

**The Frustration of Basic Psychological Needs in the Context of Higher Education and
Ill-Being: The Role of Need Valence and Need Desire**

Silke Hoffmann

University of Twente

Faculty of Behaviour, Management and Society

Department of Positive Psychology and Technology

Master Thesis Psychology

First supervisor: Dr. N. Kloos

Second supervisor: T.R. Elfrink, MSc.

July 21, 2020

Abstract

Background and Objectives: University students are at risk of experiencing psychological ill-being. One theory that can be used to explain the development of ill-being is the Basic Psychological Needs Theory, which proposes that humans have three basic psychological needs. There is evidence of a link between the frustration of these three basic psychological needs and ill-being. Additionally, there are conflicting findings in research whether individual differences in need valence and need desire might influence how strong this link is. ‘Need valence’ is the importance persons assign to the satisfaction the basic psychological needs, whereas ‘need desire’ is the longing of persons to satisfy the basic psychological needs. The current study aimed to investigate whether there is a relationship between the frustration of basic psychological needs in the context of higher education and ill-being. Furthermore, it was examined whether need valence and need desire in the context of higher education have a moderation effect on this relationship. It was assumed that need desire would have a stronger moderation effect than need valence.

Methods: A cross-sectional online survey design was employed. Need frustration in the context of university studies, need valence, and need desire in the context of university studies, and ill-being were measured. The data of 142 university students ($M_{age} = 22.35$, $SD = 2.46$) were used for correlation and moderation analyses.

Results: There were positive, moderate to strong correlations between the frustration of basic psychological needs in the context of higher education and ill-being. Need valence in the context of university studies did not moderate the relationship between need frustration and ill-being. Similarly, need desire in the context of university studies did not moderate the association between need frustration and ill-being.

Discussion: In line with previous research, the frustration of basic psychological needs was related to ill-being in students. Besides, students’ having low or high need valence or need desire experienced the same extent of ill-being when needs were frustrated. One possible explanation for this is that need valence and need desire only moderate the relationship between need frustration and ill-being when measured generally and not in specific contexts. Furthermore, the possible influence of the corona pandemic on the results is discussed.

Keywords: Basic Psychological Need Frustration, Need Valence, Need Desire, Ill-Being, University Students

Introduction

Psychological ill-being (i.e., negative affect, depressive symptoms, anxiety, or anger; Ryff et al., 2006) has been linked to several negative consequences, such as worse health behaviours (Yeh et al., 2019) and even reduced life expectancy (Smith, Glazer, Ruiz, & Gallo, 2004). One group of people that seem to be at risk for being affected by psychological ill-being are university students (Stallman, 2010). For example, 17.8 % of the U.S. college students have been treated for or diagnosed with depression in 2017 (American College Health Association, 2018), whereas 4.8 % of the general U.S. population suffered from depression the same year (“Percentage of the U.S. population”, 2019). As university students seem to be more vulnerable to suffer from indicators of ill-being compared to the general population, it is important to investigate how ill-being in students evolves. The current study investigates whether students’ perceived importance of and longing for autonomy, competence, and relatedness in the context of their studies influences their ill-being.

Several theories can be used to explain the development of ill-being. One of these theories is the Basic Psychological Needs Theory (BPNT; Deci & Ryan, 2000). This theory is one of the six mini-theories that constitute Self-Determination Theory (SDT; Ryan & Deci, 2017). BPNT states that there are three universal human psychological needs: autonomy, competence, and relatedness. *Autonomy* concerns the sense of having the freedom to decide how to behave (Ryan, Huta, & Deci, 2008) and to control experiences (Ryan & Deci, 2017). *Competence* refers to the need of perceiving oneself as effectively in executing an activity (Ryan & Deci, 2017). *Relatedness* can be defined as the need to feel loved by and connected with others (Ryan et al., 2008). BPNT holds that these three universal human needs can either lead to health and well-being when satisfied or to ill-being when frustrated (Deci & Ryan, 2000; Ryan & Deci, 2000), which is a proposition supported by various research (Cordeiro, Paixão, Lens, Lacante, & Sheldon, 2016; Ryan & Deci, 2017; Van Assche, van der Kaap-Deeder, Audenaert, De Schryver, & Vansteenkiste, 2018). There is evidence that these associations hold also true for university students (Chen et al., 2015; Tindall & Curtis, 2019).

It is important to make a distinction between need frustration and low need satisfaction, or in other words, the experience that the basic needs are *actively frustrated* by others (need frustration) and the perception of one’s needs *not being satisfied enough* (low need satisfaction; Bartholomew, Ntoumanis, Ryan, & Thøgersen-Ntoumani, 2011; Bartholomew, Ntoumanis, Ryan, Bosch, & Thøgersen-Ntoumani, 2011; Cordeiro et al., 2016; Vansteenkiste & Ryan, 2013). This is because need frustration and need satisfaction do not represent a continuum but were identified as being two independent constructs (Bartholomew,

Ntoumanis, Ryan, & Thøgersen-Ntoumani, 2011; Chen et al., 2015; Stebbings, Taylor, Spray, & Ntoumanis, 2012; Vansteenkiste & Ryan, 2013). For example, there is evidence that need frustration in students is exclusively related to ill-being, whereas need satisfaction is exclusively related to well-being (Chen et al., 2015). Therefore, interpretations about need frustration based on studies on need satisfaction should be made with caution (Vansteenkiste & Ryan, as cited in Van Assche et al., 2018).

A further element of the BPNT is the universality claim, which holds that while *every* person suffers from the frustration of basic psychological needs, there might be individual differences in the degree need frustration affects ill-being (Ryan, Soenens, & Vansteenkiste, 2019). Research increasingly investigates whether individual differences in need valence and need desire influence the extent ill-being is experienced when needs are frustrated. Need valence can be defined as how *important* a human finds the satisfaction of each basic psychological need (Heine, Lehman, Markus, & Kitayama, 1999), whereas need desire can be defined as the *longing* or *wish* for satisfaction of the basic psychological needs (Chen et al., 2015). Although there is a growing interest in research to investigate whether individual differences in need valence and need desire influence the relationship between need frustration and ill-being, until now, studies examining these interactions are scarce (but see Chen et al., 2015; Van Assche et al., 2018).

