Basic Psychological Need Satisfaction and Continued Language Learning During a Pandemic: A Structural Equation Modelling Approach

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ABSTRACT

The spread of the novel coronavirus (COVID-19) affected almost all countries in early 2020. According to the United Nations Educational, Scientific and Cultural Organization (UNESCO, 2020), over 60% of students worldwide have been affected by school closures. In such a situation, students' motivation may be a valuable resource to promote sustained language learning. Thus, based on self-determination theory, the present study (N = 215 Saudi undergraduates) investigated how English as a foreign language students' basic psychological need (BPN) satisfaction relates to their ability to continue learning during the pandemic (CLDP) through the mediating role of learning behavior. Using structural equation modelling, it was hypothesized that BPN satisfaction will directly and indirectly relate to CLDP and as students seek new opportunities to practice the language and utilize alternative options; however, BPN satisfaction was expected to negatively relate to CLDP through heightened anxiety about declining language proficiency. Generally, the results support the hypothesized indirect relationship between BPN satisfaction and CLDP by showing that the total indirect effects of autonomy and competence on CLDP were significant. This study contributes to our understanding of the usefulness of satisfying students' BPN in second language learning during difficult situations such as the COVID-19 pandemic.

Keywords: basic psychological needs (BPN), self-determination theory (SDT), novel coronavirus (COVID-19), language anxiety, pandemic

INTRODUCTION

The novel coronavirus (COVID-19) pandemic has propelled different educational restrictions. In many countries, a strict lockdown has been implemented, while others apply moderate restrictions (i.e., people may go to the supermarket, pharmacy, and other essential places). In either condition, the pandemic has impacted almost all educational systems and, in many cases, has led to the temporary closure of schools and universities. According to the United Nations Educational, Scientific and Cultural Organization (UNESCO, 2020), over 60% of students worldwide have been affected by such closures. Quarantine has possibly affected language learners' engagement, motivation, and connection with other users of the language. For example, in Saudi Arabia, the country from which the present study's participants are drawn, all universities and schools have been subjected to closure for more than one year (at the time of writing this paper), and both students and teachers have had to switch to alternative teaching methods, mainly using online teaching platforms (Ministry of Education, 2021). In such cases, policymakers and language educators consider good practices and practical learning strategies that attempt to mitigate the influence of short and long closures of educational institutions on learners' learning processes. One important resource that students and teachers can rely on in challenging situations is perhaps the nature and basis of students' motivation (MacIntyre et al., 2020).

According to self-determination theory (SDT), individuals are likely to thrive and grow psychologically when their basic psychological needs (BPN) of autonomy, competence, and relatedness are satisfied and supported by social contexts (Ryan & Deci, 2000, 2017, 2020). In essence, SDT postulates that second language (L2) learners may endorse different types of motivation toward the learning varying from controlled to autonomous (Alamer & Lee, 2019; Noels et al., 1999, 2019). Moreover, the theory suggests that L2 learners can hold autonomous motivation when the surrounding environment satisfies learners' BPN (Alamer & Al Khateeb, 2021). This, in turn, leads to optimal learning outcomes (Alamer, 2021; McEown, Noels, & Chaffee, 2014).

Recent studies have found positive effects of satisfying individuals' BPN during the COVID-19 outbreak. For example, it was found that BPN satisfaction enhances mental health (Cantarero et al., 2020), improves children's perceptions of their parents as non-controlling in terms of doing online homework (Robichaud et al., 2020), allows people to voluntarily follow the rules and guidelines implemented by decision makers (Bradshaw et al., 2021), and increases students' endorsement of the autonomous type of motivation (Behzadnia & FatahModares, 2020). However, the complex relationship between the three BPN and students' ability to continue their language learning during the COVID-19 pandemic (CLDP) has not yet been established in the field. Therefore, the present study investigates the effects of satisfying the three BPN on CLDP in a mediational process model.

LITERATURE REVIEW

BPN and Language Learning

SDT proposes that there are three fundamental needs, referred to as BPN, that people strive to have fulfilled. These needs are autonomy, competence, and relatedness, and they are postulated to reflect the essential basis of optimal functioning and wellness (Ryan & Deci, 2000). When BPN are met, language learners are expected to function optimally, be autonomously motivated, and achieve language proficiency (Alamer, 2021). 'Autonomy' refers to the feeling of having options and choices to pursue in language learning. It also reflects a sense of volition in absorbing second language (L2) aspects and a psychological sense of freedom to explore language matters. 'Competence' refers to the feeling of effectiveness in carrying out learning tasks. It also reflects the experience of mastery while overcoming challenges in language learning. 'Relatedness' refers to learners feeling positively connected with the people around them. It also reflects a sense of caring for and being cared for by others.

