

**The Effect of Immediacy in Peer Mentors on Perceived Knowledge Gain of First-Year  
Students**

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### Abstract

Research suggests a positive influence of immediacy behaviours, teacher credibility, and state motivation on perceived knowledge gain of students. Forming a better understanding of the underlying processes connecting these variables can potentially impact teacher training and the quality of student education. Therefore, the influence of immediacy on perceived knowledge gain was investigated with state motivation as a mediator. Moreover, a moderated mediation model with teacher credibility as a moderator was tested. Data was collected through an online survey via Qualtrics from a sample of first-year psychology students ( $N = 288$ ) and analysed using PROCESS model 4 and model 7 (Hayes, 2013). Results revealed a significant partial mediation model. Immediacy influenced perceived learning both directly and indirectly through motivation. No support was found for teacher credibility as a moderator of the mediation relationship. Lastly, the post hoc analysis found a direct influence of immediacy on active participation learning. Although the exact model is unclear, this study indicates the importance of training immediacy behaviours in teachers. Further research should be conducted to disentangle the relationship between immediacy, motivation, teacher credibility, and perceived knowledge gain.

*Keywords:* peer mentoring, immediacy, state motivation, perceived cognitive learning, teacher credibility

## **The Effect of Immediacy in Peer Mentors on Perceived Knowledge Gain of First-Year Students**

Peer mentors have a crucial role in first-year students' lives. They are more experienced students who interact with less experienced peers and thereby share their practical and theoretical knowledge. They might fulfil a variety of roles, such as socialization, mentoring, and instruction. In the Psychology programme at the University of Groningen (UG), peer mentors are responsible for teaching the course Academic Skills and mentoring first-year students. Having a mentor in the first year can help students feel more integrated and connected to the university by providing emotional, academic, and career support (Yomtov et al., 2017). Moreover, research has shown that peer mentors can have a positive impact on students' academic success (Salinitri, 2005). Thus, understanding the underlying behaviours of mentors that lead to positive outcomes for mentees can help us refine mentoring strategies and contribute to positive results in first-year students.

One such behaviour is immediacy. Immediacy can be defined as behaviours that decrease the perceived psychological and physical distance between a student and a teacher (Mehrabian, 1968). Two components of immediacy have been identified. Nonverbal immediacy includes behaviours such as eye contact, smiling, relaxed posture, and moving around the classroom (Andersen, 1979; Christophel, 1990). Verbal immediacy among others includes humour, addressing students by their name, asking students how they feel about the class, and using personal examples (Christophel, 1990; Kwitonda, 2017). Previous research suggests that mentor immediacy is an important predictor of various classroom outcomes (Christophel, 1990), such as affect and attitude towards the course and its content (Christensen & Menzel, 1998), willingness to talk in class (Sidelinger, 2010), and learning (Witt et al., 2004).

### **Immediacy and Learning**

A growing body of research shows the possible influence of immediacy on learning (Frymier, 1994; Kwitonda, 2017). In the literature, a distinction is usually made between affective, cognitive, and perceived cognitive learning. Affective learning refers to students' attitudes towards the course and course content, while cognitive learning concerns recall, comprehension, and application of newly learned information (Bloom, 1956). Perceived cognitive learning, or perceived knowledge gain, refers to student's subjective perception of how much they have learned in the course. Affective, cognitive, as well as perceived cognitive learning were all found to be positively correlated with immediacy (Christophel, 1990). Christensen and Menzel (1998) found that perceptions of learning increased with higher verbal and nonverbal immediacy. A meta-analysis by Witt et al. (2004) found a positive correlation between immediacy and perceived learning. If, as these studies claim, immediacy really does positively influence perceptions of learning, then we can make a significant change in students' learning experiences by training mentors in immediacy behaviours (Allen et al., 2006).

### **Immediacy and Motivation**

Although there is substantial support for the immediacy-learning relationship, some studies suggest that this association might be mediated by motivation. In the literature, motivation has been conceptualized either as a general trait or a state specific to a situation. According to Brophy (1983), trait motivation refers to attitudes and motivation to learn and study in general. State motivation, on the other hand, is specific to certain situations or classes. Although both seem to be correlated with immediacy, the evidence shows a stronger effect for state motivation (Christophel, 1990).

A number of studies have found a positive relationship between state motivation and immediacy (Frymier, 1993; Furlich, 2016; Pogue & Ahyun, 2006). Frymier (1994) discovered that immediacy had stronger paths with state motivation than learning, suggesting

motivation could be a possible mediator of the relationship. Allen et al. (2006) used affective learning as synonymous with motivation and proposed that immediacy leads to higher levels of affective learning, which then leads to increased cognitive learning. They hypothesized that immediacy leads to a desire to interact with the teacher, as well as positive valence. Because of that, the student's motivation to perform well in the class increases.

In contrast to that, there is also evidence for different possible mediators. Rodríguez et al. (1996) found that affective learning is a stronger mediator than motivation. Kwitonda (2017) suggested that the relationship might be mediated by classroom democracy. Therefore, it seems clear that more research is needed to further explore and clarify this connection.

