Examining the relationship between teacher immediacy and academic satisfaction: A mediating role for both Belongingness and Mattering?

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Abstract

Past research has provided support for the positive influence of teacher immediacy on academic satisfaction, but the mechanism underpinning this relationship has not been addressed. This study sought to address this gap by examining if belongingness and mattering have mediating roles in the relationship between academic satisfaction and nonverbal immediacy. This was done by administrating a survey among a sample of 204 Psychology bachelor's students. This survey measured the students' perceived nonverbal immediacy, mattering, belongingness and academic satisfaction in their Academic Skills course. The proposed multiple mediation model and data was statistically analysed by using PROCESS macro which utilises a 5000 bootstrap resampling method. A significant model was found and the direct effect of nonverbal immediacy on academic satisfaction replicated, but only the mediation pathway through belongingness was found to be significant. The pathway through mattering was found to be nonsignificant. These findings show that nonverbal teacher immediacy is important in maintaining academic satisfaction and feelings of belongingness in students. Therefore, teachers should seek to utilise nonverbal behaviours while teaching. Future research should seek to address if verbal immediacy possibly affects mattering and if other variables possibly mediate the relationship between nonverbal teacher immediacy and academic satisfaction.

Keywords: Nonverbal Teacher Immediacy, Teacher Immediacy, Academic Satisfaction, Mattering, Belongingness

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A common experience in education is that a teacher's behaviour can often make a class more engaging or duller (Devito, 2016). For people in teaching positions like peer mentors, it is important to know which behaviours specifically can encourage positive academic outcomes. Teacher immediacy is an example of a teaching behaviour that has gained a large amount of attention in recent years (Wit et al. 2004). Albert Mehrabian (1969) originally conceptualized immediacy as "a set of communication behaviours that enhance closeness to and nonverbal interaction with another" (p. 202). Anderson (1979) later applied the concept of immediacy to teaching environments. She posed the idea that these behaviours can be used to reduce the perceived social gap between teachers and students, which increases student motivation. Teacher immediacy can lead to the application of rewarding behaviours in a teaching environment, possibly leading to positive academic outcomes like higher student satisfaction (Liu, 2021; Park et al., 2009; Arbaugh, 2001; Bozkaya, & Erdem, 2007). In this study, the effects of teacher immediacy exhibited by peer mentors on student satisfaction will be examined. It is expected that students will feel more academic satisfaction if their peer mentors use more teacher immediacy behaviours. There currently is little research examining what mechanisms are underpinning the way teacher immediacy positively influences academic satisfaction. This study aims to address this by examining if belongingness and mattering have a mediating role in this relationship.

Teacher immediacy behaviour can be split into two types: verbal and nonverbal behaviours (Liu, 2021). Examples of verbal behaviours are asking questions, encouraging students and providing feedback. Nonverbal behaviours can include eye contact, gesturing, facing the class and vocal variation (Dong et al. 2022). There is some contention surrounding the concept of teacher immediacy, as it lacks a definitive and widely accepted

conceptualisation (Wit et al., 2004). In some cases, general teacher immediacy is conceptualised as only nonverbal behaviour instead of both. In addition, there are often concerns raised about the commonly used verbal immediacy scale by Gorham (1988) (Wit et al., 2004). These issues surrounding the measure of verbal immediacy led to the decision to focus on nonverbal immediacy specifically in this study. Hence, it is predicted that nonverbal teacher immediacy specifically promotes belongingness and mattering.

Belongingness can play an important role in social settings such as educational settings. A sense of belongingness is heavily facilitated and influenced by one's social and physical environment, and the ways in which an individual interacts with this system (Allen et al., 2021). Belongingness is a fundamental human need and because of its fundamental importance, low levels can have psychological and physiological consequences (Allen et al., 2021). In educational settings, belongingness is defined as "the extent to which students feel personally accepted, respected, included and supported by others in the school environment" (Goodenow & Grady, 1993, p. 80).

The importance of belongingness in educational settings cannot be understated as it has been linked to positive educational outcomes (e.g. academic motivation and higher retention) and can play an important role in promoting students' psychological well-being (Pedler et al., 2021; Costello et al., 2022). This could be due to the fact that a higher belongingness leads students to feel more connected and a higher sense of purpose in relation to their education (Pedler et al., 2021). Belongingness is thus a feeling teachers should seek to promote in their classroom.

Nonverbal teaching behaviours can be linked to higher feelings of belongingness. A meta-analysis by Allen et al. (2018) found that specifically student-teacher relationships play a large role in feelings of school belongingness. A student's positive perception of their relationship with their teacher and the teacher's caring, emphatic, fair and helpful behaviour

are linked to higher feelings of belongingness (Allen et al., 2018). More nonverbal immediacy behaviours like eye-contact also decreases the perceived emotional distance, increases the likeability of the teacher using the behaviour, increases the perceived approachability of the teacher and strengthens the relationship between student and teacher (Mayor, 2020). These outcomes can signal a higher amount of involvement, inclusion and support, which are important components of belongingness (Yuan, 2024). A meta-analysis by Smith (1979) describes that the smiling behaviour of a teacher can increase perceptions of a teacher's warmth. Therefore, nonverbal immediacy could improve belongingness by providing positive perceptions of the teachers and signalling inclusion. We therefore predict that nonverbal teaching immediacy promotes belongingness in students.

Another important component in social environments is mattering and has also been recognised as one in educational settings (Flett et al., 2019). Mattering and belongingness are related concepts, but still distinct from one another (Flett et al., 2019). Both concepts encapsulate a component of acceptance in the social environment, but the concept of belongingness places an emphasis on fitting in while mattering emphasises social significance and importance (Flett, 2022). Rosenberg and McCullough (1981) originally considered mattering as a concept that consisted of three components: (1) the realisation that people are paying attention to us, (2) the feeling that people regard us as important and (3) the feeling that other people are paying attention to us. In later years, the components of ego extension, the idea that we arouse positive feelings in others who regard us as important, and interdependence with others were added (Flett et al., 2022). High levels of mattering are related to a positive sense of self and agency, feelings of hope, adaptability and resilience. Additionally, low levels of mattering can have big impacts on one's mental health (Flett et al., 2022; Flett et al., 2019). These outcomes can also in turn affect academic outcomes and are therefore important to recognise and maintain in academic settings. Mattering in academic

settings is slightly different from general mattering as it mostly pertains to mattering to the school, teacher or class. In this study, the focus lies on mattering to the class.

