

Competence Need Fulfillment Increases Engagement: Does Individual Need Strength Moderate the Effect?

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ABSTRACT

The empirical literature on Self-Determination Theory is unclear about whether individual need strength moderates and enhances the effect of basic need fulfillment on positive outcome variables. This study tested whether competence need strength moderates the effect of competence need fulfillment on engagement. A sample of 181 students was randomly assigned into three experimental conditions and their felt competence was manipulated. Results showed that the high need fulfillment group had significantly higher engagement levels than the low need fulfillment group. However, there was no evidence for a moderation effect of need strength on the relation between need fulfillment and engagement.

Keywords

Self-determination theory, basic needs theory, need for competence, need valuation, engagement.

INTRODUCTION

According to Self-Determination Theory (SDT; Deci & Ryan, 2000), three basic psychological needs guide our behavior: the need for autonomy, competence, and relatedness. The satisfaction of these needs is considered to be essential to subjective well-being, as well as other positive outcomes, like motivation and performance (Deci & Ryan, 2000). The current research focuses on the need for competence, which refers to the desire to interact effectively with one's environment (Deci & Ryan, 2000; White, 1959). Satisfaction of the need for competence embodies an "affective experience of effectiveness, which results from mastering a task" (Van den Broeck, Vansteenkiste, de Witte, Soenens & Lens, 2010, p. 982). The present research examined whether there is a causal relation between competence need fulfillment and engagement. Engagement is commonly conceptualized as consisting of three dimensions: vigor, dedication, and absorption (Schaufeli, Salanova, González-Romá & Bakker, 2002). Drawing on SDT literature, it seems plausible that competence need satisfaction might be an antecedent to the experience of engagement. Several studies have shown a positive relation between competence need fulfillment and general well-being and flow, which are outcomes that are positively related to engagement (Schüler, Brandstätter, & Sheldon, 2013; Sheldon & Schüler, 2011; Yu, Shek & Zhu, 2018; Mesurado, Richaud & Mateo, 2016).

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Furthermore, Trépanier, Fernet and Austin (2013) previously found a significant positive correlation between competence need fulfillment and work engagement. Further investigating the link between competence need fulfillment and psychological engagement is important, because so far, causal evidence is still lacking (Trépanier, Fernet, & Austin, 2013). Establishing causality is necessary to be able to predict the outcomes of a competence need supporting environment. Therefore, the present study adds substantial value to the pre-existing literature by showing that the effect upholds in an experimental setting.

The second objective of the current research was to test whether a person's individual need for competence (i.e., competence need strength) moderates the positive effect of need satisfaction on engagement. In the current study, need strength was conceptualized as a person's individual valuation of having his or her need for competence fulfilled (Chen et al., 2015). Previous research findings about the moderating role of need strength have been inconsistent, which makes it crucial to investigate this effect further (Van Assche, van der Kaap-Deeder, Audenaert, de Schryver, & Vansteenkiste, 2018). According to SDT, fulfillment of the basic needs universally leads to positive outcomes (Schüler, Brandstätter & Sheldon, 2013). However, this strong view has been challenged and there are mainly two competing hypotheses being discussed. The universal hypothesis emphasizes the universal benefits of need fulfillment, while the matching hypothesis states that the extent to which a person benefits from need fulfillment depends on his or her individual need strength. The reasoning of the matching hypothesis can be integrated into a person-environment (P-E) fit framework (Ostroff & Judge, 2007). P-E fit theories argue that when personal preferences or traits align with the characteristics of the environment then this generally has positive outcomes. From a P-E fit perspective, competence need fulfillment may thus be expected to lead to a higher increase in engagement for individuals who have a strong need for competence than for those who have a weaker need for competence. Schüler et al. (2013) provide support for the matching hypothesis by showing that the effect of competence need fulfillment on well-being is moderated by an individual's achievement motive. In further research by Schüler, Sheldon, Prentice, and Halusic (2016), the strength of the autonomy motive was found to moderate the relationship between autonomy need satisfaction in the study domain and the flow experience in the study domain. However, in another study by Van Assche et al. (2018), the strength of the autonomy motive did not moderate the relationship between need satisfaction and life satisfaction. In this case, the researchers did not measure the outcome variable in relation to the same domain as the one in which the need for autonomy was fulfilled.

It results from these findings that the matching hypothesis is

most likely to be supported when the outcome variable is measured in the same domain as the one in which the need for competence was fulfilled. For these reasons, it was predicted that:

Hypothesis 1: Competence need satisfaction will increase psychological engagement.

Hypothesis 2: Competence need strength will moderate the relation between competence need satisfaction and engagement in such a way that when need strength is high, need fulfillment will lead to a higher increase in engagement than when need strength is low.

METHODOLOGY

Participants and Design

The present study sampled 181 first-year psychology students for an experimental lab study. 124 participants were female, 57 were male, and their ages ranged from 18 to 36 years with a mean age of 20.22 ($SD = 2.27$). Moreover, the students received an incentive in the form of partial course credits for their participation. We used a one factorial between-subjects design (level of competence fulfillment: high vs. low vs. control), and the participants were randomly assigned to the high fulfillment group ($n = 64$), the low fulfillment group ($n = 55$) and the control group ($n = 62$).