Only two studies investigating need valence and need desire as possible moderators on the relationship between need frustration and ill-being are known to the present researcher. One study on young adults that focused exclusively on the need ‘autonomy’ provided some initial evidence for the moderating role of autonomy valence and autonomy desire on the relationship between autonomy frustration and ill-being (Van Assche et al., 2018). Still, a limitation of the study is that the researchers did not include the needs ‘competence’ and ‘relatedness’ and, thus, give only limited insight into the influence need valence and need desire might have. In contrast to the results of Van Assche et al. (2018), one study by Chen et al. (2015) in a sample of university students did not find a moderation effect of need desire on the relation between need frustration and ill-being. This means that students who have no desire to satisfy their needs experience the same extent of ill-being as students who have a strong desire (Chen et al., 2015). This study by Chen et al. (2015) is the only study known to the present researcher examining these interactions in a sample of university students, which highlights the need for further research on the moderation effect of need valence and need desire in samples of university students. A limitation of the research by Chen et al. (2015) is that they only investigated the moderation effect of need valence on the relationship between

need satisfaction and well-being and not between need frustration and ill-being. Only need desire was studied as a moderator on the association between need frustration and ill-being. Conclusively, previous research produced conflicting results and did not investigate the full scope of need valence and need desire acting as moderators on the relationship between need frustration and ill-being.

As research in samples of university students and young adults found that need valence is positively related to need satisfaction, whereas need desire is positively related to need frustration (Chen et al., 2015; Van Assche et al., 2018), assumptions were made that there might be a difference in how need valence and need desire develop. It is presumed that need valence is based on need-satisfying experiences because people start to value the satisfaction of their needs when they experience need satisfaction (Ryan et al., 2019). The development of need desire was explained by assuming that people start to desire the satisfaction of their needs when they are experiencing need satisfaction as absent (Sheldon & Gunz, 2009). Hence, it is presumed that need valence is grounded on need-satisfying experiences (Van Assche et al., 2018), whereas need desire is based on need-frustrating experiences (Sheldon & Gunz, 2009).

Based on this, it makes sense to assume that need desire has a stronger moderation effect on need frustration and ill-being than need valence has. In line with this, Van Assche et al. (2018) found evidence that autonomy desire had a higher probability to have a moderation effect than autonomy valence had. Still, as their study was the first one to compare the moderation effect of need valence and need desire on the relationship between need frustration and ill-being, further research has to be conducted, including for the needs 'competence' and 'relatedness'. Moreover, it is not clear whether the stronger moderation effect of need desire on the need frustration-ill-being relationship also applies to students, as Chen et al. (2015) did not find moderation effect of need desire in a sample of students.

As mentioned before, university students seem to be an at-risk group for psychological ill-being. Students might experience need frustration in the context in which they operate, for example, the context of university studies which, in turn, leads to ill-being. Moreover, need valence and need desire in the context of higher education might influence how strong this relationship between need frustration and ill-being is. Studies focussing on university students' need valence and need desire specifically in the context of higher education and ill-being are unknown to the present researcher. It is important to broaden scientific knowledge on this issue to be able to develop effective prevention programs (Stallman, 2010) and to be able to help already affected individuals. Therefore, the purpose of the present study is to

examine the relationship between the need frustration in the context of university studies and ill-being. Additionally, the moderation effect of need valence and need desire in the context of university studies on this relationship is investigated and compared. Based on the results of Van Assche et al. (2018), it is assumed that need desire has a stronger moderating role than need valence. The following hypotheses and research questions are derived:

Hypothesis 1: The frustration of basic psychological needs is positively related to ill-being.

Research Question 1: Does need valence moderate the relationship between the frustration of basic psychological needs and ill-being?

Research Question 2: Does need desire moderate the relationship between the frustration of basic psychological needs and ill-being?

Hypothesis 2: Need desire has a stronger moderation effect than need valence on the relationship between need frustration and ill-being.

Methods

Design and Procedure

A cross-sectional online survey design was employed. This study was part of a collaborative research project. Ethical approval was obtained from the ethics committee of the University of Twente (no. 200444). Convenience sampling was used to initiate contact to potential respondents in the researchers' social network, continued by snowball sampling as contacted persons referred the link to further persons outside the researchers own social network. Additionally, the study was accessible at the online platform 'Sona Systems', where students of the University of Twente collect credits for taking part in research studies. Students were granted 0.25 credits for participating in the study. It was estimated that filling out the complete questionnaire would take about 15 minutes.

The online platform 'Qualtrics' was used for data collection. If respondents started the survey, the consent form was presented and had to be agreed on before proceeding. For example, the consent form stated that respondents have the right to withdraw from the study at any time and that data is stored anonymously. Questions about age, gender, nationality, and student enrolment were posed. In case respondents indicated they are not a student, they were excluded from the study. The questionnaires assessing need frustration, need valence, need desire, and ill-being were shown. A statement thanking the respondents for taking part in the study was presented, followed by contact information in case of arising questions about the study, and a box in which potential remarks could be added.

Participants

The study had 204 respondents in total, whereof the data of 62 respondents had to be excluded from the data analysis. This resulted in a total sample of 142 respondents, with the majority having a German nationality (75 %), followed by American- (5 %) and Austrian nationality (4 %). Further respondents were from The Netherlands (2 %), Egypt (1 %), Italy (1 %), and Norway (1 %). The following countries had one respondent each: Argentina, Canada, France, Indonesia, Jordan, New Zealand, Mexico, Panama, Romania, and Uruguay. Further respondents indicated a non-specific nationality: One respondent stated to be an Arab, one respondent declared to be British-Asian, and a further participant indicated to be Latinx. Most respondents identified as 'female' (73 %), 24 % as 'male' and 4 % as 'other'. The mean age was 22.35 years ($SD = 2.46$).