Studies have shown that increased endorsement of the three fundamental needs is positively related to different learning outcomes, such as autonomous motivation in learning the language inside (Alamer, 2022) and outside the classroom (Alamer & Al Khateeb, 2021); improved cognitive, emotional, and behavioral engagement (Noels et al., 1999, 2019; Oga-Baldwin et al., 2017); attainment of higher grades in L2 courses (Noels, 2013; Noels et al., 2001); greater knowledge of vocabulary (Alamer, 2021); positive perceptions about teachers' teaching styles

(McEown, Noels, & Saumure, 2014); decreased feelings of social, psychological, and proficiency anxiety (Alamer & Almulhim, 2021; Zhou, 2016); positive feelings about the target community (Clément et al., 1994; Noels, 2001); positive student assessments from teachers (Oga-Baldwin et al., 2017); the endorsement of autonomous motivation (Pae, 2008; Wu, 2003); and ultimately, the achievement of L2 proficiency (Alamer & Lee, 2019; Dincer et al., 2019). Although individuals are responsible for fulfilling their own BPN, social agents (e.g., L2 teachers, L2 peers, and family members) are undoubtedly key sources that can enhance (or perhaps undermine) the satisfaction of their basic needs (Ryan & Deci, 2000). Conversely, when social contexts do not optimally provide a need-supportive environment, this results in frustration and can lead to negative learning outcomes (Bradshaw et al., 2021). The positive impact of BPN satisfaction has been assessed in different learning contexts using various methodological approaches in the L2 domain. For example, Dincer et al. (2019) used a mixed-methods approach including structural equation modeling (SEM) to evaluate the extent to which students' perceptions of their teacher as autonomy-supportive relate to their sense of BPN satisfaction; this, in turn, relates to three types of engagement (behavioral, emotional, agentic, and cognitive), which, collectively, relate to achievement in L2 learning. The results supported the hypothesized model and showed the importance of the role of the teacher in shaping students' basic needs and actual achievement. In a longitudinal study Oga-Baldwin et al., (2017) showed how initial endorsement of the BPN relates to engagement and teacher assessment later on. The results indicated that perceiving the teacher as autonomy-supportive and BPN satisfaction were positively predictive of later language engagement, which, in turn, related to a positive assessment by the teacher. Similarly, Alamer's (2021) study used a mediational model and showed that the BPN have a direct effect on vocabulary knowledge over and above the mediation processes of effort. This specific direct effect provided unique information about the predictive power of the basic needs for increased vocabulary learning and possibly other L2 learning outcomes. Given that BPN appears to predict learning outcomes, the present study evaluated whether satisfying the BPN could be directly and indirectly related to CLDP.

Language Anxiety

Language anxiety is possibly one of the most studied constructs in the field of L2 psychology because of its influence on the L2 learning process (MacIntyre, 2017). Although the construct is multi-faceted, its negative association with language learning is noticeable (Botes et al., 2020). Language anxiety is defined as a 'distinct complex of self-perceptions, beliefs, feelings, and behaviors related to classroom language learning arising from the uniqueness of the language learning process' (Horwitz, 1986, p. 128). The construct is context-specific in that certain learning situations may evoke a specific type of language anxiety. Research in the field has demonstrated that higher language anxiety is negatively associated with different learning outcomes, such as a sense of competence and relatedness (Alamer & Almulhim, 2021), an increased sense of obligation and introjection regarding learning the L2 (McEown, Noels, & Chaffee, 2014; McEown & Sugita-McEown, 2020), loss of motivation to learn the language (Noels et al., 2000), acting as a mediator between performance-avoidance goal orientation and external motivation (Alamer & Lee, 2019), intention to discontinue learning (Noels et al., 2000, 2001).

A recent meta-analysis conducted by Zhang (2019) included more than 10,000 participants drawn from 55 different samples and demonstrated that the overall correlation between language anxiety and language achievement was negative −.34 ($p < .01$). Specifically, types of anxiety that are related to comprehension had the strongest negative correlation with achievement. The study indicates that the relationship can be modulated by variables such as anxiety type, age, lexical similarity, and the interaction between family and lexical similarity (Zhang, 2019). Similar findings have also been observed from other meta-analyses investigating the association between language anxiety and language achievement with negative correlations ranging from −.34 to −.39 (Botes et al., 2020; Teimouri et al., 2019). The question that remains unresolved in the literature is whether language anxiety indeed negatively *affects* language achievement. For example, Alamer and Lee (2021) have followed L2 students on their learning over 17 weeks and assessed their L2 achievement and anxiety interrelationship at three time points. The authors found immediate negative correlations between the variables at the same time point, which are consistent with past studies. Nonetheless, and interestingly,

the authors found that *only* language achievement that negatively predicted subsequent scores of anxiety and that anxiety failed to negatively predict achievement. Although different types of anxiety have been proposed in the literature, the present research uses 'language-use anxiety' (Gardner, 2010) because it seems more relevant to the present research context.

Given that language anxiety may inhibit the immediate learning situation, this impact may be intensified during difficult and unprecedented situations, such as those characterized by restrictions and university closures. That is, students may feel more anxious to engage in learning tasks. It can also be postulated that, with such difficulties, language anxiety would consequently affect students' desire to continue learning the language. However, it is possible that satisfying the BPN may mitigate this possible negative effect (Martela et al., 2021; Ryan & Deci, 2017). Martela et al. (2021) noted that when decision-makers do not communicate autonomously, there are more unnecessary rumors and counter-arguments related to COVID-19. Thus, the authors presented several strategies based on BPN and indicated that satisfying these basic needs should help lead to desirable outcomes with respect to people's intrinsic motivation. However, how BPN satisfaction can dampen language anxiety, particularly concerns about declining language proficiency during COVID-19 (and similar difficult times), has not been considered in previous studies; the present research will examine these complex relationships in a comprehensive mediational model.

