



Psychological needs, motivation, and well-being: A test of self-determination theory across multiple domains

Marina Milyavskaya*, Richard Koestner

Department of Psychology, McGill University, 1205 Dr. Penfield Avenue, Montréal, QC, Canada H3A 1B1

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ABSTRACT

The present investigation examined the associations between psychological need satisfaction, autonomous motivation, and subjective well-being simultaneously across multiple domains. Two hundred and three adults completed questionnaires about important life domains in which they were involved, resulting in ratings of over 800 domains. Results show that need satisfaction is strongly related to both autonomous motivation and well-being in multiple domains. Additionally, we demonstrate that motivation acts as a partial mediator of the path between need satisfaction and well-being. By using an idiographic approach, this study looks at the differences and similarities between the many important life domains in which individuals are involved. The current paper also supports the universality of SDT processes by assessing need satisfaction, motivation and well-being simultaneously in multiple life domains.

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1. Introduction

Throughout their lives, people enact various roles and pursue various goals through their engagement in a multitude of important life domains. However, not all these domains are experienced in the same way – some may be fulfilling whereas others are depleting. What determines whether one feels happy or energetic in a given domain? Research on self-determination theory (SDT; Deci & Ryan, 2000, 2008) has shown the importance of basic psychological need satisfaction for well-being and other positive outcomes (e.g., Reis, Sheldon, Gable, Roscoe, & Ryan, 2000). However, few studies have examined the relation of need satisfaction to well-being simultaneously across multiple life domains, or investigated a potential mechanism for this relation. In the present study, we assess whether the association of need satisfaction to well-being is consistent across important life domains, and test the proposition that autonomous motivation may act as a mediator of the path between need satisfaction and well-being.

1.1. Basic psychological needs

Self-determination theory conceptualizes psychological needs as essential nutrients that are required for optimal psychological growth and well-being (Deci & Ryan, 2000). The needs for autonomy, competence and relatedness are thought to be universal

across people and cultures and applicable throughout all aspects of a person's life. Autonomy refers to the experience of choice and volition in one's behaviour and to the personal authentic endorsement of one's activities and actions. Competence involves the ability to bring about desired outcomes and feelings of effectiveness and mastery over one's environment. Finally, relatedness reflects feelings of closeness and connection in one's everyday interactions (Deci & Ryan, 2000).

Many studies have examined the relation of psychological need satisfaction directly to well-being, both in general and in specific contexts. General need satisfaction has been shown to predict well-being outcomes both between-persons, with people who report greater overall need satisfaction also reporting greater well-being (Reis et al., 2000; Véronneau, Koestner, & Abela, 2005), and within-person on a day to day basis, with daily fluctuations in need fulfillment predicting daily fluctuations in well-being (Reis et al., 2000). Domain-specific need fulfillment has also been linked to positive outcomes in a variety of settings including greater vitality and lower exhaustion and burnout in sports (e.g., Gagné, Ryan, & Bargmann, 2003), persistence in school (Ratelle, Larose, Guay, & Senecal, 2005), job performance (Baard, Deci, & Ryan, 2004), involvement in volunteer work (Gagné, 2003), and relationship satisfaction (Patrick, Knee, Canevello, & Lonsbary, 2007), among others.

1.2. Autonomous motivation as mediator

While it is reasonable to expect that the experience of autonomy, competence and relatedness leads directly to well-being, it

* Corresponding author. Address: Department of Psychology, McGill University, Stewart Biology Building, 1205 Dr. Penfield Avenue, Montréal, QC, Canada H3A 1B1. Tel.: +1 514 398 8219; fax: +1 514 398 4896.

E-mail address: marina.milyavskaya@mail.mcgill.ca (M. Milyavskaya).

is also possible that some intervening variable is mediating the effect. One potential mediator which may link need satisfaction in a particular domain to well-being in that domain is the reason for which this domain is pursued – i.e., the motivation. Self-determination theory often considers the role of motivation as predictor of important outcomes, and has also frequently linked motivation with need satisfaction. It is therefore reasonable to explore the possible mediating relations between need satisfaction, motivation and well-being outcomes in an effort to unify these separate aspects of the theory.

