoring relationships. Furthermore, research has shown that individuals high in attachment anxiety tend to report lower interpersonal trust levels in comparison to individuals with a secure attachment style (Simpson et al., 1999; Hazan & Shaver, 1987; Bao et al., 2022). This is of high relevance for the current study since this implies that an anxious attachment style might debilitate the emergence of trust in the peer mentor.

This is best understood using the SDT framework. Research has established that students high in attachment anxiety have a high need for relatedness that is difficult to satisfy (Lin, 2016). Their preoccupation with the quality of the relationship, fear of rejection, and low self-esteem prevents those students from fulfilling their need for relatedness and desire for closeness (Mikulincer & Shaver, 2010; Felton & Jowett, 2013). Students who are high in

attachment anxiety might therefore perceive less trust in their peer mentor despite being socially congruent. Hence, it can be argued that having an anxious attachment style buffers the relationship between social congruence and perceived trust in the peer mentor. Considering the essential role of the satisfaction of relatedness in the classroom context, this also implies that this buffer effect might negatively influence the satisfaction of the other basic needs autonomy and competence (Reeve et al., 2012). Ultimately, this might result in less academic engagement of the student (Ryan & Deci, 2000). With this in mind, it is expected that the mediating effect of perceived trust in the peer mentor between social congruence and academic engagement will be weaker for individuals high in attachment anxiety. Specifically, we predict that, even in a context of high social congruence, individuals with an anxious attachment style will report lower levels of trust towards their mentor.

To summarize, a model is predicted in which perceived trust in the peer mentor mediates the relationship between social congruence and academic engagement in a way that higher social congruence between the student and peer mentor leads to more trust, which in turn leads to an increase in academic engagement. Moreover, it is predicted that an anxious attachment style moderates the relationship between social congruence and perceived trust in the peer mentor. Specifically, we hypothesize that attachment anxiety will attenuate the relationship between social congruence and perceived trust in the peer mentor (see Figure 1).

Figure 1

Proposed Moderated Mediation Model
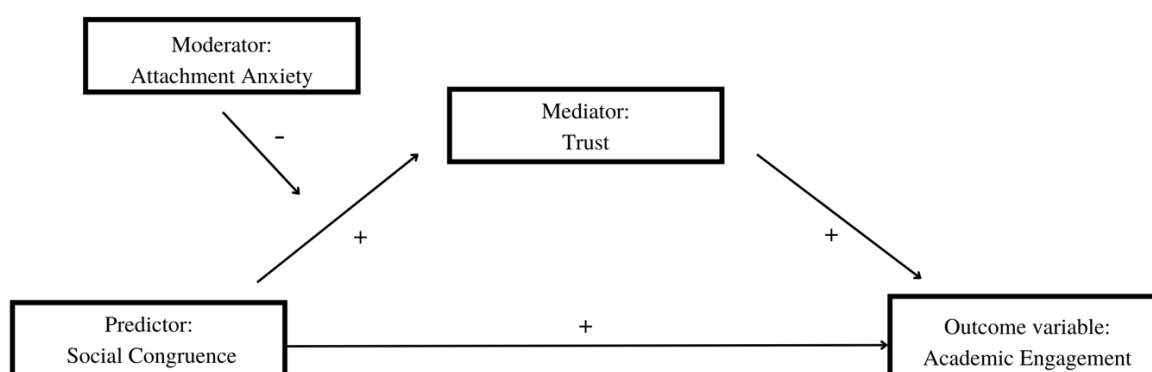
Note. This figure illustrates the proposed mediation pathways as well as the assumed direction of the effects. Trust refers to the perceived trust in the peer mentor.

Methods

Participants

One hundred sixty-nine participants originally took part in this cross-sectional study. Using convenience sampling, participants were recruited as part of a larger survey on peer mentoring at the University of Groningen. Participants were eligible for this study if they were first-year students taking part in a course implementing the peer-mentoring system within the Psychology Bachelor's Degree program. A total of 96 participants (75% female; mean age: 20.5 years ($SD = 2.3$); 44% German; 25% Dutch; 31% Other) remained for statistical analysis after excluding participants with incomplete questionnaires. For all sample characteristics refer to Table A1 (see Appendix A).

Measures

Social Congruence

The social congruence subscale of the teacher characteristics rating scale was utilized to measure social congruence (Schmidt & Moust, 1995; adapted by Rotgans & Schmidt, 2011). The subscale consists of four items. Participants had to rate on a 5-point scale, which ranged from 1 (*not true at all*) to 5 (*very true for me*), to what extent the statement of each of the items was true to them. An example item is: "The peer mentor showed interest in our personal lives ". This rating scale was previously shown to be a reliable measure of social congruence ($\Omega = .75$; Rotgans & Schmidt, 2011). In this sample, the internal validity was questionable ($\alpha = .57$; $\Omega = .56$).

Attachment Anxiety

Attachment anxiety was operationalized using the anxiety subscale of the Attachment style questionnaire – short form (ASQ-SF; Feeney et al., 1994). In total, 14 items of the

attachment anxiety subscale were included. Participants had to indicate on a 6-point scale which ranged from 1 (*totally disagree*) to 6 (*strongly agree*), to what extent they agreed with the different statements. An example item of the ASQ-SF is: "I find that others are reluctant to get as close as I would like ". The ASQ-SF has been established as a reliable and valid measure of attachment styles (α = .83, Ω = .60; Karantzas et al., 2010). The internal consistency of the attachment anxiety subscale was very good (α = .88; Ω = .88).

Student Trust

The Student Trust in Faculty – Scale is a 13-item scale that measures student trust in the faculty (STF-Scale; Forsyth et al., 2011). The scale was slightly adapted to match the context of peer mentoring. On a 4-point scale, which ranged from 1 (*strongly disagree*) to 4 (*strongly agree*), participants were asked to indicate if they agree or disagree with each of the items. An example item of the STF-scale is: "The peer mentors really listen to students". The higher the total score, the greater the trust in the mentor. The STF-scale has previously been established to be a reliable measure of student trust (α = .90; Forsyth et al., 2011). In this sample, the internal consistency of the student trust scale was very good (α = .87; Ω = .87).