Learning an L2 During COVID-19

Although studying an L2 occurs mainly in language classrooms, it does not exist in one place; rather, it is situated within broader contexts and experiences that influence the language learning process. However, practicing and learning an L2 during COVID-19, amidst the widespread closure of language institutes and the implementation of strict restrictions, entail real challenges for students in terms of engaging with the language as they used to in the classroom. For example, language learners' (self-perceived) typical workload has undergone a dramatic shift to online communication (MacIntyre et al., 2020; Moser et al., 2021). Both teachers and learners were unprepared to deal with a situation where face-to-face

communication was completely and suddenly supplanted by virtual communication. In addition to their teachers, learners were also faced with the inability to contact each other face-to-face and were limited to relying on online solutions.

Learning Behaviors During the Pandemic

This situation highlights the need to understand the internal (such as attitudes) and external factors (such as social relationships) that can shape language learners with regard to pursuing untraditional learning opportunities and utilizing the available options (Behzadnia & FatahModares, 2020). When optimally applied, these factors may allow learners to engage willingly in and, more importantly, beyond the language classroom. Research shows that internal factors help students create fertile language learning conditions to proceed smoothly with learning, potentially in difficult situations (Alamer & Al Khateeb, 2021; Behzadnia & FatahModares, 2020; Cantarero et al., 2020; Mercer & Dörnyei, 2020). Although many would postulate that the closure of the schools and universities would affect L2 students' learning proficiency, a recent study conducted by Hopp and Thoma (2020) found that the suspension of face-to-face instruction did not yield negative results on students' growth in foreign language vocabulary and grammar. According to Hopp and Thoma (2020), the retention of language development might be explained by students' behaviors during the closures. That is, that students have established optimal habits of self-regulated learning and possibly have non-institutional lessons early on which explains the reasons for the continued language development. Nonetheless, the researchers postulated that other factors, that were not measured, might explain such an increase in language attainment.

As such, learners' learning behaviors seem to be a key aspect for them to proceed in and continue learning the language efficiently during difficult times such as the COVID-19 pandemic. This is a crucial aspect of learners' journeys during unprecedented situations because students have lost many of the opportunities to communicate and interact with classmates and teachers using the L2. Furthermore, the time L2 students spend inside their universities where they are exposed to the L2 in different ways including listening, discussions, and carrying out different language-tasks have disappeared during the

pandemic. In such situations, it is important to students to secure other ways to learn and communicate using the L2. For instance, utilizing alternative learning options such as the various mobile applications that are designed for language learning purposes can be useful and possibly suitable alternatives to practice the language when the face-to-face method is suspended. A recent study found that using instant messaging applications, such as WhatsApp, can be fruitful in improving students' healthy motivation to learning the language outside the classroom (Alamer & Al Khateeb, 2021). The study also showed that using these applications have the potential to increase students' sense of autonomy because students may well have choices other than the traditional textbook to learn and practice the language. Similarly, during difficult times, students should be proactive in taking charge of their language learning and do not rely solely on institutional tuition during university closures to continue their language learning (Cantarero et al., 2020; Hopp & Thoma, 2020).

Taking these findings together and building on the SDT perspective, it can be postulated that when individuals feel a greater sense of autonomy, competence, and relatedness (i.e., when their BPN are satisfied), they are able to explore, connect with, and understand difficult conditions optimally and will utilize available resources to actively engage in the learning process (Robichaud et al., 2020; Ryan & Deci, 2020; Šakan et al., 2020). Research shows that individuals feel more satisfied with their lives during the COVID-19 pandemic when their BPN are met (Collie, 2021; Šakan et al., 2020). Further, Šakan et al. (2020) showed that BPN satisfaction acted as a mediator between positive feelings and life satisfaction, but acted negatively between negative feelings and life satisfaction. On the contrary, when BPN frustrate the effects of positive feelings, they become negative or non-significant. These results may also be extended to language learning settings to find out how BPN could be related to students' endeavors to find new opportunities to practice the language and to their efforts to utilize alternative learning options.

The Present Study

Thus far, little is known about the association between BPN and the ability to pursue learning the L2 in unprecedented situations such as the COVID-19 pandemic. This study fills this gap by considering the association between BPN and

CLDP by considering mediational variables including learning behaviors and emotions. The mediating variables are (i) language anxiety, (ii) being worried about declining language proficiency, and (iii) utilizing alternative learning options (other than the traditional classroom) to study the language, as well as seeking new opportunities to practice the language (SNOLO). Accordingly, this study adopts the following research question (RQ):

> RQ: How do BPN directly and indirectly relate to language learners' ability to continue learning during the COVID-19 pandemic through learning behavior?

> Hypothesis (H)1: BPN will directly relate to CLDP and indirectly relate to it through SNOLO.

> H2: BPN will negatively relate to language anxiety, which, in turn, negatively relates to CLDP.

> H3: BPN will negatively relate to anxiety about declining language proficiency, which, in turn, negatively relates to CLDP.

> H4: BPN will positively relate to SNOLO, which, in turn, positively relates to CLDP.

> H5: Language anxiety, including anxiety about language proficiency, will negatively relate to SNOLO.

Figure 1 shows the direct and indirect effects of BPN on CLDP through different mediation pathways.

