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# The influence of personality traits and basic psychological needs on emotional engagement: An exploration in WeChat discussion

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Online discussion is often adopted to facilitate students' interaction and communication in higher education. Student engagement, which is a prerequisite of the expected outcomes in online discussion, has been conceptualized as a multi-component construct with behavioural, cognitive and emotional aspects. Compared to the first two aspects, emotional engagement has received the least empirical investigation. Nonetheless, previous research has proposed emotional engagement is related to student's motivation and personality traits. This study adopted an exploratory approach investigating the associations between students' basic psychological needs (BPNS, i.e., autonomy, competence and relatedness), personality traits (i.e., the Big Five) and emotional engagement during WeChat-based discussions. Participants included 94 Chinese university students who voluntarily completed an anonymous online survey measuring the aforementioned factors. As hypothesized, results indicated extroversion, agreeableness, openness and BPNS were positively related to emotional engagement in online discussion. Further mediation analyses indicated BPNS had mediation effects on the relationship between traits and engagement. This is a sign for researchers and practitioners that BPNS might be more important for improving emotional engagement in online discussion settings. The practical suggestions for teachers, research limitations and future work are also offered.

Key words: Big Five, basic psychological needs, emotional engagement, online discussion

## Introduction

During the past three decades, the world has witnessed remarkable changes triggered by the advancement of information communication technology (ICT) (Palvia et al., 2018). In education, online communication tools enable students to learn collaboratively with peers without the restrictions of space and time (Cleveland-Innes & Wilton, 2018; Garrison, 2011), and are routinely adopted in both traditional campus-based education and distance education in university courses (Ding et al., 2017; Srba et al., 2019). In China, the most popular instant message software, WeChat, has been utilized by university students to support their academic discussions (Xu et al., 2020), especially during the COVID pandemic lockdown when they had no chance to meet classmates in person. Online discussion can not only provide convenience, it also benefits students' academic and social development (J. Chen et al., 2018; Hew et al., 2010), such as improving academic achievement (Kollöffel et al., 2011; Le et al., 2018) and cultivating collaboration skills (Ku et al., 2013).

Nevertheless, online discussion is not a panacea–learning does not happen inadvertently due to the access to technological tools (Wang, 2019). Student engagement is a critical prerequisite for effective learning (Guo et al., 2014; Hew, 2015a). Student engagement, as a meta-construct, comprises of three components–behavioural, cognitive, and emotional engagement (Fredricks et al., 2004; Kahu, 2013; Reschly & Christenson, 2012). Among three components, emotional engagement, which is defined as "students' affective reactions in the classroom, including students' interest, enjoyment, happiness, boredom, and anxiety… and students' feelings of belonging and value to the school" (Fredricks et al., 2004, p. 63), has been paid relatively less attention by practitioners and researchers compared to behaviours and cognition (K.-C. Chen & Jang, 2010; Cleveland-Innes & Campbell, 2012; Junco et al., 2011; Zhu, 2006). It should be noted that three dimensions of engagement dynamically interrelate with each other and simultaneously support students' learning process (Fredricks et al., 2004), it is implausible to neglect any single component.

Due to the importance of emotions in learning (Fredricks et al., 2004) and the inadequacy of research on it, the present study aimed to address this gap by investigating student emotional engagement in online discussion tasks and explore how factors, including students' personalities and basic psychological needs (BPNS), influence emotional engagement. In doing so, this study intended to yield a deeper understanding towards learners' experience and emotions and provide relevant instructional strategies to improve their emotional engagement.

## Literature Review

### Student engagement and basic psychological needs

In higher education, Kahu has developed a framework that demonstrates the antecedences of student engagement from the perspectives of sociocultural context, structural influences and students' psychosocial factors (see Kahu, 2013). This framework has proposed that student engagement could be influenced by motivation (Kahu, 2013; Kahu & Nelson, 2018). Such a position has been echoed by the empirical studies that explored related motivation factors, such as self-efficacy (e.g., Kuo et al., 2014) and personal interests (e.g., J. C.-Y. Sun & Rueda, 2012). The present study intended to go deeper than motivation by investigating the resource of intrinsic motivation–students' basic psychological needs (BPNS; autonomy, competence and relatedness, see Deci & Ryan, 2004 for a review). To be specific, *Autonomy* refers to "being the perceived origin or source of one's own behavior" (Ryan & Deci, 2004, p. 8). It describes the individual's need for acting according to their own intrinsic interest and integrated values. The need of autonomy can be satisfied when people feel their behavior as an expression of the self. *Competence* refers to people having the need to "feel effective in their interactions with the social environment" (Ryan & Deci, 2004, p. 7) and to feel competent and confident (K.-C. Chen & Jang, 2010). *Relatedness* is the need for feeling connected with others and having the sense of belonging with others as well as in the community (Ryan, 1995).