Mattering can possibly be promoted by nonverbal teacher immediacy. Students with high levels of mattering mention that having a teacher who cares and emphasises the student's importance is a significant component and these higher levels of mattering lead to positive student outcomes (Flett et al. 2022). Additionally in a paper by Flett et al. (2019), it is recommended that mattering among university students can be increased by showing interest in them and encouraging students. This can be done by instructors who are often in contact with students. Eye contact for example has been linked to a student's higher perception of interest and attention from a teacher (Kelly & Eugene, 1978). Thus, it is possible that by employing nonverbal immediacy behaviour such as eye contact and with this signalling interest and closeness, a teacher can increase feelings of mattering when interacting with students. For this reason, we predict that nonverbal immediacy promotes mattering.

Belongingness and mattering can be related to a student's academic satisfaction as social support generally plays an important role in promoting satisfaction (Coffman & Gilligan, 2022). Academic satisfaction was originally derived from the concept of life satisfaction (Coffman & Gilligan, 2022). People set a certain set of subjective expectations in life which they strive to satisfy. Their life satisfaction is thus the satisfaction of these expectations. Academic satisfaction is a domain of life satisfaction and can be defined as the extent to which the student feels satisfied with their class and their role as a student influenced by the extent to which their academic goals have been fulfilled (Coffman & Gilligan, 2022)

As aforementioned, mattering and belongingness perceptions can possibly be seen as signifiers of social support often expected by students. A higher amount of belongingness can lead to more positive emotions like feeling accepted and included (Spehar et al., 2016). These feelings have led to higher life satisfaction and might also lead to higher academic satisfaction

(Spehar et al., 2016). On the other hand, it is also highly likely that belongingness increases academic satisfaction by the sheer fact that a student's expectation of belongingness in class is fulfilled. This is possible due to the fact that belongingness is an important need that people often strive to satisfy it in all types of settings (Baumeister & Leary, 1995; Mellor et al., 2008).

Mattering could work with a similar mechanism. Similarly to belongingness one could simply have the goal of mattering or having a sense of purpose in class. Additionally, mattering has been shown to positively correlate with life satisfaction in the past (Giangrasso et al., 2021). A higher amount of mattering, by also being a feeling of importance and purpose in one's environment, could lead to more positive motivations and a higher satisfaction in one's role in the classroom (Thoits, 2012). Thus, a higher level of mattering could also result in a higher level of academic satisfaction by satisfying academic expectations and one's role in the classroom. Therefore, it is predicted that a higher level of mattering and belongingness increase feelings of academic satisfaction.

Considering all of the aforementioned information, we predict that nonverbal teaching immediacy can promote academic satisfaction through belongingness and mattering. Nonverbal teacher immediacy has in the past been shown to positively affect academic satisfaction. The first mediation pathway is through belongingness, as we predict that nonverbal teaching immediacy promotes belongingness and belongingness promotes academic satisfaction, The second mediation pathway through mattering works similarly. We are unable to predict which mediation pathway will have a stronger effect as there is a lack of theoretical and empirical evidence. The multiple mediation pathway is summarised in figure 1 below.

Figure 1.

A dual mediation pathway model showing the relationship between nonverbal teacher immediacy and academic satisfaction mediated by belongingness and mattering
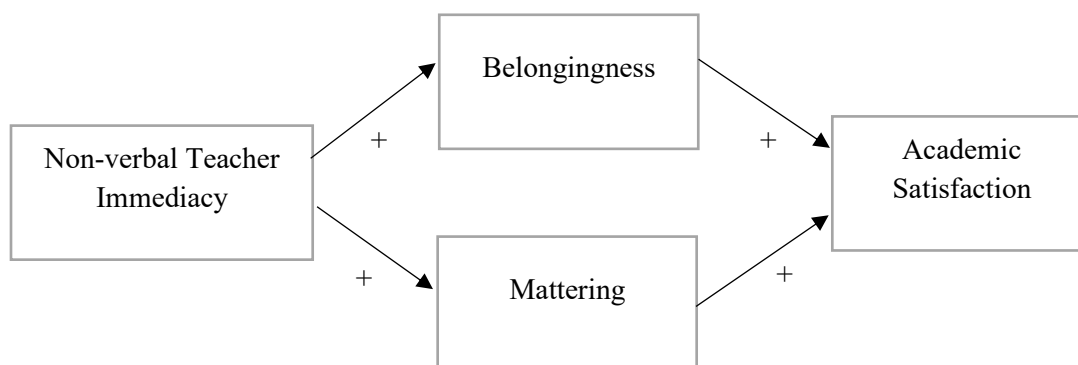
Methods

Participants

A total of 232 bachelor of Psychology students at the university of Groningen participated in a survey study. From the original dataset obtained on the 10th of April 2025 48 participants were removed. Five of the observations were part of preliminary testing of the survey, 22 cases included missing data, and 1 case did not meet the inclusion data. This case was discovered through manual examination of the data. This case had the highest score by choosing the highest number of points on every item, even for reverse coded items, and had a response time of 73 seconds. This made the final sample size 204. This sample consisted of 38 men (18.6%), 165 women (80.9%) and 1 person (0.5%) identifying as another gender. The minimum age of the participants was 17, while the maximum age was 29 ($M = 19.8$, SE = 1.68). Of the participants, 136 (66.7%) were of Dutch Nationality, 15 (7.4%) of German nationality, 5 (2.5%) participants had a dual nationality, and 48 (23.5%) participants were of other nationalities (e.g. Bulgarian or Chinese).

Measures

Teacher Nonverbal Immediacy

For teacher nonverbal immediacy, the Revised Nonverbal Immediacy Measure was used (Rocca, 2008). This scale was originally derived from the 14-item Nonverbal Immediacy Measure by Richmond, Gorham and McCroskey (1987) and was made to be applicable regardless of cultural background. Excluding 4 items led to higher reliability (McCroskey, et al., 1995), thus this shortened version was chosen for this survey. The scale consists of 10 items. All items were rated according to a 5-point Likert scale from 0 (*Never)* to 4 (*Very often)*. Items included behaviours such as 'Gestures while talking to the class' and 'Uses monotone/dull voice when talking to the class'. Four of the items were reverse-coded. All items are weighted equally and the total score is the items summed. A higher score indicates a higher level of nonverbal teacher immediacy. McCroskey et al. (1995) found a Cronbach's alpha ranging from .69 to .89 depending on the sample. In this study, a Cronbach's alpha of .76 was found.