In SDT, motivation is conceptualized as a continuum ranging from a motivation that is autonomous, originating within the self, to one which is controlled and stems from outside pressure (Deci & Ryan, 2008). Moreover, the extent to which an activity is integrated into the self is influenced by experiences of need satisfaction or need thwarting (Deci & Ryan, 2000). A domain in which a person experiences adequate support for autonomy, competence and relatedness should thus be associated with more autonomous motivation for participating in that domain, whether it is a hobby, a relationship, school, work, or any other area in which a person may be involved. Previous research has examined this proposition in some specific domains, showing that parental support for psychological needs was positively associated with children's autonomous motivation for schoolwork (Grolnick & Ryan, 1989), and teachers' support of these needs was linked to more autonomous motivation in medical students (Williams & Deci, 1996).

Autonomous motivation has in turn been associated with numerous positive outcomes, including greater creativity (Koestner, Ryan, Bernieri, & Holt, 1984), persistence at school (Vallerand, Fortier, & Guay, 1997), healthier lifestyles and eating behaviour (Pelletier, Dion, Slovenic-D'Angelo, & Reid, 2004) and more positive psychotherapy outcomes (Zuroff et al., 2007). There is thus ample evidence suggesting both that need satisfaction leads to autonomous motivation, and, in a separate set of studies, that autonomous motivation leads to positive outcomes.

Some researchers have begun to test this idea of mediation in specific domains. For example, in the sports domain, motivation has been shown to mediate (at least partially) the link between need satisfaction and a variety of outcomes including affect, effort, further participation intentions, and drop-out (Ntoumanis, 2005; Sarrazin, Vallerand, Guillet, Pelletier, & Cury, 2002). In the relationship domain, Patrick and colleagues (2007, study 3) tested a mediation model where relationship motivation mediated the path between need satisfaction within the relationship and relationship satisfaction and commitment after disagreements, and found evidence for full mediation. While these studies represent an important contribution to understanding the mechanism through which need satisfaction leads to positive outcomes, it was only examined separately in each of these domains. Our research extends these studies by examining this path simultaneously in multiple contexts to test the hypothesis that these processes operate in a similar fashion in a variety of important life domains.

1.3. Multiple domains

One of the basic premises of SDT is that it applies universally across cultures and domains. Previous research has confirmed that the key processes theorized by SDT are universal across cultures (e.g., Sheldon et al., 2004). However, in order to be truly universal, a theory needs to apply not only across multiple cultures, but also across multiple contexts. While research on self-determination theory has been conducted in numerous domains including relationships, sports, school, work, leisure, and many others, virtually no studies have examined multiple domains simultaneously, comparing the strength of the links between need satisfaction, autonomous motivation and positive outcomes across domains. Although

SDT expects that need thwarting in any social environment will lead to negative outcomes (Deci & Ryan, 2008), the magnitude of the effects across environments or domains has not been thoroughly examined. Two studies which assessed need satisfaction in separate contexts examined their effects on general well-being outcomes (Milyavskaya et al., 2009; Véronneau et al., 2005). Additionally, one study examined need satisfaction with diverse relational partners (i.e., mother, father, best friend, roommate, etc.; La Guardia, Ryan, Couchman, & Deci, 2000), linking need satisfaction in each relationship to attachment security in that relationship. While participants in that study reported significantly different levels of need satisfaction and attachment across relationships, the authors did not investigate whether the strength of the association between need satisfaction and attachment differed across relationships.

1.4. Present study

In the present study we sought to address the aforementioned questions regarding need satisfaction in various life contexts and the mechanism through which need satisfaction can impact domain well-being. Over two hundred participants indicated between 3 and 6 domains in which they were involved and rated each domain on measures of need satisfaction, motivation and well-being. We first tested the strength of the relation of need satisfaction to motivation and well-being and whether these relations vary across domains. While previous studies have shown need satisfaction in different domains to be differentially associated with well-being outcomes (e.g., Milyavskaya et al., 2009), those studies examined general rather than domain-specific well-being. As predicted by SDT, we hypothesized that need satisfaction in a domain would be strongly associated to both motivation and well-being in that domain and that this would be true across all domains. Secondly, based on the theoretical link between need satisfaction, motivation and well-being described above, we hypothesized that motivation for each domain mediates the relationship between need satisfaction and well-being.

