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Bachelor Thesis

Balance in the satisfaction of basic psychological needs (SDT) across life domains and its relation to subjective wellbeing in university students

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ABSTRACT

Background and Objective. According to the Self-Determination Theory, autonomy, competence, and relatedness are three intrinsic basic psychological needs that, if satisfied, will lead to greater psychological wellbeing. In addition, a balance hypothesis assumes balance among the needs to be a predictor of wellbeing, independent of the total amount of need satisfaction. This study examined student's perceptions of their autonomy, competence, and relatedness across two life domains (i.e. friends, education), and how it was related to their subjective wellbeing.

Research Design and Methods. The sample comprised 75 university students (M_{age} = 21.50). Using a cross-sectional survey design, it was tested whether balance among the needs within one life domain, and balance of the needs across the two life domains was related to higher subjective wellbeing.

Results. Findings revealed, that in both life domains, satisfaction of the needs was positively related to wellbeing. After controlling for the individual need satisfaction, however, balance among the needs neither within nor across the life domains was found to be a predictor of wellbeing.

Conclusion. The results could not confirm the claims proposed by the balance hypothesis. This may be due to the fact that specific needs are more fundamentally important in certain life domains than others. In the light of relevant past research about the SDT, it is discussed why competence satisfaction might have played the major role in the educational context, with that being the case for autonomy in the friends-domain, and in what way that may have impacted the balance's influence on wellbeing.

Introduction

Studying at a university can be an exciting yet often stressful and challenging time for students, that is characterized by self-discovery and adaptation processes. For the first time, the emerging adults live apart from their family and face new tasks, like providing for themselves, and new experiences, like being confronted with other cultures, living with roommates, or engaging in serious relationships. In addition to that, students have to manage the academic pressure, which requires a constant balancing of their private life (e.g. circle of friends, hobbies) and the demands of their study. As a result of these challenges and the pressure, students face the risk of mental problems – anxiety, stress, and depression are a predominant part of many students' university experience (Cooke, Bewick, Barkham, Bradley, & Audin, 2006; Ibrahim, Kelly, Adams, & Glazebrook, 2012; Auerbach et al., 2016). In order to successfully master this phase in life and overcome its challenges, psychological wellbeing has shown to be an important resource insofar as higher wellbeing was found to be related to a successful adaption to university life (Weinstein & Laverghetta, 2009; Bowman, 2010; Husted, 2017). This relation can be attributed to the skills and perspectives that make up psychological wellbeing, which allow for successful engagement in meaningful relationships, mastery over one's environment, the development of one's full potential, and academic achievement (Ryff, 1989; El Ansari & Stock, 2010; Suldo, Thalji, & Ferron, 2011; Borrello, 2005). High wellbeing is therefore crucial for students to master the transition to university and thereby counteract or prevent mental problems, such as anxiety or distress. This shift in focus from an emphasis on mental disorders or dysfunctions towards a growing interest in wellbeing and positive mental health can be found throughout contemporary literature in psychology (e.g. Ryff & Singer, 1998; Diener, Suh, Lucas, & Smith, 1999; Keyes, Shmotkin, & Ryff, 2002; Seligman, 2011).

Psychological wellbeing, from the hedonistic point of view, concerns people's subjective evaluation of their lives and is therefore also referred to as subjective wellbeing (Diener, 2000). Subjective wellbeing is comprised of two components, the first of which is the affective component that involves the perceived frequency and magnitude of either positive or negative feelings and emotions. The second component is cognitive-evaluative and represents the information-based degree to which people are satisfied with their life as a whole (Diener, 2000). It is claimed that when positive affect (i.e. emotions like happiness, interest, commitment, trust) and satisfaction with life are high, people experience a high level of subjective wellbeing (Diener, 2000). Subjective wellbeing does not only represent a desirable condition in itself but has also shown to contribute to the overall health, as well as to have

important effects including on behaviour, attitudes and both mental and physical health. Empirical research has linked high subjective wellbeing to healthy psychosocial functioning, like more accurate interpretations of social behaviour, and more effective executive functioning (Forgas, 2002; Keyes, 2005). Concerning physical health, higher wellbeing is related to a stronger immune system and longevity (Ryff & Singer, 1998; Diener & Chan, 2011). Due to this amount of positive effects of subjective wellbeing, the importance to explore it in research becomes apparent. Findings of this research have primarily a practical value as they can be used for the implementation of various interventions in order to promote the population's wellbeing and thus counteract or prevent many mental and physical problems.