### **Teacher Credibility**

Teacher credibility refers to the degree to which students see their teacher as trustworthy, believable, and competent (McCroskey & Teven, 1999). Research shows that teacher credibility and immediacy seem to be intertwined. Teven & Hanson (2004) found that highly immediate teachers were seen as more credible. A similar connection between immediacy and teacher credibility was found by Johnson and Miller (2002), as well as Thweatt and McCroskey (1998). Moreover, a link between credibility and motivation was suggested by Martin et al. (1997). According to Pogue and Ahyun (2006), teachers who are perceived as more credible might have more influence on students' perceptions of cognitive learning. They found that teachers high in credibility and immediacy had a stronger impact on student motivation than credibility and immediacy alone. If credibility and immediacy together have an influence on motivation, credibility might moderate the strength of the mediation relationship between immediacy and perceived learning through state motivation.

### **Current Study**

Although previous research has suggested various links between immediacy and perceived learning with motivation as a mediator, several limitations and differences make

the generalization of these findings difficult. First, the way learning has been measured is inconsistent. While some studies did look specifically at perceived cognitive learning, many combined it with affective learning (Frymier, 1994; Pogue & Ahyun, 2006). This joint measure might be confounding as affective learning focuses more on students' attitudes towards the course, rather than knowledge. Moreover, a part of research used learning loss as a measure of perceived learning (Christensen & Menzel, 1998; Christophel, 1990; Richmond, 1990). This instrument compares how much the student feels they learned and how much they could have learned if they had the ideal teacher. However, its validity is questionable as the two items are subtracted from each other producing one single score, and the measure seems to be correlated with affective learning more than cognitive learning (King & Witt, 2009; Witt et al., 2004).

Second, the findings on the different components of immediacy have been disparate. Many studies focused on either verbal or nonverbal immediacy, while others only found an effect for one component. Some research shows that both verbal and nonverbal immediacy influence learning (Christensen & Menzel, 1998; Gorham, 1988). According to Witt et al. (2004), studies that measured teacher immediacy as a single construct found higher correlations with learning than those examining verbal and nonverbal immediacy separately. On the other hand, there is also evidence for a higher correlation of nonverbal immediacy with learning (Christophel, 1990). When it comes to motivation, Furlich (2016) found that only verbal immediacy was associated with motivation. In contrast to that, Christophel (1990) identified nonverbal immediacy as a predictor of state motivation. Because of the conflicting evidence, it is unclear under what conditions immediacy influences learning and motivation.

Lastly, concerns have been raised about the ecological validity of some immediacy studies done in a lab. An analysis by Witt et al. (2004) found that survey designs were generally showing greater effects compared to lab studies of immediacy and learning. While

this type of research design allows for greater control to establish causality, it might not provide sufficient time for immediacy to create long-term gains for the students.

Therefore, the present research aims to shed light on the relationship between immediacy and learning by focusing specifically on perceived cognitive learning using a validated instrument (Kwitonda, 2017). Moreover, this study will use a joint measure of immediacy. Lastly, we will use a survey design to examine the motivation and perceived knowledge gain in first-year students.

The present study will use a correlational survey design to examine whether the relationship between immediacy and perceived knowledge gain of first-year students is mediated by state motivation. Moreover, we will investigate whether the possible indirect effect of immediacy on learning through motivation is moderated by credibility (Figure 1). Specifically, we expect the following:

**H1a:** Higher levels of immediacy in peer mentors will be associated with higher perceived knowledge gain in first-year students.

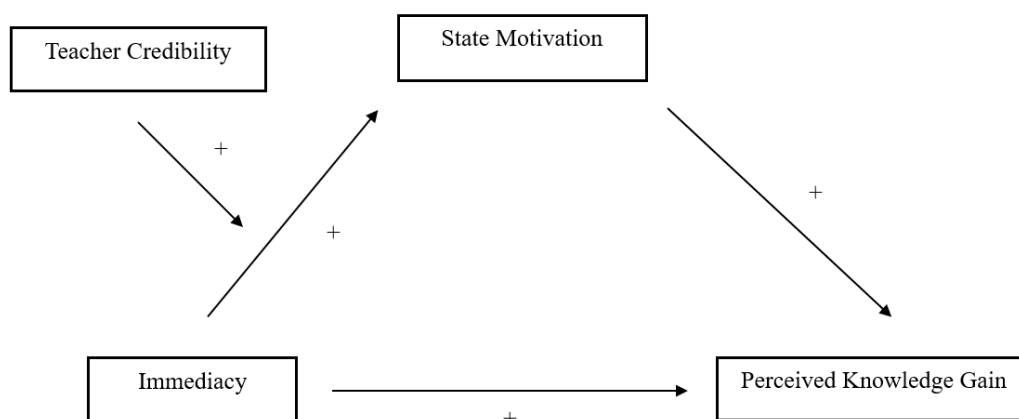
**H1b:** State motivation will mediate the positive relationship between immediacy and perceived knowledge gain.