Academic Engagement

In order to assess a behavioral component of academic engagement, we utilized the Participation/Interaction subscale of the Student Course Engagement Questionnaire (SCEQ; Handelsman et al., 2005). The subscale contained a total of six items. Participants had to indicate on a 5-point Likert scale ranging from 1 (*not at all characteristic of me*) to 5 (*very characteristic of me*) to what extent the behaviors mentioned in the items describe them. An example item of the SCEQ: "Asking questions when I don't understand the instructor ". The SCEQ has been proven to be a reliable measure of academic engagement (α = .79; Handelsman et al., 2005). In this sample, the internal validity of the SCEQ was questionable (α = .62; Ω = .61).

Procedure

This study was approved by the Ethics Committee of the Department of Psychology at the University of Groningen. The data was collected as a part of a larger survey study on peer mentoring at the University of Groningen. The Qualtrics software was utilized to create the survey. First-year students were approached during class and asked to participate in the study. Furthermore, the survey was advertised within the faculty building and was also accessible on a website where the first-year students could complete it in exchange for credits. The survey was distributed over various social media outlets, including WhatsApp and Facebook, and lecturers distributed it among their students. The survey was completed in a secured online environment (Qualtrics). Following this, the participants provided informed consent and completed the survey containing demographic information (i.e., age, gender, nationality), measures of social congruence, trust, academic engagement, and attachment anxiety. Lastly, participants were debriefed.

Statistical Analysis

The analyses were conducted using SPSS version 27 (IBM Corp, 2020). First, we inspected the zero-order correlations between social congruence, trust, academic engagement, and attachment anxiety. The nonparametric (Spearman's rho) correlations were calculated in case the assumption of normality was violated. To inspect whether the assumption of normality is violated, a Shapiro-Wilk test was conducted, and normal probability plots were investigated (Agresti & Finley, 2014; Chatterjee & Hadj, 2006).

In our main analysis, we conducted a moderated mediation analysis (model 7) using the PROCESS macro of SPSS (v.4.0, Hayes, 2013). The PROCESS macro utilizes a bootstrap approach that counters violations of normality (Hayes, 2013). However, the other assumptions, such as linearity, homoscedasticity, independence of observations, and absence of multicollinearity, are not countered by the bootstrapping method used by the PROCESS

macro (Hayes, 2013). Therefore, we checked the assumptions of the relationships between the independent variable (social congruence), mediator (trust), the dependent variable (academic engagement), and the moderator (attachment anxiety). To do so, we investigated scatterplots to assess if the assumption of linearity and homoscedasticity were met, assessed the Durbin-Watson index to establish if independence was given, inspected the variance inflation factor (VIF) to assess the degree of multicollinearity and lastly, used Cook's distance to remove potential outliers (Agresti & Finley, 2014; Chatterjee & Hadj, 2006).

The moderated mediation analysis tests whether the mediating effect of trust between social congruence and academic engagement is moderated by attachment anxiety. This analysis yielded the index of moderated mediation (Hayes, 2013), which reflects the slope of the line representing the association between attachment anxiety and the indirect effect, estimates of the indirect effect, and confidence intervals on different levels of the moderator attachment anxiety (i.e., -1SD, Mean, +1SD). To test whether the effects are significant, 5,000 bootstrap samples were applied using a 95% confidence interval (95% CI).

Results

Preliminary Analyses

Since the assumption of normality was violated for the variables social congruence ($W(96) = 0.96$, $p = .005$) and trust in the peer mentor ($W(96) = 0.95$, $p < .001$) and the normal probability plots indicated minor violations of normality (see Figures B1-B4), we calculated nonparametric zero-order correlations between social congruence, attachment anxiety, student trust, and academic engagement. Descriptive and correlation analyses of the measured variables are presented in Table 2.

Furthermore, the assumptions for the main analysis were tested. The inspection of scatterplots (see Figure B5 and Figure B6) revealed no trends that indicate violations of the assumptions of linearity and homoscedasticity. The assumption of independence was met

(*Durbin-Watson value* = 1.96). Moreover, there was no indication of multicollinearity between the variables (social congruence: *VIF* = 1.38; attachment anxiety: *VIF* = 1.01; trust: *VIF* = 1.36). Lastly, no outliers were present.

Table 2

Nonparametric Zero-order Correlations Between the Main Variables

	1	2	3	4
1 Social congruence	1.00			
2 Attachment anxiety	-.14	1.00		
3 Student trust	.49***	-.03	1.00	
4 Academic engagement	.30**	-.35***	.13	1.00
M	16.7	49.5	42.0	18.1
SD	2.1	11.8	4.8	2.9
N	96	96	96	96

Note. M, *SD*, and *N* represent the mean, standard deviation, and sample size.

**p* < .01. ****p* < .001

Main Analyses

Moderated Mediation Analysis

The index of moderated mediation was not significant (B = 0.00, *SE* = 0.00, 95% CI [-0.01, 0.01]). Thus, student trust did not mediate the relationship between social congruence and students' academic engagement across different levels of attachment anxiety. Upon further investigation of levels of attachment anxiety and the indirect effect, it was established that the conditional indirect effect of social congruence on academic engagement, through perceived trust in the peer mentor, was non-significant at low (-1SD; *B* = -0.04, *SE* = 0.11, 95% CI [-0.26, 0.18]), moderate (Mean; *B* = -0.03, *SE* = 0.08, 95% CI [-0.19, 0.12]) and high (+1SD; *B* = -0.02, *SE* = 0.05, 95% CI [-0.13, 0.08]) levels of attachment anxiety.

Moderation Analysis

Since a significant interaction effect was found, we decided to conduct a moderation analysis that examined the moderating effect of attachment anxiety on the relationship between social congruence and student trust. The overall model was significant and explained 30% of the variance in perceived trust in the mentor, ($F(3, 92) = 13.27$, $p < .001$). Social congruence ($B = 2.92$, $SE = 0.83$, $t(95) = 3.54$, $p < .001$) and attachment anxiety ($B = 0.66$, $SE = 0.30$, $t(95) = 2.23$, $p = .029$) were both significant predictors of academic engagement. Furthermore, as illustrated in Figure 2, a significant interaction effect was found ($B = -0.04$, $SE = 0.02$, $t(95) = -2.19$, $p = 0.031$). The relationship between social congruence and perceived trust in the peer mentor increased in strength from low ($- 1SD$; $B = 1.52$, $SE = 0.25$, $p < .001$, 95% CI [1.01, 2.02]) to moderate (mean; $B = 1.08$, $SE = 0.20$, $p < .001$, 95% CI [0.68, 1.48]) to high ($+ 1SD$; $B = 0.64$, $SE = 0.31$, $p = .043$, 95% CI [0.02, 1.26]) at decreasing levels of attachment anxiety.

