**Peer Mentor's Cognitively Congruent Teaching Style as a Factor in Student's In-Class**

**Engagement: A Moderated Mediation Analysis**

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**Abstract**

Peer mentoring can offer help, attention and guidance at the student's required level. Certainly, research shows that peer mentoring has various positive outcomes within the academic and socioemotional domains. However, little research has been directed at investigating the processes behind increased engagement and motivation. Therefore, the current study investigates the mechanisms which influence in-class engagement behaviours within first-year psychology students. Based on the similarity theory and the Self-Determination theory, the proposed moderated mediation model predicts that trust mediates the relationship between cognitive congruence and in-class engagement. It is also proposed that this effect would be exacerbated for those students who have higher intercultural communication competencies (ICC). This cross-sectional study ($N = 99$) measured the student's perceptions of cognitive congruence with the peer mentor, trust toward the peer mentor, the mentee's intercultural communication competencies and the mentee's behavioural in-class engagement. The results indicated no support for the suggested moderated mediation. Two mediation analyses were conducted to further explore the relationships between the identified variables. Cognitive congruence was found to be related to in-class engagement but trust did not mediate this effect. Additionally, significant relationships between cognitive congruence, ICC and trust were found. It is concluded that trust toward the peer mentor does not mediate the relationship between cognitive congruence and in-class engagement and this effect is not moderated by ICC. Possible explanations and implications are offered for these findings.


*Keywords:* cognitive congruence, peer-learning environment, trust, in-class engagement, intercultural communication competence

**Peer Mentor's Cognitively Congruent Teaching Style as a Factor in Student's In-Class Engagement: A Moderated Mediation Analysis**

Peer mentoring has been shown to have various positive effects on student academic motivation and well-being, such as increased persistence through academic difficulties (Destin et al., 2018) and increases in overall mental health (Stapley et al., 2022). Several authors have suggested that this impact is due to peer mentors', in comparison to faculty mentors', greater cognitive congruence with their fellow students (Cornwall, 1979; Lockspeiser et al., 2008; Williams et al., 2011). So far, relatively little research has examined the underlying mechanisms by which cognitive congruence can exert a positive impact on students' motivation. However, recent research has linked trust with cognitive congruence and student engagement (Loda et al., 2020). Therefore, the primary aim of this study is to examine whether trust toward the peer mentor mediates the relationship between the peer mentor's cognitively congruent teaching style and student engagement. A secondary aim is to examine whether Intercultural Communication Competence (ICC), a variable linked with trust (Lloyd & Härtel, 2010), can exacerbate this mediation pathway.

Cognitive congruence, within the peer-learning context, is the peer mentor's ability to communicate to their students in a clear and comprehensible manner (Schmidt & Moust, 1995; Rotgans & Schmidt, 2011). When the peer mentor understands the academic skills and abilities of the student, they can provide help on the student's required level (Lockspeiser et al., 2008; Yew & Yong, 2014; Loda et al., 2019). Furthermore, a cognitively congruent peer mentor is able to understand the situational constraints and liberties of the learning environment. In practice, the mentor should give space for relevant discussions and allow free exchange of information within the class setting (Rotgans & Schmidt, 2011). This means that the peer mentor does not interrupt the flow of the conversation, communicates also in non-formal language and is responsive to students' questions and thoughts. Already in the late 70's it was suggested (Cornwall, 1979) that cognitive congruence is exactly why peers are better mentors than faculty members. Several authors

(Lockspeiser et al., 2008; Oortwijn et al., 2008; Williams et al., 2011) have suggested that this is because of the peer mentor's ability to see the student's perspective as they experienced similar difficulties in the near past. Additionally, the peer mentor's use of scaffolding and positive interactions (Pilot et al., 2021) may explain why peers are better mentors than faculty members. The use of scaffolding, breaking down complex constructs, increases the likelihood of the concept being understood while increasing cognitive congruence (Yew & Yong, 2014). However, little research exists on the underlying mechanisms on how cognitive congruence may influence student motivation and in-class engagement. It is proposed that the similarity theory (Byrne, 1971) explains how trust can mediate this pathway from cognitive congruence to in-class engagement.

Cognitive congruence exerts it's influence over trust because it promotes perceived similarity, which has been consistently linked with trust and trustworthy behaviours (Taylor & Brown, 1988; Krueger, 1998; DeBruine, 2002; Whitmore & Dunsmore, 2014; Ennen et al., 2015; Clerke & Heerey, 2021). Trust can be defined as an "individual's or group's willingness to be vulnerable to another party based on the confidence that the latter party is benevolent, reliable, competent, honest and open" (Hoy, n.d.). One factor which is closely related to the formation and maintenance of trust is perceived similarity (Clerke & Heerey, 2021). The similarity theory (Byrne, 1971) states that we are drawn toward individuals who share similar traits, values and attitudes as we do. In practice, this means that we are more likely to engage in conversation and befriend individuals who we perceive as similar to ourselves. Especially action-based similarity cues have been identified as a key factor in establishing perceived trust (Huff et al., 2002). It is suggested that cognitive congruence underpins perceived similarity. Cognitive congruence entails communication competence and situational awareness whereas action-based similarity cues seem to be manifestations of these cognitions through behaviours such as communication style and responsiveness. These behavioural cues have been argued to foster feelings of trust because interactions are more processed with improved fluency, namely they are more predictable (Taylor &

Brown, 1988; Krueger, 1998; Clerke & Heerey, 2021). This is because of the way information about others is processed in the brain. The medial prefrontal cortex, (mPFC) activates when the behaviour of oneself and of similar others' is interpreted (Jenkins et al., 2008), which leads to inferences between oneself and others. If the student perceives themselves as trustworthy and similar to their peer mentor, they will also deem the peer mentor as trustworthy. Therefore, perceived similarity might increase feelings of trust toward the peer mentor. Interestingly, individuals attribute more self-relevance when their needs are being fulfilled by a relationship or activity (Di Domenico et al., 2022). This could imply that if the student's relatedness needs are being fulfilled through trust toward the peer mentor, they feel that the material is more self-relevant and therefore engaging. Hence, the role of fulfilled relatedness needs through trust should be considered within student engagement.