**H2:** The mediated relationship between immediacy and perceived knowledge gain through motivation will be stronger in higher levels of credibility.

## **Figure 1**

*Proposed Moderated Mediation Model*





## Methods

### Participants

After removing invalid and missing cases, the sample consisted of 288 first-year university students of the Bachelor Psychology program of the UG who are currently enrolled in the course *Academic Skills*. Of these participants, 212 identified as female, 72 as male, and four as other. The age ranged from 17 to 31 with a mean of 20.28 years. The majority of participants, 57.4%, were Dutch, followed by 20.1% German. Other nationalities such as Romanian, Slovak, American, Irish, and others, made up 22.5% of the participants. Since all participants were fluent in English at least at the B2 level, the questionnaire was in English. We used convenience sampling via the recruiting system Sona (Sona Systems, n.d.), offering study credits to the participants.

### Study Design and Procedure

This study used a cross-sectional design to examine the proposed moderated mediation model. Data were collected via an online survey hosted by Qualtrics (Qualtrics, 2005). Students were invited to participate in the research on the Sona system (Sona Systems, n.d.). This study was correlational in nature, as the mentor's immediacy behaviour was not directly manipulated or altered by the study design. The study was part of a larger bachelor thesis project and was approved by the Faculty Ethics Committee. The survey took about 15-

20 minutes to complete. First, participants had to confirm that they were a first-year psychology student enrolled in the course Academic Skills; this was the main admission criterion. Only those who met this condition were able to proceed. A study introduction describing objectives and procedures was provided, followed by an informed consent form. After actively agreeing to participate, all respondents completed the same questionnaire in a fixed order. Participants were given as much time as needed to complete the questionnaire and had the option to quit at any time. If participants chose to discontinue, their data were excluded from the study. After completing the survey, the participants received 0.9 SONA credits.

### **Instruments**

Since this study was part of a larger research project, the survey included eight scales in total. For the purposes of this thesis, only relevant scales will be explained (see Appendix).

#### ***Immediacy***

To measure immediacy behaviours, Kwitonda's (2017) verbal and non-verbal immediacy scales were merged into one immediacy scale (see Figure 4). The students were asked to rate the frequency of the teacher's immediacy behaviours in the target class using a 5-point Likert-type scale ranging from *Never* (1) to *Always* (5). This adapted version consisted of 23 items (e.g., "The instructor smiles at individual students in the class."). The internal consistency of the scale, Cronbach's alpha, was computed to be  $\alpha = .85$  for faculty mentors and  $\alpha = .84$  for peer mentors.

#### ***Teacher Credibility***

To measure how credible the student deems the teacher to be, we used the Teacher Credibility scale (see Figure 5) by McCroskey and Teven (1999). The scale consists of 18 items in which the students had to indicate which word describes their teacher better (e.g., "Informed or Uninformed", "Cares about me or Doesn't care about me"). A 7-point semantic

differential scale was used, with 1 and 7 indicating strong feelings (e.g., “1 = *Informed*” and “7 = *Uninformed*”). The students were asked to fill out the questionnaire once for their peer mentor and once for their faculty mentor. Both scales showed a reliability of  $\alpha = .95$ .

### ***Perceived Learning***

The Learning Indicators scale by Kwitonda (2017) was used to measure students’ subjective perception of learning in Academic Skills classes (see Figure 6). The scale included 11 items (e.g., “I see the connections between the content in this class with the content in other classes.”). The items were scored on a 5-point Likert-type scale, ranging from *Never* (1) to *Always* (5). The Cronbach’s alpha was  $\alpha = .84$ .

### ***State Motivation and Situational Interest***

To measure the state motivation of students, we used the State Motivation and Situational Interest scale (see Figure 7) by Christophel (1990). The scale included 13 items where students were asked to indicate how they feel during their Academic Skills classes. Each item contained a pair of contrasting adjectives and students were asked to pick which one they related to the most. The semantic differential scale had 7 points (e.g., “1 = *Interested*” and “7 = *Uninterested*”). The wording of some items on the scale was adjusted to avoid potential misunderstandings for non-native English-speaking participants. The Cronbach's alpha was  $\alpha = .93$

### **Data Analysis**

The data was analysed using IBM SPSS software (Version 27). Then, Hayes’ PROCESS macro for modelling mediation was applied (Hayes, 2013). First, Model 4 for mediation was used. Next, the analysis was expanded using model 7 – a moderated mediation effect on the independent variable to the mediating variable. These models are based on regression analysis and their assumptions. Bootstrapping and heteroscedasticity-consistent inference were used to avoid possible violations of normality and homoscedasticity

assumptions, respectively. As per the model, the mediation variables were examined independently, followed by a moderation mediation analysis. The analysis used a 95% confidence interval to determine the significance of the results. When the confidence interval included non-zero values, the variable was statistically significant. Unstandardised beta coefficients were used. The variables used in the model were immediacy as the independent variable, teacher credibility as the moderating variable, state motivation as the mediating variable, and perceived learning as the outcome variable.