Figure 2

Interaction Effect
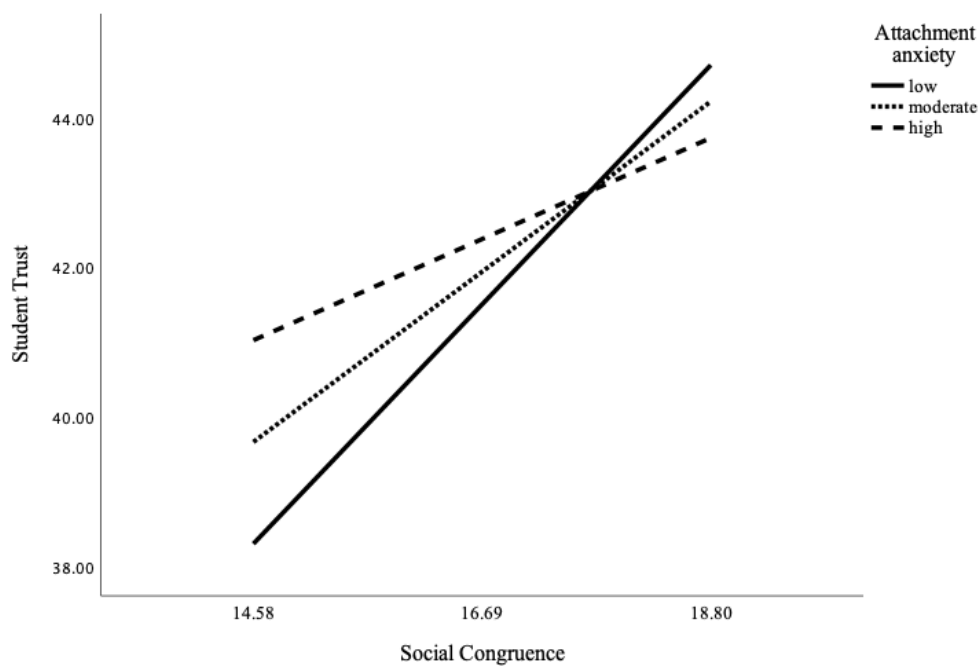
Note. Interaction effect between social congruence and low, moderate, and high levels of attachment anxiety and their relationship with student trust. Unstandardized data was utilized to present the values.

Mediation Analyses

Based on the nonparametric correlations and to further explore our data, we decided to conduct a mediation analysis that tested whether the relationship between social congruence and academic engagement was mediated by perceived trust in the peer mentor (see Figure 3). An overall significant model was found ($F(2, 93) = 3.24$, $p < .044$), with 7% of the variance in academic engagement explained by attachment anxiety and perceived trust in the peer mentor. While trust in the peer mentor did not significantly predict academic engagement ($B = -.03$, $SE=.07$, $t(95) = -.41$, $p < .683$), social congruence was found to be a significant predictor ($B = .38$, $SE= .16$, $t(95) = 2.36$, $p < .020$). The total direct effect of social congruence on academic engagement was significant (path c; $B = .35$, $SE = .14$, $t(95) = 2.52$, $p = .013$). After controlling for the indirect effects of the mediator student trust ($B = -.03$, $SE = 0.09$, 95% CI [-.21, .13]), the direct effect remained significant (path c'; $B = .38$, $SE = .16$, $t(95) = 2.36$, $p = .020$). This indicated that perceived trust in the peer mentor does not mediate the relationship between social congruence and students' academic engagement. Furthermore, there was also a significant effect for social congruence on student trust (path a; $B = 1.16$, $SE = .20$, $p < .001$, 95% CI [0.76, 1.56]).

Figure 3

Diagram of the Mediation Model of Social Congruence via Trust on Academic Engagement
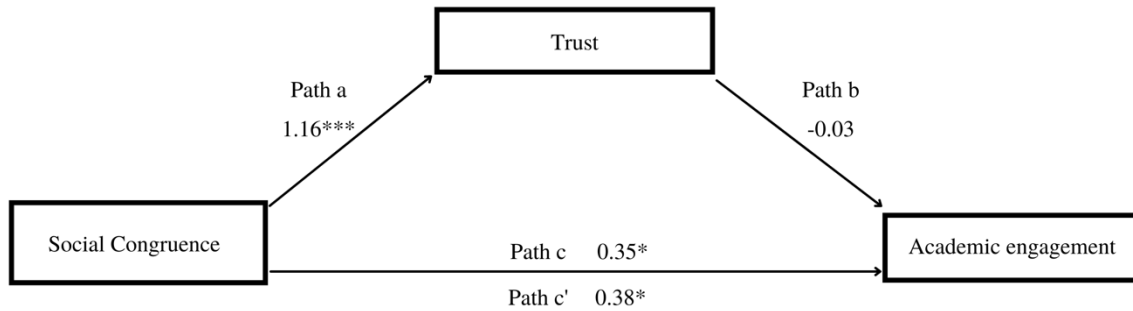
Note. Unstandardized regression coefficients are reported. Trust refers to the perceived trust in the peer mentor.

* *p* <.05 **p < .01 ***p < .001

Discussion

We predicted that the relationship between social congruence and students' academic engagement is mediated by perceived trust in the peer mentor across different levels of attachment anxiety. We hypothesized that higher levels of social congruence between the student and peer mentor lead to increasing perceived trust and thus to increasing student engagement, and that attachment anxiety moderates the relationship between social congruence and perceived trust in the peer mentor. Specifically, we hypothesized that high levels of attachment anxiety attenuate the relationship between social congruence and trust. A moderated mediation analysis was conducted to investigate the hypothesis, which was found to be non-significant.