2. Method

2.1. Participants and procedure

Participants were recruited through online classified ads and through a Facebook event, and offered a 10\$ gift card to amazon.ca for completing an online survey about important life domains. Two hundred and eighteen adults responded to the survey. As the survey was expected to take approximately 30–45 min, we removed all respondents who completed the survey in less than 20 min ($N = 10$). We also removed five participants who either rated the same domains twice or left some of the measures entirely blank. The final sample consisted of 203 adults (62.6% female; two participants did not indicate gender) ages 18–71 ($M = 24.55$, $SD = 7.03$). Under occupation, 50% of the sample indicated they were students; 8% were graduate students, 35% indicated a job, and 8% did not indicate an occupation.

Participants completed some general questionnaires and then were asked to think about 3–6 domains: "For the next set of questions, you will be asked about some life contexts, or domains in which you spend your time. Examples of a life domain can include school, work, family, a relationship, friends, sports (e.g., basketball, yoga, skiing, going to the gym, golf, etc.), hobbies (e.g., playing a musical instrument, painting, gardening, etc.), religious or community organizations, volunteering, etc." Participants were then asked to name the domains in which they were involved and completed measures for each of these domains.

2.2. Measures

2.2.1. Domain need satisfaction

A 24-item scale was adapted from previous scales of need satisfaction (Gagné, 2003; La Guardia et al., 2000) to assess competence (e.g., “In this domain, I feel like a competent person”), relatedness (e.g., “I feel that the other people in this domain sincerely care about me”), and autonomy (e.g., “I am free to express my ideas and opinions in this domain”) in each domain. Responses were made on a 7 point scale, ranging from 1 (*not at all true*) to 7 (*completely true*). As we were interested in need satisfaction in general, we averaged all the items to form one measure of overall need satisfaction in the domain. This scale had a high reliability $\alpha = .92$.

2.2.2. Domain motivation

Respondents' motivation for participating in each domain was measured using a four-item scale adapted from Sheldon and Elliot (1999). Participants were asked to rate the extent to which they are involved in each domain for intrinsic (“Because of the enjoyment or stimulation that this domain provides me”), identified (“Because I really identify with this domain”), introjected (“Because I would feel ashamed, guilty, or anxious if I was not involved in this domain”), and extrinsic (“Because of external rewards such as money, or because someone else wants me to do it”) reasons. These items were combined into a single relative autonomy index by using the following formula: $2 * \text{intrinsic} + \text{identified} - \text{introjected} - 2 * \text{extrinsic}$ (Ryan & Connell, 1989).

2.2.3. Domain subjective well-being

Participants completed the seven-item subjective vitality scale (Ryan & Frederick, 1997) which assessed the degree to which they felt physically and mentally vigorous and alert in that domain (e.g., “I feel energized in this domain.”). Additionally, participants completed a nine-item scale of affect (Emmons, 1992) which included 4 positive (e.g., joyful) and 5 negative (e.g., frustrated) items. Participants rated each item based on how they typically felt when they were engaged in that particular domain. All responses were made on a scale of 1 (*not at all true*) to 7 (*very true*). The reliability for each measure was $\alpha = .92$ for positive affect, $\alpha = .88$ for negative affect, and $\alpha = .94$ for vitality. As subjective well-being is commonly operationalized by aggregating multiple indicators (e.g., Reis et al., 2000), a composite measure of domain well being was created by taking a mean of the standardized scores for each scale (with negative affect reverse-scored). The correlation of these measures among themselves (.52 to .82, $p < .001$) was sufficient to warrant combining them.