Materials

Frustration of Basic Psychological Needs. To measure the frustration of autonomy, competence, and relatedness, the frustration subscale of the Basic Psychological Need Satisfaction and Need Frustration scale (BPNSNF; Chen et al., 2015) was used. This subscale consists of 12 items, with each need measured by four items. Respondents have to indicate on a 5-point Likert scale (from '1 = completely false' to '5 = completely true') how much they agree with each item. Based on the Dutch version of the questionnaire specific for the context of education (Vandenkerckhove et al., 2019), the items of the frustration subscale of the BPNSNF were adapted to the context of higher education.

Example questions include 'I feel pressured to do too many things in my study' (autonomy), 'I feel insecure about my skills' (competence), 'I feel the relationships I have at university are just superficial' (relatedness). In the present study, the scores for the frustration of autonomy, competence, and relatedness were computed by calculating the mean of the items belonging to each of the three basic needs. A higher score indicated more frustration of that need in the context of university studies. In previous research, internal consistency of the three need frustration subscales ranged from moderate ($\alpha = .64$) to good ($\alpha = .86$; Chen et al., 2015). In the current research, the autonomy frustration subscale showed acceptable reliability ($\alpha = .76$) and the subscales of competence frustration ($\alpha = .83$) and relatedness frustration ($\alpha = .82$) had good reliability.

Need Valence. The questionnaire to measure need valence created by Van Assche et al. (2018) was used. This questionnaire is an adapted version of the satisfaction subscale of the BPNSNF (Chen et al., 2015). Thus, the 12 need satisfaction items were rephrased in the way that each item was preceded by "How important is it for you to..." (Van Assche et al.,

2018). To relate the items to the context of higher education, they were afterwards rephrased based on the education version of the BPNSNF (Vandenkerckhove et al., 2019). An example of an item measuring autonomy valence is ‘How important is it for you to feel that your choices at university express who you really are?’. The 12 items were rated on a 5-point Likert scale ranging from ‘1 = not important at all’ to ‘5 = very important’.

Scores were computed by establishing the mean of each of the three basic needs. High scores signified higher valence of a need. Van Assche et al. (2018) only included autonomy valence in their study, which showed acceptable internal consistency ($\alpha = .77$). In the present study, the reliability of autonomy valence was moderate to acceptable ($\alpha = .69$) and the reliability of competence ($\alpha = .80$) and relatedness valence ($\alpha = .90$) was good.

Need Desire. The scale measuring need desire was developed the same way the scale assessing need valence was, but here the adaptations of Van Assche et al. (2018) concerning need desire were used. Hence, the items were preceded by “At this moment I desire...”. Items were rated on a 5-point Likert scale, ranging from ‘1 = Not desired at all’ to ‘5 = Very much desired’. An example of an item measuring autonomy desire is: ‘At this moment I desire that my decisions reflect what I really want.’

To calculate the scores, the mean of each of the three basic psychological needs was computed. A high score indicated that a person has a stronger desire to satisfy a need. In the study by Van Assche et al. (2018), the questionnaire assessing autonomy desire had good reliability ($\alpha = .87$). In the current study, the internal consistency of autonomy desire was acceptable ($\alpha = .70$). The reliabilities of competence desire ($\alpha = .83$) and relatedness desire ($\alpha = .89$) were good.

Ill-being. Depressive symptoms were measured as an index of ill-being. The Center for Epidemiologic Studies Depression Scale (CED-S; Radloff, 1977) which consists of 20 items, was employed. Respondents were asked to indicate on a 4-point Likert scale how often they felt or behaved a certain way during the past week (Radloff, 1977). The Likert scale ranged from ‘0 = Rarely or none of the time (less than 1 day)’ to ‘3 = Most or all of the time (5-7 days)’. Example items are ‘I felt fearful’, ‘I felt lonely’ and ‘I had crying spells’. Scores were calculated by summing up the responses to the items, where higher scores indicated more symptoms of depression. Possible scores range from 0 to 60 (Radloff, 1977). In previous research, the scale showed good reliability ($\alpha = .85$; Radloff, 1977). In the current research, reliability was excellent ($\alpha = .91$).

Data Analysis

IBM SPSS Statistics 25 was used, with a significance level of $\alpha < .05$. To prepare the data set for further analysis, four exclusion criteria were applied. Hence, the whole data of respondents who were not enrolled in an institution of higher education ($n = 31$) or who did not agree with the informed consent ($n = 1$) were excluded. Furthermore, the whole data were excluded if the full survey was answered within seven minutes or less, based on the estimation that completing the questionnaire would take 15 minutes and serious completion in less than half of this estimated time was doubted ($n = 26$). Moreover, the whole data of respondents were excluded if a respondent scored as an outlier on at least two scales or subscales, which was determined by creating boxplots ($n = 4$).

To test the first hypothesis whether need frustration is positively related to ill-being, three correlation analyses were performed, each including one of the basic psychological needs. Pearson's r was employed as the variables' skewness and kurtosis indicated normal distribution of scores of the variables. The interpretations of the strengths of the correlations were based on Cohen (1988), who defined a correlation as strong if the correlation coefficient (r) $\geq .50$, as moderate when $r \leq .49$, and as weak if $r \leq .29$. To answer the first and second research question, six moderation analyses were performed using the software 'PROCESS macro' (Hayes, 2017; version 3.3), with need frustration as independent variable and ill-being as dependent variable. Three of these six moderation analyses were executed with need valence as a moderator, and three moderation analyses were conducted with need desire as a moderator. To test the second hypothesis, whether need desire has a stronger moderation effect than need valence, the results of the six moderation analyses were compared. The following options were chosen in PROCESS macro: 95% confidence intervals, 5000 bootstrap samples, mean center for construction of products, generate code for visualizing interactions, conditioning values of -1SD, Mean, +1SD, heteroscedasticity-consistent inference HC3 (Davidson-MacKinnon), probe interactions if $p < .05$, and Johnson-Neyman output.