### **Data Preparation**

Originally, 326 students signed up to be part of the study. However, some of them had to be excluded from the sample, and their data cannot be included in the analysis. Nine participants did not meet the criteria for being a first-year student enrolled in the Academic Skills course and 28 failed to finish the questionnaire. Additionally, one person responded 'yes' to every question, therefore their data was eliminated. In the end, 288 people made up the final sample.

### **Ethical Considerations**

Participants were told that participation in the study was entirely voluntary and withholding consent would not have had any adverse consequences. Also, the participants had the freedom to leave the study at any time if they wanted to. Since all responses were treated with confidentiality and were anonymous, the results and by that the personal opinions of students on their mentors cannot be linked to specific people. By using gender-neutral pronouns we ensured that the questionnaire did not contain any discriminatory terms. Lastly, participants were given the thesis supervisor's contact information if they would have any concerns regarding the research project.

## **Results**

### **Correlational Analysis**

Descriptive statistics and Pearson's correlations were computed for all variables and are reported in Table 1. All variables were significantly positively correlated with each other, with the exception of teacher credibility and perceived learning, although the strength of the associations varied. This is in line with our first hypothesis, which predicted a positive association between immediacy and perceived knowledge gain. Notably, a strong positive correlation was also found between immediacy and credibility.

**H1a:** Higher levels of immediacy in peer mentors will be associated with higher perceived knowledge gain in first-year students.

**Table 1**

*Correlations and Descriptive Statistics for Study Variables*

	1	2	3	4	M	SD
1. Immediacy	-				81.94	11.16
2. Teacher Credibility	.52**	-			101.72	16.18
3. State Motivation	.12*	.17**	-		54.49	14.72
4. Perceived Learning	.31**	.11	.35**	-	32.06	7.39

*Note.* For each variable, the unstandardized Pearson correlation is reported.

\*  $p < .05$ . \*\*  $p < 0.01$

### **Mediation Analysis**

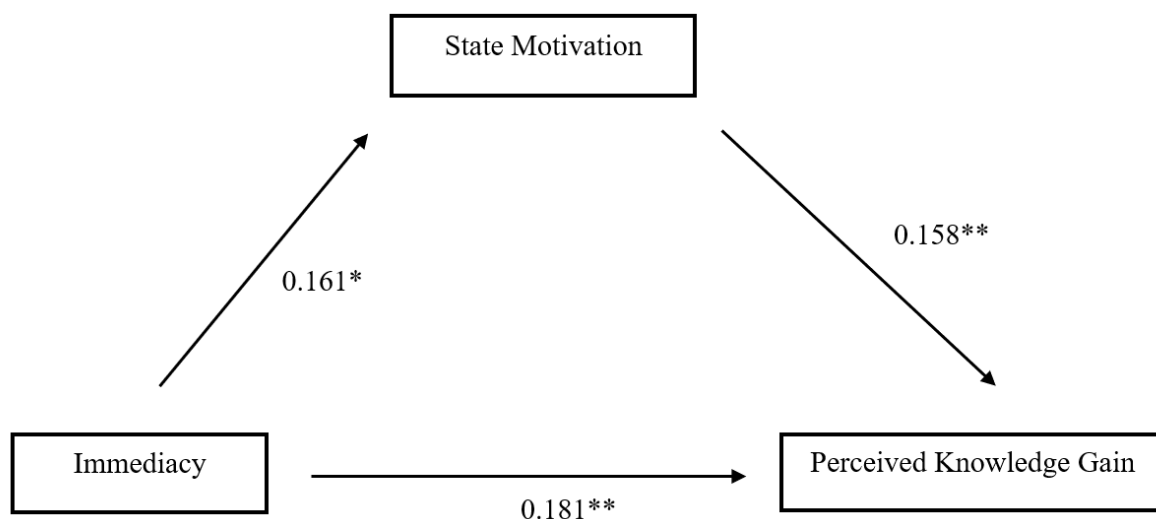
Prior to the analysis, an assumption check was performed. Since mediation analysis includes regression analysis, the observations have to be independent, relationships among variables have to be linear, there should be homoscedasticity of error variables, error values should be normally distributed, and there should be no multicollinearity between independent variables (Clement & Bradley-Garcia, 2022). The assumption check revealed that all assumptions were met and therefore mediation analysis can be performed.

The indirect effect of immediacy on learning through motivation was significant ( $B = 0.03$ , 95% CI = [0.0006, 0.0548]). Both the a-path from immediacy to motivation ( $B = 0.161$ ,  $t(282) = 2$ ,  $p < .05$ , 95% CI = [0.009, 0.318]) and the b-path from motivation to learning ( $B = 0.158$ ,  $t(281) = 4.54$ ,  $p < .001$ , 95% CI = [0.093, 0.223]) were significant. Lastly, there was a significant direct effect from immediacy to learning ( $B = 0.181$ ,  $t(282) = 4.45$ ,  $p < .001$ , 95% CI = [0.102, 0.260]) and a significant total effect of the model ( $B = 0.207$ ,  $t(282) = 5.26$ ,  $p < .001$ ). Thus, the results seem to suggest a partial mediation. This means that immediacy might affect learning via two distinct paths – directly, and indirectly through motivation. This is in line with our second hypothesis.