With regard to the factors to which individual variations in psychological wellbeing can be ascribed, Self-Determination Theory (SDT) proposed by Ryan and Deci (2000) offers one possible basis for explanation. The SDT postulates three basic psychological needs – autonomy, competence, and relatedness – the satisfaction of which is claimed to be crucial to psychological wellbeing, as well as growth, integrity, vitality, and self-congruence (Ryan & Deci, 2000). Autonomy is a feeling of voluntariness or of having a sense of choice, as well as the personal confirmation of one's actions and activities. The need for competence refers to the mastery over one's environment and the ability to achieve desired results. Lastly, relatedness represents the need for closeness and connection to significant others, to be understood and appreciated by them. According to the theory, all three needs are innate, universally valid, and equally important for wellbeing (Ryan & Deci, 2000). Various studies confirmed the claims of the SDT that satisfaction of basic psychological needs is strongly related to wellbeing (e.g. Black & Deci, 2000; Andreassen et al., 2010; Milyavskaya & Koestner, 2011, Church et al., 2013). Likewise, meta-analyses of SDT-based studies yielded findings showing that the satisfaction of each basic need predicts independent variance in wellbeing, as hypothesised by the theory (Ng et al., 2012; Van den Broeck, 2016).

Individuals' lives take place in a variety of environments, including educational institutions or the workplace, the home or family, circles of friends, partner relationships or marriages, and leisure activities, such as sports or music clubs. Ryan and Deci (2000) assume that each of these life contexts or life domains fulfil the needs for autonomy, competence, and relatedness to a different extent. Thus, given the aforementioned presumption that all three needs are to be met for wellbeing to be achieved, individuals are more likely to thrive in domains that fulfil all their psychological needs (Deci and Ryan 2000). On the other hand, a situation in which a particular life domain fails to meet one or more needs, deteriorated wellbeing would be the result (Ryan, Deci, & Grolnick, 1995). Regarding the educational

domain, where mastery is a crucial feature, the SDT theorises that if students feel autonomous and competent in their learning, and related to their peers and teachers, they tend to have an intrinsic motivation to study which in turn is associated with both better performance and positive wellbeing (Kusurkar, Croiset, Ten Cate, 2011; Reeve, 2012). In other words, the basic needs have been identified as a major source of students' wellbeing, highlighting the importance of focusing on this target group in research.

Sheldon and Niemiec (2006) identified an important construct that was not studied within SDT so far – the balance in satisfying psychological needs. As part of their balance hypothesis, they theorised that in addition to the total need satisfaction, the balance of this satisfaction among the needs is vital for mental health. They argued that perceived imbalance in the satisfaction of autonomy, competence, and relatedness would result in role conflicts or stress, and thus, reduced wellbeing (Sheldon & Niemiec, 2006). Consequently, a person whose level of need satisfaction is balanced would experience a relatively higher level of wellbeing, than a person who has the same overall level of satisfaction but an unequal distribution or high variance among the individual needs' satisfaction. This implies that high satisfaction of one need cannot compensate for a low level of satisfaction of another need (Kloos, Trompetter, Bohlmeijer, & Westerhof, 2018).

Taking this balance hypothesis one step further, Milyavskaya et al. (2009) theorised that not only a balance between the needs within a life context is important in order to experience higher levels of wellbeing, but that the balance of need satisfaction across several contexts plays an additional crucial role. According to them, the balance in the satisfaction of needs across various contexts is positively associated with wellbeing, above the individual satisfaction of the three needs. Hence, just as the balance hypothesis implies that a high satisfaction level of one need cannot compensate for a low level of another need, so the high satisfaction of one need in one context (e.g. *autonomy* in the context of *friends)* is thought to not be able to compensate for a low satisfaction of the same need in another context (*e.g. autonomy* in the context of *education*). The effect of balance in the satisfaction of the needs on psychological wellbeing has been confirmed by several studies in various western and non-western cultures, and age groups (Sheldon & Niemiec, 2006; Kloos et al., 2018; Sheldon, Abad, & Omoile, 2009; Church et al., 2013). However, these studies only considered the balance of needs in a given role, i.e. within a single life context, without distinguishing different contexts. Studies analysing the relationship between the balance of need satisfaction across contexts and psychological wellbeing remain relatively rare. Yet, the importance of examining this relationship seems plausible as previous empirical studies have shown that consistency in psychological constructs