Student trust did not mediate the relationship between social congruence and academic engagement across different levels of attachment anxiety. Increasing levels of social congruence between student and peer mentor were related to increasing levels of perceived trust in the peer mentor. This is in line with previous research (Jenkins et al., 2008; Loda et al., 2020). Therefore, our results support our reasoning that social congruence increases the fluency in the processing of interpersonal interactions and might function as a heuristic for the emergence of trust in the peer mentor. However, no relationship was found between perceived

trust in the peer mentor and students' academic engagement. There is no coherent picture regarding this in the existing literature. While Ennen et al. (2015) found that trust is not a significant mediator between perceived similarity and academic performance, Massari and Rosenblum (1972) found trust to be an important factor in academic achievement. Therefore, more research is needed to clarify the effect of trust on behavioral outcomes such as academic engagement.

Adopting an SDT perspective, it could be argued that the pathway from perceived trust in the peer mentor to academic engagement is non-significant because perceived trust in the peer mentor might not sufficiently satisfy the need for relatedness, autonomy, and competence, or it might satisfy the need for relatedness but not for autonomy and competence (Reeve et al., 2012). The current study focuses on trust in the peer mentor only. However, multiple factors influence behavior within a collaborative learning group (MacAulay, 1990). This implies that perceived trust in the peer mentor is not the only relevant factor for the satisfaction of the relatedness need. Specifically, trust in peers might be as important if not more important for the satisfaction of the relatedness need. Previous research indicated that trust in peers is related to positive outcomes such as prosocial behavior (Jambon & Malti, 2022). However, there is a lack of research regarding the effect of trust in peers on academic outcomes such as academic engagement, performance, and achievement, as well as the effect of trust in peers on the satisfaction of basic needs. Future research should investigate these relationships.

Since a significant interaction effect was found in the moderated-mediation analysis, a moderation analysis was conducted, which was found to be significant. In line with our reasoning, participants that scored low in attachment anxiety were found to have the highest increase in trust in the context of high perceived social congruence. Individuals scoring low in attachment anxiety were able to build more trust with socially congruent student mentors than

individuals high in attachment anxiety. This is consistent with previous research (Simpson et al., 1999; Hazan & Shaver, 1987; Bao et al., 2022). A recent meta-analysis of the effects of attachment anxiety on interpersonal trust revealed that attachment anxiety is negatively, concurrently and longitudinally associated with interpersonal trust (Bao et al., 2022). Accordingly, high levels of attachment anxiety did seem to buffer the effect of social congruence on trust. Following SDT, it could be argued that the extreme high need for relatedness of students high in attachment anxiety (Lin, 2016) is not satisfied through the trust that emerges in the context of high social congruence, and they, therefore, require more perceived trust than students low in attachment anxiety. Generally, an increase in perceived trust was observable for students high and low in attachment anxiety. However, students high in attachment anxiety might not benefit as much from socially congruent peer mentors as students low in attachment anxiety.

Based on the correlations and to investigate if trust mediates the relationship between social congruence and academic engagement independently of the different levels of attachment anxiety, a mediation analysis was conducted. Trust remained a non-significant mediator of the relationship between social congruence and student engagement. However, even though trust did not mediate the relationship between social congruence and student engagement, it remains an important factor in the classroom context. Trust has been shown to be an essential component of the student environment (Huff et al., 2002). More specifically, trust was linked with a decrease in discipline problems (Gregory & Ripski, 2008), an increase in student satisfaction (Ennen et al., 2015), and the promotion of adaptive behavioral adjustment (Okonofua et al., 2016). Therefore, it is highly desirable to build trustful relationships in the education context irrespective of if it is linked with academic engagement or not.

The limitations of the current study need to be considered. Convenience sampling was utilized instead of randomized sampling. All participants were first-year psychology students at the University of Groningen taking part in a course implementing the peer mentoring system. Therefore, the sample is not representative of the whole population of students. Moreover, many participants did not fill out the survey properly. Some participants skipped single questions or multiple parts of the survey. Some participants mentioned that they perceived the questionnaire as too long and repetitive, which might have caused them to not fill out the questionnaire reliably. The fact that we used questionnaires is problematic in itself. Several biases, such as for example the self-serving bias, influence the participants' answers (Sedgwick, 2013). Different individuals might interpret the questions differently, which can be caused by language barriers or cultural differences among the participants. Furthermore, the validity of our scales was compromised, as illustrated by the low measures of reliability. Therefore, our results need to be considered with caution since the constructs that we intended to measure might not be sufficiently reflected in our data (Hogan, 2019). Lastly, it is important to mention that this study employs a cross-sectional design which does not elucidate any causal relationships (Agresti & Finley, 2014).

Future research should aim to replicate this study and minimize its limitations. Specifically, the scales that demonstrated poor reliability should be investigated to determine their quality and, if necessary, should be exchanged with other well-validated scales. Also, a different trust scale should be utilized to investigate if the results would differ using a different well-validated scale. Moreover, future research should clarify the relationship between trust and behavioral academic outcomes such as academic engagement and academic performance in order to achieve a coherent body of research that indicates a clear direction. More specifically, future research could conduct a multilevel analysis to establish if trust in faculty mentors, peer mentors, or peers contribute equally to the satisfaction of the basic

needs. Furthermore, it might be interesting to investigate social congruence in combination with the closely related concepts of cognitive congruence and expertise (Schmidt & Moust, 1995) since the combination of these concepts might be more representative of the mechanism underlying the effectiveness of peer mentoring and might, therefore, lead to more academic engagement. Lastly, longitudinal or experimental studies might provide deeper insights into the effectiveness of peer mentoring.

Despite the mentioned limitations, this study has important implications. First, it demonstrates the utility of peer mentoring. Peer mentoring has consistently been shown to increase academic engagement and, therefore, is an interesting concept to incorporate into the curriculum. Secondly, it demonstrates that trust in the peer mentor might not be the only variable influencing the relationship between social congruence and academic engagement, but rather that many different factors are influencing the complex system of a classroom. However, the importance of perceived trust in the classroom context remains undeniable. Lastly, we demonstrated the importance of attachment styles and the attenuating effect of attachment anxiety in the emergence of trust. This indicates that peer mentoring might not be as beneficial for students high in attachment anxiety as it is for students low in attachment anxiety.