Results

Descriptives and correlations

Table 1 shows the means, standard deviations, minimum and maximum values and the correlations of need frustration, need valence, need desire, and ill-being. Concerning need frustration, respondents scored the highest on autonomy frustration, followed by competence- and relatedness frustration. Regarding need valence, competence valence was rated the

highest, followed by autonomy- and relatedness valence. Similar results were apparent for need desire, as the scores for competence desire were the highest, followed by autonomy- and relatedness desire.

It was hypothesized that need frustration would positively relate to ill-being. The correlation analyses showed that the frustration of all needs was positively related to ill-being. The strongest correlation was between competence frustration and ill-being, which was a high, significant correlation. The correlation between autonomy frustration and ill-being and between relatedness frustration and ill-being were both moderate and significant.

Table 1

Descriptive Values of Frustration, Need Valence, and Need Desire of the Three Basic Psychological Needs, and Ill-Being and Pearson Correlation Between Frustration of the Three Basic Psychological Needs and Ill-Being (N = 142)

	M	SD	Min	Max	1	2	3	4	5	6	7	8	9
Need frustration													
1. Autonomy	3.33	0.82	1	5	-								
2. Competence	2.80	1.06	1	5	.50**	-							
3. Relatedness	2.16	0.91	1	5	.39**	.49**	-						
Need valence													
4. Autonomy	4.00	0.62	2	5	-.04	-.10	-.12	-					
5. Competence	4.29	0.52	3	5	.03	.08	.07	.26**	-				
6. Relatedness	3.85	0.94	1	5	-.07	-.20*	-.24**	.30**	.25**				
Need desire													
7. Autonomy	3.70	0.71	2	5	.18*	.03	-.12	.62**	.17*	.15	-		
8. Competence	4.29	0.63	2	5	.14	.32**	.07	.11	.48**	.07	.32**	-	
9. Relatedness	3.55	0.97	1	5	-.01	-.18*	-.24**	.25**	.15	.76**	.23**	.23**	-
10. Ill-being	20.81	11.43	0	48	.38**	.59**	.43**	-.01	.18*	-.11	.06	.32**	-.04

N.B. M = Mean; SD = Standard Deviation.

* $p < .05$. ** $p < .01$. (2-tailed).

Moderation analyses

Need valence. Three multiple regression analysis were performed to determine whether the frustration of the three basic psychological needs and need valence could predict ill-being. All models, each including one of the basic psychological needs, accounted for a significant variance in ill-being (not in table). The model of autonomy frustration and autonomy valence accounted for a small and significant variance in ill-being ($R^2 = .14$, $p < .01$), which means that autonomy frustration and autonomy valence explain 14% of the variance in ill-being. Competence frustration and competence valence accounted for a high and significant variance in ill-being ($R^2 = .36$, $p < .01$). The model in which relatedness valence served as a moderator explained a medium and significant amount of variance in ill-being ($R^2 = .19$, $p < .01$). Table 2 presents the outcomes of the moderation analyses. There was no significant moderation, meaning that need valence did not affect the link between need frustration and ill-being.

Need desire. To ascertain whether the frustration of the three basic psychological needs and need desire could predict ill-being, three multiple regression analysis were performed. The three models, each including one of the basic psychological needs, explained a significant amount of variance in ill-being (not in table). Autonomy frustration and autonomy desire accounted for a small and significant variance in ill-being ($R^2 = .14$, $p < .01$). The model in which competence desire was a moderator explained a high and significant amount of variance in ill-being ($R^2 = .37$, $p < .01$). Relatedness frustration and relatedness desire accounted for a medium and significant variance in ill-being ($R^2 = .20$, $p < .01$). There was no significant moderation effect of need desire on the relation between need frustration and ill-being (see Table 2).

Table 2

Results of the six Multiple Regression Analyses for Ill-Being Predicted by Either Need Valence or Need Desire and the Frustration of Basic Psychological Needs

	Moderation Need Valence						Moderation Need Desire					
	ΔR^2	<i>b</i>	df2	S.E.	t	<i>p</i>	ΔR^2	<i>b</i>	df2	S.E.	t	<i>p</i>
Autonomy	.00	-.92	138	2.02	-.45	.65	.00	.61	138	1.75	.35	.73
Competence	.00	-.18	138	1.58	-.12	.91	.00	-.61	138	1.48	-.41	.68
Relatedness	.00	-1.26	138	1.09	-1.15	.25	.01	-1.56	138	1.04	-1.50	.14

N.B. *b* = unstandardized coefficient; S.E.= standard error.

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

Discussion

The present study aimed to investigate whether there was an association between the frustration of basic psychological needs and ill-being in a sample of students and whether need valence and need desire moderate this relationship. Moreover, the purpose of the study was to examine whether need desire has a stronger moderation effect than need valence. There was a relationship between need frustration and ill-being, meaning that the more frustrated a student was in either one of the basic psychological needs, the more ill-being the student experienced. Moreover, the present study found that neither need valence nor need desire moderated the relationship between need frustration and ill-being. This means that students who were frustrated in one need and had a great need valence or a strong need desire experienced the same extent of ill-being as a student having low need valence or low need desire. The results also showed that need desire did not have a stronger moderation effect than need valence.