3. Results

3.1. Preliminary analyses

Participants indicated 3–6 domains in which they were involved (median = 4; total of 863 domains). These domains were examined and coded into six categories by two independent raters. The categories were family, friends, romantic relationship, work, school, and activities/leisure. Domains which were unclear or ambiguous (e.g., ‘home’; ‘restaurant’ ‘taking care of others’) and those which were missing ratings on any of the key variables were removed from the analyses, resulting in a final sample of 826 domains. Agreement between the two raters was high, $\kappa = .99$, $p < .001$, and cases of disagreement were discussed until an agreement was reached so that each domain was assigned a category. Some participants listed more than one domain which was coded in the same category (e.g., playing sports and watching TV both coded as activity/leisure; having two part-time jobs both coded

as work). Table 1 shows the mean need satisfaction, motivation and well-being by type of domain. Participants reported the highest need satisfaction and the most autonomous motivation with friends and in relationships, and the least need satisfaction, motivation and well-being at work and at school.

To account for non-independence of each domain rating, we used hierarchical linear modeling (HLM) for our data analysis. HLM is a technique that takes into account similarities of observations within individuals and allows for a different number of observations for each individual. The HLM software, version 6.06, was used to conduct these analyses using full maximum likelihood estimation. To examine the role of each type of domain separately, we dummy-coded each domain type and included the interaction between the dummy-code and need satisfaction, so that for each domain that a person indicated the measure of need satisfaction takes into account the domain type that is represented. All variables were standardized prior to running the central analyses to allow for an easier comparison among variables.

To ensure that participants were really responding to each domain separately, we computed intraclass correlations (ICC) for our three main variables. The ICC represents the proportion of variance in outcome between participants (rather than between domains). HLM analyses of an empty model predicting need satisfaction, motivation, and well being were, respectively, 0.19, 0.03, and 0.16. This means that 81% of the variance in need-satisfaction, 97% of the variance in motivation, and 84% of the variance in well-being was between domains.

3.2. Predicting motivation from need satisfaction

To test our first hypothesis that need satisfaction would be positively associated with autonomous motivation in all domains, we first computed a model which included the type of domain (dummy coded for each domain – D1 to D6) and the interaction between each domain type and need satisfaction (ID1NS to ID6NS). The equation of autonomous motivation in each context was as follows: Domain motivation = $\beta_{0j} + \beta_1(D1_j) + \beta_2(D2_j) + \beta_3(D3_j) + \beta_4(D4_j) + \beta_5(D5_j) + \beta_6(D6_j) + \beta_7(ID1NS_j) + \beta_8(ID2NS_j) + \beta_9(ID3NS_j) + \beta_{10}(ID4NS_j) + \beta_{11}(ID5NS_j) + \beta_{12}(ID6NS_j) + \epsilon_{ij}$. As we included all six domain dummy-codes in the equation, we removed the fixed portion of the person-level intercept but allowed the intercept to vary ($\beta_{0j} = u_{0j}$, where u is error). All other effects were fixed.

Overall, need satisfaction explained 40% of the variance in autonomous motivation between domains for each participant. The coefficients for need satisfaction in each domain were significant (see Table 2), although the magnitude appeared to vary somewhat between domains. To test whether these differences were statistically significant, we compared the above model to a model which constrained all the coefficients of need satisfaction by domain to equal each other ($\beta_7 = \beta_8 = \beta_9 = \beta_{10} = \beta_{11} = \beta_{12}$). This model provided a better fit, suggesting that there were no significant differences in the effects of need satisfaction across domains,

Table 1
Means and standard deviations of study 1 variables across domains.

Domain	N	Need satisfaction mean (SD)	Autonomous motivation mean (SD)	Well-being mean (SD)
Family	96	5.33 ^a (1.16)	5.54 ^a (5.47)	-.17 ^a (.97)
Friends	101	5.80 ^b (.73)	8.38 ^b (3.50)	.43 ^b (.51)
Relationship	56	5.94 ^b (.85)	8.80 ^b (4.13)	.41 ^b (.84)
School	109	4.48 ^c (.97)	2.64 ^c (5.29)	-.58 ^c (.87)
Work	146	4.52 ^c (.86)	-.40 ^d (5.06)	-.59 ^c (.80)
Activities	318	5.02 ^d (.85)	6.98 ^e (4.31)	.31 ^b (.66)

Note: Different subscripts within each column signify that the means are significantly different from each other.