Based on the Self-Determination Theory (Deci & Ryan, 1985) it is suggested that trust could mediate the pathway from cognitive congruence to in-class engagement. According to Deci & Ryan (2000) fulfilled relatedness needs form a motivational basis for fulfilling autonomy and competence needs. Empirical evidence supports this proposition as satisfied relatedness needs have been consistently linked to greater academic achievement and engagement outcomes (King, 2015). Foremostly, trust has been identified as a key component in satisfying relatedness needs (Caleon & Wui, 2019) and as a prerequisite for supporting student-teacher relationships (Leenknecht et al., 2020), which are required for engaging student learning (Reeve, 2012). This may be because trusting the peer mentor allows the student to freely express themselves and pursue their interests in a class-setting, which contributes positively to their autonomy and competence needs (Deci & Ryan, 2000). Within the peer-learning environment, this means that once the student can trust that the peer mentor is benevolent and honest, they can express their opinions, ask more questions and be their authentic selves without the fear of being judged or ridiculed. Therefore, trust toward the peer mentor encourages the student to engage with the material more actively and openly, which

supports their confidence in their own skills and independence which fulfils their autonomy and competence needs. Yet, there are various factors which might influence the formation and maintenance of this trust. Previous research has indicated that cultural background is important for cognitive capacities, visible physical behaviours and cognitive schemas also within a co-operative learning environment (Oortwijn et al., 2008; Goncalves et al., 2020). Therefore, it is suggested that Intercultural Communication Competence (ICC), the capability to interact effectively with individuals from other cultures, could enhance the effects of cognitive congruence, therefore promoting experienced trust toward the peer mentor.

It is suggested that the mediation pathway from cognitive congruence to in-class engagement through trust will be strengthened for those students who are higher in Intercultural Competence Communication (ICC). ICC is commonly defined as "knowledge, motivation and skills to interact effectively and appropriately with members of different cultures" (Wiseman, 2002, p. 208). ICC has been linked to the facilitation of adjustment to new cultures, to the forming and maintenance of new social relationships and to positive psychological health outcomes (Matera & Catania, 2021). This means that a student who is capable of ICC is better equipped to form friendships, communicate and relate to those from different cultures. Therefore, it is not surprising that ICC skills have been found to be vital for fostering trust within an international student base (Zou & Yu, 2021). Research even suggests that individuals who are not capable of ICC are more likely to trust less and have lower levels of satisfaction (Lloyd & Härtel, 2010). This effect might arise from perceiving similarity even with those individuals who are dissimilar to oneself. This would mean that ICC provides an extra facet for being able to fulfil relatedness needs. Therefore, if a student is able to fulfil their relatedness needs with peer mentors from different cultures, they should have even more possibilities to explore their interests and fulfil their autonomy and competence needs. This would give these students an advantage over students who do not possess ICC skills, which is why ICC is expected to exacerbate the proposed mediation pathway.

**Figure 1.**

*Proposed Moderated Mediation Model of Cognitive Congruence and In-Class Engagement*
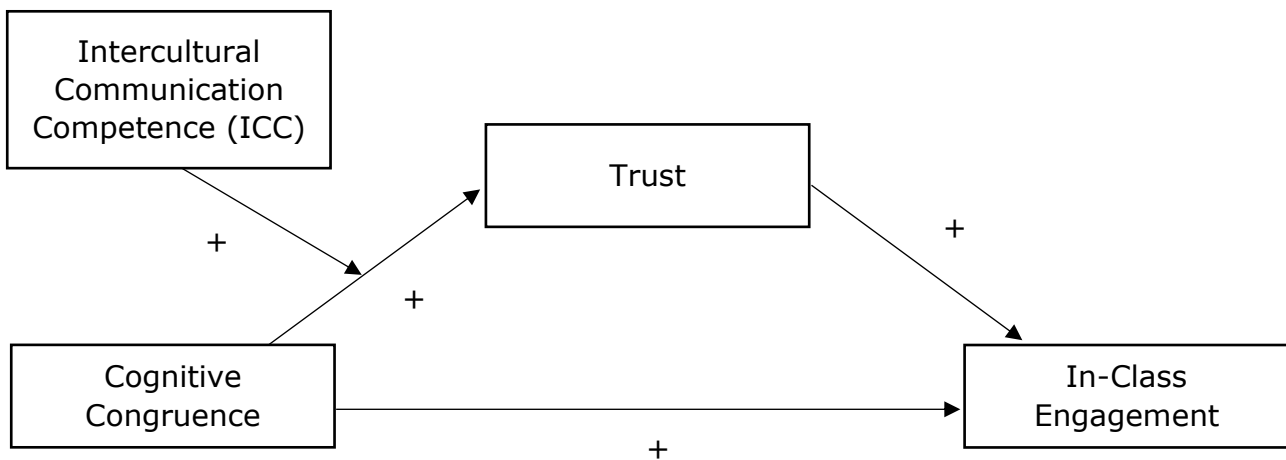


*Note.* Trust stands for trust toward the peer mentor.

In sum, it is proposed that higher cognitive congruence between the peer mentor and the student leads to increased trust toward the peer mentor which contributes to more frequent in-class engagement behaviours. The effect is expected to be exacerbated for those individuals who exhibit Intercultural Communication Competence (ICC) as it further enhances the trust toward the peer mentor, thus strengthening the pathway. Therefore, the role of trust as a mediator between the predictor cognitive congruence and the criterion variable in-class engagement will be investigated. ICC is expected to moderate the effect of cognitive congruence on to trust. See Figure 1. above for a visual representation of the proposed model.

## Method

### Participants

The participants of this cross-sectional study were recruited via convenience sampling. The only prerequisites for participating were that the individual needed to be a first-year psychology student and is currently taking a course with a peer and/or faculty mentor. A total of 199 responses were recorded. After omitting incomplete or unsuitable answers, the sample consisted of 99

participants, the ages ranging from 18 to 31, ($M = 20.47$, $SD = 2.29$). The nationality options were divided into three answering possibilities, Dutch ($N = 24$), German ($N = 44$) and other ($N = 31$).

**Materials**

The platform Qualtrics was used for administering the questionnaire. Qualtrics is an online tool through which the questionnaire can be constructed and administered. In the current research there were a total of 15 individuals who were conducting their bachelor's thesis, which was reflected in the contents of the questionnaire. However, the relevant scales for this thesis were the measures for cognitive congruence, trust, intercultural communication competence and in-class engagement. See Appendix A for the full item scales.

*Cognitively Congruent Teaching Style*

The cognitive congruence subscale for ratings of teacher characteristics was used to measure the peer mentor's cognitively congruent teaching style (Schmidt & Moust, 1995; adapted by Rotgans & Schmidt, 2011). The subscale consists of three items (e.g., "The facilitator used words or jargon that were difficult for me to understand.), which participants rated on a Likert scale from 1 (*not true at all*) to 5 (*very true for me*). Previous research has shown a sufficient reliability through the Hancock's coefficient *H* of .79, which is an alternative for Cronbach's alpha (Rotgans & Schmidt, 2011). In our current sample the Cronbach's α was .54, which is not satisfactory. This was further supported by the McDonald's ω as it was .55, which is also insufficient.