METHOD

Participants

The present study's participants were 215 Saudi male and female undergraduate students who were studying English as a second language in the Department of English at a Saudi university. Among them, 79 were male and 134 were female, and two did not provide information about their gender. The duration of their study of English as an L2 ranged from 1 to 10 years of learning ($M = 5.21$, $SD = 2.54$). Students were invited to participate in June 2020 (under Saudi Arabia's complete restriction plan) via an invitation sent on a Telegram channel dedicated to departmental news and announcements. Those who were willing to participate clicked on a link to a Google Forms questionnaire. Those

who were not interested ignored the invitation or refrained from completing the questionnaire if they had started filling it out. The department head granted permission to collect data from the students.

Figure 1. *The Hypothesized Structural Relationships Between BPN and CLDP*
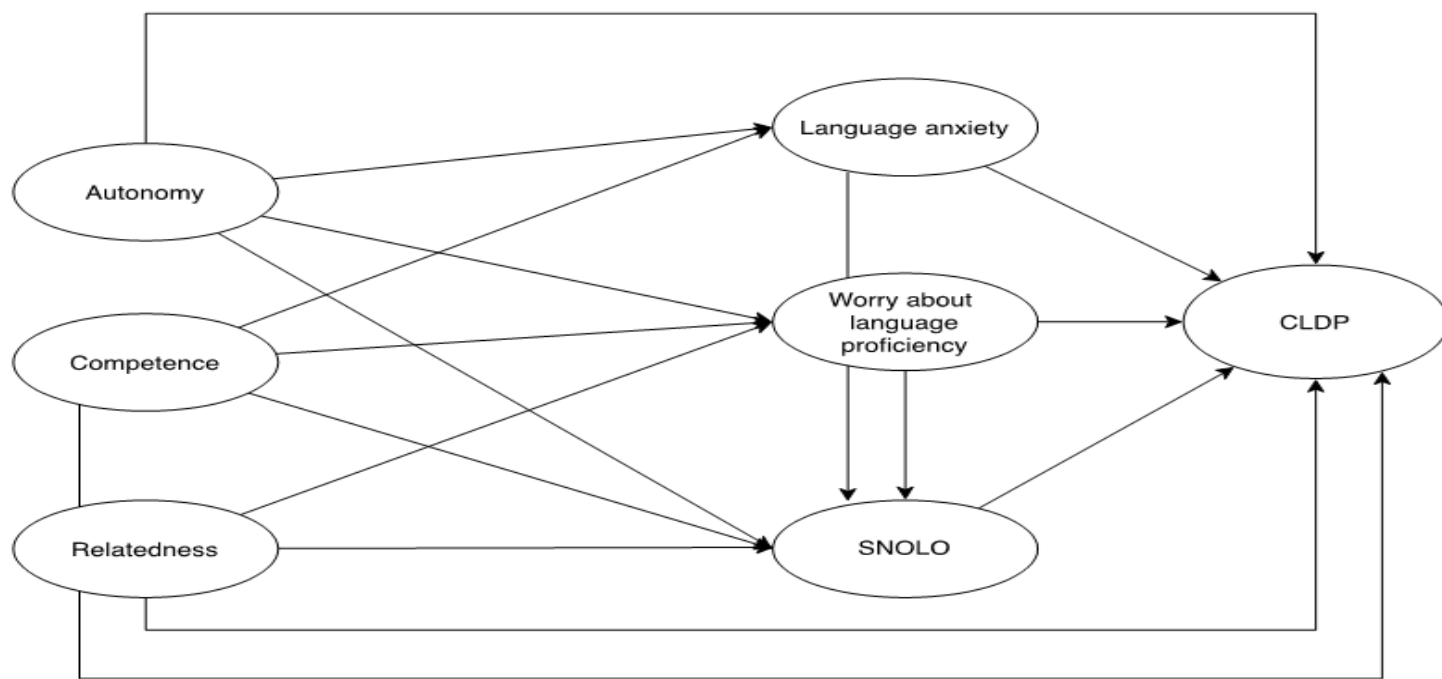
Note. SNOLO = Seeking new opportunities and using alternative learning options; CLDP = Language learners' ability to continue learning during the pandemic.

Measures

The Basic Psychological Needs (BPN-L2) Scale

The BPN-L2 scale, which consists of 12 items, was adopted to evaluate students' basic needs, namely autonomy, competence, and relatedness (Alamer, 2021). The BPN-L2 was previously validated and has been divided equally across the three constructs, with four items for each construct in a 7-point Likert-type response format ranging from 1 (*strongly disagree*) to 7 (*strongly agree*). Example items are as follows: for autonomy, "I am able to freely decide my own pace of learning in English;" for competence, "I feel I am capable of learning English;" and for relatedness, "People around me care about my progress".

Language Anxiety

Three items from the language-use anxiety scale (Gardner, 2010) were adopted and slightly adjusted to suit the study context. The items had a 7-point Likert-type response format ranging from 1 (*strongly disagree*) to 7 (*strongly agree*) and were designed to collect information about students' anxiety that may be experienced during language learning situations. An example item is "Speaking English anywhere makes me feel worried".

Worry About Language Proficiency During the Pandemic

To evaluate the extent to which students worry about their language proficiency declining during the pandemic, one item was developed based on a 7-point Likert-type response format, ranging from 1 (*strongly disagree*) to 7 (*strongly*

agree). The statement was "Overall, I am worried about my language proficiency declining during the pandemic".

Seeking New Opportunities and Utilizing Alternative Learning Options

To assess whether students were able to seek new opportunities to practice the language and utilize alternative learning methods other than the traditional classroom, two items based on a 7-point Likert-type response format ranging from 1 (*strongly disagree*) to 7 (*strongly agree*) were developed. An example item is: "I have found ways to practice the language during the pandemic".