Table 2
Coefficients of need satisfaction in life domains on study outcomes.

Domain	Autonomous motivation		Well-being		Well-being after controlling for motivation		Sobel <i>z</i>
	β (SE)	<i>t</i> (814)	β (SE)	<i>t</i> (814)	β (SE)	<i>t</i> (813)	
Family	.65 (.05)	12.35	.84 (.05)	16.86	.57 (.05)	11.76	9.04
Friends	.52 (.08)	6.32	.56 (.08)	7.23	.35 (.07)	4.95	5.71
Relationship	.54 (.09)	5.70	.95 (.09)	10.75	.74 (.08)	9.07	5.24
School	.68 (.06)	11.51	.88 (.06)	15.88	.61 (.05)	11.25	8.69
Work	.60 (.06)	10.43	.83 (.05)	15.26	.58 (.05)	11.22	8.20
Activities	.54 (.04)	13.33	.52 (.04)	13.78	.31 (.04)	8.11	9.40

Note: All coefficients significant, $p < .001$.

$\chi^2(5) = 6.80$, $p > .2$. A non-significant χ^2 signifies that the simpler model (in this case the second model assessed) was a better fit.

3.3. Predicting well-being from need satisfaction

We next assessed whether need satisfaction is similarly associated with well-being across all domains. We estimated the same model as above to predict domain well-being. All the coefficients for need satisfaction in each domain were significant. Results for this model are shown in Table 2. Overall, need satisfaction accounted for 51% of the variance in well-being between domains for each participant. To test whether these coefficients were significantly different from one another we compared the above model to a model which constrained all the coefficients of need satisfaction by domain to equal each other. This model provided a worse fit, suggesting that there were significant differences in the effects of need satisfaction across domains, $\chi^2(5) = 54.67$, $p < .001$. Additional exploratory analyses showed that need satisfaction plays a similar role in family, school, work and relationship domains and a smaller effect in friendship and activity domains.

3.4. Testing for mediation

We next tested our second hypothesis, that the relationship between need satisfaction and well-being in each domain was mediated by autonomous motivation. As all our main effects in the model were fixed, the steps for testing mediation in HLM are similar to those used to test a traditional mediation model, as described by Baron and Kenny (1986). Since we already showed that domain need satisfaction predicted both domain well-being (our outcome variable) and domain motivation (mediator variable), the final step was to test whether autonomous motivation predicted well-being even when we controlled for domain need satisfaction, and whether the direct path between need satisfaction and well-being became non-significant when we included the mediator in the model. We re-ran the above model with well-being as the dependent variable and included domain motivation (DMOT). At level one, the following equation was used: Domain well-being = $\beta_0 + \beta_1(\text{DMOT}_i) + \beta_2(\text{D1}_i) + \beta_3(\text{D2}_i) + \beta_4(\text{D3}_i) + \beta_5(\text{D4}_i) + \beta_6(\text{D5}_i) + \beta_7(\text{D6}_i) + \beta_8(\text{ID1NS}_i) + \beta_9(\text{ID2NS}_i) + \beta_{10}(\text{ID3NS}_i) + \beta_{11}(\text{ID4NS}_i) + \beta_{12}(\text{ID5NS}_i) + \beta_{13}(\text{ID6NS}_i) + \varepsilon_{ij}$. All other effects were fixed.

Analyses showed that autonomous motivation had a significant effect on domain well-being even when we controlled for need satisfaction, $\beta_1 = 0.39$, $t(817) = 13.27$, $p < .001$. However, the direct paths of need satisfaction in each domain to well-being were still significant (see Table 2), showing that these effects were not fully mediated by motivation. Although there was no full mediation, since the coefficients of need satisfaction were reduced, we tested the mediation path to see whether there was partial mediation. Following Krull and MacKinnon (2001), we performed a Sobel test of mediation using the coefficients of need satisfaction on well-

being from the model predicting the mediator and the coefficient of motivation on well-being from the final model. The Sobel test indicated that the mediation path was statistically significant for all domains, z 's = 5.24–9.40, all p 's < .001 (see Table 2). This suggests that the effect of need satisfaction on well-being was partially mediated by motivation.