*Intercultural Communication Competence (ICC)*

The sociocognitive subscale by Goncalves et al. (2020) was chosen for measuring the participants' Intercultural Communication Competence. The sociocognitive subscale consists of four items such as "I often notice similarities in personality between people who belong to completely different cultures." and were be rated on a seven-point Likert scale from 1 (*totally disagree*) to 7 (*totally agree*). Previous research has established an internal consistency of 0.65 (α =

.65) for the subscale. In the current study the Cronbach's α was at a similar level at .63, but still not at an acceptable level. The observed McDonald's ω equals to .66, which is also unsatisfactory.

### Trust Toward the Peer Mentor

As the student perceptions are of most interest in the current context, the trust of the student towards the peer and faculty mentor was measured. A Student Trust in Faculty scale (STF) was used for assessing the trust towards both the peer mentor. The scale consists of thirteen items that are rated on a Likert scale from 1 (*strongly disagree*) to 5 (*strongly agree*) based on the student's perspective on peer mentor responsiveness. The scale consists of items such as "Peer mentors are always honest with me.". Previous research has found the reliability of the measure to be .90 (α = .90), respectively. In the current study the Cronbach's α was good at .87. The McDonald's ω further supported this as it was observed at .87.

### In-Class Engagement

The behavioural component of engagement was deemed as the most relevant aspect for our current study. Therefore, the Participation/Interaction subscale from the Student Course Engagement Questionnaire (SCEQ; Handelsman et al., 2005) was adapted. The five items, such as "Raising my hand in class." were rated by the participants on a Likert scale from 1 (*not at all characteristic of me*) to 5 (*very characteristic of me*) on their descriptiveness of the participant's in-class engagement behaviours. The subscale has an adequate Cronbach's α of .79, respectively. However, in the current study we found a questionable internal consistency of .61 (α = .61). This was further supported as McDonald's ω was at .60.

## Procedure

The Ethical Committee of Psychology of the University of Groningen reviewed this research prior to data gathering to ensure ethical measures and procedures. Several pathways were adopted for distributing the questionnaire. Some peer mentors were directly contacted and asked to distribute the questionnaire to their students. The questionnaire was also advertised on screens

across faculty spaces and flyers were given out to students. Some participants were offered

incentives, such as sweets, for their participation. The study was also made accessible through

SONA. SONA is a program for first-year students through which they can obtain credits for a

participatory section of a mandatory course. Once the participants accessed the Qualtrics, they were

informed of the aims of the study, namely investigating the peer-learning environment dynamics.

After this, the participants could give their informed consent and demographic information, which

allowed them to complete the rest of the questionnaire. The questionnaire was designed in such a

way that it would take less than 20 minutes to complete.

**Statistical analysis**

The preliminary analyses focused on checking assumptions, namely, the assumptions for

normality, possible multicollinearity, homoscedasticity and possible linear relationships between

the variables were checked. The main analysis was conducted using the PROCESS macro (v.3.4,

Hayes, 2013) for SPSS (version 26, IBM Crop, 2019) as suggested by Hayes (2013). The

moderated mediation (Model 7) tested cognitive congruence as a predictor variable, ICC as a

moderator, trust as a mediator and in-class engagement as the criterion variable. The PROCESS

macro (v.3.4, Hayes, 2013) analysis utilises 5,000 bootstrap samples using a 95% bias-corrected

confidence interval (95% CI), to test whether the effects were significant.

The PROCESS macro utilises the bootstrap approach, which is robust to the potential

influences in non-normally distributed samples (Wright et al., 2011) and estimates all given

parameters concurrently (Hayes, 2013). Applying the bootstrap approach enables the researcher to

make no assumptions about the sample distribution, which makes it more likely that valid results

are obtained compared to normal theoretical approaches (Wright et al., 2011). Additionally, even

with lower sample sizes there are decent standard error estimates (Efron et al., 2004). Furthermore,

evidence exists to support that using larger samples only reduces the effects of sampling errors

(Goodhue et al., 2012), which would indicate a decent reliability for the bootstrap analysis.

## Results

Before examining the analyses of the results, some points with the data should be mentioned. A total of 199 cases were recorded in the data collection process. However, some cases were omitted from the data analysis. The previews and pilot responses were filtered out from the data set. Furthermore, any participant case was excluded if the participant did not consent, was not a first year psychology student and/or did not complete all relevant measure items. Therefore, the final sample consisted of 99 cases.

### Preliminary analyses

In the preliminary analyses, zero-order correlations were observed between cognitive congruence, trust, in-class engagement and ICC. See Table 1 for variable descriptives. Both the Kolmogorov-Smirnov test and the Shapiro-Wilk test showed that the normality assumption was violated for all independent variables (see Appendix B, table B1). This was further investigated through inspecting the normal probability plots, residual plots and scatterplots ([Testing assumptions of Linear Regression in SPSS], n.d.), which further indicated signs of non-normality for trust (See Appendix B, figure B3). Therefore, the nonparametric (Spearman's rho) correlations were calculated for all variables. Non-parametric tests do not assume normality and function also for normally distributed data. After this the assumptions of the relationships between the independent variable (cognitive congruence), the mediator (trust toward the peer mentor), the dependent variable (in-class engagement) and the moderator (ICC) were examined. In order to conduct this, the degree of multicollinearity was assessed using the scatterplots and correlations. The data indicated homoscedasticity (See Appendix B, figure B4) and the variable correlations were at an adequate level ($< .80$) indicating that multicollinearity is not an issue ([Testing assumptions of Linear Regression in SPSS], n.d.). Furthermore, distinct linear relationships were not observed between the variables (See Appendix B, figure B5).

**Table 1**

*Mean, Standard Deviation and Correlation Coefficients for Variables*

|  | 1 | 2 | 3 | 4 |
|---|---|---|---|---|
| 1. Cognitive congruence | - |  |  |  |
| 2. ICC | .24* | - |  |  |
| 3. Trust | .32** | .28** | - |  |
| 4. In-class engagement | .29** | .14 | .14 | - |
| *M* | 13.4 | 22.81 | 40.95 | 18.09 |
| *SD* | .13 | .29 | .47 | .28 |

*Note.* ICC indicates Intercultural Communication Competence. *M* refers to mean. *SD* indicates

standard deviation. Trust indicates trust toward the peer mentor.

*p < .05. **p < .01 for Spearman's rho.

**Moderated mediation**

The main analysis indicated a non-significant ($B$ = -.0005, $SE$ = .0083, *95% CI* [-.02, .01])

indirect effect for the proposed mediated moderation model (Model 7) between cognitive

congruence, ICC, trust toward the peer mentor and in-class engagement. Furthermore, the analysis

detected no interaction between the variables ($B$ = -.061, $SE$ = .12, *95% CI* [-.29, .17] $p$ > .05).