**H1b:** State motivation will mediate the positive relationship between immediacy and perceived knowledge gain.

**Figure 2**

*Mediation Model with Effects for Each Relationship*



*Note.* Unstandardized beta coefficients are reported.

\* $p < .05$ . \*\* $p < .01$ .

### Moderated-Mediation Analysis

Similarly to mediation analysis, moderated mediation is also based on regression analysis. Thus, the same assumption check was performed as with the previous model. The results showed that no assumptions were violated and moderated mediation can be done.

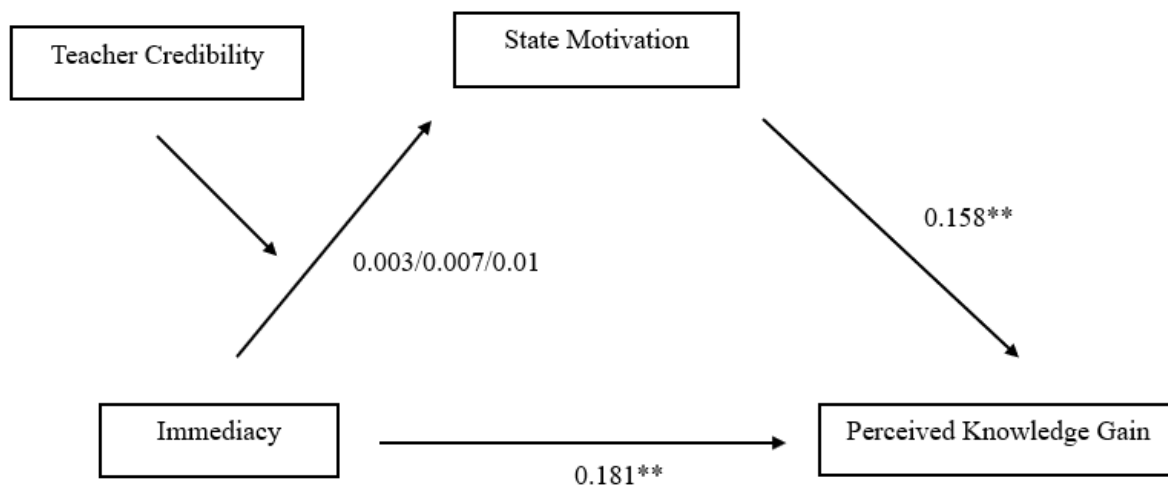
The index of moderated mediation was not significant ( $B = 0.00008$ ,  $SE = 0.001$ , 95% CI = [-0.002, .0001]). The conditional indirect effect of immediacy on motivation was not significant at high (+1SD,  $B = 0.003$ ,  $SE = 0.02$ , 95% CI = [-0.04, 0.05]), moderate ( $M$ ,  $B = 0.007$ ,  $SE = 0.02$ , 95% CI = [-0.02, 0.04]), or low (-1SD,  $B = 0.01$ ,  $SE = 0.02$ , 95% CI = [-0.02, 0.04]), levels of peer mentor credibility. The interaction effect between immediacy and teacher credibility was not found for the immediacy-motivation path ( $B = -0.001$ ,  $p = .73$ ,  $\Delta R^2 = .0002$ ). Notably, there was a significant effect of credibility on motivation ( $B = 0.15$ ,  $SE = 0.07$ , 95% CI = [0.02, 0.28]). Figure 3 shows the updated moderated mediation model with all corresponding coefficients.

This reveals that levels of credibility did not influence the strength of the mediated relationship between immediacy, state motivation, and perceived learning gain. Thus, we did not find any support for our final hypothesis.

**H2:** The mediated relationship between immediacy and perceived knowledge gain through motivation will be stronger in higher levels of credibility.

### **Figure 3**

*Model of Moderated Mediation with Effects for Each Relationship*



*Note.* Unstandardized beta coefficients are reported.

\* $p < .05$ . \*\* $p < .01$ .

### Post-hoc Analysis

Criticism has been raised towards the Learning Indicators Scale by Frymier et al., (1996) on which Kwitonda's (2017) Learning Scale was based. According to Frymier & Houser (1999), the Learning Indicators Scale consists largely of items related to communication and thus communication apprehension might confound the results. To investigate the validity and possible confounds, factor analysis was used to test the unidimensionality of the scale. Next, mediation analysis was repeated with a revised learning indicators scale.