Belongingness

The School Belongingness Scale was used for measuring belongingness by Arslan and Duru (2017). This scale was specifically made to measure belongingness in an educational setting (Arslan & Duru, 2017). This is a 10-item scale. For 5 items reverse-scoring was necessary. All items were rated on a 4-point Likert scale ranging from 1 (*Almost never)* to 4 (*Almost always)*. None of the items have a different weight. The final score is obtained through summing all the items, while accounting for reverse coded items. A higher score indicates a higher level of belongingness. Examples of items included were 'I see myself as a part of this class.' and 'I have close / sincere relationships with my teachers and friends.'. The study by Arsland and Duru (2017) found a Cronbach's alpha of .86. This study found a Cronbach's alpha of .85.

Mattering

The General Mattering Scale (GMS-6) by Flett and Nepon (2024) was used to measure mattering. This is a six-item scale. All items are rated on a 4-point Likert Scale ranging from 1 (*Not at all)* to 4 (*a lot)*. For the mattering score, each item is equally weighted. The score is also the items summed. This scale included items such as 'How important are you to others?' and 'How much do other people depend upon you?'. For this study, some of the items were rephrased to measure mattering in a classroom setting. The aforementioned item 'How much do other people depend upon you?' was rephrased as 'How much do other people in this class depend upon you?'. A higher score indicates a higher feeling of mattering. Flett and Nepon (2024) found a Cronbach's alpha of .87. The Cronbach's alpha found in this study was .87.

Academic Satisfaction

Academic satisfaction was measured using a subscale made by Schmitt et al. (2007). This was originally part of a larger scale measuring both academic fit and satisfaction (Schmitt et al. 2007). A study by Polat and Karabatak (2022) used only the satisfaction scale to measure academic satisfaction, providing evidence that the single subscale can be used. This is a 5-item scale. A 5-point Likert scale was used to rate the items from 0 (*Strongly disagree*) to 4 (*Strongly agree*). No items needed to be reversed-scored. All items are equally weighted. The final score was calculated through summing all the scores of the items. Examples of the items included are 'All in all, I am satisfied with the education I can get in this course' and 'I'm happy with the amount I learn in this course.'. The questions were slightly altered to prime the participants to think of the Academic Skills settings. A higher score indicates a higher level of academic satisfaction. The study by Polat and Karabatak (2022) found a Cronbach's alpha of .85. In our current study a Cronbach's alpha of .91 was found.

Procedure and Design

The conducted study confirmed to the fast-track procedure of the ethics commission of the faculty of Behavioural and Social sciences at the University of Groningen. Participants were recruited through convenience sampling using the SONA system. The SONA pool consists of students currently partaking in a university course in which they get credits for participating in research. The survey was a self-report questionnaire administered digitally via the Qualtrics platform. The data used in this study was collected from March to April of 2025. At the start of the survey, participants were digitally informed about the ethics of the study and had to consent to continue with the survey. To ensure that the participants had a reference for the same specific teaching setting, participants were asked at the start of the survey if they are enrolled in the bachelor Psychology course Academic Skills. If the participant was not enrolled, they could not participate, and the survey closed for them. This was to ensure that the participant was able to answer all the questions. Firstly, demographic information in regard to age, gender and nationality was asked, followed by the remainder of the questionnaire that included questions about nonverbal teacher immediacy, mattering, belongingness and academic satisfaction. Before each set of questions, there was a short paragraph to prime the participants to think of the Academic Skills teaching setting. The survey also included questions for other research purposes.

Statistical Analysis

The predicted multiple mediation model was tested using the PROCESS macro (Hayes, 2022) for IBM SPSS (version 28). This model utilizes a 5000 bootstrap re-sampling method which corrects for bias (Hayes, 2022). A mediation analysis (model 4 (Hayes, 2022)) that estimated all parameters simultaneously was performed. This analysis provided information about the total, direct and indirect effects of the predictors on the model. Significance was determined based on 95% confidence intervals. In the mediation model

(model 4 (Hayes, 2022)), nonverbal immediacy was used as the predictor variable, mattering and belongingness as mediator variables, and academic satisfaction as the outcome variable.

Results

Preliminary Analysis and Descriptive Statistics

The final dataset used in the analysis contained $N = 204$. The plots and analyses used for the preliminary analysis can be found in Appendix A. Five assumptions must be met before performing the test using the PROCESS Macro (Hayes, 2022): no outliers, independence of the residuals, linearity, homoscedasticity and normality (Regorz et al., 2021; Ernst & Albers, 2016). The Durbin-Watson statistic showed that there was independence of residuals. A casewise diagnostic ($> \pm 3$ SD) was performed and showed no other spurious outliers. A scatterplot of predicted value against the standardized residual of the dependent variable academic satisfaction showed no violation of linearity nor of homoscedasticity. In addition, a scatterplot of Nonverbal Immediacy against Academic Satisfaction shows no violation of linearity. The scatterplot of the standardized predicted value against the standardized residual of the dependent variable also showed no violation of homoscedasticity (Field, 2024). Visual inspection of the Q-Q plots of each of the variables and a P-P plot of the dependent variable were examined showing no violation of normality (Field, 2024). The VIF of each of the variables was below 10 and this shows that there was no sign of extreme multicollinearity (Field, 2024). The assumption tables and figures for the assumption checks are in Appendix A. The final dataset consisted of $N = 204$. See Table 1 for the correlations and descriptive statistics of the variables.

Table 1

Pearson correlations, means and standard deviations for analyzed variables.

	1	2	3	4
1. NI	-			

2. Ma	-.02	-		
3.Be	.23**	.56**	-	
4.AS	.33**	.22**	.32**	-
Mean	26.72	13.52	30.90	12.82
SE	4.85	3.60	5.28	4.29

Note. NI: Nonverbal Immediacy; Be: Belongingness; Ma: Mattering; AS: Academic Satisfaction.

** *p* < .05.

Mediation Analysis

A mediation analysis was performed using Hayes (2022) model 4 to test the model of the effect of nonverbal teacher immediacy on academic satisfaction, mediated by mattering and belongingness. This found a significant overall model of all the predictors (F (3, 200) = 0.43, p < .005), in which 18.0% of the variance of academic satisfaction was explained by the predictor variables. The total effect of nonverbal teacher immediacy on academic satisfaction was significant (b = 0.29, SE = 0.06, 95% *CI* [0.18, 0.41], p < .005). It was found that the direct effect of nonverbal teacher immediacy on academic satisfaction was significant (b = 0.25, SE = 0.08, 95% *CI* [0.11, 0.40], p < .005). However, the total indirect effect of nonverbal teacher immediacy on academic satisfaction was not significant *(b = 0.04, SE = 0.03,* 95% CI [-0.02, 0.09*], p* < .005*)*.