However, a direct effect from cognitive congruence on to in-class engagement behaviours was

found ($B$ = .55, $SE$ = .23, *95% CI* [.10, 1.00], $p$ = .017).

**Two Mediation Pathways of Trust**

Two exploratory mediation analyses were conducted to investigate and explain the

relationships between the chosen variables. Another aim was to examine the strength and direction

of these relationships. The first exploratory mediation analysis was conducted to investigate

whether the proposed mediator trust mediated the pathway from cognitive congruence to in-class

engagement behaviours. The second mediation analysis examined whether trust mediated the

relationship between ICC and in-class engagement behaviours. These relationships were tested with

two separate mediation analyses using the PROCESS macro Model 4.

**Figure 2**

*Exploratory Mediation Analysis of Cognitive Congruence, Trust and In-Class Engagement*
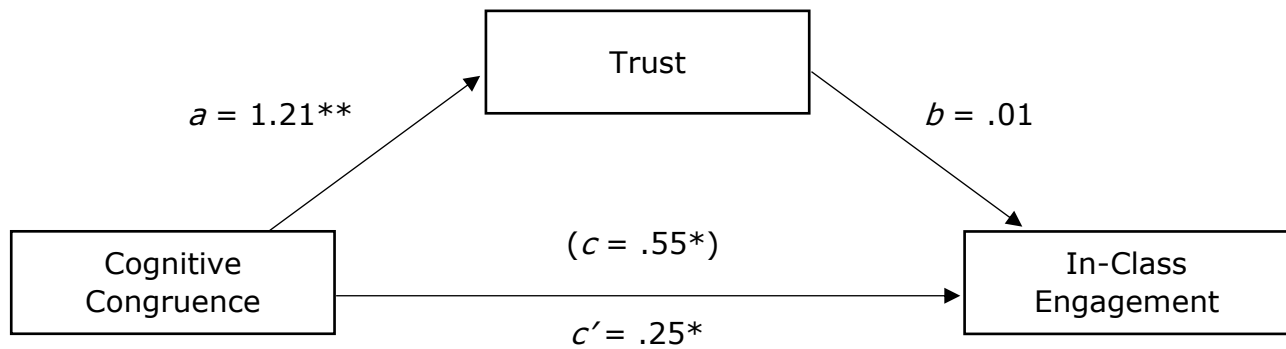


*Note.* Unstandardized betas are reported for the pathway between cognitive congruence and in-class engagement mediated by trust toward the peer mentor.

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

The first mediation analysis indicated that cognitive congruence is related to trust ($B = 1.21$, $SE = .34$, *95% CI* [.54, 1.88], $p < .001$]. A significant direct effect from cognitive congruence to in-class engagement ($B = .55$, $SE = .23$, *95% CI* [.10, 1.00], $p = .02$) was observed. However, trust did not mediate this pathway. Despite the significant p-value the first mediation model was not supported [$F(2, 96) = 3.46$, $p = .04$]. This is because the effect was stronger without the mediator trust. The proposed mediation model explained only 7 per cent of the variation in in-class engagement ($R^2 = .07$). See Figure 2. above for a visual representation.

The second mediation analysis indicated that ICC is related to trust toward the peer mentor ($B = .45$, $SE = .16$, *95% CI* [.14, .76], $p = .005$). However, ICC did not exhibit direct significant effects on in-class engagement ($B = .15$, $SE = .10$, *95% CI* [-.05, .36], $p > .05$). Overall, there was no support for the second model [$F(2, 96) = 1.62$, $p > .05$], as it explained only 3 percent of the variation in in-class engagement tendencies ($R^2 = .03$). See Figure 3. below for a visualisation of the findings.

**Figure 3**

*Exploratory Mediation Analysis Investigating ICC, Trust and In-Class Engagement*
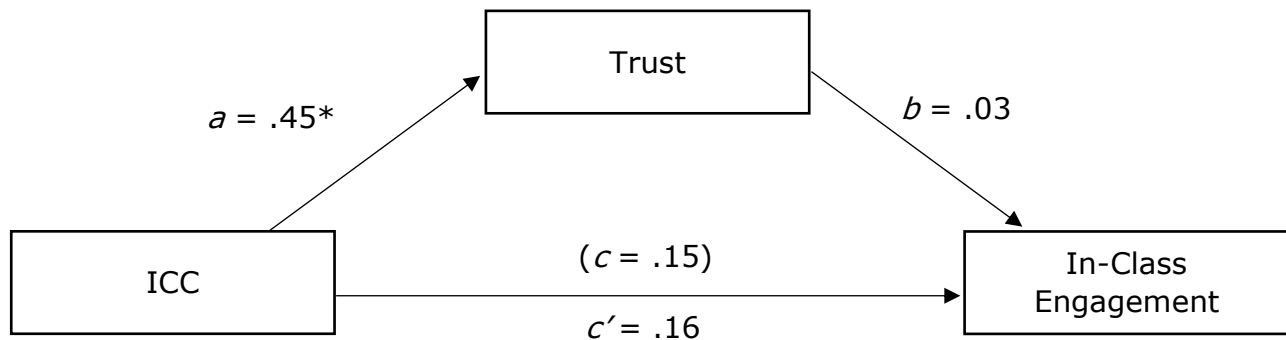


*Note.* Unstandardized betas are reported for the pathway between Intercultural Communication Competence (ICC) and in-class engagement being mediated by trust toward the peer mentor. *p < .05

## Discussion

It was predicted that trust toward the peer mentor would mediate the relationship between cognitive congruence and in-class engagement in first-year psychology students. Intercultural Communication Competence (ICC) was expected to exacerbate this mediation pathway. The results were not supporting the proposed moderated mediation. It was found that trust toward the peer mentor was did not mediate the relationship between cognitive congruence and in-class engagement. Furthermore, ICC did not moderate this relationship. Neither exploratory mediation pathway gained support from the results, indicating that trust is not provoking greater in-class engagement behaviours. Yet, cognitive congruence had a direct effect on in-class engagement and ICC and cognitive congruence were significantly related to trust toward the peer mentor.