The first finding in the present study was that the more either one of the basic psychological needs in the context of higher education was frustrated, the more ill-being the student experienced. This outcome is in line with the first hypothesis and the BPNT (Deci & Ryan, 2000; Ryan & Deci, 2000). Furthermore, this result supports the universality hypothesis, because there was a link between need frustration and ill-being in a sample of students. The finding is also in accordance with results of previous studies that found the relationship between need frustration and ill-being in samples of athletes, adolescents, high school students, university students, young adults, and prisoners (Bartholomew, Ntoumanis,

Ryan, Bosch, et al., 2011; Chen et al., 2015; Cordeiro et al., 2016; Costa, Cuzzocrea, Gugliandolo, & Larcan, 2016; Tindall & Curtis, 2019; Van Assche et al., 2018).

Referring to the first research question, there was no moderation effect of need valence on the association between need frustration and ill-being, indicating that need valence did not influence how much ill-being was experienced when basic psychological needs were frustrated. Similarly, concerning the second research question, need desire did not moderate the relationship between need frustration and ill-being. Based on these findings that neither need valence nor need desire acted as a moderator, the second hypothesis, stating that need desire has a stronger moderation effect than need valence, was not supported. These results conflict with the outcomes of one study by Van Assche et al. (2018), who found modest evidence for a moderation effect of autonomy valence and autonomy desire on the relationship between autonomy frustration and ill-being in young adults. The results of need desire not acting as a moderator is, however, in accordance with the outcomes of one study by Chen et al. (2015), whose sample also consisted of university students. A further outcome in opposition to the current results is that one study found that autonomy desire had a stronger moderation effect than autonomy valence on the relationship between autonomy frustration and ill-being (Van Assche et al., 2018). Keeping these conflicting results in mind, further research is needed to provide clarity about the moderation effect of need valence and need desire. More specifically, future cross-sectional studies could further investigate and compare the moderation effect of need valence and need desire in samples of university students.

A possible explanation for the current results might be that need valence and need desire moderate the relationship between need frustration and ill-being, but just not in the *context of university studies*. In other words, it could be assumed that need valence and need desire do act as moderators, but only generally and not when measured in specific contexts. This proposition can be supported by one study that found some evidence for the moderation effect by measuring autonomy frustration, autonomy valence, and autonomy desire generally and not context-specific (Van Assche et al., 2018).

This interpretation of the present study's findings would question the statement of Ryan et al. (2019) about the universality claim, who argued that *individual differences* affect the extent ill-being is experienced when needs are frustrated. The current interpretation of the findings questions how 'universal' the statement of Ryan et al. (2019) about the universality hypothesis truly is, because the interpretation implies that need valence and need desire (as individual differences) would only influence the need frustration-ill-being relationship generally, and not in specific contexts. Additionally, the interpretation that need valence and

need desire are only moderators when measured generally would be in opposition to the results of Chen et al. (2015), as their research focused on a general context in a sample of students and they did not find a moderation effect. Still, the presumption that need valence and need desire do not have a moderation effect in specific contexts can be made because of the lack of available research. However, the present researcher sounds a note of caution to this interpretation, because while the current study measured need frustration, need valence, and need desire in the context of university studies, ill-being was assessed generally and not in the context of university studies. Therefore, future research could investigate whether this interpretation holds true, by measuring and comparing need frustration, need valence, need desire, and ill-being generally and context-specifically (for example, the context of university studies).

A further possible reason for not finding a moderation effect could be that there are other individual differences instead of need valence and need desire that rather act as moderators. For example, there is some evidence that certain personality traits moderate the relationship between need frustration and ill-being (Mabbe, Soenens, Vansteenkiste, & Van Leeuwen, 2016). Hence, it could be possible that individual differences in personality influence the relationship between need frustration and ill-being, instead of need valence and need desire. Still, meaningful statements about moderating individual differences cannot be made, since research was not able to provide robust results yet (Ryan et al., 2019). This underlines the general lack of research on moderating individual differences on the relationship between need frustration and ill-being. There needs to be more research on this topic, so individual differences can be identified which pose a risk of experiencing higher levels of ill-being when needs are frustrated.

Strengths and Limitations

This study was the first one to investigate whether the frustration of the basic psychological needs and their relationship with ill-being is moderated by need valence and need desire in university students. Previous research only investigated this for the need 'autonomy' in a sample of young adults and prisoners (see Van Assche et al., 2018) or only examined need desire and not need valence as a moderator in the relationship in a sample of university students (see Chen et al., 2015). Moreover, to the researcher's knowledge, this was the first study to investigate need valence and need desire in the context of higher education. There are also limitations to the current study. The first limitation is that because 73% of the respondents were female and 75% had German nationality, the sample of the current study was not diverse, which could impede the generalisability of the results. However, Chen et al.

(2015) included university students from four nationalities in their studies about need frustration and need desire and did not find an effect of nationality and gender. Moreover, if the universality claim is truly universal, nationality and gender should not have an influence. Still, due to the scarcity of research on need frustration, need valence, and need desire, certain statements about the effects of nationality and gender cannot be made. Hence, there needs to be more research on possible influences of nationality and gender to make claims about the generalisability of the current study.

A further limitation concerns only assessing depression as an indicator of ill-being in the present study. As stated above, ill-being can constitute different aspects such as negative affect, depression, anger, and anxiety (Ryff et al., 2006). Similar to the present study, previous studies investigating the moderation effect of need valence and need desire on the relationship between need frustration and ill-being employed depression as an indication of ill-being (Chen et al., 2015; Van Assche et al., 2018). However, there is evidence that besides higher levels of depression compared to the general population, students also experience higher levels of anxiety compared to the general population (American College Health Association, 2018; “Share of the U.S. population”, 2019). Generally, depression and anxiety seem to be the most prominent mental health issues in students (“Percentage of mental health”, 2020) and are correlated with distinct negative consequences (Sobel & Markov, 2005). Therefore, it would have been beneficial to also include anxiety in the present study to get a more extensive insight into the development of ill-being in students. One study on the correlation between need frustration and depression and anxiety in a sample of firefighters found that autonomy frustration was correlated the strongest with depression, whereas competence frustration was correlated the strongest with anxiety (Rouse et al., 2020). Based on this, it can be assumed that the frustration of one need might be more anxiety-inducing, whereas the frustration of another need might be more depression-inducing. Contrary to these outcomes, there is evidence that the correlations between three basic psychological needs and measures of depression and anxiety mostly had the same strengths in a student sample, meaning that one need is as strongly correlated with depression as it is with anxiety (Tindall & Curtis, 2019). Hence, there is conflicting evidence whether different needs can lead to different outcomes in depression and anxiety.