To conclude, the current study demonstrated that social congruence consistently predicts academic engagement. Therefore, it is of high importance to further investigate social congruence and gather a deeper understanding of the underlying mechanisms that result in positive outcomes such as an increase in academic engagement. Even though trust did not mediate the pathway between social congruence and students' academic engagement, it is still an important variable in the classroom context. Lastly, this study demonstrated that attachment anxiety seems to be an important factor in peer mentoring since students high in

attachment anxiety did not seem to trust socially congruent peer mentors as much as individuals low in attachment anxiety.

References

Agresti, A., & Finley, B. (2014). *Statistical Methods for the Social Sciences* (4th ed.). Pearson.

Allen, T. D., Shockley, K. M., & Poteat, L. (2010). Protégé anxiety attachment and feedback in mentoring relationships. *Journal of Vocational Behavior*, *77*(1), 73–80. https://doi.org/10.1016/j.jvb.2010.02.007

Amemiya, J., Fine, A., & Wang, M. T. (2019). Trust and discipline: Adolescents' institutional and teacher trust predict classroom behavioral engagement following teacher discipline. *Child Development*, *91*(2), 661–678. https://doi.org/10.1111/cdev.13233

Bowlby, J. (1969). *Attachment and loss: Vol. 1. Attachment.* New York: Basic Books.

Bowman-Perrott, L., Burke, M. D., Zhang, N., & Zaini, S. (2014). Direct and collateral effects of peer tutoring on social and behavioral outcomes: A meta-analysis of single-case research. *School Psychology Review*, *43*(3), 260–285. https://doi.org/10.1080/02796015.2014.12087427

Brennan, K. A., Clark, C. L., & Shaver, P. R. (1998). Self-report measurement of adult attachment: An integrative overview. In J. A. Simpson & W. S. Rholes (Eds.), *Attachment theory and close relationships* (pp. 46–76). The Guilford Press.

Brown, S., Bowmar, A., White, S., & Power, N. (2017). Evaluation of an instrument to measure undergraduate nursing student engagement in an introductory human anatomy and physiology course. *Collegian*, *24*(5), 491–497. https://doi.org/10.1016/j.colegn.2016.09.006

Chatterjee, S., & Hadj, A. S. (2006). Regression analysis by example. *Wiley Series in Probability and Statistics*. https://doi.org/10.1002/0470055464

Clerke, A. S., & Heerey, E. A. (2021). The influence of similarity and mimicry on decisions to trust. *Collabra: Psychology*, *7*(1). https://doi.org/10.1525/collabra.23441

Ennen, N. L., Stark, E., & Lassiter, A. (2015). The importance of trust for satisfaction, motivation, and academic performance in student learning groups. *Social Psychology of Education*, *18*(3), 615–633. https://doi.org/10.1007/s11218-015-9306-x

Feeney, J. A., Noller, P., & Hanrahan, M. (1994). Assessing adult attachment. In M. B. Sperling & W. H. Berman (Eds.), *Attachment in adults: Clinical and developmental perspectives* (pp. 128–152). New York: Guilford Press.

Felton, L., & Jowett, S. (2013). Attachment and well-being: The mediating effects of psychological needs satisfaction within the coach–athlete and parent–athlete relational contexts. *Psychology of Sport and Exercise*, *14*(1), 57–65. https://doi.org/10.1016/j.psychsport.2012.07.006

Forsyth, P. B., Adams, C. M., & Hoy, W. K. (2011). In *Collective trust: Why schools can't improve without it*. essay, Teachers College Press.

Gigerenzer, G., & Gaissmaier, W. (2011). Heuristic decision making. *Annual Review of Psychology*, *62*(1), 451–482. https://doi.org/10.1146/annurev-psych-120709-145346

Gordon, R. M. (1992). The simulation theory: Objections and misconceptions. *Mind and Language*, *7*, 11–34.

Gregory, A., & Ripski, M. B. (2008). Adolescent trust in teachers: Implications for behavior in the High School Classroom. *School Psychology Review*, *37*(3), 337–353. https://doi.org/10.1080/02796015.2008.12087881

Handelsman, M. M., Briggs, W. L., Sullivan, N., & Towler, A. (2005). A measure of college student course engagement. *The Journal of Educational Research*, *98*(3), 184–192. https://doi.org/10.3200/joer.98.3.184-192

Hayes, A. F. (2013). *Introduction to mediation, moderation, and conditional process analysis: A regression-based approach*. Guilford Press.

Hazan, C., & Shaver, P. (1987). Romantic love conceptualized as an attachment process. *Journal of Personality and Social Psychology*, *52*(3), 511–524. https://doi.org/10.1037/0022-3514.52.3.511

Hodgson, Y., Benson, R., & Brack, C. (2013). Using action research to improve student engagement in a peer-assisted learning programme. *Educational Action Research*, *21*(3), 359–375. https://doi.org/10.1080/09650792.2013.813399

Hogan, T. P. (2019). *Psychological testing: A practical introduction* (4th ed.). Wiley.

Hoy, W. K., & Tschannen-Moran, M. (2003). The conceptualization and measurement of faculty trust in schools: The omnibus T-Scale. *PsycTESTS Dataset*. https://doi.org/10.1037/t65808-000

Huff, L. C., Cooper, J., & Jones, W. (2002). The development and consequences of trust in Student Project Groups. *Journal of Marketing Education*, *24*(1), 24–34. https://doi.org/10.1177/0273475302241004

Jambon, M., & Malti, T. (2022). Developmental relations between children's Peer

    Relationship Quality and prosocial behavior: The mediating role of trust. *The Journal*

    of Genetic Psychology, *183*(3), 197–210.

    https://doi.org/10.1080/00221325.2022.2030293

Jenkins, A. C., Macrae, C. N., & Mitchell, J. P. (2008). Repetition suppression of

    ventromedial prefrontal activity during judgments of self and others. *Proceedings of*

    the National Academy of Sciences, *105*(11), 4507–4512.

    https://doi.org/10.1073/pnas.0708785105

Karantzas, G. C., Feeney, J. A., & Wilkinson, R. (2010). Is less more? confirmatory factor

    analysis of the attachment style questionnaires. *Journal of Social and Personal*

    Relationships, *27*(6), 749–780. https://doi.org/10.1177/0265407510373756

King, R. B. (2015). Sense of relatedness boosts engagement, achievement, and well-being: A

    latent growth model study. *Contemporary Educational Psychology*, *42*, 26–38.

    https://doi.org/10.1016/j.cedpsych.2015.04.002

Leighton, J. P., Guo, Q., Chu, M.-W., & Tang, W. (2017). A pedagogical alliance for

    academic achievement: Socio-emotional effects on assessment outcomes. *Educational*

    Assessment, *23*(1), 1–23. https://doi.org/10.1080/10627197.2017.1411188

Lin, J.-H. (2016). Need for relatedness: A self-determination approach to examining

    attachment styles, Facebook use, and psychological well-being. *Asian Journal of*

    Communication, *26*(2), 153–173. https://doi.org/10.1080/01292986.2015.1126749

Lockspeiser, T. M., O'Sullivan, P., Teherani, A., & Muller, J. (2006). Understanding the

    experience of being taught by peers: The value of social and cognitive congruence.