Overall, the findings of this study would imply that trust toward the peer mentor does not motivate in-class engagement behaviours. However, trust has previously been linked to academic motivation and engagement (King, 2015), which would indicate that trust plays a role in engagement as well. It could be that the student's relatedness needs are being fulfilled through trust

but it is not enough to satisfy their autonomy and competence needs. The student cannot fully express and explore their interests within a class environment if the pedagogical expertise of the peer mentor is not adequate to the student's needs. This might leave the student's competence and autonomy needs unfulfilled, which influences the lack of engagement. Perhaps this is why cognitive congruence was found to be directly related to in-class engagement as it was able to fulfil all the student's needs for maximal engagement. Cognitive congruence might have promoted enough similarity and trust to fulfil relatedness needs, which serve as a basis for fulfilling autonomy and competence needs (Ryan & Deci, 2000) and therefore the student is more engaged. However, trust might have not mediated the relationship because trusting the peer mentor is not enough to satisfy relatedness needs. Previous research has shown that an overall trusting environment increases the student's open communication, motivation and effort (Huff et al., 2002; Ennen et al., 2015; Bell & Lygo-Baker, 2019). Therefore, the group level trust might influence relatedness more than the individual level trust. If the student is in an overall accepting and trustworthy environment they might be more capable of exploring their interests and therefore to fulfil their autonomy and competence needs. Finally, the findings of this study might indicate that trust is more important for the socio-emotional domain than for the academic domain. Trust has been linked to various other outcomes such as higher creativity in a student group (Barczak et al., 2010), improved communicational skills and improved cohesion (Huff et al., 2002; Ennen et al., 2015). Therefore, it would seem that trust may elicit other relevant outcomes that foster a pleasant learning environment rather than have a direct influence on in-class engagement behaviours.

Despite the non-significant findings on the proposed moderated mediation model, this research provides insight into several pathways between the identified variables. The current research found a direct effect between cognitive congruence and in-class engagement. This would indicate that being cognitively congruent with a peer mentor influences in-class engagement behaviours positively. These results are in line with previous research which has identified the role

of cognitive congruence in eliciting situational interest (Rotgans & Schmidt, 2011). Yet, mostly the

two congruences, social and cognitive, have been investigated together (e.g., Lockspeiser et al.,

2008), which might have implications for this research. Accounting for only cognitive congruence

might neglect other important socio-emotional factors which influence in-class behaviours.

Introducing social congruence as a mediator could help explain the pathway as social congruence

has underpinnings in utilising expertise and cognitive congruence (Loda et al., 2019) and it has been

identified as relevant for effective learning (Loda et al., 2019). Perhaps perceived social congruence

could further strengthen to satisfy relatedness needs which foster the basis for competence and

autonomy needs. Another significant relationship was found between cognitive congruence and

trust toward the peer mentor. These results are in line with the previously established findings

(Taylor & Brown, 1988; Krueger, 1998; Whitmore & Dunsmore, 2014; Ennen et al., 2015; Clerke

& Heerey, 2021). Perhaps cognitive congruence underpins perceived similarity which fosters trust

and acceptance and fulfil the relatedness needs of the student. Furthermore, ICC was significantly

related to trust which could indicate that being open to alternative cultures and attitudes within a

group learning environment resonates positively to foster a more trusting environment. These

results support previously established findings (Lloyd & Härtel, 2010; Zou & Yu, 2021).

Furthermore, the importance of an intercultural and accepting environment within an academic

setting is highlighted by these results.

This research identified multiple interesting relationships with real-life implications.

Cognitive congruence was found to be related to in-class engagement. In practice this means that

peer mentors should continue to try to be approachable, focus on clear and open communication and

give space for students to explore their specific interests within a class environment. Those peer

mentors that are cognitively congruent with their mentees also might be better at encouraging a

more trustworthy atmosphere, which has been found to have various positive outcomes, such as

engagement and motivation (Deci & Ryan, 2000). Furthermore, students who are capable of

intercultural communication competence appear to be more responsive to trusting the peer mentor, which highlights the importance of cultural diversity advocacy within the university. Universities should therefore focus their training on multiculturally aware peer mentors and continue to highlight intercultural values and norms. Research supports this notion as faculty culture similarity, compared to cultural similarity, is more important for successful cooperation (van Oudenhoven & van der Zee, 2002). Possibly, promoting acceptance as a value at the university could result in improved student perceptions and well-being as well as in more diverse and higher quality education.

Any form of psychological research has limitations, there are some which should be discussed here. Firstly, there are limitations with the sample. The current study had a low number of cases ($N = 99$), which were included in the analysis. However, bootstrapping has been found to be reliable even with smaller samples (Efron et al., 2004). It has been argued that larger samples only decrease the effects of sampling errors rather than to provide more data about the relevant constructs (Goodhue et al., 2012). Therefore, the current research might have been more prone to errors arising from sampling which may reflect in the validity of the findings. It should be noted that the convenience sample was WEIRD, White, Educated, Industrialized, Rich and Democratic (American Psychological Association, 2010) which could influence the generalizability of these findings to larger populations. However, the aim of the research was to identify components within university level learning environments, which inevitably influences the sampling. Yet, the current research provided more data from non-medical settings, which has been the primary source of past literature on cognitive and social congruences (Yew & Yong, 2014). In the future, research could be conducted within an interdependent culture to further broaden the applicability of the findings. Secondly, there are limitations regarding the reliability of the scales. The trust scale exhibited good reliability at $\alpha = .87$. However, the reliability for cognitive congruence, ICC and in-class engagement deviated negatively from the acceptable reliability of $\alpha > .70$. These variations might

stem from the low number of items combined with the small sample. This being said, the validity of the findings may be questionable. A future study might try to tackle these issues with either increasing the number of items within a scale, using an alternative scale or utilizing a larger sample to investigate whether validity was impacted. Finally, causality cannot be inferred due to the cross-sectional nature of the study. Therefore, it cannot be said whether cognitive congruence actually causes in-class engagement behaviours. Causality would need to be investigated with an alternative research method instead.

Given the discussion above, several directions for future research can be suggested. Firstly, the relationship between cognitive congruence and in-class engagement should be investigated further. One possibility is to apply social congruence as a mediator. Higher cognitive congruence has been linked to higher social congruence (Loda et al., 2019), which could influence in-class engagement behaviours positively. Another interesting direction would be to investigate whether an overall trusting environment functions as a predictor for in-class engagement behaviours. Trust has been linked to various positive outcomes within a class environment, which would indicate its importance to a class setting (Huff et al., 2002; Fisher, 2009; Ennen et al., 2015; Hernandez et al., 2017; Bell & Lygo-Baker, 2019). Therefore, future research could be directed toward identifying the mechanisms underlying how trust functions to impact positive in-class outcomes. Finally, future research could focus on identifying individual level factors within the dyadic relationship between the peer mentor and student. For example, relevant personality traits or learning-teaching style compatibility might influence the relationship between cognitive congruence and in-class engagement. Such research could result in identifying valuable factors within the process of creating and fostering a pleasant learning environment.