Exploratory factor analysis was conducted to see whether the Learning Indicators Scale is unidimensional. Using Kaiser's criterion (Eigenvalue  $\geq 1$ ), two factors were extracted with proportion of explained variance of 40.18% and 13.91%. Upon further inspection, it can be noticed that items pertaining to Factor 1 seem to be more communication and participation-related behaviours (e.g., "*I volunteer my opinion in class.*"), while Factor 2 seems to contain learning-related items (e.g., "*I think about the course content outside of class.*"). These results suggest that active class participation behaviours, rather than purely



learning behaviours, seem to explain more variance in the Learning Indicators Scale.

Therefore, we created an updated scale only containing active participation learning items.

The Cronbach's alpha of the new scale was computed to be  $\alpha = .82$ . Complete results of the factor analysis after varimax rotation are reported in Table 2.

**Table 2**

*Results From a Factor Analysis of the Learning Indicators Scale*

Learning Indicators Scale Item	Factor loading	
	1	2
<b>8. I challenge points made by my instructor in class</b>	.81	
<b>9. I openly disagree with my instructor on content in class</b>	.79	
<b>7. I volunteer my opinion in class</b>	.73	.27
<b>4. I actively participate in class discussion</b>	.68	.31
<b>6. I explain course content to other students</b>	.60	.41
<b>3. I ask questions to find out what others in class think about the content</b>	.50	.34
1. I see the relationship of the course content from one day to the next throughout the semester		.76
2. I see the connections between the content in this class with the content in other classes		.73
10. I see improvement in my performance on assignments in this class	.24	.66
5. I like to talk about what I'm doing in this class with friends and family	.36	.61
11. I think about the course content outside of class	.36	.58

*Note.* Principal Component Analysis was used as the extraction method. Varimax with Kaiser normalization was used as the rotation method. Only factors loadings above .2 are displayed. Active participation learning items are marked in bold. Adapted from (Kwitonda, 2017).

Next, mediation analysis with the updated learning scale was performed to test whether active participation learning behaviour is predicted by teacher immediacy. The indirect effect of immediacy on active participation through motivation was non-significant ( $b = 0.01$ , 95% CI = [-0.0001, 0.0225]). Similarly, the total effect was also non-significant ( $b = 0.12$ , 95% CI = [0.07, 0.16]). This was also the case for the a-path from immediacy and motivation ( $b = 0.16$ ,  $t(284) = 1.96$ ,  $p = 0.051$ , 95% CI = [-0.001, 0.315]). On the other hand, the b-path from motivation to learning was significant ( $b = 0.06$ ,  $t(283) = 2.65$ ,  $p < .001$ , 95% CI = [0.01, 0.10]). Lastly, there was a significant direct effect of immediacy on active participation learning ( $b = 0.11$ ,  $t(283) = 4.15$ ,  $p < .001$ , 95% CI = [0.06, 0.16]). Unlike the previously analysed mediation model using the original Learning Indicators Scale, this mediation model was not significant. Instead, only positive direct relationships were found between active participation learning and motivation, as well as immediacy. Thus, it seems like active participation learning is directly influenced by immediacy behaviours and motivation. In the original mediation model, however, it is the combination of concrete learning and active participation learning that is affected by immediacy and state motivation jointly.

### **Discussion**

This study examined the relationships between immediacy of peer mentors, state motivation, perceived knowledge gain, and teacher credibility of peer mentors. First, we predicted a positive association between immediacy of peer mentors and perceived knowledge gain. This hypothesis was supported by our results. Second, we hypothesized that the relationship between immediacy and perceived knowledge gain would be mediated by

state motivation. Again, our results were in line with this prediction. Lastly, teacher credibility was expected to moderate the mediation model. However, this hypothesis was not supported by our data.

### **Theoretical Implications**

Our results about the connection between immediacy, perceived learning gain, and motivation are in line with previous research. Similarly to Witt et al. (2004), we also found an association between immediacy and perceived learning. Moreover, our findings shed more light on the hypothesized model with motivation as a mediator. Although studies have investigated the possible links between immediacy, learning, and motivation, they either did not establish the full mediation model (Christensen & Menzel, 1998), only focused on actual learning (Allen et al., 2006), or used learning loss as a measure (Christophel, 1990). Thus, the present study provides support for the findings by Frymier (1994) where state motivation acts as a mediator in the immediacy and learning relationship. Furthermore, it shows that this mediation relationship is not only present for actual cognitive learning and when using learning loss as an instrument, but also when perceived learning is measured using a validated scale.

Second, our results provide newly found support for motivation as a partial mediator, a relationship which has not been explored well in the literature. Except for Christophel (1990) who found both direct and indirect effects of immediacy on learning, most research in the field only explored a full mediation model (Allen et al., 2006; Frymier, 1994). However, differences in the conceptualization of learning and study design make it difficult to compare these findings. It might be that, as these studies suggest, immediacy only has indirect effects on learning with motivation as a mediator. However, it is also plausible that perceived learning is predicted by a combination of other variables, such as classroom democracy (Kwitonda, 2017). Therefore, future research should focus on identifying the direct and

indirect effects of immediacy and motivation on perceived knowledge gain, as well as identifying its other potential predictors.