Advances in Health Sciences Education, *13*(3), 361–372.

https://doi.org/10.1007/s10459-006-9049-8

Loda, T., Erschens, R., Loenneker, H., Keifenheim, K. E., Nikendei, C., Junne, F., Zipfel, S.,

& Herrmann-Werner, A. (2019). Cognitive and social congruence in peer-assisted

learning – A scoping review. *PLOS ONE*, *14*(9).

https://doi.org/10.1371/journal.pone.0222224

Loda, T., Erschens, R., Nikendei, C., Giel, K., Junne, F., Zipfel, S., & Herrmann-Werner, A.

(2020). A novel instrument of cognitive and social congruence within peer-assisted

learning in medical training: Construction of a questionnaire by factor analyses. *BMC*

Medical Education, *20*(1). https://doi.org/10.1186/s12909-020-02129-x

Loda, T., Erschens, R., Nikendei, C., Zipfel, S., & Herrmann-Werner, A. (2020). Qualitative

analysis of cognitive and social congruence in peer-assisted learning – the perspectives

of medical students, student tutors and lecturers. *Medical Education Online*, *25*(1).

https://doi.org/10.1080/10872981.2020.1801306

MacAulay, D. J. (1990). Classroom environment: A literature review. *Educational*

Psychology, *10*(3), 239–253. https://doi.org/10.1080/0144341900100305

Martin, A. J., & Dowson, M. (2009). Interpersonal relationships, motivation, engagement, and

achievement: yields for theory, current issues, and educational practice. *Review of*

Educational Research, *79*(1), 327–365. https://doi.org/10.3102/0034654308325583

Massari, D. J., & Rosenblum, D. C. (1972). Locus of control, Interpersonal Trust and

academic achievement. *Psychological Reports*, *31*(2), 355–360.

https://doi.org/10.2466/pr0.1972.31.2.355

Mikulincer, M., & Shaver, P. R. (201AD). *Attachment in adulthood: Structure, dynamics, and change* (1. ed.). Guilford Press.

Nayir, F. (2017). The relationship between student motivation and class engagement levels. *Eurasian Journal of Educational Research*, *17*(71), 59–78. https://doi.org/10.14689/ejer.2017.71.4

Northey, G., Bucic, T., Chylinski, M., & Govind, R. (2015). Increasing student engagement using asynchronous learning. *Journal of Marketing Education*, *37*(3), 171–180. https://doi.org/10.1177/0273475315589814

Okonofua, J. A., Walton, G. M., & Eberhardt, J. L. (2016). A vicious cycle. *Perspectives on Psychological Science*, *11*(3), 381–398. https://doi.org/10.1177/1745691616635592

Pomeroy, E. (1999). The teacher-student relationship in secondary school: Insights from excluded students. *British Journal of Sociology of Education*, *20*(4), 465–482. https://doi.org/10.1080/01425699995218

Reeve, J., Christenson, S., Reschly, A., & Wylie, C. (2012). *Handbook of Research on Student Engagement* (Vol. 14). Journal of Educational psychology.

Rotgans, J. I., & Schmidt, H. G. (2011). The role of teachers in facilitating situational interest in an active-learning classroom. *Teaching and Teacher Education*, *27*(1), 37–42. https://doi.org/10.1016/j.tate.2010.06.025

Ryan, R. M., & Deci, E. L. (2000). Self-determination theory and the facilitation of intrinsic motivation, social development, and well-being. *American Psychologist*, *55*(1), 68–78. https://doi.org/10.1037/0003-066x.55.1.68

Schmidt, H. G., & Moust, J. H. (1995). What makes a tutor effective? A structural-equations modeling approach to learning in problem-based curricula. *Academic Medicine*, *70*(8), 708–14. https://doi.org/10.1097/00001888-199508000-00015

Sedgwick, P. (2013). Questionnaire surveys: Sources of bias. *BMJ*, *347*(aug30 1). https://doi.org/10.1136/bmj.f5265

Simpson, J. A., Ickes, W., & Grich, J. (1999). When accuracy hurts: Reactions of anxious–ambivalent dating partners to a relationship-threatening situation. *Journal of Personality and Social Psychology*, *76*(5), 754–769. https://doi.org/10.1037/0022-3514.76.5.754

Sinclair, A. C., Gesel, S. A., & Lemons, C. J. (2019). The effects of peer-assisted learning on disruptive behavior and academic engagement. *Journal of Positive Behavior Interventions*, *21*(4), 238–248. https://doi.org/10.1177/1098300719851227

Topping, K. J. (2005). Trends in peer learning. *Educational Psychology*, *25*(6), 631–645. https://doi.org/10.1080/01443410500345172

Trenshaw, K. F., Revelo, R. A., Earl, K. A., & Herman, G. L. (2016). Using Self Determination Theory Principles to Promote Engineering Students' Intrinsic Motivation to Learn. *International Journal of Engineering Education*, *32*(3), 1194´-1207.