Significant direct effects of nonverbal immediacy on belongingness (b = 0.25, SE = 0.08, 95% *CI* [0.10, 0.40], p < .005) and of Belongingness on academic satisfaction (b = 0.15, SE = 0.07, 95% *CI* [0.02, 0.28], p < .05) were found. Additionally, the indirect effect of Nonverbal teacher immediacy on academic satisfaction through Belongingness was significant (b = 0.04, SE = 0.02, 95% *CI* [0.00, 0.09], p < .005. The effect size was small (β = 0.04, 95% *CI* [0.003, 0.099] (Preacher and Kelly, 2011).

Figure 2

Unstandardized multiple mediation model of the relationship between nonverbal teacher immediacy and academic satisfaction mediated by belongingness and mattering

* p < .005
** p < .05
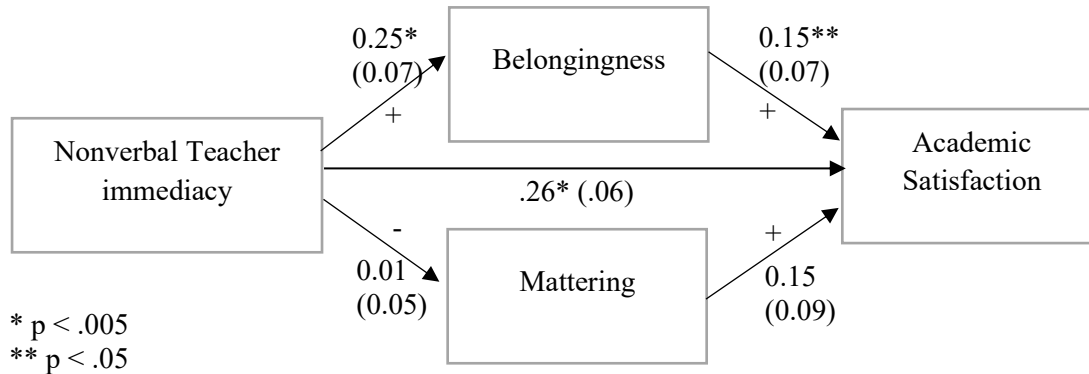
Note. The statistics in brackets are the unstandardized standard errors of the effect size.

However, the direct effect of nonverbal immediacy on mattering ($b = 0.01$, $SE = 0.05$, 95% CI [-0.12, 0.09], $p = .794$) and of mattering on academic satisfaction ($b = 0.15$, $SE = 0.09$, 95% CI [-0.04, 0.33], $p = .120$). were found to be nonsignificant. The indirect effect of nonverbal teacher immediacy on academic satisfaction through mattering was not significant ($b = -0.00$, $SE = 0.01$, 95% CI [-0.03, 0.02], $p < .005$). In summary, the results of the analysis show that there is no support for a dual parallel mediation pathway but support for a single mediation pathway through belongingness.

Discussion

The current study sought to examine the mechanism that explains the relationship between nonverbal teacher immediacy and academic satisfaction, as there currently is a lack of research on it. This was done by examining the mediating roles of belongingness and mattering between these variables. The findings of our study did not fully support the proposed multiple mediation model. In line with our expectations, a direct significant relationship was found between nonverbal teacher immediacy and academic satisfaction. In

contrast to expectations, only an indirect effect of belongingness was found to be significant, and the indirect effect of mattering was found to be nonsignificant.

Our findings were in line with past research. In our study, a relationship between nonverbal teacher immediacy and academic satisfaction was found in agreement with previous research (Park et al., 2009; Arbaugh, 2001; Bozkaya, & Erdem, 2007). This study was the first to examine the mediating roles of belongingness and mattering. There is also a lack of research on the direct effects of these variables. However, our study also does not align with the previously found relationship between general satisfaction and mattering (Giangrasso et al., 2021).

Only the first mediation pathway through belongingness was found to be significant. The direct effect between nonverbal teacher immediacy and belongingness can be explained by the effect nonverbal teacher immediacy has on perceptions of teacher-student relationships. A student's perception of the teacher-student relationship plays an important part in feelings of belongingness (Allen et al., 2018). These positive perceptions can be increased by nonverbal behaviours like eye contact (Mayor, 2020; Smith, 1979). Nonverbal immediacy behaviours can additionally promote feelings of inclusion and acceptance, in other words, promote feelings of belongingness (Spehar et al., 2016).The direct effect between belongingness and academic satisfaction can be explained by the satisfaction of specific social needs in relation to the teacher and the class. Promoting feelings of belongingness can simply satisfy a students' need to belong in an academic setting (Mellor et al., 2008). This is further supported by the "need to belong" theory proposed by Baumeister and Leary (1995). This theory poses that the "need to belong" is a fundamental human motivation that heavily influences behaviour. This has also been applied in school settings which has shown that belongingness is closely associated with many academic outcomes such as performance and mental well-being (Alien et al., 2022). Baumeister and Leary further emphasise that this is

due to the satisfaction of this fundamental need and this could mean that satisfying the "need to belong" can be an important component of academic satisfaction (Alien et al., 2022).. Furthermore, the aforementioned positive feelings and perceptions associated with belongingness could also satisfy a students' need for these (Spehar et al., 2016). This is possible as this mechanism has been found to underpin the relationship between belongingness and life satisfaction (Spehar et al., 2016).

On the other hand, the indirect effect was moderate to small meaning that it is possible that other mediators can play a role in the relationship between nonverbal teacher immediacy and academic satisfaction. This is in line with the established idea that academic satisfaction is a multifaceted concept that can also for example be influenced by the students' belief in self-efficacy and perceived goal progress (Duffy et al. 2011). A study by Valez et al. (2012) found a positive correlation between nonverbal immediacy and self-efficacy and it could therefore be possible that self-efficacy also has mediating role. Future research could examine if self-efficacy or other variables can help further explain the relationship between nonverbal teacher immediacy and academic satisfaction.

There was no significant direct effect found from nonverbal immediacy to mattering nor from mattering to academic satisfaction. Therefore, the absence of a significant indirect effect is unsurprising. The lack of direct effect between nonverbal teacher immediacy and mattering could possibly be due to nonverbal immediacy being unable to address feelings of mattering. Important components of mattering are for example feeling recognised as important and being both dependent on and depending on others (Flett et al., 2022). In support of this reasoning, Dixon and Tucker (2008) suggest that in the case of school counselling, it is important for counsellors to verbally indicate the student's importance and the interdependent relationship of students and counsellors. This suggests that verbal

immediacy might be more related to mattering. It might be of interest for future research to examine the relationship between verbal immediacy and mattering.