Materials and Procedure

The full experimental procedure happened in front of a computer in a private cubicle. The first screen on the computer presented some information about the study, which served as a cover story in order to hide the true research purpose. It described the experiment as a 'verbal comprehension task', which may be important to the students, because past research has shown a link between verbal comprehension skills and university grades (Petrides, Chamorro-Premuzic, Frederickson & Furnham, 2005). Next, the participants answered some demographic questions, followed by a self-report measure of competence need strength. At this point, participants completed a puzzle task, which we used for the manipulation of felt competence (described below). The task involved finding letters in a grid while considering certain rules (cf. Sheldon & Filak, 2008), a feedback stage, a hint stage and a second equally difficult version of the puzzle task. All participants received their numerical score for the first version of the puzzle task and then were presented with hints for the second version. After completion of the second puzzle task, a manipulation check of competence need fulfillment and a self-report measure of psychological engagement concluded the experimental procedure.

Competence Need Strength

The three competence-specific items of the 9-item measure of psychological need satisfaction by Sheldon, Elliot, Kim and Kasser (2001) were adapted so that they measure participant's valuation of this need satisfaction (cf. Chen et al., 2015). We used a 5-point unipolar Likert scale (1 = not important at all; 5 = very important to me) and the items correspond to the opening statement: "How important is it for you to feel...". An example item is: "...that you are competent at the verbal comprehension task". The items were averaged into one general measure of need strength. The Cronbach's alpha for this scale was .85.

Manipulation of Competence Need Satisfaction

Depending on their randomly assigned group, participants in the high need fulfillment condition received the bogus feedback that their performance was 'very good', compared to 350 students who have allegedly completed the task before them. In addition, the hints were described to be useful for improving their performance even further. By contrast, in the low need fulfillment condition, participants received the feedback that their performance was 'weak' in comparison to 350 prior participants of the task. Furthermore, the hints were described as being unlikely to help improve their performance noticeably. The control group did not receive any other feedback than their numerical score and the hints were presented without any further comment.

Manipulation check

To measure the participants' felt competence between the two versions of the experimental task, we administered three items from Sheldon et al.'s (2001) measure of psychological need satisfaction that we adapted to fit our research context. The scale was presented in a 7-point bipolar Likert format (1 = strongly disagree; 7 = strongly agree) and an example item is: "I felt that I performed the verbal comprehension task successfully". All items were averaged into one measure of competence need satisfaction for each of the three conditions. The Cronbach's alpha for this scale was .86

Engagement

In order to measure participant's domain-specific engagement, three items of the UWES-9 were selected and slightly adapted so that they fit the context of the puzzle task (Schaufeli, Bakker, & Salanova, 2006). It is a 7-point bipolar Likert agreement scale with point 1 reflecting "strongly disagree" and point 7 reflecting "strongly agree". Each item assessed one of the three components of psychological engagement: vigor, dedication, and absorption. The selected items were: "I am enthusiastic about the verbal comprehension task" (vigor), "I feel like performing Version 2 of the verbal comprehension task" (dedication), and "I feel happy working intensely on the verbal comprehension task" (absorption). The three items were averaged into one general measure of psychological engagement. The Cronbach's alpha for this scale was .85.

Data Analysis

Both hypotheses, including the two main effects of the level of competence, the main effect of need strength, as well as the interaction effect, were tested using a regression analysis. All assumptions for running the regression analysis appeared to hold. Before conducting the analysis, the three levels of competence need fulfillment were dummy coded with D1 comparing high competence need fulfillment to low fulfillment and D2 comparing the control group to low fulfillment. The low competence need fulfillment condition served as a reference group. The moderator variable need strength was centered. Two regression models were tested. The first one included only the centered predictor need strength and two dummy variables for the level of competence as predictors. In the second model, the interaction terms for centered need strength and the two dummy variables were added as additional predictors.

RESULTS

Manipulation Check

A one-way ANOVA was conducted to test whether the experimental manipulation worked. Results revealed that there exist significant differences in competence need fulfillment levels, $F(2, 178) = 19.59, p < .001$, between the high fulfillment group ($M = 4.6, SD = 1.15$), the low fulfillment group ($M = 3.3, SD = 1.12$), and the control group ($M = 4.29, SD = 1.23$). Contrast tests showed that the low fulfillment group differed significantly from the high fulfillment group, $t(178) = -6.06, p < .001$, and the control group $t(178) = -4.56, p < .001$, but the high fulfillment group did not differ significantly from the control group, $t(178) = 1.51, p = .13$. Therefore, the experimental manipulation was successful, except for the difference between the control group and the high need fulfillment group.

Hypothesis Testing

The first hypothesis predicted that competence need satisfaction, relative to competence need non-satisfaction, increased engagement. The regression analysis revealed that the slope associated with D1 was significant. In specific, the low fulfillment group ($M = 4.56, SD = 1.27$) differed significantly from the high fulfillment group ($M = 5.56, SD = .99$), $t(178) = -5.01, p < .001$. Therefore, the first hypothesis was supported by the data.