Tversky, A., & Kahneman, D. (1973). Availability: A heuristic for judging frequency and probability. *Cognitive Psychology*, *5*(2), 207–232. https://doi.org/10.1016/0010-0285(73)90033-9

Van der Werff, L., Legood, A., Buckley, F., Weibel, A., & de Cremer, D. (2019). Trust

    motivation: The self-regulatory processes underlying trust decisions. *Organizational*

    Psychology Review, *9*(2-3), 99–123. https://doi.org/10.1177/2041386619873616

Whittlesea, B. W., & Leboe, J. P. (2000). The heuristic basis of remembering and

    classification: Fluency, generation, and resemblance. *Journal of Experimental*

    Psychology: General, *129*(1), 84–106. https://doi.org/10.1037/0096-3445.129.1.84

Williams, B., & Reddy, P. (2016). Does peer-assisted learning improve academic

    performance? A scoping review. *Nurse Education Today*, *42*, 23–29.

    https://doi.org/10.1016/j.nedt.2016.03.024

Yew, E. H., & Yong, J. J. (2013). Student perceptions of facilitators' social congruence, use

    of expertise and cognitive congruence in problem-based learning. *Instructional*

    Science, *42*(5), 795–815. https://doi.org/10.1007/s11251-013-9306-1

Appendix A

Table A1

Sample Characteristics (N = 96)

Age in years, *M* (*SD*)	20.5 (2.3)
Gender, *n* (%)	
Female	72 (75)
Male	22 (23)
Other	2 (2)
Do not wish to disclose	0 (0)
Gender peer mentor, *n* (%)	
Female	72 (75)
Male	22 (23)
Other	0 (0)
Do not wish to disclose	1 (1)
Gender faculty mentor, *n* (%)	
Female	59 (61)
Male	36 (38)
Other	0 (0)
Do not wish to disclose	1 (1)
Nationality, *n* (%)	
Dutch	24 (25)
German	42 (44)
Other	30 (31)

Note. This table provides a comprehensive summary of all sample characteristics.

Appendix B

Figure B1

Normal Probability Plot of the Regression Standardized Residuals of Social Congruence
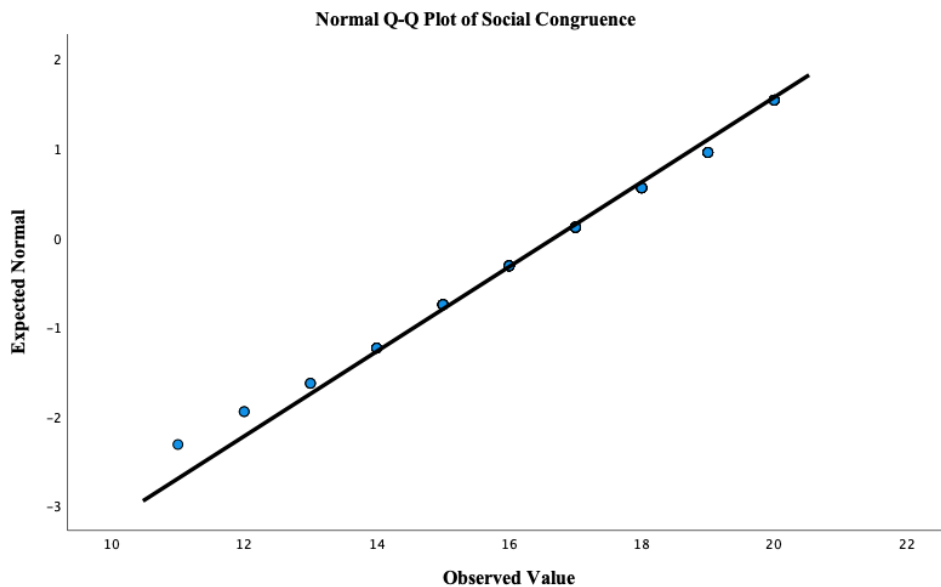
Note. The x-axis represents the observed cumulative probability and the y-axis depicts the expected cumulative probability for the variable social congruence.
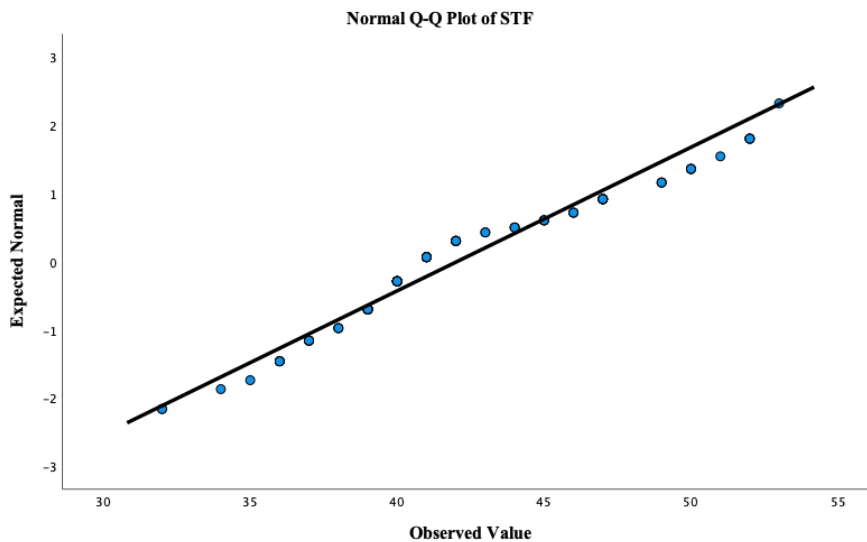
Figure B2