The nonsignificant direct effect of mattering on academic satisfaction could possibly be due to mattering being more significant for a student's personal life than their academic life (Schriver & Harr Kulynych, 2021). A higher level of mattering might not lead to a higher level of academic satisfaction as a high level of mattering might not be what a student considers important in academic life. Instead, a student could possibly seek to satisfy this need outside of an academic setting. In spite of the lack of significant effects of mattering, these findings do provide support for the idea that mattering and belongingness are distinct concepts as they both correlate differently to academic satisfaction (Flett et al., 2019; Flett, 2022). This support for distinct concepts also suggests the idea that belongingness might be a more important component of academic satisfaction and thus undermine the importance of mattering. This further also aligns with the idea that mattering is more important in a student's life outside of academic settings, and belongingness possibly being more important in a student's academic life. Belongingness could also have a much stronger mediating effect than mattering as a correlation was found between mattering and academic satisfaction, but no direct effect. This means that mattering could still possibly play an important role in increasing academic satisfaction unrelated to nonverbal teacher immediacy. Future research should investigate manners in which mattering can be increased to help further promote academic satisfaction. Additionally, Schriver and Harr Kulynych (2021) suggested that other academic outcomes might be more related to feelings of mattering. The results of this study suggest that this is possible. Future research would benefit from investigating if mattering can possibly affect other academic outcomes. On the other hand, it can be suggested that mattering to the teacher is important to academic satisfaction while classroom mattering is not. Mattering in this study was measured using GMS-6 and the questions were rephrased to

emphasise classroom mattering (Flett & Nepon, 2024). Future research should examine if this type of difference in kinds of mattering influences the relationship with academic satisfaction.

A significant direct was found between nonverbal teacher immediacy and academic satisfaction. As previously stated, this is in line with previous research (Park et al., 2009; Arbaugh, 2001; Bozkaya, & Erdem, 2007). This is likely due to the overlap between the teachers' behaviours and the student's expectations of a teachers' behaviour. Thus, if this expectation is satisfied by nonverbal behaviour, academic satisfaction will be higher. Academic satisfaction could also increase due to satisfaction of the student's desire to learn, to pass the course and to utilise the given support (Park et al., 2009; Bozkaya, & Erdem, 2007). Additionally, as mentioned before, belongingness only explained a small to moderate amount of this relationship. Seeing as a need to learn and pass a course can possibly play a role in the relationship, perceived learning and course completion could be other factors that mediate this relationship (Bozkaya, & Erdem, 2007). Future research should examine the possibility of these mediating factors further explaining the relationship.

In line with earlier findings, fostering feelings of belongingness is an important component of creating a good teaching environment and improving academic outcomes such as academic satisfaction (Pedler et al., 2021). Our findings suggest that teachers and peer mentors can improve these feelings of belongingness by applying nonverbal teacher immediacy behaviours. For this reason, it is important to emphasise the significance of nonverbal behaviours, which should thus be taught and included in resources for teachers and peer mentors. Increased knowledge on the mechanisms can aid in creating feelings of belongingness in classroom settings and help improve academic satisfaction. It is important to maintain high levels of academic satisfaction among students as it can strongly predict depression, anxiety, stress, and general psychological well-being (Franzen et al., 2021). High levels of academic satisfaction are thus important to ensure the psychological well-being of

students. This could be achieved by increasing awareness of the importance of nonverbal immediacy behaviours and by providing training and examples of the behaviours mentioned. Nonverbal training has been used for clinicians and adolescents, and both have been shown to improve nonverbal communication (Riess & Kraft-Todd, 2014; Olszewsk et al., 2016). Additionally, a preliminary training programme study by Terrón-López et al. (2012) suggests that nonverbal training through self-awareness can also be effective for teachers. In the future, programmes such as these could be used or integrated to help improve the nonverbal communication skills of people in teaching positions to further aid in promoting academic satisfaction.

There were several limitations to our study. Firstly, this study was cross-sectional and for this reason it is not possible to establish temporal order. Therefore, we can only establish correlation between our variables and not direct causation (Morling, 2021). It might be possible that proposed relationships are in reality reversed. Future research should seek to examine the temporal order of the effects by performing an experimental or longitudinal study. Secondly, the sample was of a specific population and thus lacks external validity (Morling, 2021). It is important that future research replicates this study with other populations outside of first-year bachelor psychology students such as students of other programmes at the same university or students at other universities. Lastly, our research was done using a self-report survey. It is thus heavily reliant on the students' perceptions of nonverbal teaching immediacy. It might be that objective levels of nonverbal behaviour were different in these settings and thus the subjective perception of these behaviours plays a larger role than the objective number of nonverbal behaviours (Andersen, 1979; Witt et al. 2004). Additionally, Hess and John (2001) argue that students' perceptions of teaching immediacy could be influenced by other variables such as their grading and could thus be considered

unreliable. Future experimental studies or observational studies could help address this issue by providing more objective measures of teacher immediacy.

In conclusion, while the findings of this study do not support the full multiple mediation model, they do provide support for the single mediation pathway through belongingness . The lack of significant direct and indirect effect of mattering could be due to a number of factors such as the importance of a verbal component in mattering, due to larger role of belongingness in academic satisfaction or due to mattering playing a larger role in influencing other academic outcomes. These complications with the mediating role of mattering could be of interest for future research. Our findings can help teachers and peer mentors create academic settings that foster feelings of belongingness and help improve academic outcomes.