The second hypothesis predicted that the positive relation between competence need satisfaction and engagement will be moderated by need strength in such a way that when need strength is high, need satisfaction will have a stronger positive effect on engagement than when need strength is low. Results revealed that Model 2 did not explain significantly more variance, $F(2, 175) = 1.3, p = .27$, than Model 1 already did (see Table 1). The slope pertaining to the interaction between D1 and need strength was not significant, $p = .11$. This means that there was no evidence for a moderation effect and that the second hypothesis was not supported by the data.

DISCUSSION & CONCLUSION

The first aim of the present study was to provide causal evidence for a positive effect of competence need satisfaction on psychological engagement. As predicted, we found that individuals with high competence need satisfaction were indeed more engaged than individuals with low competence need satisfaction. These findings converge with previous research on SDT that found evidence for the universal hypothesis (Mesurado et al., 2016; Sheldon & Schüler, 2011; Trépanier et al., 2013).

Secondly, we hypothesized that individual competence need strength acts as a moderator in the relation between need satisfaction and engagement, leading to a stronger positive effect of need satisfaction on engagement when need strength is high, compared to when need strength is low. Contrary to our expectations, we did not find statistically significant support for our second hypothesis. Schüler et al. (2013) presumed that domain-specific measurement of the outcome variable might be necessary to find support for the matching hypothesis. Despite complying with this criterion, our study's results do not converge with their findings in support of a moderation effect (Schüler et al., 2013). In another study, Schüler et al. (2016) found a

significant moderation effect only for implicit autonomy need strength and not for explicit autonomy need strength in the relation between autonomy need satisfaction and domain-specific well-being. Our study converges with these findings, as we also measured need strength explicitly and did not encounter a significant interaction.

This leads to the presumption that the interaction effect may be most likely to be found when the study complies with two criteria; domain-specific measurement of the outcome variable and implicit measurement of the moderator variable. In congruence with the majority of SDT literature (Chen et al., 2014; van Assche et al., 2018), it appears that encountering evidence for the universal hypothesis is easier than finding evidence for the matching hypothesis. Despite the fact that the two hypotheses are said to be complementary (Schüler et al., 2013), our study's findings endorse only the universal hypothesis and therewith the central tenet of SDT; that basic psychological need satisfaction is essential, and that individual differences in need strength may exist but are not relevant for psychological engagement.

Our study has shown that a manipulation of felt competence can be accomplished by using encouragement and positive norm-based feedback, in which the individual is evaluated as having performed better than the majority of a reference group did. Employers benefit from employees who are engaged in their work: they show higher personal initiative, they perform better on the job, and they are less likely to leave the organization (Lee, Idris & Tuckey, 2018; Lisbona, Palaci, Salanova & Frese, 2018). Managers can use our findings in practice by encouraging their subordinates and providing positive feedback in order to increase the employees' engagement in their work. Teachers and coaches can also use these strategies to increase students' engagement in a learn setting. Generally, personal interactions and environments that are supportive of the need for competence are likely to increase engagement.

A valuable strength of our study was that we used an experimental design, which allows us to make causal inferences. Furthermore, we adopted a procedure, which was already used in prior research (Sheldon & Filak, 2008) and validated that this experimental manipulation successfully creates differences between high and low felt competence. The advantages of conducting the experiment on lab computers are that we could randomly allocate the participants to one of the three conditions and that we were able to standardize the full procedure for each condition.

A limitation of our study is that the findings lack ecological validity. The puzzle task that the participants did is unlikely to be relevant in their daily life. In addition, since we measured domain-specific engagement, we cannot say with full certainty that the effect upholds in other domains. Furthermore, 181 first-year psychology students from the same university may not be the best sample for generalizability. Having low external validity means that one should take caution when generalizing our findings to populations that differ noticeably in characteristics from the sample that we used. It would be valuable for future research to investigate the effect of competence need fulfillment on engagement in other settings (e.g. at school or at work).

In conclusion, the present findings endorse the universal hypothesis of SDT, but not the matching hypothesis.

Competence need satisfaction is shown to increase psychological engagement and this effect was found to hold regardless of individual differences in need strength.

ROLE OF THE STUDENT

Amai Brandes was an undergraduate student working in a research group with five other students under the supervision of Burkhard Wörtler. The student proposed her own specific topic within the context of the group's research area. The general study design and the interaction with lab participants was done in collaboration with the other group members. The statistical analysis and evaluation, as well as the writing of the paper were done by the student.

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APPENDIX

Table 1. Results of the Regression Analysis

	Model 1			Model 2		
	B	SE	β	B	SE	β
Intercept	4.569	.14		4.562	.14	
Need Strength	.511	.109	.312*	.305	.181	.186
D1	.961	.191	.394*	.955	.191	.392*
D2	.706	.192	.287*	.713	.192	.29*
Need Strength \times D1				.421	.261	.149
Need Strength \times D2				.231	.266	.072

Notes. Dependent variable: Engagement. D1= High competence need fulfillment in comparison to low competence need fulfillment. D2= Control group compared to low competence need fulfillment. * $p < .001$