Ryan and Deci (2004) claim that BPNS link with human emotions. It means that in education, when their needs are fulfilled, students tend to experience positive feelings and achieve psychological well-being (K.-C. Chen & Jang, 2010). While if the needs are thwarted, students might have negative feelings and disaffection (Deci & Ryan, 2008). In traditional learning environments, students' basic needs are regarded as the positive predictors of emotional engagement (Reeve, 2012; Skinner et al., 2014). However, such relationships have not been adequately confirmed in the online learning settings, as highlighted by Hew, Lan, Tang, Jia & Lo (2019). Although researchers have conducted similar studies in online learning, some limitations and conflicts can be identified. For example, Y. Sun et al. (2019) adopted a self-report survey to measure students' emotional engagement in online courses, while the survey contained only four items and no items were related to students' feelings of belonging and value to the learning community, which should be important elements of emotional engagement (Fredricks et al., 2004). Moreover, Hew (2015a, 2015b) and Lan and Hew (2020) showed that participants' relatedness was slightly negatively associated with engagement in MOOCs, which was controversial to the literature proposing that the satisfaction of relatedness needs can improve engagement (e.g., Reeve, 2012; Skinner et al., 2009). Such a conflict may be due to the differences of the context (i.e., traditional or technology-enhanced learning). Thus, the present study highlighted the necessity of exploring student emotional engagement in online discussion and proposed the fulfilment of needs is positively associated with it.

### Student engagement and Big Five personality traits

In addition, Kahu (2013) has also suggested that students' personalities would have an impact on engagement. Some researchers believe that personalities affect people's perceptions of the environment (Jonason & Sherman, 2020), their behaviours, cognitions and emotions (Bidjerano & Dai, 2007; de la Fuente et al., 2020). The main-stream of studying people's personalities is the Big Five model (Tempelaar et al., 2007). Big Five identifies five major dimensions of personality traits (i.e., OCEAN), including Openness (open to adventure, creative and inquisitive), Conscientiousness (persistent, reliable and self-disciplined), Extraversion (outgoing, energetic and sociable), Agreeableness (friendly, compassionate and likeable) and Neuroticism (sensitive, nervous and insecure; see Costa & McCrae, 1988; Poropat, 2015). Among these five elements, the present study focuses on openness, extraversion and agreeableness since these three factors are more likely to associate with students' **emotions** in a **social collaborative** discussion setting than the other two.

Literature has discussed the effect of openness, extraversion and agreeableness on educational outcomes while the conclusions are varied. For example, some studies have proposed that **extraverts** have the nature of sociability and help seeking, which can support them in learning (de la Fuente et al., 2020). While others found negative associations between extroversion and grades (Furnham & Monsen, 2009) and online learning

performance (Altanopoulou & Tselios, 2018). Similarly, previous research has also shown mixed findings regarding the relationships (i.e., significantly positive, significantly negative or non-significant) among openness, agreeableness and learning outcomes (e.g., Cohen & Baruth, 2017; Downs, 2019; Kelsen & Liang, 2019; Poropat, 2015). Furthermore, the majority of related studies were conducted in the traditional face-to-face learning contexts (Cohen & Baruth, 2017), while only a minor part have focused on the online discussion settings and even less considered student emotions. Thus, this study addressed such a gap by exploring how openness, extraversion and agreeableness correlate with their emotional engagement in online discussion.

Student engagement is not the outcome of one single factor but the complicated interplay among factors (Kahu, 2013). Although personalities and psychological needs are conceptually different, they may impact engagement collaboratively (Kahu, 2013). In fact, studies in traditional face-to-face learning (e.g., Zhou, 2015), psychotherapy (Leow et al., 2016) and sports exercising (e.g., Ingledew et al., 2004; Ramsey & Hall, 2016) have claimed that personalities are related to the fulfilment of needs (Ryan & Deci, 2001; Şimşek & Koydemir, 2013). However, less has been investigated in online learning. To bridge such a research gap, the present research investigated interactive relationships among personality traits, BPNS and student emotional engagement in online discussion. Specifically, this research started with detecting the associations among personality traits, three psychological needs and emotional engagement and then tested how needs mediate the effects of the traits on engagement. In summary, the research questions (RQs) are:

**RQ 1**: What are the relationships between students' personality traits, including Openness, Extraversion and Agreeableness, and their emotional engagement in online discussion?
**RQ 2**: What are the relationships between students' basic psychological needs, including autonomy, competency and relatedness, and their emotional engagement in online discussion?
**RQ 3**: To what extent do the needs mediate the relationship between the traits and emotional engagement in online discussion?