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Appendix A

Tables and Graphs used during the preliminary analysis

Figure 1

Scatterplot of the Predicted Value against the Standardized Residual of the Dependent
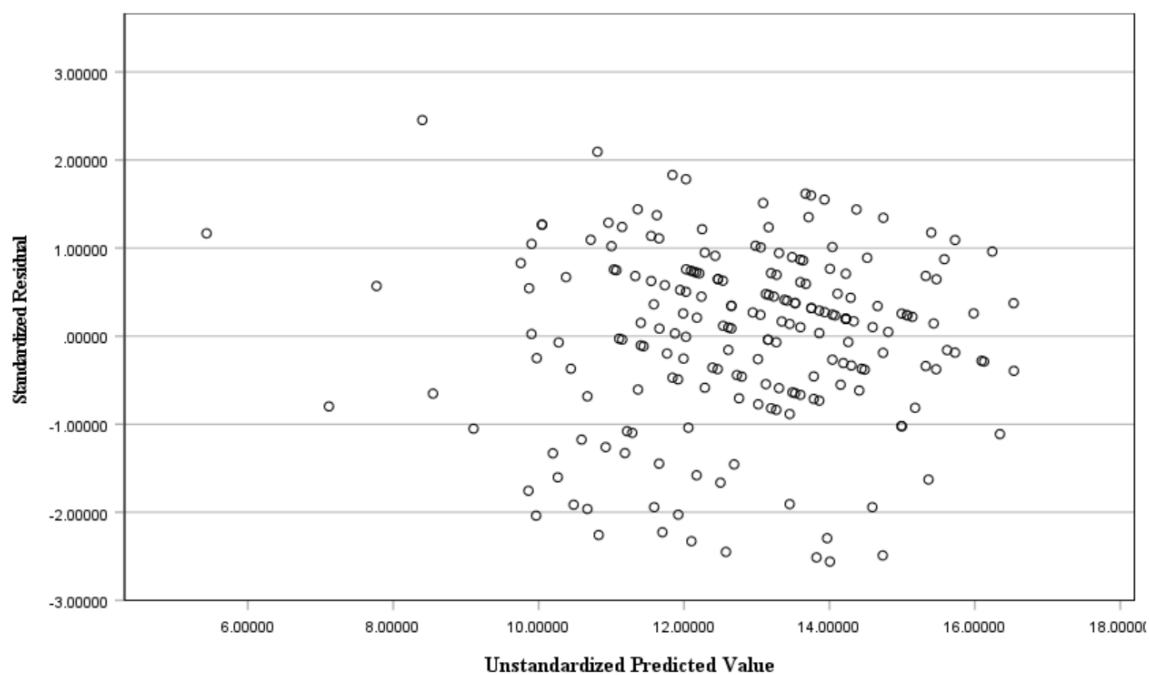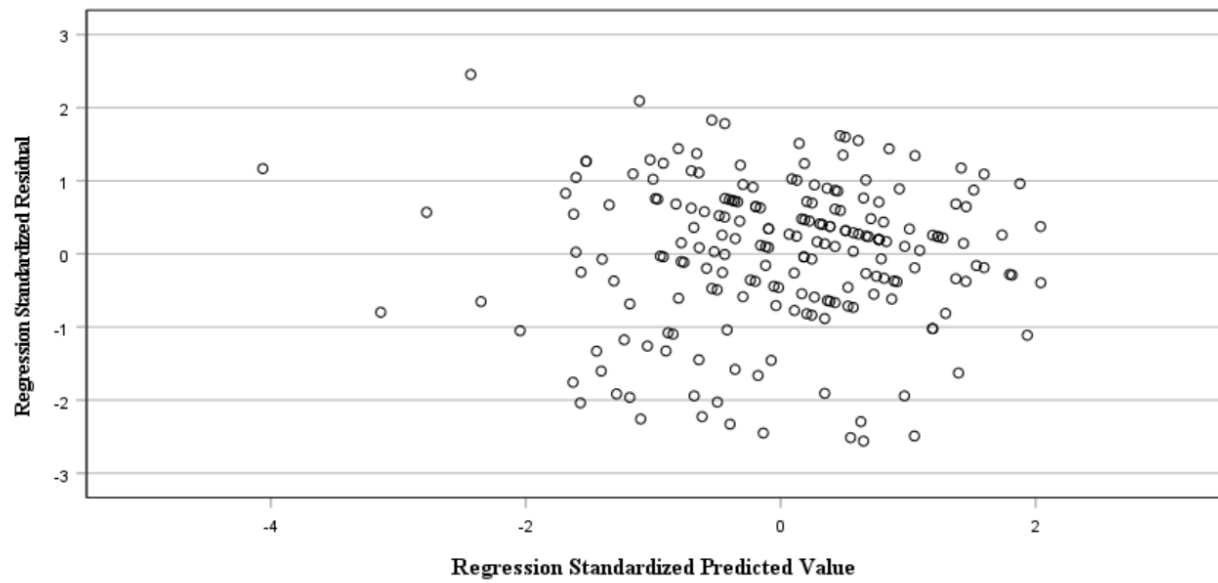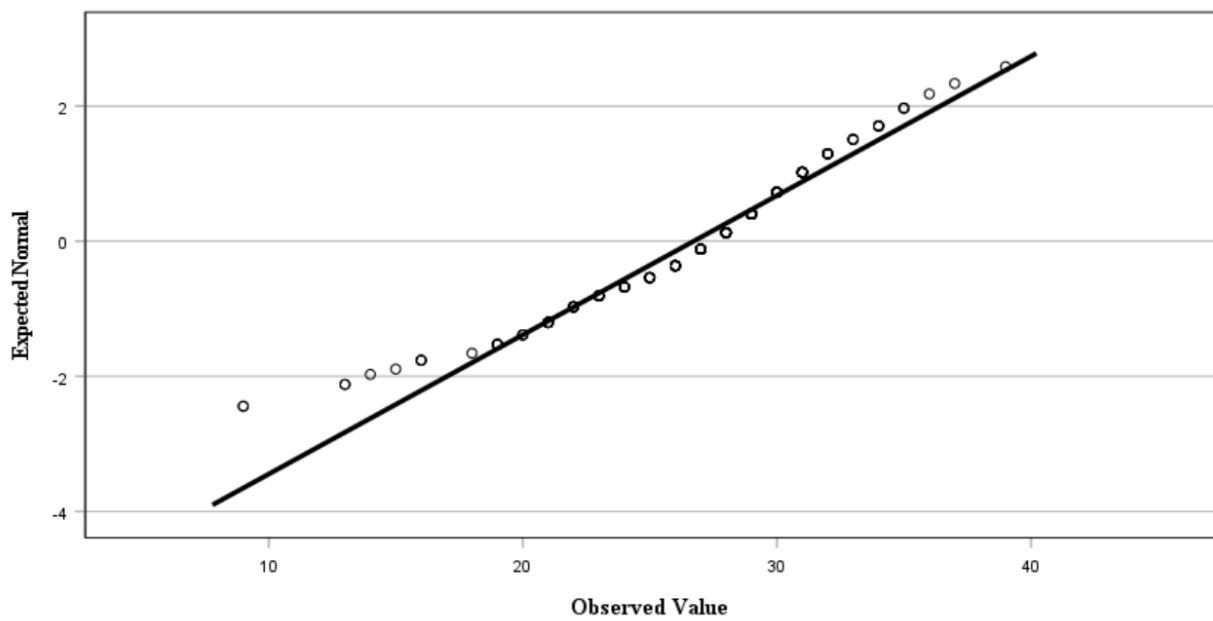
Variable Sum_AS