throughout the contexts of an individual's life play an essential role in their subjective wellbeing (Kernis, 2005; Ryan, Rawsthorne, & Ilardi, 1997). It is therefore assumed that consistency in, or balance of, the satisfaction of needs across important life domains is also related to positive wellbeing. Exploring this relationship during emerging adulthood is especially important, as individuals during this time period explore a variety of values and lifestyles and, dependent on the support of autonomy, competence, and relatedness in a given social context, often take on different roles in different contexts (Harter, Bresnick, Bouchey, & Whitesell, 1997).

The present study examines whether a balance of the three basic psychological needs' satisfaction both within and across two life domains is linked to higher subjective wellbeing over and above the individual need satisfaction. It complements existing literature on SDT by examining whether the domain-specific and across-domain balance of needs have an effect on wellbeing that is more predominant than the total amount of need satisfaction. Since the study is conducted with students, the educational institution, specifically the university, and furthermore the circle of friends are considered to be two of the life contexts of high relevance. Therefore, the following two hypotheses can be formulated:

H1: The balance in satisfaction of the three psychological needs within the two life domains of friends and education, respectively, is positively related to subjective wellbeing above the total amount of need satisfaction.

H2: The balance of need satisfaction across the two life domains is also positively related to subjective wellbeing above the total amount of need satisfaction.

Methods

Participants and procedure

The current sample was comprised of 75 students (66.7% female, 32.0% male, 1.3% other) with a mean age of 21.50 years (SD_{age} = 1.86), ranging from 18 to 26. The majority of the students was German (88.0%), followed by Dutch (9.3%) and other nationalities (2.7%). 69.3% of the participants were undergraduate students completing a bachelor's programme, 16.0% were graduate students in a master' programme, and 14.7% expected a German degree called *Staatsexamen*. With regard to their current living arrangement, most of the students reported living with roommates, friends or a partner in a shared flat (64%), while the rest lived on their own (20%) or at home with their family (14.7%).

Data was collected as part of a cross-sectional online survey design for which participants were sampled using a convenience sampling method. A link to the online survey was sent to students asking them to complete a brief questionnaire. Informed consent was obtained by clicking on the "Continue"-button after reading about the nature, method, and target of the investigation (see Appendix A). The study was ethically approved by the Ethics Committee of the Faculty of Behavioural Sciences at the University of Twente (request-no. 190263).

Measures

Need Satisfaction. The satisfaction of the three basic psychological needs was measured using an adjusted version of the *Need satisfaction at work scale* (BPNWS) which was developed by Deci, Ryan, Gagné, Leone, Usunov, and Kornazheva (2001) (see Appendix B). The original scale consists of 21 items measuring the degree of satisfaction of the three needs for autonomy (7 items, e.g. "I feel like I can make a lot of inputs to deciding how things gets done"), competence (6 items, e.g. "I do not feel very competent at my job", reversed score), and relatedness (8 items, e.g. "I get along with people at work") in one's work domain. For the purpose of the current study, those parts on each item related to the workplace (e.g. "on my job", "at work") were replaced by formulations that suited the life domains of friends and education (e.g. "with my friends"; "at my university"). Consequently, participants answered the questionnaire twice, successively, with items being slightly adapted in order to fit the respective life domain. The items were answered on a 7-point Likert-scale ranging from 1 "Strongly disagree" to 7 "Strongly agree". After re-coding the reversed items, subscale means were calculated with higher scores reflecting greater satisfaction. The subscales of each need showed sufficient internal consistency in the sample for both life domains. Cronbach's alpha for each subscale with friends was as follows: For the life domain of friends, autonomy α = .71; competence: α = .71; relatedness: α = .61, and for the life domain of education, autonomy α = .61; competence: α = .70; relatedness: α = .66.

Need balance. Following the procedure proposed by Sheldon and Niemiec (2006), a measure of need balance was calculated, in order to test the balance hypothesis, by computing absolute differences between the satisfaction scores of all three pairs of needs (i.e. autonomy-competence; autonomy-relatedness; competence-relatedness) for the two life domains of friends and education, respectively. This balance score had a possible range from 0 (indicating equal satisfaction among the three needs) to 12 (indicating the maximum difference among the

three needs). The three values were summed and subtracted from the maximum possible score of 12. As a consequence, a higher score reflected a greater balance of need satisfaction within the life domains. Moreover, the absolute differences between each need in the two contexts were calculated (i.e. autonomy with friends - autonomy at university; competence with friends - competence at university; relatedness with friends - relatedness at university), summed and then again reversed by subtracting it from the highest possible score (i.e. 6) so that higher scores corresponded to greater balance for each need across the two life domains.