Therefore, including not only depression but also anxiety in the current study would have lead to a broader understanding of ill-being in students. Thus, it is advised to future studies to include measures of depression as well as anxiety when investigating ill-being in students. Concerning need valence and need desire as moderators on the correlation between

need frustration and depression or anxiety, it is hard to make statements at this point without being speculative, as no study investigated these moderators with anxiety as an indicator of ill-being before. Therefore, future studies could, for example, investigate whether need valence and need desire have a different moderating role when depression or anxiety are used as indicators of ill-being.

A further limitation of the present study is that data were collected during the global corona pandemic. The corona pandemic led to several economic uncertainties (Federal Statistical Office Germany, 2020), safety issues, and social constraints (Guan, Deng, & Zhou, 2020). Additionally, students were effected by universities having to close and change over to online-classes (Murphy, 2020). These consequences of the corona crisis induced psychological distress in many people (Sood, 2020) and a decline in students' mental health (Kaparounaki et al., 2020; Yehudai et al., 2020). In accordance with this, seven respondents of the current study commented on the survey saying they are negatively affected by the repercussions of the corona pandemic. Themes in these comments were, for example, feeling distressed or having a low mood, having problems to focus and concentrate, and not being able to study in company with friends at university. Of course, these comments are not representative of how people in the sample felt, but it indicates how the situation might have effected some persons.

There is a possibility that the psychological consequences of the corona crisis affected people negatively, which could, in turn, influence the outcomes. If comparing the means of need frustration, need valence, and need desire of the current study to a Belgian student sample (Chen et al., 2015), it becomes apparent that for need frustration and need desire, mean scores were somewhat higher in the present study. This means that on average, respondents of the current sample experienced more need frustration and need desire than in the study by Chen et al. (2015). For need valence, mean scores of autonomy- and relatedness valence were lower, and the mean score for competence valence was similar compared to the Belgian student sample. This indicates that on average, respondents in the current study found the satisfaction of autonomy and relatedness to be less important than respondents of the study by Chen et al. (2015). Based on these comparisons, it could be presumed that corona might have lead to a shift in means in the current sample. The present researcher assumes that, for example, students' relatedness frustration could have been influenced by not being able to meet fellow students at university. This could have also lead to the increased mean of need desire because, as mentioned before, need desire is hypothesised to stem from need frustration. In other words, students might have also had a stronger desire to, for example,

meet fellow students, because they felt frustrated in their need for relatedness. The present research assumes that the mean of need valence could have been lower in the present sample as it is hypothesized to be based on need satisfaction, which can be assumed to be lower during the corona pandemic. Because Chen et al. (2015) used a different scale for assessing ill-being, means could not be directly compared. If comparing the present study's mean scores of ill-being to other studies on university students using the same questionnaire as the present study, it becomes apparent that the mean in the current study was somewhat higher (see Regestein et al., 2010; Umegaki & Todo, 2017), indicating that on average, students in the current sample experienced higher levels of ill-being. However, it needs to be highlighted that it is only an assumption that the corona pandemic could be an explanation for the divergence in means. The means could also be different compared to the other studies due to other reasons. The corona pandemic is just one of the possible explanations. Also, it does not seem like these differences affected the correlations between need frustration and ill-being in the current study, as the strengths of the current study's correlations were mostly similar to results of other studies in samples of university students, adolescents, and young adults (Chen et al., 2015; Costa et al., 2016; Van Assche et al., 2018). Conclusively, the correlations were probably not affected by students being influenced due to the pandemic, but the generalisability of the mean scores could be affected as those were in divergence compared to other studies. Future studies should keep this in mind if comparing future studies' means of need frustration, need valence, need desire, and ill-being to the current results.

Practical implications

Based on the current study's results, it can be recommended that universities should test regularly which needs of their students might be frustrated and consider implementing programs or interventions to decrease the frustration of needs. For example, teachers or tutors could be educated to employ autonomy-supportive behaviours like giving hints or encouragements instead of utilizing controlling and autonomy-frustrating behaviours (Reeve & Jang, 2006). Also, there is evidence that peer-lead social support groups in college can decrease feelings of social isolation (Mattanah et al., 2010), thus, helping students to experience less relatedness frustration. Furthermore, there are suggestions that universities should not only offer merit-based academic scholarships but also effort-based scholarships, so that students who have lower academic achievements but put in a lot of effort could get rewarded (Copeland & Levesque-Bristol, 2011). This could, in turn, increase their sense of competence (Tindall & Curtis, 2019). Students experiencing less need frustration and ill-being in their studies could potentially have large effects on their lives, as facets of ill-being have

been linked to several health-impeding consequences like worse health behaviours (Yeh et al., 2019) and reduced life expectancy (Smith et al., 2004).

Conclusion

The findings provide evidence that the frustration of the basic psychological needs in the context of university studies is associated with ill-being, which supports the insights of existing research. Furthermore, the study extended the body of research on individual differences as moderators on the relationship between need frustration and ill-being. The results showed that need valence in the context of university studies did not moderate this relationship. Furthermore, need desire in the context of higher education did not act as a moderator. The outcomes of the current research added to previous research as need valence and need desire have not been examined in the context of higher education before. This study was the third one to investigate need valence and need desire as moderators on the relationship between need frustration and ill-being, which highlights the general scarcity of research on this topic. It is advised to future research to further investigate this topic, so the understanding of ill-being in students can be extended. This is important in order to establish or improve effective prevention programs or interventions for students experiencing psychological ill-being.