In sum, trust did not mediate the relationship between cognitive congruence and in-class engagement behaviours and this effect was not exacerbated by ICC. However, cognitive congruence did directly relate to the student's in-class engagement behaviours. This suggests that perceived

similarity with a peer mentor relates to the student's in-class engagement tendencies. Furthermore, the research showed relationships between cognitive congruency, ICC and trust, which can provide directions for future research in investigating the processes within the academic learning settings.

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**Appendix A**

**Measures**

*Cognitive Congruence*

The items of the rating scales were scored on a 5-point Likert scale: 1 (*not true at all*), 2 (*not true for me*), 3 (*neutral*), 4 (*true for me*), and 5 (*very true for me*).

1) The facilitator asked questions we could understand.

2) The facilitator interrupted us several times which disturbed the progress of the group discussion.*

3) The facilitator used words or jargon that were difficult for me to understand.*

* The item is reverse-coded.

*Sociocognitive Subscale for Intercultural Communication Competence*

The items of the rating scales were coded on a 7 point Likert scale from 1 (*totally disagree*) to 7 (*totally agree*).

1) I often notice similarities in personality between people who belong to completely different cultures.

2) I feel that people from other cultures have many valuable things to teach me.

3) I feel more comfortable with people who are open to people from other cultures than people who are not.

4) I usually look for opportunities to interact with people from other cultures.

*Trust toward the Peer-Mentor*

The scale is administered to students in the school and scored along a 4-point scale from 1 (*strongly disagree*) to 4 (*strongly agree*): The higher the score, the greater the trust in the faculty.

1) Peer mentors are always ready to help.

2) Peer mentors are easy to talk to.

3) Peer mentors care for students.

4) Peer mentors always do what they are supposed to.

5) Peer mentors really listen to students.

6) Peer mentors are always honest with me.

7) Peer mentors do a terrific job.

8) Peer mentors are good at teaching.

9) Peer mentors have high expectations for all students.

10) Peer mentors DO NOT care about students.*

11) Students can believe what peer mentors tell them.

12) Students learn a lot from peer mentors.

13) Students at this school can depend on peer mentors for help

* The item is reverse-coded.

### *Participation Subscale for In-Class Engagement*

To what extent do the following behaviors, thoughts, and feelings describe you, in this course.

Please rate each of them on the following scale: 1 (*not at all characteristic of me*), 2 (*not really characteristic of me*), 3 (*moderately characteristic of me*), 4 (*characteristic of me*), 5 (*very characteristic of me*).

1) Raising my hand in class.

2) Asking questions when I don't understand the instructor.

3) Having fun in class.

4) Participating actively in small-group discussions.

5) Helping fellow students.

**Appendix B**

**Table B1**

*Significance for Tests of Normality for Predictor, Moderator and Mediator Variable*

|  | KS | SW |
|---|---|---|
| Cognitive congruence | .26** | .88** |
| ICC | .11* | .97* |
| Trust | .17** | .95** |

*Note.* For both normality tests significance below .05 ($p < .05$) indicates that normality cannot be assumed. *KS* indicates the Kolmogorov-Smirnov test and the *SW* indicates the Shapiro-Wilk test. ICC stands for Intercultural Communication Competence and trust indicates trust toward the peer mentor.

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

**Figure B1**

*Q-Q-Plot for Distribution of Cognitive Congruence*
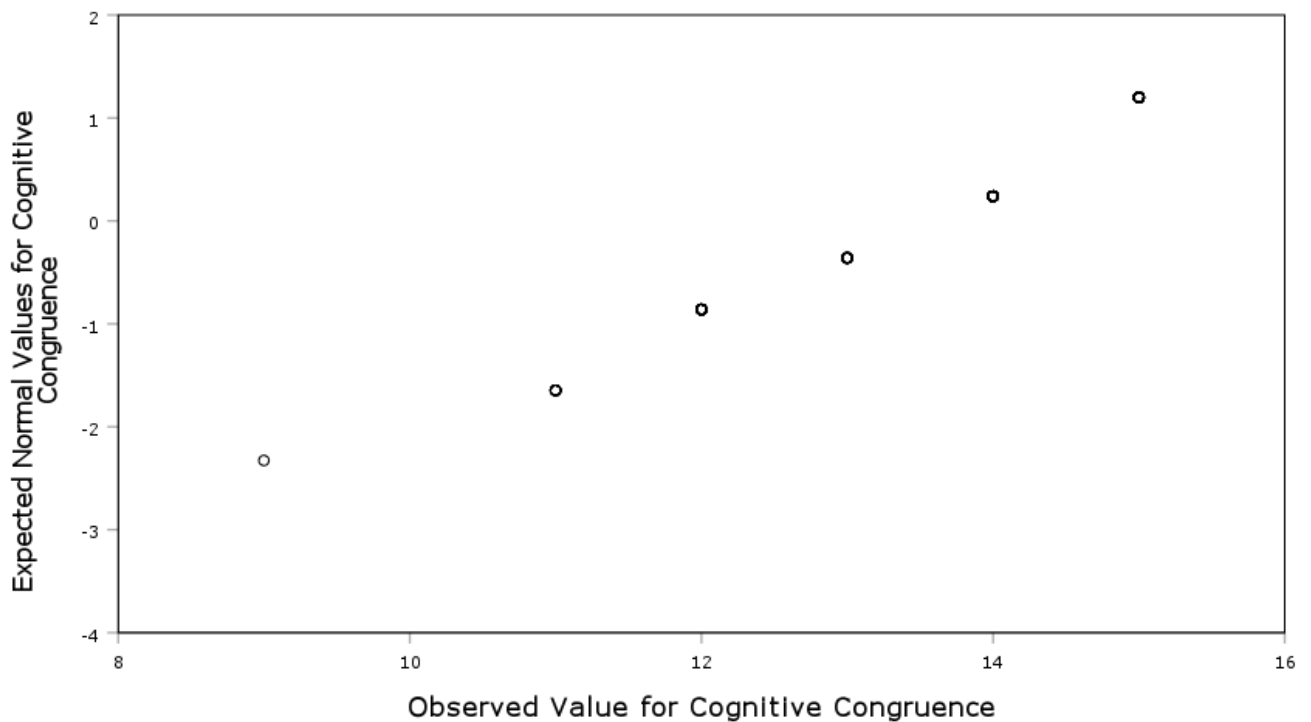