Subjective wellbeing. In order to measure subjective wellbeing, two scales were used. First, the Satisfaction with Life Scale (SWLS) was applied in order to assess the cognitive-evaluative component (Diener, Emmons, Larsen, & Griffin, 1985). The SWLS consists of five items measuring the cognitive judgement of one's life as a whole (e.g. "In most ways my life is close to my ideal."). The answer scale ranges from 1 "Strongly disagree" to 7 "Strongly agree". Higher calculated sum scores indicate greater life satisfaction. With a Cronbach's alpha of α = .69, the scale showed sufficient internal reliability in the current sample. Second, regarding the emotional component of wellbeing, the Positive Affect Negative Affect Schedule (PANAS) was used (Watson, Clark, & Tellegen, 1988). Participants were presented with 20 adjectives that reflect positive affect (10 items; e.g. "enthusiastic," "strong") or negative affect (10 items; e.g. "nervous," "guilty"), and asked to rate the extent to which they have felt that way in the last month on a 5-point Likert-scale from 1 "Very slightly or not at all" to 5 "Extremely". The scale showed high internal consistency for both the positive affect (Cronbach's alpha α = .72) and the negative affect items (Cronbach's alpha α = .84) in the current sample. Finally, following Sheldon and Niemiec (2006), a subjective wellbeing variable was created by adding up the positive affect and life satisfaction scores and then subtracting the negative affect scores. As a consequence, this variable could range from 5 to 35, with higher scores indicating higher subjective wellbeing.

Data analysis

The current data was analysed using IBM SPSS Statistics 24. Missing data on individual items was not found in the current sample. Three participants were excluded based upon the criterion of not being a student, which was checked for by an item asking whether they were enrolled at a university at the time of completing the survey. As a result, a data set of 75 participants was used for further analysis. Regarding the correlations between the subscales of need satisfaction

and subjective wellbeing, $r \leq .30$ was considered as indicating a weak, $r \leq .50$ a moderate, and $r \geq .70$ a strong correlation (Akoglu, 2018).

In order to test whether there was a relation of balance among needs to wellbeing independently of the total amount of need satisfaction (Hypothesis 1), two multiple hierarchical regression analyses were run, one for each life domain, both using subjective wellbeing as the dependent variable. In the first step, subjective wellbeing was regressed on the three satisfaction scores of the basic needs to see whether they were uniquely related to wellbeing. In the second step, the balance score was entered to see whether balance had a relationship to subjective wellbeing above individual need satisfaction. The unique contribution of balance across contexts (Hypothesis 2) was tested using another hierarchical regression analysis, again with subjective wellbeing as the dependent variable. This time, all need satisfaction measures from both contexts were entered simultaneously as control variables in the first step, with the three balance scores from each need across contexts being included as predictor variable in the second step.

Results

Descriptive statistics

Means, standard deviations, and correlations of the main variables are presented in Table 1. As for the life domain of friends, participants scored similarly high on all three needs, as well as on balance of the needs within this life domain. Need satisfaction in the life domain of education was generally lower, with autonomy being the lowest and also the need-balance being slightly lower in this life domain. Balance across contexts was lowest for the need of autonomy.

The three measures of need satisfaction were moderately positively related to subjective wellbeing in both contexts, as well as with each other within the respective contexts. Within the life domain of friends, there was a moderate positive correlation between competence and the balance score (r=.52, p<0.01), while balance was not significantly related to autonomy and relatedness (r=.06, p=0.56; r=.02, p=0.89), which suggests that balance was dependent on the satisfaction of competence with regards to the life domain of friends. For the life domain of education, balance seemed highly dependent on autonomy (r=.50, p<0.01), while it was negatively correlated to relatedness (r=-.23, p<0.05) and not related to competence (r=-.16, p=0.16).