## Methods

### Participants

In the present study, participants included 94 first-year (mean age 18-19) undergraduate students in the Faculty of Education at a Double First-Class university in Beijing, China. The participants were enrolled in two courses, with 46 students (9 males, 37 females) in the course the Developmental Psychology and 48 students (16 males, 32 females) in the course of Educational Psychology. These two courses were compulsory for the students who major in education and were led by one lecturer, who delivered face-to-face lectures, uploaded relevant learning materials and quizzes on the online Schoology platform, and designed online discussion tasks for students. All participants were invited to answer a survey on a voluntary basis, with no compensation. All of them had their own smartphones and WeChat accounts and were familiar with using WeChat for discussion.

### Instruments

The instrument for the present study was an anonymous survey that contained four parts for getting participants' demographic information and measuring three variables of interest: basic psychological needs, Big Five personality traits and emotional engagement.

*Basic psychological needs*
The general basic psychological needs scale was developed by Gagné (2003) and translated into Mandarin by Yu and his colleagues (2012). The scale includes 21 items concerning the three needs, competence (6 items, e.g., "Most days I feel a sense of accomplishment from what I do"), autonomy (7 items, e.g., "I generally feel free to express my ideas and opinions"), and relatedness (8 items, e.g., "People are generally pretty friendly towards me"). Five-point Likert scales were used for all items, ranging from "1=strongly disagree" to "5=strongly agree". The Cronbach's alpha values (Cronbach's alpha= $0.66_{(competence)}$, $0.70_{(autonomy)}$ and $0.75_{(relatedness)}$) showed the high reliability of the instrument.

*Big Five personality traits*
The Chinese version of NEO-FFI (Neuroticism Extroversion Openness Five-Factor Inventory) was utilized to measure participants' Big Five personality traits (P. T. Costa & McCrae, 1989; Luo & Dai, 2011). It contains 60 items in the five-point Likert scale, with 12 items in each personality. The Cronbach's alpha coefficients for five factors were above 0.75, showing its high reliability.

*Emotional engagement*
The emotional engagement survey developed by Skinner et al. (2009) was adopted in the present study. In the original scale, there are 17 items in two dimensions (i.e., engagement and disengagement), while in the current study, only 10 items were adopted and the other 7 items focused on the classroom settings rather than learning activities (i.e., discussion) were removed. The first author and another master student in the same research team were in charge of the translation and back-translation of the survey. Cronbach' alpha coefficient (0.717) was calculated to ensure the reliability of the revised survey.

### Procedure

The online discussion tasks, which accounted for 5% of final score, was originally included in the syllabus. The lecturer took the responsibilities of randomly dividing students from each course into discussion groups of 5-6 people (8 groups in each course) and created a WeChat group for each discussion team. The lecturer assigned two discussion sessions for each class. The discussion topics for Developmental Psychology course were "*Analysing the reasons that may cause underweight of new-born babies"* and *"Comparing the advantages and disadvantages of breast feeding and formula feeding"*; the topics for the Educational Psychology course were *"Imaging you are a teacher in a kindergarten, how do you handle if some children cannot stop crying when their parents are going to leave after sending them to kindergarten"* and *"Please give some principles (or theories) and the corresponding strategies (or methods) that can be used to activate Year 5 students' motivation in a science class".*

The teacher published the discussion topics in WeChat groups at the same time, and the participants had opportunities to ask questions about the topic. Students had 24 hours to finish the task and they could use all five forms of messages in WeChat: text, stickers, images, weblinks and voice/video calls. The researcher was invited into the team and introduced the present research aims and distributed an anonymous online survey. All participants answered the survey by their willingness. One week later, since there were no more new responses, the researcher disabled the survey link and finished data collection.