Figure 2

Scatterplot of the Standardized Predicted Value against the Standardized Residual of the

Dependent Variable Sum_AS

Figure 3

Normal Q-Q Plot of Sum_Im

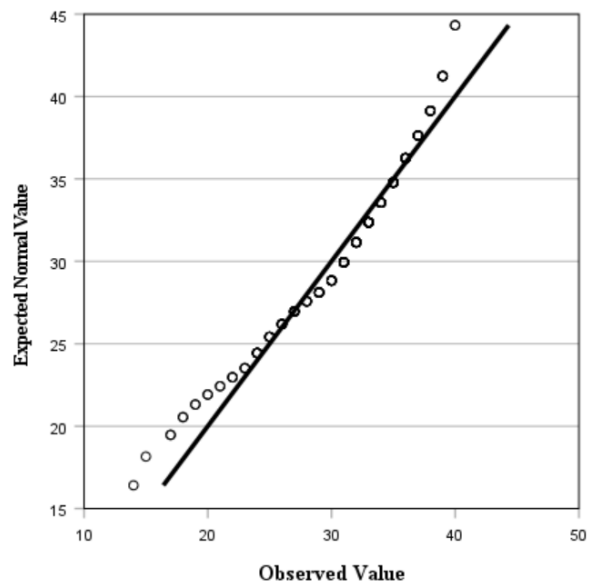**Figure 4**

Normal Q-Q Plot of Sum_Be

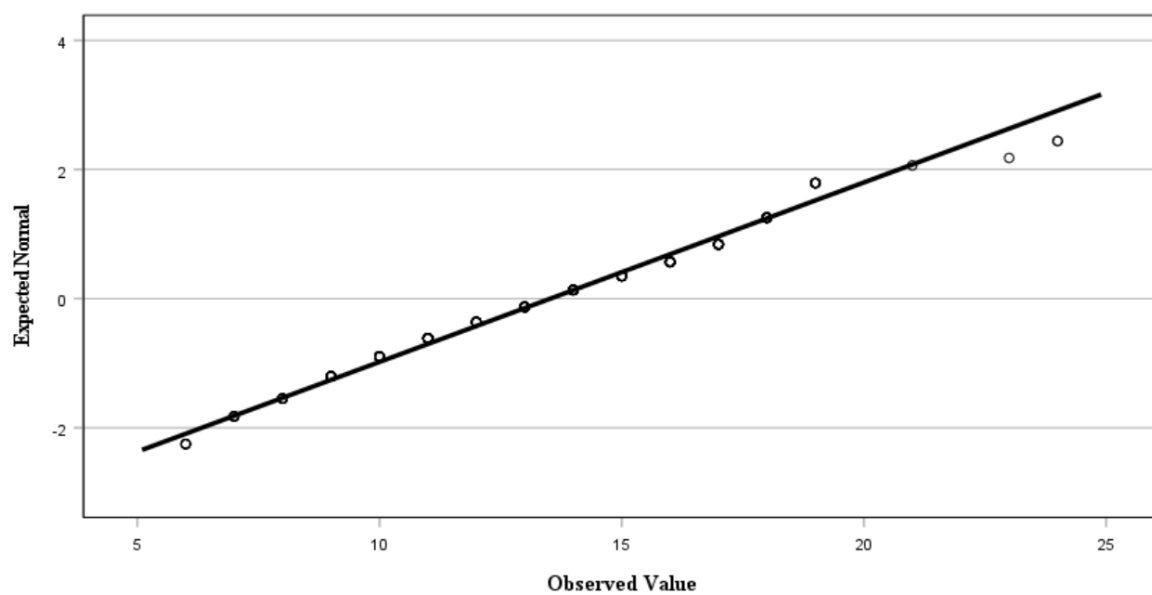**Figure 5**

Normal Q-Q Plot of Sum_Ma

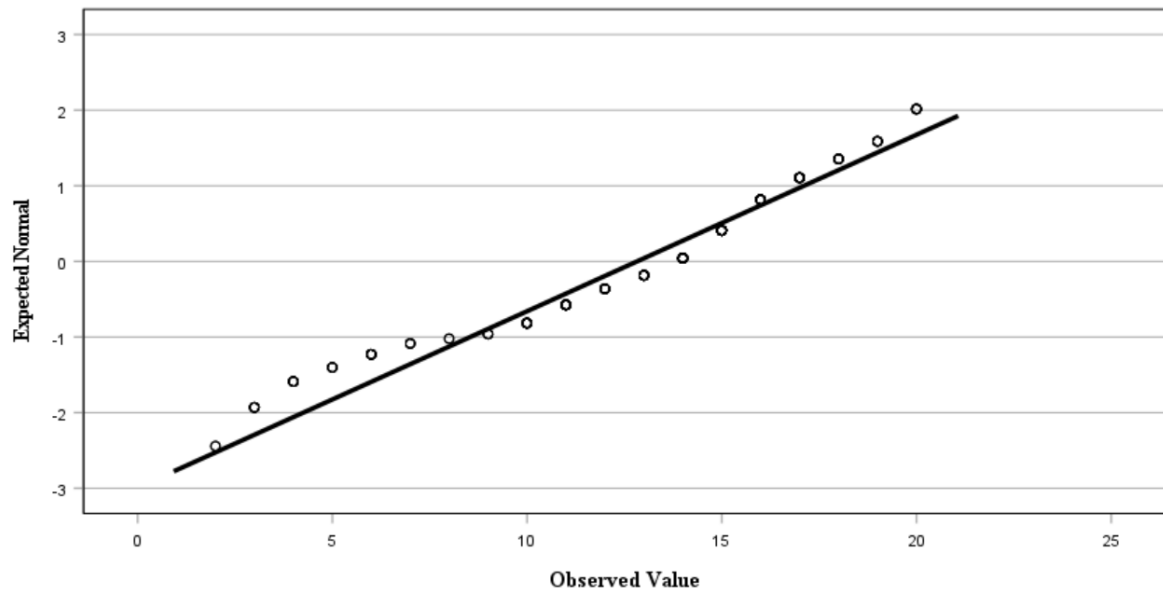**Figure 6**

Normal Q-Q Plot of Sum_AS

Figure 7

Normal P-P Plot of Regression Standardised Residuals of the Dependent Variable Sum_AS
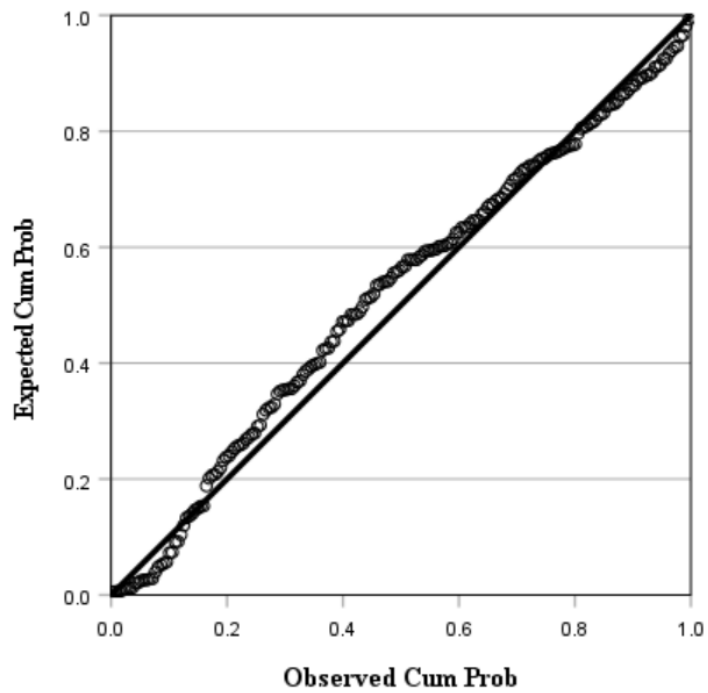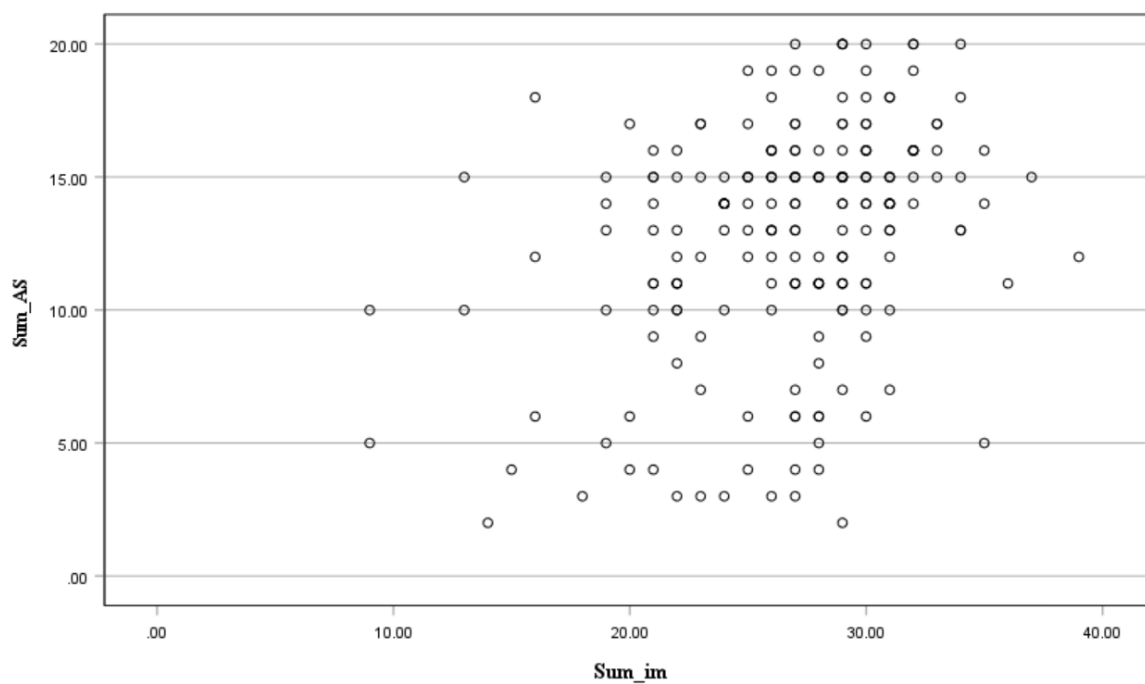

Figure 8

Scatterplot of Nonverbal Immediacy against Academic Satisfaction

Table 1

Model summary of Model used in Preliminary Analysis

Model	R	R-sq	Adjusted R-sq	SE of estimate	Durbin-Watson
1.	.424	.180	.168	3.910	1.779

Note: Predictors: Sum_Im, Sum_Ma, Sum_Be; Dependent variable: Sum_AS

Table 2

VIF Values of Variables

	VIF
Sum_Im	1.095
Sum_Be	1.602

Sum_Ma	1.516

Note: Dependent variable: Sum_AS

Tables from the Mediation Analysis

Table 3