Regression analyses

First, it was tested whether balance among the needs predicted subjective wellbeing, independent of the total amount of satisfaction, within each of the contexts (Table 2). Concerning the life domain of friends, when entering the three needs simultaneously as predictors in the first step, only autonomy proved to be significantly uniquely related to subjective wellbeing (β=.29, p=0.05). This suggests that competence and relatedness were not responsible for the additional explained variance of 19% (p=0.001) in subjective wellbeing. Adding the balance score in the second step did not significantly change the model's ability to predict wellbeing (β=.29, p=0.32; ΔR^2=.02, p=0.33). With regard to the educational context, only competence was uniquely related to subjective wellbeing (β=.35, p=0.002). Therefore, while adding the needs as predictors of the model in the first step explained 28% (p<0.001) of the variance in subjective wellbeing, autonomy and relatedness did not seem to be responsible for it. Controlling for the individual need satisfaction, balance among the needs did not significantly predict subjective wellbeing (β=.00, p<0.79). In summary, the present results provide no evidence for the assumption that balance of the needs is more important than overall need satisfaction, consequently the first hypothesis cannot be supported.

Table 2. Beta coefficients and Additional Explained Variance of the Multiple Regression Models (Balance within life domains, with subjective wellbeing as dependent variable)

	Friends		Education	
	Step 1	Step 2	Step 1	Step 2
Autonomy	.29*	.28*	.08	.05
Competence	.10	.22	.35**	.40**
Relatedness	.12	.05	.16	.18
Balance		-.17		.04
R^2 change	.19**	.02	.28**	.00

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

Table 1. Means, SD, and Correlations of the Basic Needs Satisfaction Scales, the Balance Scores within and across the two life domains, and Subjective Wellbeing.

	Scale	M	SD	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.
Need satisfaction in friends															
1. Autonomy	1-7	5.70	0.70												
2. Competence	1-7	5.32	0.76	.45**											
3. Relatedness	1-7	5.66	0.63	.61**	.55**										
4. Balance within friends	0-12	10.38	1.08	.06	.52**	.02									
Need satisfaction in education															
5. Autonomy	1-7	3.86	0.77	.25*	.06	.08	-.12								
6. Competence	1-7	4.80	0.80	.29*	.13	.20	-.03	.47**							
7. Relatedness	1-7	4.76	0.68	.15	.13	.29*	-.01	.48**	.37**						
8. Balance in education	0-12	9.30	1.33	-.09	-.01	-.29*	.01	.50**	-.16	-.23*					
Balance across contexts															
9. Autonomy	1-6	4.14	0.87	.56**	.30**	.40**	.17	-.66**	-.18	-.30**	-.49**				
10. Competence	1-6	5.07	0.70	.08	.31**	.19	.07	-.21	-.53**	-.15	.08	.23*			
11. Relatedness	1-6	5.02	0.71	.22	.21	.29*	.05	-.44**	-.26*	-.76**	.00	.54**	.26*		
12. Overall balance across contexts	0-12	8.24	1.72	-.40**	-.36**	-.40**	-.13	.60**	.42**	.53**	.21	-.82**	-.63**	-.79**	
Subjective Wellbeing	5-35	33.19	13.62	.41**	.29*	.35**	-.04	.35**	.49**	.35*	.05	.02	-.14	-.24	.14

**. Correlation is significant at the 0.01 level (2-tailed), *. Correlation is significant at the 0.05 level (2-tailed).

Secondly, it was hypothesised that the balance of need satisfaction across the two life domains is positively related to wellbeing above individual need satisfaction. Regarding the first step of the model, only competence satisfaction in education was found to be uniquely related to subjective wellbeing (β=.33, p=0.005). Thus, although adding the predictors of the model of the first step explained 36%, p=0.001 of the variance in subjective wellbeing, the findings imply that only competence in education accounted for this additional explained variance (Table 3). The balance scores were no significant predictors of subjective wellbeing (β=-.39, p=0.66; β=-.01, p=0.91; β=.68, p=0.70), so did not add explained variance in the second step. The R^2 change score in the second step was not significant (ΔR^2=.02, p=0.06). Thus, these findings fail to support the second hypothesis since the effect of balance of each psychological need across contexts on wellbeing was not significant.