Language Learners' Ability to Continue Learning During the Pandemic

To examine whether language students were able to continue learning the language and whether they employed the restrictions in their favor during the pandemic, one general item was developed. The item was scored on a 7-point Likert-type scale ranging from 1 (*strongly disagree*) to 7 (*strongly agree*). The item was "Overall, I have dedicated time to continuing my language learning during the pandemic".

Statistical Analysis

The reliability and construct validity of the measures in the present study were assessed using the partial least squares structural equation modelling (PLS-SEM) framework. PLS-SEM is one of the SEM methods, which focuses on 'prediction in estimating statistical models, whose structures are designed to provide causal explanations' (Hair, Risher, et al., 2019, p. 3). PLS-SEM differs from the widely-implemented covariance-based SEM (which is conducted using software such as Amos, Mplus, LISREL, and others) in that it is a variance-based method. It is most suitable when the research goal is prediction and not to confirm theory or relationships (Chin et al., 2020; Garson, 2016; Sarstedt et al., 2014). Unlike some covariance-based SEM estimators, PLS-SEM works well if the data are non-normally distributed (Hair et al., 2017). Readers are referred to Hair, Risher, et al. (2019) for a summary of PLS-SEM.

In assessing the PLS-SEM measurement model, reliability, convergent validity, and discriminant validity were taken into consideration (Hair et al., 2017). Reliability is evaluated using two measures: Cronbach's alpha (α) and composite reliability (CR). It is suggested that α values between .60 and .70 are indicative of acceptable values in exploratory research, but since CR is a less conservative statistic, values higher than .70 need to be obtained to show good internal reliability. Convergent validity is assessed using the average variance extracted (AVE). The common guideline used for AVE is a value of .50 or higher to support convergent validity. In contrast, discriminant validity is achieved by evaluating the heterotrait–monotrait ratio (HTMT) of the correlations. The suggested cut-off value of .90 is used to show discriminant validity of the latent variable.

To evaluate the structural part of the model, three major measures were used: an assessment of collinearity, the coefficient of determination (the R^2 value), and model predictive power (i.e., the Q^2 value and $PLS_{predcit}$). Collinearity is evaluated by checking the variance inflation factor (VIF), and a cut-off value of 5 indicates a lack of collinearity. The R^2 value is evaluated based on L2 criteria (Plonsky & Oswald, 2014), such that values of .06, .16, and .36 are indicative of small, medium, and strong explanatory power, respectively. Similarly, Q^2 values around 0, .25, and .50 depict small, medium, and large predictive accuracy, respectively (Hair, Risher, et al., 2019). $PLS_{predict}$ "uses the values for the independent constructs' indicators of observations in the holdout sample and applies the model estimates from the training sample to generate predictions of the dependent constructs' indicators in the holdout sample" (Hair et al., 2021, p. 197) and predictive power is established when the PLS model produces lower error in RMSE compared to the linear regression model (LM) benchmark (Hair, Risher, et al., 2019).

With regard to the effect size, beta (β) values of the predictor variables can be used as effect sizes. Following Cohen et al.'s (2011) guidelines, β values in the ranges of 0-.1, .1-.3, and .3-.5, and those that are > .5 are indicative of weak, modest, moderate, and strong effect sizes, respectively.

Table 1. *Descriptive Statistics, Distribution, and Zero-Order Spearman's (ρ) Correlations for the Variables*

Variable	(α)/CR	S	K	AVE	*M*	*SD*	1	2	3	4	5	6	7
1. Autonomy	.65/.74	−.72	.22	.56	5.59	1.17	-						
2. Competence	.70/.83	−1.81	4.01	.78	6.38	.89	.27*** (.28)	-					
3. Relatedness	.68/.82	−.99	.41	.58	5.48	1.49	.19** (.16)	.34*** (.61)	-				
4. Language anxiety	.88/.90	.21	−1.29	.81	3.76	2.09	−.24*** (.22)	−.14* (.59)	−.16* (.31)	-			
5. Worry about language proficiency	-	.65	−.55	-	2.99	1.73	−.16* (.12)	−.26*** (.41)	−.28*** (.52)	.58*** (.57)	-		
6. Seeking new opportunities and utilizing alternative options	.80/.91	−1.63	2.87	.83	5.86	1.39	.20** (.28)	.26*** (.50)	.28*** (.43)	−.17* (.25)	−.20** (.18)	-	
7. CLDP	-	−.91	.13	-	5.29	1.67	.28*** (.42)	.17* (.34)	.28*** (.39)	−.28*** (.23)	−.24*** (.23)	.44*** (.71)	-

Note. S = skewness; K = kurtosis; CR = composite reliability; AVE = average variance extracted; values in brackets = HTMT; ** *p* < 0.01.

RESULTS

Missing Values and Data Distributions

The missing values were checked prior to evaluating the structural model. Cases with missing values for more than 10% of the questionnaire items were removed from the analysis (Hair, Black, et al., 2019). However, the analysis yielded no missing values. Data distribution was assessed using the skewness and kurtosis measures. Values above +1 or lower than –1 indicate a non-normal distribution (Hair et al., 2017). The results shown in Table 1 indicate that several variables failed to meet the normal distribution. Therefore, the correlation coefficients reported in the study are the nonparametric Spearman's (ρ) correlation, which is an alternative to the Pearson (*r*) correlation. It can be observed from the table that several variables correlated with CLDP. Specifically, all BPN variables correlated significantly with CLDP, while language anxiety and worry about language proficiency were negatively correlated. The strongest correlation was found between SNOLO and CLDP (see Table 1). SEM (explained next) provides a clearer picture of the mediation process for the relationship between BPN and CLDP.