To answer the RQ1 and RQ2, the Pearson correlation analysis was applied to analyse the relationship between students' basic psychological needs, personality traits and their emotional engagement. Following that, for answering the RQ3, linear regression models were constructed to test the mediating effects of needs on the relationship between traits and engagement. All these analyses were conducted in software SPSS v27.

## Results

### Descriptive and correlation analyses

Due to the low percentage of missing data (<3%), missing values were replaced by the variable mean. Shapiro-Wilk test showed the data was normally distributed (|skewness| <2.00 and |kurtosis| <7.00). The counts of validated discussion messages in group 1 to group 8 (G1- G8) during two sessions are presented in Table 1, and the results of descriptive statistics and Pearson's correlation among traits, needs and engagement are shown in Table 2. Generally, the mean count of validated messages (Table 1) students posted and the mean engagement score of two sessions (Table 2) showed they actively participated in the tasks and experienced a moderate emotional engagement. Pearson's correlation showed students' extraversion, openness and agreeableness were moderately and positively associated with emotional engagement ($r$= 0.44, 0.42, 0.46 respectively, $p$<.05). In addition, BPNS were also positively related to engagement, especially the autonomy and relatedness which showed strong relationships ($r$= 0.78, 0.80 respectively, $p$<.05).

**Table 1. The counts of validated messages in each group's discussion**

| Courses | Sessions | G1 | G2 | G3 | G4 | G5 | G6 | G7 | G8 | Mean |
|---|---|---|---|---|---|---|---|---|---|---|
| Developmental | 1 | 81 | 138 | 31 | 86 | 46 | 102 | 99 | 110 | 87 |
| Psychology | 2 | 65 | 105 | 55 | 36 | 40 | 53 | 32 | 72 | 57 |
| Educational | 1 | 85 | 123 | 25 | 46 | 24 | 59 | 54 | 62 | 60 |
| psychology | 2 | 40 | 42 | 38 | 47 | 27 | 61 | 31 | 56 | 43 |

**Table 2. Intercorrelations among emotional engagement, basic psychological needs and personal traits**

| Variables | EE | Aut | Com | Rel | Ext | Ope | Agr |
|---|---|---|---|---|---|---|---|
| EE | — | | | | | | |
| Aut | .78** | — | | | | | |
| Com | .49** | .50** | — | | | | |
| Rel | .80** | .76** | .46** | — | | | |
| Ext | .44** | -.37** | .40** | .44** | — | | |
| Ope | .42** | .45** | .37** | .39** | .29** | — | |
| Agr | .46** | .38** | .35** | .42** | .46** | .25* | — |

*Note.* EE: emotional engagement; Aut: Autonomy; Com: Competency; Rel: Relatedness; Ext: Extraversion; Ope: Openness; Agr: Agreeableness; *$p$<.05, **$p$<.01

## Mediation analysis

The prerequisite for the mediation effect (significant bivariate correlations among the predictors, outcomes and mediators; see Baron and Kenny, 1986) was met according to the Pearson correlation results. The mediation models were constructed following the process proposed by Baron and Kenny (1986). As depicted in Figure 1**,** the paths labelled *b* and *c* represent the direct effect of traits and needs on engagement, respectively, the path *a* denotes the correlation between traits and needs, and the path c′ shows the correlation between traits and engagement after controlling for the mediator needs. The results are presented in Table 3**.**