References

- American College Health Association. (2018). *National College Health Assessment II: Reference Group Executive Summary Fall 2017*. Retrieved from American College Health Association website: https://www.acha.org/documents/ncha/NCHA-II_FALL_2017_REFERENCE_GROUP_EXECUTIVE_SUMMARY.pdf
- Bartholomew, K. J., Ntoumanis, N., Ryan, R., & Thøgersen-Ntoumani, C. (2011). Psychological Need Thwarting in the Sport Context: Assessing the Darker Side of Athletic Experience. *Journal of Sport & Exercise Psychology, 33*, 75-102. doi:10.1123/jsep.33.1.75
- Bartholomew, K. J., Ntoumanis, N., Ryan, R. M., Bosch, J. A., & Thøgersen-Ntoumani, C. (2011). Self-Determination Theory and Diminished Functioning: The Role of Interpersonal Control and Psychological Need Thwarting. *Personality and Social Psychology Bulletin, 37*(11), 1459-1473. doi:10.1177/0146167211413125
- Chen, B., Vansteenkiste, M., Beyers, W., Boone, L., Deci, E. L., Van der Kaap-Deeder, J., . . . Verstuyf, J. (2015). Basic psychological need satisfaction, need frustration, and need strength across four cultures. *Motivation and Emotion, 39*, 216-236. doi:10.1007/s11031-014-9450-1
- Cohen, J. (1988). *Statistical power analysis for the behavioral sciences* (2nd ed.). doi:10.4324/9780203771587
- Copeland, K. J., & Levesque-Bristol, C. (2011). The Retention Dilemma: Effectively Reaching the First-Year University Student. *Journal of College Student Retention: Research, Theory & Practice, 12*(4), 485-515. doi:10.2190/CS.12.4.f
- Cordeiro, P., Paixão, P., Lens, W., Lacante, M., & Sheldon, K. (2016). Factor Structure and Dimensionality of the Balanced Measure of Basic Psychological Needs Among Portuguese High School Students. Relations to Well-being and Ill-being. *Learning and Individual Differences, 47*, 51-60. doi:10.1016/j.lindif.2015.12.010
- Costa, S., Cuzzocrea, F., Gugliandolo, M. C., & Larcan, R. (2016). Associations Between Parental Psychological Control and Autonomy Support, and Psychological Outcomes in Adolescents: The Mediating Role of Need Satisfaction and Need Frustration. *Child Indicators Research, 9*, 1059-1076. doi:10.1007/s12187-015-9353-z
- Deci, E. L., & Ryan, R. M. (2000). The "What" and "Why" of Goal Pursuits: Human Needs and the Self-Determination of Behavior. *Psychological Inquiry, 11*(4), 227-268. doi:10.1207/S15327965PLI1104_01

- Federal Statistical Office Germany. (2020). Economic impacts - Statistics related to COVID-19. Retrieved from <https://www.destatis.de/EN/Themes/Cross-Section/Corona/Economy/context-economy.html?nn=396932#branch>
- Guan, Y., Deng, H., & Zhou, X. (2020). Understanding the impact of the COVID-19 pandemic on career development: Insights from cultural psychology. *Journal of Vocational Behavior, 119*, 103438. doi:10.1016/j.jvb.2020.103438
- Hayes, A. F. (2017). *An Introduction to Mediation, Moderation, and Conditional Process Analysis: A Regression-based Approach* (2nd ed.). New York: Guilford Press.
- Heine, S. J., Lehman, D. R., Markus, H. R., & Kitayama, S. (1999). Is there a universal need for positive self-regard? *Psychology Review, 106*, 766–794. doi:10.1037/0033-295X.106.4.766
- Kaparounaki, C. K., Patsali, M. E., Mousa, D. P. V., Papadopoulou, E. V. K., Papadopoulou, K. K. K., & Fountoulakis, K. N. (2020). University students' mental health amidst the COVID-19 quarantine in Greece. *Psychiatry Research, 290*. doi:10.1016/j.psychres.2020.113111
- Mabbe, E., Soenens, B., Vansteenkiste, M., & Van Leeuwen, K. (2016). Do Personality Traits Moderate Relations Between Psychologically Controlling Parenting and Problem Behavior in Adolescents? *Journal of Personality, 84*(3), 381-392. doi:10.1111/jopy.12166
- Mattanah, J. F., Ayers, J. F., Brand, B. L., Brooks, L. J., Quimby, J. L., & McNary, S. W. (2010). A social support intervention to ease the college transition: Exploring main effects and moderators. *Journal of college student development, 51*(1), 93-108. doi:10.1353/csd.0.0116
- Murphy, M. (2020, May 02). Universities beyond the coronavirus crisis – What awaits? *University World News*. Retrieved from <https://www.universityworldnews.com/post.php?story=2020050114564949>
- Percentage of mental health clinicians who stated select issues were the top concerns of their college student patients during the 2018-2019 academic school year. (2020). Retrieved from <https://www.statista.com/statistics/827374/clinician-chosen-top-mental-health-concerns-for-college-students/>
- Percentage of the U.S. population that had depression from 1990 to 2017. (2019). Retrieved from <https://www.statista.com/statistics/979880/percentage-of-people-with-depression-us/>