Assessing the Measurement Model

Before evaluating the structural model, the measurement part of the model was assessed. The results show that the reliability of the variables indicates acceptable to good internal reliability values, especially when considering that the CR values were all above the cut-off of .70. The AVE values of the constructs reported in Table 1 were all above .50, indicating convergent validity. In addition, discriminant analysis was achieved because all HTMT values were below .90, the cut-off value. Thus, the PLS-SEM measurement model seems to be satisfactory; thus, the structural part of the model was assessed.

Assessing the Structural Model

The evaluation of the structural model shown in Figure 2 starts by inspecting the collinearity issue. The VIF values were all below 2, indicating non-collinearity. Next, the R^2 value was obtained, and it achieved strong prediction power ($R^2 = .43$). This result presents evidence that the structural model is meaningful and explains approximately 43% of the variance in CLDP. Lastly, Q^2 was obtained using the blindfolding technique, and it revealed the model's moderately strong predictive accuracy ($Q^2 = .40$). With

regards to the our-of-sample prediction relevance, PLS$_{predict}$ displays that both the PLS and LM models produced very similar RMSE values (i.e., 2.053 and 2.052, respectively), thus the predictive power of the model can be said to be modest. Overall, the results indicated that the structural model was appropriate and that it sufficiently explained the variance in the outcome variable.

Figure 2. *Standardized Coefficients of the Structural Model Linking BPN to CLDP*
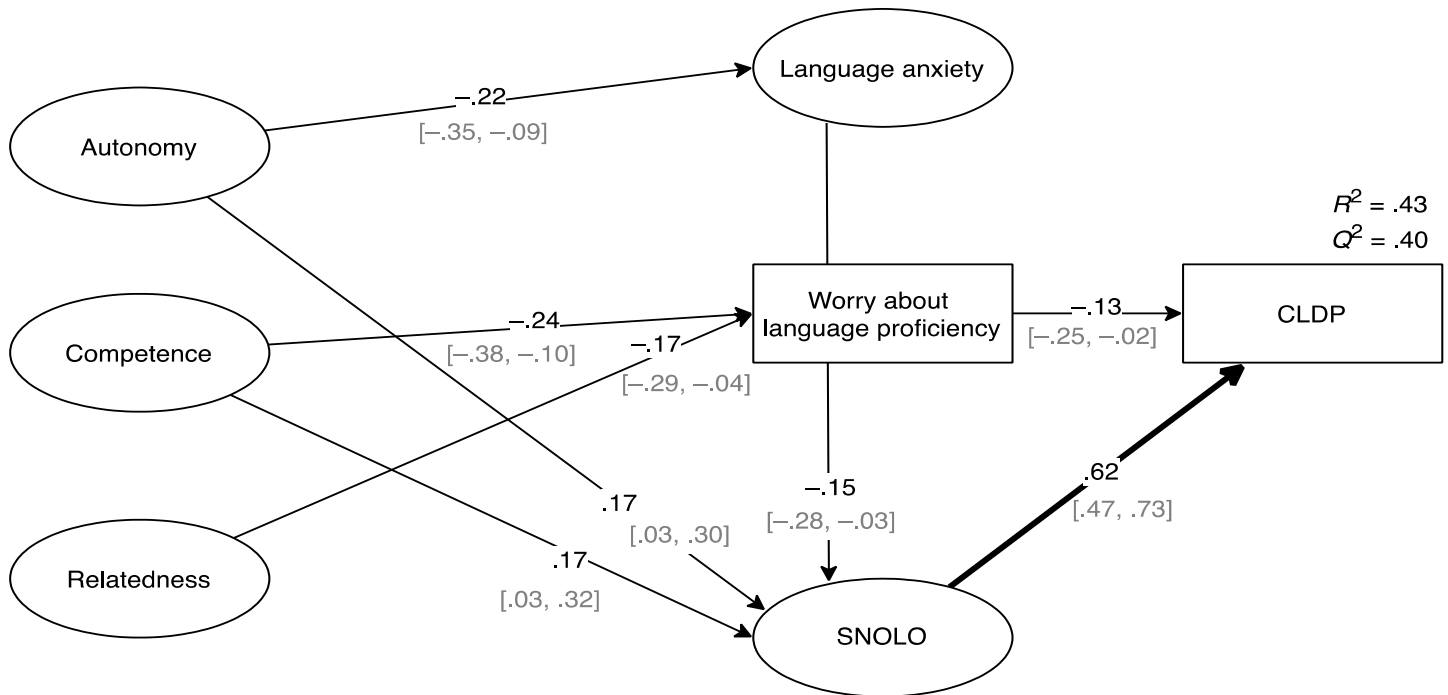
Note. Only significant paths are shown; all paths are significant at $p < .05$; thick line = strong association; values in brackets are confidence interval (CI) 95%. SNOLO = Seeking new opportunities and using alternative learning options; CLDP = Language learners' ability to continue learning during the pandemic