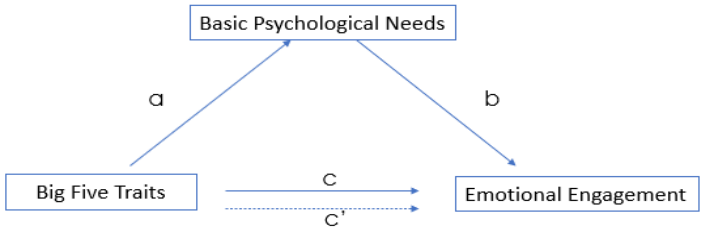


**Figure 1. Mediation test model for the effect of basic psychological needs on emotional engagement.**

**Table 3. Standardized regression coefficients for the mediation paths**

| Model No. | Big Five factors | BPNS | *a* | *b* | *c* | c′ (controlled mediator) | indirect effect | 95%CI for indirect effect |
|---|---|---|---|---|---|---|---|---|
| I | Ext | Aut | .37** | .59** | | .18** | .30 | [.13, .48] |
| II | Ext | Com | .40** | .37** | .44** | .34** | .17 | [.06, .31] |
| **III** | **Ext** | **Rel** | **.43**** | **.75**** | | **.11** | **.38** | **[.21, .56]** |
| IV | Agr | Aut | .38** | .71** | | .18** | .32 | [.12, .53] |
| V | Agr | Com | .35** | .37** | .46** | .32** | .16 | [.06, .29] |
| VI | Agr | Rel | .42** | .74** | | .14* | .38 | [.21, .56] |
| **VII** | **Ope** | **Aut** | **.45**** | **.74**** | | **.08** | **.37** | **[.23, .52]** |
| VIII | Ope | Com | .37** | .38** | **.42**** | .27** | .16 | [.06, .27] |
| **IX** | **Ope** | **Rel** | **.39**** | **.76**** | | **.12** | **.34** | **[.20, .49]** |

*Note.* EE-emotional engagement; Aut-Autonomy; Com-Competency; Rel-Relatedness; Ext-Extraversion; Ope-Openness; Agr-Agreeableness; *$p$ < .05. **$p$ < .01.

The results showed that 95% confidence intervals of the indirect effect were above zero and the c′ values were less than c values, indicating significant mediation effects in **all models**. Specifically, relatedness fully mediated the effect of extraversion (Model III, c′=.11, $t$=1.67, $p$>.05) and openness (Model IX, c′=.12, $t$=1.78, $p$>.05) on engagement, and autonomy fully mediated the effect of openness (Model VII, c′=.08, $t$=3.64, $p$>.05) on engagement. The tests of the other six triads showed significant c′ values indicating partial mediation effects of these needs on the relationship between traits and engagement.

## Discussion

The present study explored the relationships between students' emotional engagement, BPNS and personality traits, in the online discussion settings. A sample of undergraduate students were recruited to fill in an anonymous survey about the variables of interest. The results showed that the traits of Extraversion, Openness, Agreeableness and BPNS were positively correlated with emotional engagement. In addition, autonomy and relatedness showed full mediation effects on the relationships between traits and engagement.

It was not surprising that openness, agreeableness and extraversion were positively correlated with emotional engagement. The students with openness are receptive to various learning formats (Bernard, 2010) and tend to adopt positive attitudes towards new knowledge and learning challenges (Bruso et al., 2020). They are also more likely to avoid negative emotions (e.g., anxiety and frustration), enjoy the discussion task, and experience higher emotional engagement than their counterparts (Jonason & Sherman, 2020). Likewise, agreeableness and extraversion have been associated with the abilities to develop and maintain positive relationships with peers in groups (Poropat, 2015). These three traits enable students to have a positive attitude towards online learning, help students connect and cooperate with peers and could further improve emotional experience and engagement in the online discussion settings.

Consistent with previous findings in traditional face-to-face learning (e.g., Reeve, 2012) and in MOOC learning (e.g., Hew, 2015; Lan & Hew, 2020; Sun et al., 2019), results from the present study indicated that students' autonomy, competence, and relatedness were positively related to their emotional engagement in online discussion learning. Specifically, as students' reports of autonomy and relatedness increase, so too do their reports of positive achievement-related emotions (e.g., interest), being valued by peers in the learning group (sense of belonging), and level of emotional engagement (Fredricks et al., 2004). In the online learning setting, relatedness and the sense of belonging were more treasured since students could not physically present and might encounter the challenge of low social presence (Garrison, 2011). Competence was also positively linked to emotional engagement, although the correlation was not as strong as autonomy and relatedness. When the need of competence was met, students felt effective and confident in the interactions with the environment and in the academic tasks. This could provide a motivational basis (e.g., self-efficacy) for conducting the tasks, but it might not as significantly predict the core elements of emotional engagement (i.e., achievement-related emotions, value and the sense of belonging) as the other two needs.

The findings also reflected and explained the mechanism why some instructional strategies, such as providing multiple tasks, promoting positive peer interaction (Johnson & Johnson, 2009), instructor accessibility (Hew, 2015) and formative feedback (Harks et al., 2014; Hattie, 2009), are beneficial to students' perceptions and emotions. To be specific, various task options ensure students to find the one which suits their personal interest and intrinsic motivation and fulfill the need of autonomy; instructor accessibility and formative feedback can improve students' confidence and perceived competence; positive peer interaction could enhance students' feeling of being connected and supported by others thus satisfy the need of relatedness. It is reasonable to claim the effectiveness of the above strategies in online discussion, because they are aligned with students' BPNS and can enhance their emotional engagement.