Model summary of Significant model of the model of the effect of Nonverbal Teacher immediacyTeacher immediacy on Academic satisfaction mediated through Mattering and Belongingness

Rows	R	R-sq	MSE	*F*	Df1	Df2	*p*
Row 1	.4245	.1802	15.2882	14.6517	3.0000	200.0000	.0000

Table 4

Direct effects of variables

Variables	*b*	*SE*	*LLCI**	*ULCI**	*p*
NVI on AS	.2560	.0592	.1393	.3727	.0000
NVI on Be	.2536	.0745	.1067	.4005	.0008
Be on AS	.1469	.0658	.0173	.2766	.0266
NVI on Ma	-.0136	.0522	-.1165	.0892	.7942
Ma on AS	.1468	.0939	-.0384	.3320	.1197

Note. NVI on AS: Nonverbal Teacher immediacyTeacher immediacy on Academic Satisfaction; NVI on Be: Nonverbal Teacher immediacyTeacher immediacy on

Belongingness; Be on AS: Belongingness on Academic Satisfaction; NVI on Ma: Nonverbal

Teacher Immediacyon Mattering ; Ma on AS: Mattering on Academic Satisfaction.

* 95% Confidence Interval

Table 5

Indirect effect of Nonverbal Teacherimmediacy on Academic Satisfaction

	Effect	*SE*	*LLCI**	*ULCI**
Total	.0353	.0288	-.0188	.0935
Sum_Be	.0373	.0227	.0017	.0888
Sum_Ma	-.0020	.0110	-.0317	.0155

Note. Sum_Be: Belongingness; Sum_Ma: Mattering.

* 95% confidence interval