Table 3. Beta coefficients' and Additional Explained Variance of the Multiple Regression Models (Balance across life domains, with subjective wellbeing as dependent variable)

	Step 1	Step 2
Autonomy Friends	.19	-.07
Competence Friends	.11	.12
Relatedness Friends	.06	.41*
Autonomy Education	.07	.36
Competence Education	.33**	.32*
Relatedness Education	.14	-.46
Balance Autonomy		-.39
Balance Competence		-.01
Balance Relatedness		.68
R^2 Change	.36**	.07

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

Discussion

The aim of the present study was to expand the existing literature on subjective wellbeing and SDT, by testing whether a balanced fulfilment of the psychological needs autonomy, competence, and relatedness within and across important contexts in students' lives was linked to higher wellbeing beyond the overall satisfaction of these needs. However, unlike proposed by the balance hypotheses, neither balance among the needs within the contexts of education and friends, nor across these contexts, was found to predict wellbeing over and above the total amount of need satisfaction. In sum, the current research overall failed to support the stated hypotheses. As to why the findings defied expectations, several potential reasons apply.

The regression analyses revealed that, in contrast to previous research on the SDT, the three needs did not independently predict variance in subjective wellbeing in the current study (Black & Deci, 2000, Sheldon et al., 2001, Kloos et al., 2018, Milyavskaya & Koestner, 2011). Instead, only the satisfaction of competence was uniquely related to subjective wellbeing in the educational domain, and only autonomy showed a relationship to subjective wellbeing in the life domain of friends, whereas the respective remaining needs did not have an effect. However, caution is required in over-interpreting these results since the correlations between the three needs and subjective wellbeing were similarly strong in both life domains. Consequently, it can be assumed that the satisfaction of all needs is indeed important for experiencing subjective wellbeing, while some needs within particular areas of life seem to be of particular importance. This suggestion is supported by literature, in which specific needs in certain life domains were found to be more strongly related to subjective wellbeing than others, which will be discussed further in the following.

With regard to the educational domain, competence was the only need that was uniquely related to wellbeing which implies that feeling effective in their studies has a particular impact on students' wellbeing. In line with this suggestion, earlier studies also found competence in the educational context to be of particular importance for subjective wellbeing, which is mainly due to the strong relationship between an academic sense of competence and a positive self-image (Faya & Sharpe, 2008; Upadyaya & Salmela-Aro, 2013; Tian, Chen, & Huebner, 2014). With respect to the two remaining needs, relatedness and autonomy failed to account for unique variance in subjective wellbeing in education in the present sample. Concerning the former, students usually experience a low degree of autonomy due to little choice of course options, compulsory attendance, formal exams, and no personal feedback, impeding the opportunity to satisfy their need for autonomy (Levesque, Zuehlke, Stanek, & Ryan, 2004). This is also evident

in the present findings in the low average sense of autonomy within the educational domain, compared to competence and relatedness. However, it seems that student's perception of being autonomous within their educational institution played no role in how well they feel overall. This assumption is supported by past research in which the satisfaction of education-related autonomy was only minimally relevant for the evaluation of students' university experience and did not affect their subjective wellbeing (Filak & Sheldon, 2003; León & Núñez, 2013). Regarding the need for relatedness, research has shown that interpersonal constructs in the academic context do not play an important role in wellbeing (Filak & Sheldon, 2003). Overall, social contacts in the educational domain seem to have little influence on students' wellbeing. Instead, a sense of belonging only seems to be relevant in areas of life that are predominantly interpersonal, such as the life domain of friends in the present study (Deci & Ryan, 2000). Next to this sense of belonging, also satisfaction of autonomy in interpersonal domains is crucial for wellbeing as is indicated by the great quantity of research that linked perceived autonomy support from close friends to higher levels of subjective wellbeing, especially in university students (e.g. Ratelle, Simard, & Guay, 2013; Deci, La Guardia, Moller, Scheiner, & Ryan, 2006). Both these findings regarding belongingness and autonomy are reflected in the present study in the life domain of friends, in which only the needs of autonomy and relatedness were unique predictors of wellbeing.

In sum, when students evaluate whether they feel good in their lives, the issue of being related to fellow students or professors, as well as being able to be autonomous in their decisions and actions during their studies, is not taken into account or is overruled by other considerations. Similarly, a feeling of being able to master one's environment within the circle of friends seems irrelevant when it comes to the overall subjective wellbeing. Instead subjective wellbeing seems more dependent on students' perception of mastering academic challenges and tasks, as well as a sense of belonging and autonomy when being with their friends. Of course, these interpretations are preliminary and need to be undermined by further data.