4. Discussion

Self-determination theory has long recognized that the basic psychological needs of autonomy, competence, and relatedness are necessary for optimal functioning and for the integration of social norms and values in all life contexts (Deci & Ryan, 2000). This study examined the relation of these needs to autonomous motivation and well-being in important life domains, finding that need satisfaction was significantly related to both variables across domains. Importantly, we used an idiographic approach where participants were asked to name and rate domains important to them rather than rating categories set by the researcher. The results thus provide concrete evidence to support SDT's proposition that need satisfaction is universally important across domains. Although such consistency has been previously demonstrated across diverse cultures and developmental periods, our research is the first to explore SDT's universality assumption across domains. It will be important to more carefully explore this issue by developing stronger research designs that include peer-report measures and prospective longitudinal designs. If the connections between need satisfaction, motivation, and domain well-being can be demonstrated using such designs, this would represent very strong evidence for the universal applicability of this model across domains. Of course, such rigorous tests of the SDT universality propositions have not yet been confirmed with regard to cultural or developmental variations.

Our second hypothesis that motivation mediates the link between need satisfaction and well-being was not fully supported, although we did find evidence of partial mediation. This suggests that there are multiple mechanisms through which need satisfaction leads to positive outcomes. Indeed, it is possible that feeling that one's needs are satisfied in an important life domain is energizing in itself, and thus no mechanism is required to explain this connection. However, as we found the mediation path in our study to be significant, this supports our expectations that in addition to being beneficial in its own right, part of the positive effects of need satisfaction is the role it plays on motivation, which then leads to greater well-being. Overall, the partial mediation suggests that need satisfaction plays a dual role, acting both directly and indirectly on well-being outcomes. This fits well with previous theorizing on the role of the needs. In their seminal paper, Deci and Ryan (2000) predicted "that fluctuations in need satisfaction will directly predict fluctuations in well-being", whereas Vallerand (1997) expected that the needs operate by influencing motivation which in turn influences specific outcomes. Our research supports both these arguments.

An alternative explanation for our findings, which would make the directionality of the effects of need satisfaction, motivation and well-being particularly difficult to disentangle, is that these variables feed into each other, forming a cycle or spiral. Indeed, it is possible that experiencing need satisfaction in a domain leads to more autonomous motivation, and then autonomous involvement in a domain leads to more experiences of need satisfaction and greater well-being. A similar proposal has been made by Sheldon and Houser-Marko (2001), who showed that setting self-concordant (i.e., autonomous) goals resulted in greater goal attainment, which in turn lead people to set and attain more self-concordant goals in the future, thereby enhancing well-being.

Although our model and analysis are theoretically grounded, it is important to exercise caution when applying causal models to data collected at a single time point. The mediation pathway specified in our second hypothesis implies causality (i.e., that need satisfaction causes autonomous motivation which in turn causes well-being), and longitudinal studies need to be conducted to statistically test its validity. The current analyses suggest that the proposed relationship linking the three variables of interest does exist, but further studies are needed to confirm these findings. Additionally, our measure of well-being consisted of only vitality and affect, and the effects may differ on other outcome measures. Another important limitation to our study is the classification of the domains. Participants were not asked to rate each potential domain, but only to nominate some that were important to them, with their answers later classified to fit six general domains. This is especially problematic for the resulting category of 'activities', which encompasses such different things as sports, volunteering, or watching TV, all of which could be experientially different and distinct from each other and could potentially either differ more or be more similar to other domain categories. Future research is needed to better understand the domains that people find important, their experiences in these domains, and how these activities can be classified.

Overall, this study shows that need satisfaction is universally linked to motivation and well-being across important life domains. The quality of one's engagement in important domains, as well as the affective outcomes in these domains are all associated with the amount of psychological need satisfaction experienced in these contexts.

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