Third, no support was found for the hypothesized role of teacher credibility as a moderator of the mediation relationship. Based on the findings by Pogue and Ahyun (2006) who found that credibility and immediacy together were a stronger predictor of motivation than either of the variables alone, we expected that high credibility would be necessary for immediacy to lead to higher motivation. However, it is possible that the relationship between immediacy and motivation is always present independently of credibility. Then, immediacy and credibility could act as separate, albeit correlated, predictors of motivation. The significant positive correlation between immediacy and motivation, as well as the positive effect of credibility on motivation found in our analysis, would support this prediction.

It could be that credibility might instead mediate the relationship between immediacy and motivation. Then, immediacy would lead to credibility, which in turn leads to motivation, and finally to perceived learning gain. This relationship is supported by a body of research which found relationships between credibility and immediacy (Johnson & Miller, 2002; Teven & Hanson, 2004; Thweatt & McCroskey, 1998), credibility and motivation (Martin et al., 1997), and motivation as a mediator of a relationship between credibility and learning (Zhang, 2009). Since this relationship seems to be fairly complex, future research should test the proposed model.

The results of the post hoc analysis revealed a positive significant direct effect of immediacy on active participation learning. This is in line with previous research which found immediacy to be a predictor of participation in the classroom (Roberts & Friedman, 2013), as well as willingness to talk (Sheybani, 2019). However, motivation was not a significant mediator of this relationship between immediacy and active participation. Additionally, the correlation between immediacy and state motivation was weak. Since

immediacy had a significant path with active participation learning but not motivation, it might be that immediacy can encourage people to be more active, but it doesn't necessarily translate into their motivation for the course. Alternatively, motivation could act as the outcome variable. Since immediacy significantly predicted active participation learning and active participation learning and motivation were significantly positively correlated, immediacy could first lead to increase in active participation before it can influence motivation. Furthermore, our results show that state motivation is a complex construct that might be challenging to measure. Especially when looking at motivation regarding a specific class, students' attitudes might change on a daily basis and be influenced by other factors outside of the teacher's behaviour. The results of the post hoc analysis highlight the importance of immediacy behaviours beyond perceived knowledge gain. Moreover, future studies should aim to improve our understanding of motivation and its influences in the classroom.

### ***Practical Implications***

The current study provided support to an existing body of research that suggests the importance of immediacy in perceived learning gain of students and active participation learning. This has relevant practical implications for peer mentors in general, as well as for the psychology programme at the UG. Peer mentors at the UG follow a teaching course in which they receive guidance and learn about effective peer mentoring. Therefore, a better understanding of peer mentor factors that influence student outcomes can improve the course curriculum. If we train mentors in immediacy behaviours, it seems that we can significantly contribute to the positive learning experiences of their students (Allen et al., 2006).

### **Limitations and Directions for Further Research**

Although this study provides valuable contributions to the research about immediacy and learning, it suffers from several limitations. First, the study was done online on a sample

of first-year students who completed it for course credit. Therefore, it cannot be assured that students put forth their best effort while completing the questionnaire. However, upon the initial check, only one person was found with a suspicious pattern of responding and was subsequently removed from the analysis. Moreover, our study solely focused on the relationships between peer mentors and students of the first-year psychology programme at the UG. With a sample size of  $N = 288$ , it includes about half of the current first-year students and thus has excellent generalizability to our target population and the practical implications can be readily applied to the students in our programme. However, it is unclear whether our findings are applicable to other peer mentors in different types of education.

Second, the nature of the study might impact the validity of its findings. Since it is very difficult to measure and manipulate these variables in an experimental study, most research in the field, including ours, has to rely on self-reports. Moreover, our study used a cross-sectional design with all variables measured at the same time. Therefore, it is impossible to establish temporal precedence and causality. However, the constructs measured in this study are subjective by definition. Motivation, as well as perceived learning gain concern students' personal feelings about their own experiences. Moreover, even if a teacher is highly credible or immediate, they might not have any influence if the student does not perceive them as such. Therefore, self-report measures, rather than experiments or observations, might provide more meaningful insight when investigating these constructs.

To address the issue of temporal precedence, future studies should use longitudinal design. Instead of taking measurements at one time point, students should complete the questionnaire multiple times throughout the year. That way, development of the variables and their levels, as well as their mutual relationships, can be observed.

Lastly, although our results showed a significant mediation, the full relationship between immediacy, motivation, and learning remains somewhat unclear. Even though

immediacy appears to predict learning through motivation, it also seems to have a direct influence. Moreover, it is uncertain what role credibility plays in this model – whether it is a separate predictor, if it acts as a mediator between immediacy and motivation, or if it moderates the relationship in a different way. All things considered, our results seem to suggest the relationships between the variables investigated in this study are complicated. Thus, further research should focus on disentangling the associations between immediacy, state motivation, and perceived knowledge gain. Furthermore, the role of credibility should be explored.