Relating the above discussion to the balance among needs, its inability to predict subjective wellbeing might be explained by the fact that some needs play a more fundamental role in certain life domains than others. In other words, when some needs do not determine students' wellbeing compared to other needs in a given life domain, perceived imbalances or balances among the needs consequently have no effect on wellbeing either. Other studies also failed to demonstrate any predictive value of balance among satisfaction of the needs on subjective wellbeing. For example, Emery, Toste, & Heath (2015) found no relationship between balance and wellbeing and were able to attribute this finding to the lack of effect of

particular needs on subjective wellbeing. Another possible reason as to why the present study was unable to replicate the results of past research (e.g. Sheldon & Niemiec, 2006; Milyavska et al., 2009) is that the effect that was found within those studies cannot be applied to the domains of the educational institute and the circle of friends used here. It is also important to note that although previous studies provided evidence that balance was related to wellbeing beyond the overall level of need satisfaction, the results were only of small effect size (Mack, Wilson, Oster, Kowalski, Crocker & Sylvester, 2011; Dysvik, Kuvaas, & Gagné, 2013).

The results of the present study should be interpreted in light of several limitations. First, due to the non-experimental cross-sectional design of the study, no assertion could be made about the causality between the psychological needs, their balance and subjective wellbeing, and furthermore, reverse causality could not be excluded. In order to demonstrate the direction of causality, future studies should apply longitudinal study designs with a temporal delay between collection of data. Using a longitudinal design would also counteract an effect proposed by Sheldon & Niemiec (2006). According to them, sudden increases in satisfaction of individual needs in one life domain (e.g. a good exam grade increases perceived competence, while autonomy and relatedness remain on a comparatively lower level) can lead to a short-term increase in wellbeing, which is, however, diminished by this imbalance in the long run.

Secondly, only two life domains were taken into account in the measurement of psychological need satisfaction, which may represent a limitation insofar as people's lives take place in a variety of life domains. Consequently, it was not possible to demonstrate the full extent of balances or imbalances in the satisfaction of needs in people's lives, which may explain the lack of significant effects of balance on subjective wellbeing. Instead, additional life contexts should be considered in future research (e.g. leisure activities, such as sports or music clubs, family, part-time job) in order to capture the full interaction of need satisfaction over multiple contexts and thus make the effect of balance more meaningful.

Thirdly, due to the non-probability sampling, the sample was fairly homogenous as participants were similar with respect to their age and background. Provided that only university students were included, it can be assumed that they shared a similar education, social status and socio-economic background with their friends and fellow students. Hence, the generalizability of the results to other population groups of varying cultures, age groups, and income groups, as well as the entire population, is unknown.

Moreover, the adjusted questionnaire used for measuring the satisfaction of the psychological needs was originally developed for the workplace domain. This may prove to be a limitation insofar, as the items were potentially not applicable or relevant to the life domains

of education and friends. An interesting approach for future research would hence be the usage of a different scale for measuring need satisfaction, such as the recently constructed Balanced Measure of Psychological Needs (BMPN) by Sheldon & Hilpert (2012), whose psychometric properties prove it a suitable alternative to the BPNWS.

A last interesting avenue for future research would be to use other outcome variables in addition to or instead of subjective wellbeing, such as depressive symptoms, to obtain a full understanding of the effects of contextual need balance on subjective wellbeing. That could complement the present research findings insofar, as it may provide additional insight into balance's influence on other aspects of psychological wellbeing.

In spite of these limitations, the current study provided a useful insight into the domain-specific impact of basic psychological needs on wellbeing. The results showed clear relations between certain needs in the two given contexts and subjective wellbeing, and thereby potential inferences of balanced need satisfaction on wellbeing could be drawn. The results further provide a useful basis for practical implications in universities as they illustrate the importance of promoting the satisfaction of the three needs in students in order to enhance their overall wellbeing. Doing this, it should be paid specific attention to students' feelings of competence, which can be done by means of posing challenging yet achievable tasks, that enable students to increase their perception of competence within the educational context.

In conclusion, the current study attempted fill a gap in research about the SDT respecting balance of psychological need satisfaction and its impact on subjective wellbeing, while distinguishing different life contexts. It has shown that, while all needs were positively related to subjective wellbeing in both life domains, only competence showed a unique relation to wellbeing in the educational context, with that being the case for autonomy in the friends-domain. It is thus suggested, that specific needs play the major role in certain life domains while others fall behind in their relevance. As a result, balance or imbalances between the needs within and across those life domains have no meaningfulness and therefore failed to be related to subjective wellbeing. So, while some light could be shed on the relationship between need satisfaction in specific contexts and wellbeing, more empirical research in different contexts and target groups is needed to draw more definitive conclusions about balance's role in this relationship.