Normal Probability Plot of the Standardized Residuals of Attachment Anxiety
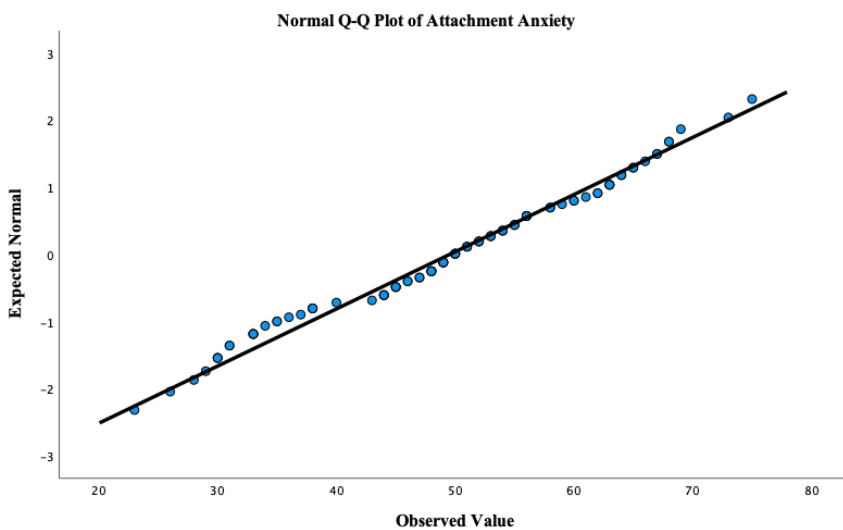
Note. The x-axis represents the observed cumulative probability and the y-axis depicts the expected cumulative probability for the variable attachment anxiety.
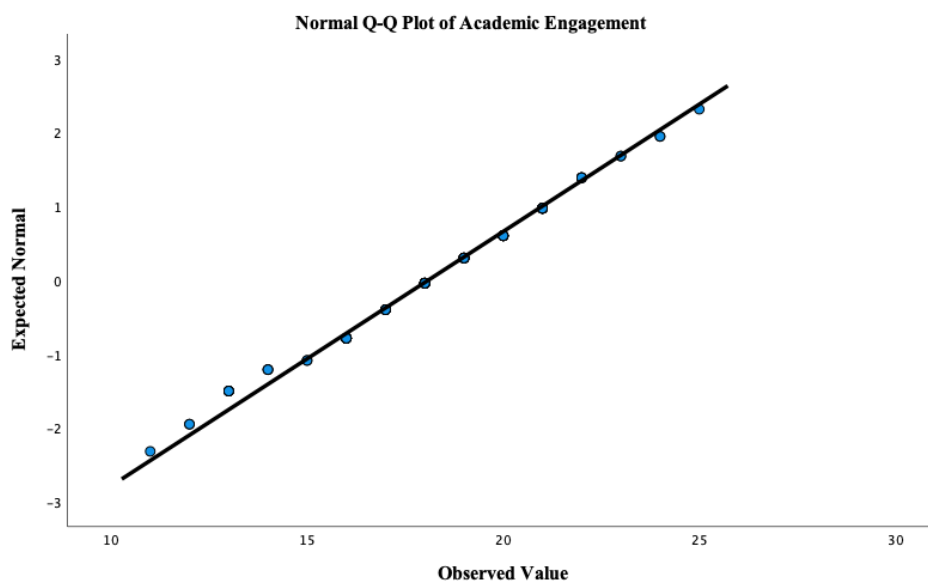
Figure B3

Normal Probability Plot of the Standardized Residuals of Perceived Trust in the Peer Mentor

Note. The x-axis represents the observed cumulative probability and the y-axis depicts the expected cumulative probability for the variable perceived trust in the peer mentor.
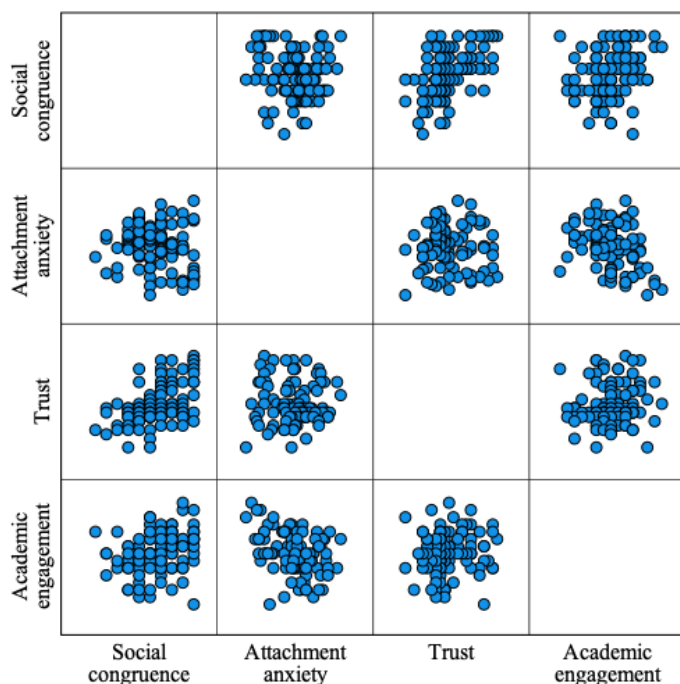
Figure B4

Normal Probability Plot of the Regression Standardized Residuals of Academic Engagement

Note. The x-axis represents the observed cumulative probability and the y-axis depicts the expected cumulative probability for the variable academic engagement.
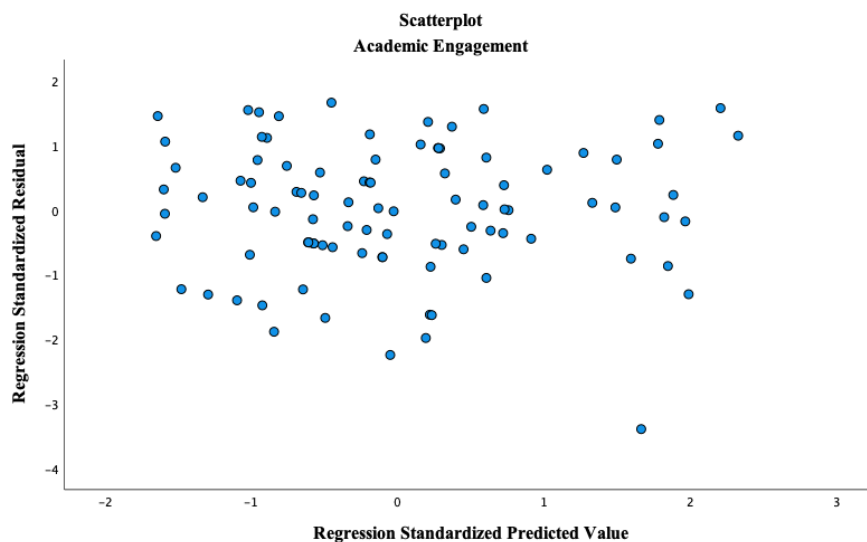
Figure B5

Scatter matrix to Investigate the Assumption of Linearity

Note. This scatter matrix illustrates the linear relationships between all relevant variables.

Figure B6

Scatterplot to Investigate the Assumption of Homoscedasticity

Note. The x-axis represents the regression of the standardized predicted value and the y-axis showcases the regression of the standardized residual for the dependent variable academic engagement.