As shown in Figure 2, the BPN variables failed to be linked directly to CLDP. Nonetheless, as reported in Table 2, satisfaction of the needs of autonomy and competence were each indirectly linked to CLDP through the mediating role of SNOLO. Specifically, satisfaction of autonomy predicted SNOLO, and SNOLO, in turn, predicted CLDP ($\beta = .10, p < .05$), showing a modest effect size. Furthermore, satisfaction of autonomy negatively predicted language anxiety; language anxiety, in turn, predicted a decrease in SNOLO; and SNOLO, in turn, predicted CLDP ($\beta = .02, p = .05$), representing a small effect size. These indirect effects were also supported by the total effect of autonomy on the outcome ($\beta = .12, p < .05$), indicating a modest effect size. Similarly, satisfaction of competence was only indirectly associated with CLDP through the mediation process of SNOLO ($\beta = .11, p < .05$), representing a modest

effect size. The total effect of competence on CLDP was also significant ($\beta = .14, p < .01$), indicating a modest effect size. Therefore, H1 is partly supported. Moreover, it was noticed that only satisfaction of autonomy was negatively linked to language anxiety, which then linked to CLDP through SNOLO ($\beta = .02, p = .05$), indicating a small effect size. Thus, H2 is only partially supported. Furthermore, it was observed that two BPN variables, namely satisfaction of competence and relatedness, were negatively related to anxiety about language proficiency, but the indirect effects of this variable on CLDP were non-significant (see Table 2). Hence, H3 is marginally supported. It was also observed that satisfaction with autonomy and competence were positively related to SNOLO, which, in turn, affected CLDP (see Table 2). Only satisfaction of relatedness did not exhibit a direct effect on SNOLO. Thus, H4 is largely

supported. Finally, it was noted that language anxiety but not worry about language proficiency negatively linked with SNOLO (see Table 2). Hence, H5 is partially supported.

Table 2. *Indirect and Total Effects of BPN Variables on CLDP*

Indirect paths	β	p	CI 95%	
			Lower	*Upper*
Autonomy → Language anxiety → SNOLO	.02	.05	.01	.05
Autonomy → SNOLO	.10	.03	.02	.20
Autonomy (*total effect*)	.12	.01	.03	.23
Competence → SNOLO	.11	.02	.02	.20
Competence → Worry about language proficiency	.03	.06	.00	.07
Competence (*total effect*)	.14	.002	.05	.29
Relatedness → Worry about language proficiency	.02	.11	.00	.06
Relatedness (*total effect*)	.02	.11	.00	.06

DISCUSSION

The purpose of the present study was to evaluate the extent to which the basic needs of autonomy, competence, and relatedness can be linked to language learners' ability to continue learning during the pandemic through the mediation effects of learning behavior and emotions. Previous studies maintain that L2 students whose basic psychological needs are satisfied are more likely to flourish, put sufficient effort into their language tasks, and make linguistic achievements (Alamer, 2021, 2022; Alamer & Lee, 2019; Noels, 2013; Oga-Baldwin et al., 2017; Pae, 2008; Wu, 2003). However, the field lacked a scientific investigation into why some students may be able to continue learning the language during difficulties such as during the COVID-19 pandemic from the perspective of SDT. The results of the present study showed that at the correlational level, all basic needs variables showed positive relationships with 'continue learning during the pandemic'.

These findings are in line with previous research that showed the positive effect of the basic needs on life satisfaction during the outbreak (Šakan et al., 2020) and the positive effects of need-satisfying activities on their autonomous motivation during the outbreak (Behzadnia & FatahModares, 2020). Nevertheless, when considering the mediational processes of learners' behavior in the relationship between the basic needs and 'continue learning during the pandemic', the results revealed some interesting patterns of indirect effects. First, the mediational model explained approximately 43% of the variance in 'Language learners' ability to continue learning during the pandemic'; that is, by understanding these mechanisms, the model predicted about 43% of the reasons these students decided to take responsibility for their learning and continue in the face of challenges. Moreover, the blindfolding (via the Q^2 measure) and PLS$_{predict}$ analyses provided evidence that model prediction for out-of-sample was relatively tenable. Overall, the results of the mediational model provided

evidence that students' psychological needs, particularly satisfaction of the needs of autonomy and competence, relate indirectly to 'continue learning during the pandemic' via 'seeking new opportunities and using alternative learning options'.

Although no direct effects of the basic needs on 'continue learning during the pandemic' were observed, the satisfaction of autonomy (among the basic needs variables) directly predicted a decrease in language anxiety but an increase in 'Seeking new opportunities and using alternative learning options'. Further, competence satisfaction predicted decreased anxiety about language proficiency decline but predicted higher 'Seeking new opportunities and using alternative learning options'. Moreover, satisfaction with relatedness seemed to decrease the sense of worry about language proficiency decline. Although not all BPN variables are indirectly connected with the outcome (i.e., 'continue learning during the pandemic'), their total effects contribute to a greater understanding of how their effects can be established through different psychological processes.