### **Conclusion**

The present study found a significant relationship between immediacy and perceived knowledge gain, mediated by state motivation. However, teacher credibility did not moderate this relationship. The post hoc analysis revealed a direct relationship of immediacy on active learning participation without the influence of motivation. These findings suggest that students' experience in education can be positively influenced by training teachers in immediacy. Further research should be done to clarify the mediation relationship between immediacy, motivation, and perceived learning gain, as well as the role of teacher credibility.

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## Appendix

**Figure 4**

### *Verbal and Nonverbal Immediacy Scale (Kwitonda, 2017)*

Please answer the following questions regarding your **faculty mentor**

	(1) Never	(2) Sometimes	(3) About half the time	(4) Most of the time	(5) Always
1. Asks questions or encourages students to talk	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
2. Smiles at the class while talking	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
3. Asks how students feel about the class (assignment, due date or discussion topics)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
4. Uses monotone/dull voice when talking to the class	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
5. Praises students' work, actions or comments	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
6. Asks questions that solicit viewpoints or opinions	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
7. Refers to class as 'our' class or what 'we' are doing	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
8. Smiles at individual students in the class	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
9. Has a very relaxed body position while talking to the class	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
10. Addresses students by name	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
11. Invites students to telephone or meet with him/her outside of class if they have questions or want to discuss something	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
12. Uses a variety of vocal expressions when talking to the class	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
13. Uses humor in class	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
14. Stands behind the podium or desk while teaching	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
15. Looks at board or notes while talking	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
16. Moves around the classroom while teaching	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
17. Provides feedback on my individual work through comments on papers, oral discussions, etc	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
18. Gets into discussions based on something a student brings up even when this doesn't seem to be part of his/her lecture plan	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
19. Gestures while talking	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
20. Sits on a table or chair while talking	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
21. Gets into conversations with individual students before or after class	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
22. Refers to class as 'my' class or what 'I' am doing	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
23. Smiles at individual students in the class	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

**Figure 5**

### *Teacher Credibility Scale (McCroskey & Teven, 1999)*

On the scales below, indicate how you perceive your **faculty mentor**.

Intelligent	○ ○ ○ ○ ○ ○ ○ ○	Unintelligent
Untrained	○ ○ ○ ○ ○ ○ ○ ○	Trained
Cares about me	○ ○ ○ ○ ○ ○ ○ ○	Doesn't care about me
Honest	○ ○ ○ ○ ○ ○ ○ ○	Dishonest
Has my interests at heart	○ ○ ○ ○ ○ ○ ○ ○	Doesn't have my interests at heart
Untrustworthy	○ ○ ○ ○ ○ ○ ○ ○	Trustworthy
Inexpert	○ ○ ○ ○ ○ ○ ○ ○	Expert
Self-centered	○ ○ ○ ○ ○ ○ ○ ○	Not self-centered
Concerned with me	○ ○ ○ ○ ○ ○ ○ ○	Not concerned with me
Honorable	○ ○ ○ ○ ○ ○ ○ ○	Dishonorable
Informed	○ ○ ○ ○ ○ ○ ○ ○	Uninformed
Moral	○ ○ ○ ○ ○ ○ ○ ○	Immoral
Incompetent	○ ○ ○ ○ ○ ○ ○ ○	Competent
Unethical	○ ○ ○ ○ ○ ○ ○ ○	Ethical
Insensitive	○ ○ ○ ○ ○ ○ ○ ○	Sensitive
Bright	○ ○ ○ ○ ○ ○ ○ ○	Stupid
Phony	○ ○ ○ ○ ○ ○ ○ ○	Genuine
Not understanding	○ ○ ○ ○ ○ ○ ○ ○	Understanding

**Figure 6**

*Learning Indicators Scale (Kwitonda, 2017)*

Please answer the following statements in regard to Academic Skills.

	Never	Sometimes	About half the time	Most of the time	Always
I see the relationship of the course content from one day to the next throughout the semester	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I see the connections between the content in this class with the content in other classes	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I ask questions to find out what others in class think about the content	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I actively participate in class discussion	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I like to talk about what I'm doing in this class with friends and family	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I explain course content to other students	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I volunteer my opinion in class	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I challenge points made by my instructor in class	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I openly disagree with my instructor on content in class	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I see improvement in my performance on assignments in this class	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I think about the course content outside of class	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

**Figure 7**

*State Motivation and Situational Interest Scale (Christophel, 1990)*

These items relate to how you generally feel about your Academic Skills sessions. Please, indicate toward which word you feel best describes you.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	
1. Motivated	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Unmotivated
2. Interested	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Uninterested
3. Involved	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Uninvolved
4. Not Stimulated	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Stimulated
5. Don't want to study	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Want to study
6. Inspired	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Uninspired
7. Unchallenged	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Challenged
8. Discouraged	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Encouraged
9. Unenthused	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Enthused
10. Excited	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Unexcited
11. Energized	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Unenergized
12. Not Fascinated	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Fascinated
13. Dreading it	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Looking forward to it