Beyond what has been shown in literature, this study also found that autonomy and relatedness fully mediated the effects of traits on emotional engagement. One possible explanation for such results is the integrative model of personality traits and BPNS proposed by Prentice, Jayawickreme and Fleeson (2019). In their article, they presented a framework showing the interactive links between **goals, traits** and **needs**. Reflecting in the present study, in online collaborative discussion, students' main **goal** was to finish the discussion task with their peers. Their **traits** of extraversion, agreeableness and openness were more likely to be enacted and these traits further facilitated the fulfilment of the needs of **autonomy** and **relatedness.** Thus, the path linking traits and engagement was actually via the particular needs. The present research findings also imply that there might be an overestimation about the influence of traits on engagement shown in previous literature and also echo to Major et al.'s (2006) claim that the personality variables may be less important when the situational support is strong (i.e., when the needs are satisfied).

## Conclusion and Implication

Online discussion has been widely applied to support learning in both distance education and traditional (face-to-face) classes. A high level of student engagement is critical for the expected outcomes of discussion, such as academic and social development (J. Chen et al., 2018; Hew et al., 2010). However, one of the three sub-components of engagement, emotional engagement, has been paid relatively less attention by the previous

literature in online discussion learning settings. The present paper addressed this research gap by exploring the relationship between students' emotional engagement, Big Five personality traits and basic psychological needs. By analyzing the data collected in a Chinese university, this study found students who showed the traits of extraversion, openness and agreeableness, or the students who reported the fulfillment of the basic needs of autonomy, competence and relatedness, were more likely to emotionally engage in online discussion. In addition, autonomy and relatedness have mediation effects on the relationships between personality traits and engagement.

The present study had several limitations. Firstly, the participants were from one university and the tasks lasted for one day, which limited to generalize the findings into wider contexts. However, the results drawn from the present data set are validated and trustworthy to provide references for other Chinese university teachers who also include WeChat-based discussion in their courses. A similar sample bias is also present in other research (e.g., Cohen & Baruth, 2017), thus, it is suggested that future studies recruit participants with comprehensive backgrounds and characteristics. Secondly, this study only adopted the quantitative research approach and utilized a cross-sectional self-report survey as the instrument. The limitations of quantitative methods and survey tools cannot be ignored, such as self-report bias, lack of individual's voice. Multiple research approaches (i.e., quantitative and qualitative), assessment methods and longitudinal study design are recommended for future studies. Thirdly, this study only explored traits and needs, however, according to Kahu's (2013) framework, there are more than these two factors influencing engagement. Future empirical studies are suggested to investigate how other factors affect student engagement in online discussion settings. In doing so, it is possible to gain a comprehensive picture of the antecedents of engagement based on empirical evidence.

Though with the aforementioned limitations, this research has contributed the literature in the following ways. It focused on emotional engagement which has not been paid enough attention in online discussion. It also proposed more research to consider students' emotions since they correlate with, even play as the resources of, other respects (e.g., behaviors and cognition). In addition, the results confirmed Kahu's framework in China context and in online discussion settings, where related work has hardly been done by previous research. Moreover, this study considered the stable personalities and flexible needs simultaneously and contributed to knowledge by giving empirical evidence of the mediating effects and stronger predicting power of needs. Thus, it emphasized the importance of fulfilling their flexible needs over propensities.

Some implications for instructional practices can be drawn from the findings in the present study. For example, collaborative learning activities should 1) provide various discussion topic options so the students can choose the one they are interested in (autonomy), 2) utilize extra team-building activities to help improve collaboration skills and build the sense of belonging (relatedness) and 3) provide constructive feedback to enhance competence. Additionally, online discussion might be less supportive for a particular part of students, such as those who are introverted, less social or less open to online group learning, and might have the potential risks of impeding engaging them emotionally. Introverted students prefer the feeling of distance from teachers and peers, and enjoy concentration and deep-thinking without interruptions from others. Therefore, teachers should provide opportunities for students to summarize the groupwork at the end of discussion (Offir et al., 2007). Antagonistic (less agreeable) and/or close-minded students may dislike the new online-based collaborative learning compared to traditional individual learning (Poropat, 2015). Teachers can ensure the tasks are aligned with their intrinsic motivation and emphases the importance of the tasks. Such strategies could enhance students' positive affect and perceptions towards tasks in turn could be enhanced their emotional engagement (Pekrun & Linnenbrink-Garcia, 2012).

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