Therefore, it appears that satisfaction of autonomy may be a valuable resource for students, as it relates to a reduction in language anxiety during challenging times and also to adaptive language learning by allowing students to actively search for untraditional ways to practice the language (Noels et al., 2000; Ryan & Deci, 2020). Collectively, but not directly, autonomy helped students continue learning the language during difficult times. Hence, students' need for autonomy (e.g., their sense of being in charge of their learning) is an important psychological need during difficult situations that people around students should strengthen (Cantarero et al., 2020; Collie, 2021). For example, teachers can help their students by providing them with choices and meaningful options and discuss alternative language learning options in the face-to-face mode so that students can pursue learning when physical meetings are suspended. This can be one of the reasons language proficiency can develop among L2 students in such difficult times (Hopp & Thoma, 2020). It should be noted, however, that autonomy did not decrease worry about language proficiency. One can postulate that being autonomous about learning the L2 does not necessarily reduce anxiety about what would happen to the student's language level. It appears that being competent and connected optimally with others contribute toward declining this emotion.

Similarly, the study's findings showed that feelings of competence constitute another important basic need that is integral to understanding why some learners are able to continue to learn during difficult situations. Competent learners are more likely to feel that their language proficiency will not decline during the pandemic. Further, competent learners appear to be more likely to seek new opportunities to practice the language. This conjecture seems to be in line with earlier results regarding the role of competence in determining learning outcomes (Alamer, 2022; Alamer & Lee, 2019; Oga-Baldwin et al., 2017). Hence, teachers may want to concentrate on reminding students about their capability to continue undertaking language tasks in different ways and that practicing the language is not limited to language virtual classrooms but can be extended to computer-mediated communication (Moser et al., 2021). Teachers could show their students examples, discuss the available alternatives with them, and allow students to share their new learning experiences (if available).

Although relatedness was neither directly nor indirectly related to the outcome, it was a key variable that was related to a decrease in worry about language proficiency decline. This is partially similar to what Robichaud et al., (2020) have found regarding children's perception of their parents as controlling which increases their sense of anxiety during COVID-19. Thus, individuals appreciate the support from significant others, but when this support is missing negative consequences might come to the surface. The non-significant effect of relatedness on CLDP is not surprising giving that relatedness is often reported as weakly related to language outcomes (Alamer & Lee, 2019; Noels et al., 1999, 2000). As such, teachers can ask their students from time to time about their experiences during these difficult periods and how they can support them. In some cases, this may be as simple as technical issues, but in other cases, students may be unsure how to use the online learning options to improve their language proficiency; if this latter issue is not addressed, students may develop symptoms of anxiety. Understanding students' relatedness may help predict their anxiety about their learning progress during the COVID-19 pandemic and other difficult situations (Collie, 2021).

Taken together, these findings align with the general argument that BPN play a role in determining positive learning outcomes, especially in situations such as COVID-19 where the educational system is affected and (in this

context) shifted from face-to-face to virtual communication (Behzadnia & FatahModares, 2020; Cantarero et al., 2020; Robichaud et al., 2020; Ryan & Deci, 2020; Šakan et al., 2020). The results of this study provide an understanding of how satisfying students' psychological needs may be related to continuous language learning in challenging times (Hopp & Thoma, 2020). Although the basic needs were not directly associated with the outcome, they were indirectly useful in explaining the mechanisms linking the variables to continuous language learning.

Limitations and Conclusion

Despite the important results provided by the present study, it has some limitations that need to be addressed. First, the current research utilized a cross-sectional approach based on a convenient sampling method; that is, data were collected from one cohort of participants at one time point during the COVID-19 pandemic. It would be better if one could follow the effects of basic needs over time to be more confident regarding their roles in language learning outcomes. Similarly, it would be fruitful if the research accounted for the endorsement of psychological needs before the pandemic to evaluate whether students' endorsement of basic needs was stable over time and whether prior endorsement would predict students' learning behavior and emotions in the pandemic. Second, the newly developed measures have not undergone a full validation process because of the limitations and restrictions that come

with the pandemic. For example, the variable 'worry about language proficiency during the pandemic' has only one item, and thus, no reliability measures were obtained. In future research, researchers could use this item as a starting point and elaborate on it to cover its conceptual dimensionality. Third, although the study has achieved the minimum number of participants to run the analyses, the findings should be generalized to other socio-cultural contexts with caution. It can be postulated that different contexts and various manners in which educational systems respond to COVID-19 may result in different psychological processes, which might eventually lead to dissimilar results regarding the prediction of the outcome.

In conclusion, the findings of this study suggest the indirect role of the BPN of autonomy, competence, and relatedness in recognizing a certain number of reasons that lead learners to continue their pursuit of L2 learning during difficult times such as the COVID-19 pandemic. The present study substantiated the processes associated with learners' basic needs and their ability to continue learning during the pandemic by accounting for the mediation of students' behavior during the pandemic, which, in turn, contributed to a greater understanding of the prediction of continuous language learning. The current findings contribute to the research conducted under SDT in language learning and expand upon them by shedding light on its role in learning the L2 during challenging situations such as the COVID-19 pandemic.

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APPENDIX

Basic Psychological Needs in Second Language (BPN-L2) Scale

Autonomy
I am able to freely decide my own pace of learning in English.
I am able to freely choose the tasks to be done while learning English.
My English teacher allows my class to choose how we approach English learning.
My English teacher let me freely practice English in the classroom.

Competence
I feel I am capable of learning English.
I can be a successful language learner.
I am competent enough to meet the challenges and tasks posed in English learning.
I feel a sense of accomplishment in my English classes.

Relatedness
My English teacher is friendly and cordial with me.
My English teacher is very understanding (puts him/herself in other people's place) about students' problems. My classmates are willing to help and cooperate with me while learning the language.
My English teacher cares about my progress.