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Appendices

Appendix A

Informed Consent

Dear participant,

Thank you for participating in our study! You are helping a lot with our bachelor's graduation process at the University of Twente!

With this research we want to gather knowledge about how students perceive the choices that they have (autonomy), the connections they feel (relatedness), and how competent they feel (competence) in various areas of their life and how this perception is related to psychological well-being. Here, the contexts in life that are considered are family, the educational institute, and friends.

When answering the questions, there is no right or wrong. Do not think about the answers too much, but rather rely on your first intentions and thoughts. Your answers will be treated confidentially, and data will be used only in combination with the answers of all participants. The questionnaire will take approximately 10 minutes.

The participation is fully voluntary, which means that you can withdraw from the study at any time without consequences. The data and results of the study will be stored and published anonymously. The data may also be used for other future research, but still anonymously.

If you have any questions left, you can just write an email to Alisa Kloppenborg (a.kloppenborg@student.utwente.nl), Carina Kühne (c.kuhne@student.utwente.nl) or to our supervisor Noortje Kloos (n.kloos@utwente.nl).

With clicking the "Continue"-button below, you ensure that you have read the informed consent and agree to what you read. You declare that you are informed about the nature, method, and target of the investigation.

Appendix B

Need Satisfaction at Work Scale *(altered for the life domains of friends and education)*

When you think about being with your friends, to what extent do you agree or disagree with the following statements? *(Answered on a 7-point scale: 1 "Strongly disagree", 2 "Disagree", 3 "Somewhat disagree", 4 "Neither agree nor disagree", 5 "Somewhat agree", 6 "Agree", 7 "Strongly agree")*

1. I feel like I can make a lot of inputs to deciding how things get done with my friends.
2. I really like my friends.
3. I do not feel very competent when I am with my friends.
4. My friends tell me I am good at what I do.
5. I feel pressured by my friends.
6. I get along with my friends.
7. I pretty much keep to myself when I am with my friends.
8. I am free to express my ideas and opinions when I am with my friends.
9. I consider the people I regularly interact with to be my friends.
10. I have been able to learn interesting new skills from my friends.
11. When I am with my friends, I have to do what I am told
12. Most days I feel a sense of accomplishments with my friends.
13. Most days I feel capable and effective with my friends.
14. My feelings are taken into consideration by my friends.
15. With my friends, I do not get much of a chance to show how capable I am.
16. My friends care about me.
17. There are not many friends that I am close to.
18. I feel like I can pretty much be myself with my friends.
19. My friends do not seem to like me much.
20. When I am with my friends, I often do not feel very capable.
21. There is not much opportunity for me to decide for myself how to go about something with my friends.
22. My friends are pretty friendly towards me.

Now, think about being at your educational institute, i.e. university or school. To what extent do you agree or disagree with the following statements? *(Answered on a 7-point scale: 1 "Strongly disagree", 2 "Disagree", 3 "Somewhat disagree", 4 "Neither agree nor disagree", 5 "Somewhat agree", 6 "Agree", 7 "Strongly agree")*

1. I feel like I can make a lot of inputs to deciding how my work gets done at my university.
2. I really like the people at my university.
3. I do not feel very competent when I am at my university.
4. People at my university tell me I am good at what I do.
5. I feel pressured at my university.
6. I get along with the people at my university.
7. I pretty much keep to myself when I am at my university.
8. I am free to express my ideas and opinions at my university.
9. I consider the people I work with at my university to be my friends.
10. I have been able to learn interesting new skills at my university.
11. When I am at my university, I have to do what I am told.
12. Most days I feel a sense of accomplishment from studying.
13. Most days I feel capable and effective when I am studying.
14. My feelings are taken into consideration at my university.
15. At my university I do not get much of a chance to show how capable I am.
16. People at my university care about me.
17. There are not many people at my university that I am close to.
18. I feel like I can pretty much be myself at the university.
19. The people at my university do not seem to like me much.
20. When I am studying, I often do not feel very capable.
21. There is not much opportunity for me to decide for myself how to got about my work at my university.
22. People at the university are pretty friendly towards me.