*Note.* Distribution of observed cognitive congruence values showing decently normal distribution.
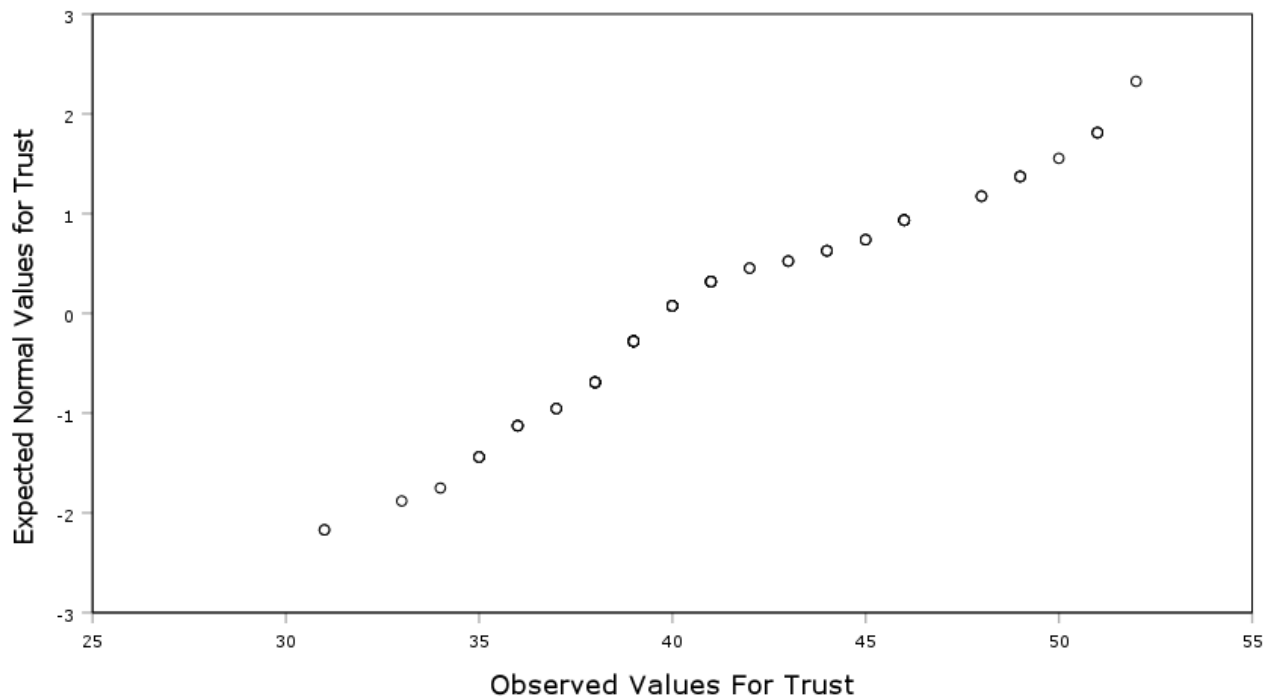
**Figure B2**

*Q-Q Plot for Distribution of Intercultural Communication Competence*
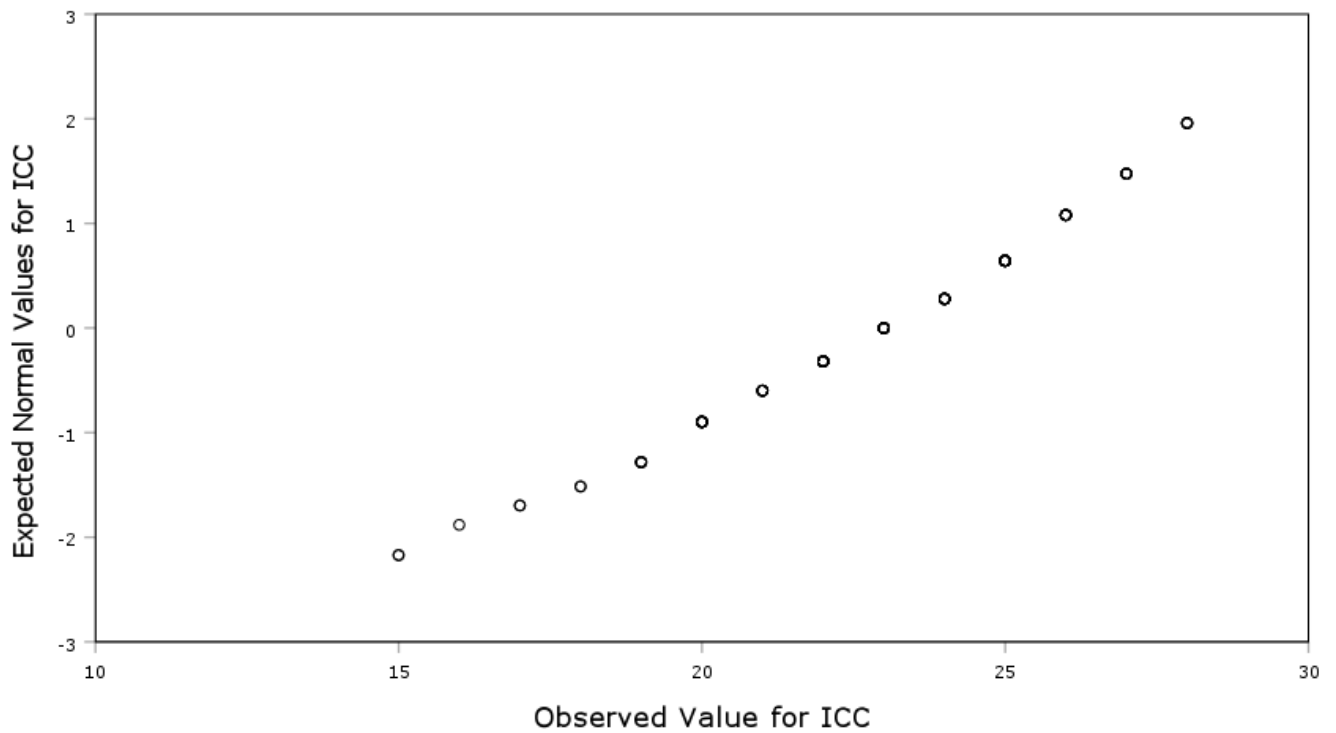


*Note.* Distribution of observed values for Intercultural Communication Competence showing

decently normal distribution. ICC stands for Intercultural Communication Competence.

**Figure B3**

*Q-Q Plot for Distribution of Trust toward the Peer Mentor*



*Note.* Distribution of observed values for trust toward the peer mentor showing some evidence of non-normally distributed data. Trust stands for trust toward the peer mentor.