- Radloff, L. S. (1977). The CES-D Scale: A Self-Report Depression Scale for Research in the General Population. *Applied Psychological Measurement, 1*(3), 385-401.
doi:10.1177/014662167700100306
- Reeve, J., & Jang, H. (2006). What teachers say and do to support students' autonomy during a learning activity. *Journal of Educational Psychology, 98*(1), 209-218.
doi:10.1037/0022-0663.98.1.209
- Regestein, Q., Natarajan, V., Pavlova, M., Kawasaki, S., Gleason, R., & Koff, E. (2010). Sleep debt and depression in female college students. *Psychiatry Research, 176*(1), 34-39. doi:10.1016/j.psychres.2008.11.006
- Rouse, P. C., Turner, P. J. F., Siddall, A. G., Schmid, J., Standage, M., & Bilzon, J. L. J. (2020). The interplay between psychological need satisfaction and psychological need frustration within a work context: A variable and person-oriented approach. *Motivation and Emotion, 44*, 175-189. doi:10.1007/s11031-019-09816-3
- Ryan, R. M., & Deci, E. L. (2000). Self-determination theory and the facilitation of intrinsic motivation, social development, and well-being. *American Psychologist, 55*(1), 68-78.
doi:10.1037/0003-066X.55.1.68
- Ryan, R. M., & Deci, E. L. (2017). *Self-determination theory: Basic psychological needs in motivation, development, and wellness*. New York, NY: Guilford Press.
- Ryan, R. M., Huta, V., & Deci, E. L. (2008). Living well: a self-determination theory perspective on eudaimonia. *Journal of Happiness Studies, 9*(1), 139-170.
doi:10.1007/s10902-006-9023-4
- Ryan, R. M., Soenens, B., & Vansteenkiste, M. (2019). Reflections on self-determination theory as an organizing framework for personality psychology: Interfaces, integrations, issues, and unfinished business. *Journal of Personality, 87*(1), 115-145.
doi:10.1111/jopy.12440
- Ryff, C. D., Dienberg Love, G., Urry, H. L., Muller, D., Rosenkranz, M. A., Friedman, E. M., . . . Singer, B. (2006). Psychological Well-Being and Ill-Being: Do They Have Distinct or Mirrored Biological Correlates? *Psychotherapy and Psychosomatics, 75*(2), 85-95. doi:10.1159/000090892
- Share of the U.S. population who suffered from anxiety disorders from 1990 to 2017. (2019). Retrieved from <https://www.statista.com/statistics/979919/percentage-of-people-with-anxiety-us/>

- Sheldon, K. M., & Gunz, A. (2009). Psychological Needs as Basic Motives, Not Just Experiential Requirements. *Journal of Personality, 77*(5), 1467-1492. doi:10.1111/j.1467-6494.2009.00589.x
- Smith, T. W., Glazer, K., Ruiz, J. M., & Gallo, L. C. (2004). Hostility, Anger, Aggressiveness, and Coronary Heart Disease: An Interpersonal Perspective on Personality, Emotion, and Health. *Journal of Personality, 72*(6), 1217-1270. doi:10.1111/j.1467-6494.2004.00296.x
- Sobel, R. M., & Markov, D. (2005). The impact of anxiety and mood disorders on physical disease: the worried not-so-well. *Current Psychiatry Reports, 7*(3), 206-212. doi:10.1007/s11920-005-0055-y
- Sood, S. (2020). Psychological effects of the Coronavirus disease-2019 pandemic. *Research & Humanities in Medical Education, 7*, 23-26. Retrieved from <https://www.rhime.in/ojs/index.php/rhime/article/view/264>
- Stallman, H. M. (2010). Psychological distress in university students: A comparison with general population data. *Australian Psychologist, 45*(4), 249-257. doi:10.1080/00050067.2010.482109
- Stebbing, J., Taylor, I. M., Spray, C. M., & Ntoumanis, N. (2012). Antecedents of Perceived Coach Interpersonal Behaviors: The Coaching Environment and Coach Psychological Well- and Ill-Being. *34*(4), 481-502. doi:10.1123/jsep.34.4.481
- Tindall, I. K., & Curtis, G. J. (2019). Validation of the Measurement of Need Frustration. *Frontiers in Psychology, 10*(1742). doi:10.3389/fpsyg.2019.01742
- Umegaki, Y., & Todo, N. (2017). Psychometric properties of the Japanese CES-D, SDS, and PHQ-9 depression scales in university students. *Psychological Assessment, 29*(3), 354-359. doi:10.1037/pas0000351
- Van Assche, J., van der Kaap-Deeder, J., Audenaert, E., De Schryver, M., & Vansteenkiste, M. (2018). Are the benefits of autonomy satisfaction and the costs of autonomy frustration dependent on individuals' autonomy strength? *Journal of Personality, 86*, 1017-1036. doi:10.1111/jopy.12372
- Vandenkerckhove, B., Soenens, B., Van der Kaap-Deeder, J., Brenning, K., Luyten, P., & Vansteenkiste, M. (2019). The role of weekly need-based experiences and self-criticism in predicting weekly academic (mal)adjustment. *Learning and Individual Differences, 69*, 69-83. doi:10.1016/j.lindif.2018.11.009

- Vansteenkiste, M., & Ryan, R. M. (2013). On psychological growth and vulnerability: Basic psychological need satisfaction and need frustration as a unifying principle. *Journal of Psychotherapy Integration, 23*(3), 263-280. doi:10.1037/a0032359
- Yeh, V. M., Mayberry, L. S., Bachmann, J. M., Wallston, K. A., Roumie, C., Muñoz, D., & Kripalani, S. (2019). Depressed Mood, Perceived Health Competence and Health Behaviors: aCross-Sectional Mediation Study in Outpatients with Coronary Heart Disease. *Journal of General Internal Medicine, 34*(7), 1123-1130. doi:10.1007/s11606-018-4767-1
- Yehudai, M., Bender, S., Gritsenko, V., Konstantinov, V., Reznik, A., & Isralowitz, R. (2020). COVID-19 Fear, Mental Health, and Substance Misuse Conditions Among University Social Work Students in Israel and Russia. *International Journal of Mental Health and Addiction*. doi:10.1007/s11469-020-00360-7