**Figure B4**

*Homoscedasticity of the Variables Cognitive Congruence, Intercultural Communication*
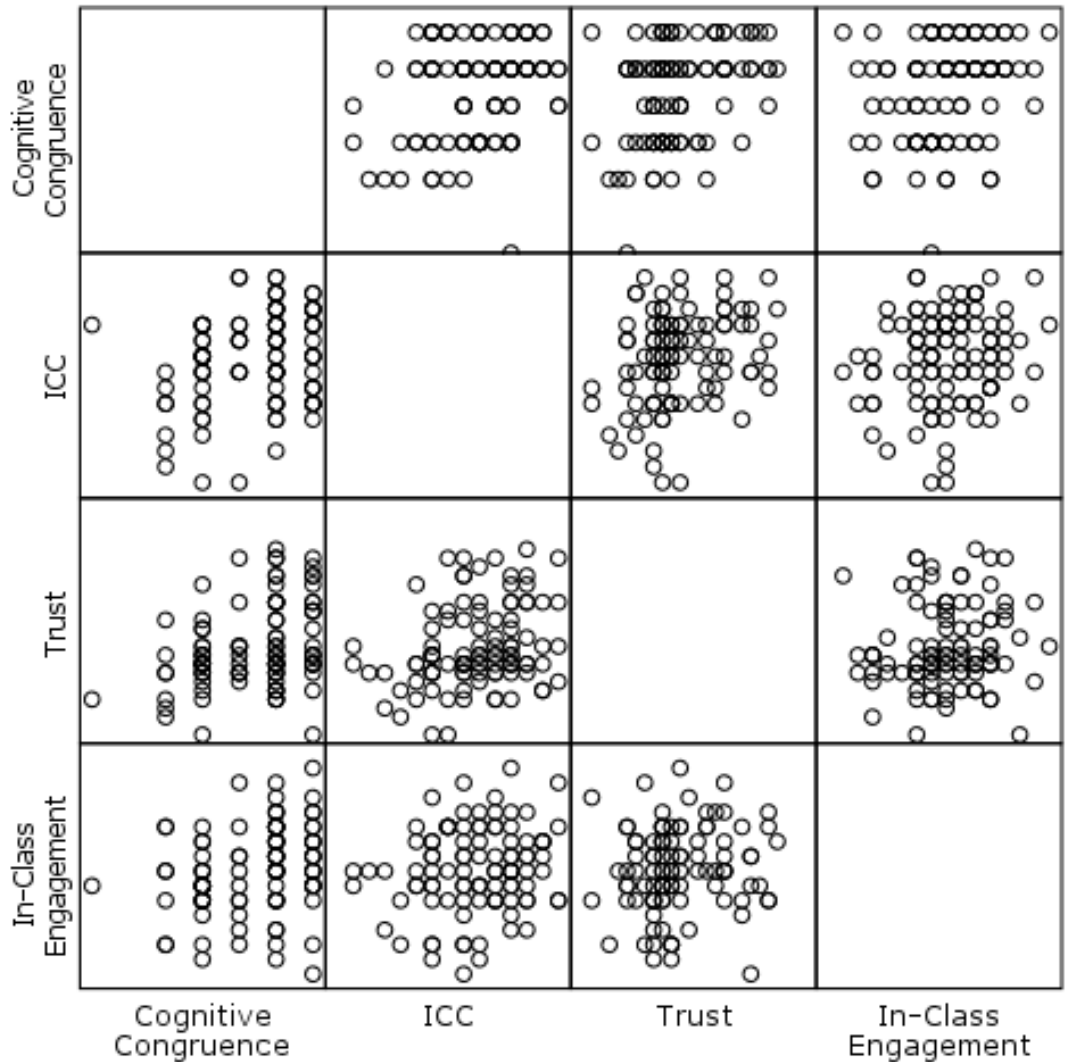
*Competence and Trust on In-Class Engagement*
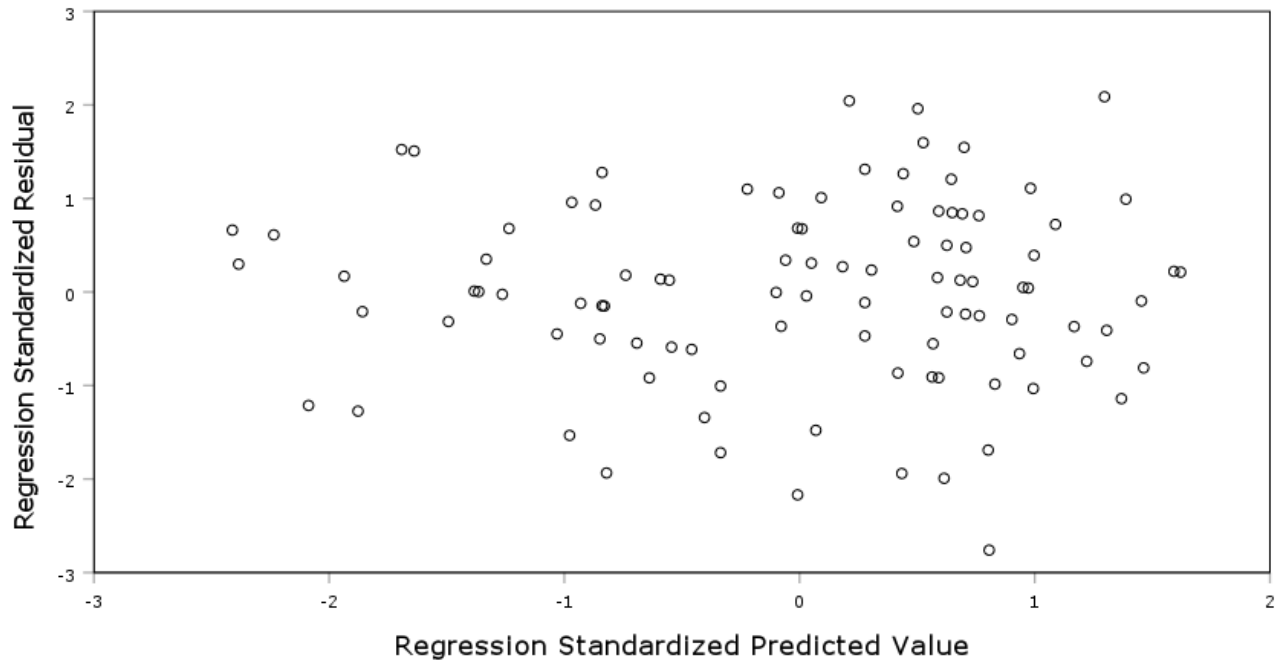


*Note.* A scatterplot showing that the residuals and standardized predicted values of cognitive

congruence, intercultural communication competence and trust are adequately homoscedastic.

**Figure B5**

*Scatterplot Matrix of Variables Cognitive Congruence, Intercultural Communication Competence, Trust and In-Class Engagement*



*Note.* Correlation matrix depicting non-linearity between the variables cognitive congruence, intercultural communication competence, trust and in-class engagement. ICC stands for intercultural communication competence.