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Exploring the Association between Calling and Work Engagement: The Mediating Role of Psychological Needs Satisfaction and Perception of Meaningful Work

Meslek Aşkı ve İşe Adanmışlık Arasındaki İlişki: İhtiyaçların Tatmini ve İşi Anlamlı Bulmanın Aracılık Rolleri

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ABSTRACT

There are different conceptualizations of work. Work can be seen as unpleasant but necessary to make a living. It can also be perceived as meaningful and a way to contribute to society. Employees who see their work as important and are motivated to make a difference in society have a sense of "calling". The perception of a calling pertains to a sense of purpose that includes values and goals oriented to other people, and motivation to work to contribute to the welfare of society. Calling has many individual and organizational benefits; it contributes to well-being and life satisfaction because it provides meaningful goals in life. Research has shown that calling and work engagement are positively related. However, how and why perception of a calling predicts work engagement is under-researched. This research aims to fill this void. Drawing on self-determination theory and work as calling theory, this study examines a model that basic psychological needs satisfaction (autonomy, competence, and relatedness) at work and work meaning sequentially mediate the positive relationship between calling and work engagement. The sample consists of 286 Turkish teachers working in various schools in Turkey. Results showed that there is a positive relationship between calling and work engagement. Autonomy and competence needs satisfaction, but not relatedness needs satisfaction mediated this relationship. Moreover, the calling–work engagement relationship was sequentially mediated by autonomy and relatedness needs satisfaction, and work meaning. Competence needs satisfaction and work meaning, on the other hand, did not significantly mediate the proposed relationships. These results indicate that satisfaction of psychological needs, and work meaning may represent the intermediary processes in the calling–work engagement relationship. The present study provides insights for both teachers and school administrations to understand the relationship between calling and work engagement of teachers. School principals and teachers can employ these findings for the benefit of their organizations.

Keywords: Calling, work engagement, self-determination theory, meaningful work

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ÖZ

İş farklı şekillerde kavramlaştırılmaktadır. İş zevksiz ama yaşamı idame ettirmek için gerekli bir aktivite olarak algılanabilir. Bunun yanısıra iş anlamlı ve topluma katkı sağlayan bir araç olarak da görülebilir. İşlerini önemli ve yaşamda bir şeyleri değiştirmek olarak algılayan çalışanlarda meslek aşkı duygusu vardır. Meslek aşkı algısı bir insanların yararına toplumunda refahı sağlamak adına çalışmayı istemek anlamına gelmektedir. Meslek aşkı anlamlı amaçlara ulaşmayı sağladığı için kişilerin iyi olma haline ve yaşam doyumlarına katkı sağlar bu bağlamda bir çok kişisel ve kurumsal olumlu çıktı ile ilişkilidir. Araştırmalar meslek aşkı ve işe adanmışlık arasında pozitif bir ilişki olduğunu ortaya koymuştur. Ancak meslek aşkı algısının ve işe adanmışlığı nasıl ve neden yordadığı araştırılmamış bir konudur. Bu araştırma bu boşluğu doldurmaya amaç edinmiştir..Bu araştırmada ayrıca öz belirleme kuramı ve iş meslek aşkı kuramından faydalanılarak, meslek aşkı ve işe adanmışlık ilişkisinde işteki psikolojik ihtiyaç (özerklik, yetkinlik ve ilişkisellik) tatmini ve işi anlamlı bulmanın sıralı aracı rolü olduğu bir model sınanmıştır. Örneklem farklı okullarda çalışan 286 öğretmenden oluşmaktadır. Analiz sonuçları, meslek aşkı ve işe adanmışlık arasında pozitif bir ilişki olduğunu göstermiştir. Bu ilişkide özerklik ve yetkinlik tatmini aracı role sahiptir. Ayrıca, özerklik ve ilişkisellik tatmini ve işi anlamlı bulmanın meslek aşkı ve işe adanmışlık ilişkisinde sıralı biçimde aracı role sahip olduğu bulunmuştur. Modelde yetkinlik ihtiyacı ve işi anlamlı bulmanın sıralı aracı rolü istatistiksel olarak anlamlı değildir Çalışma sonuçları, işteki temel psikolojik ihtiyaç tatminiyle işi anlamlı bulmanın meslek aşkı ve işe adanmışlık ilişkisinde rolü olan sıralı aracı süreçlerden olabileceğini göstermiştir. Bu çalışma öğretmenlere ve okul yöneticilerine öğretmenlik mesleğindeki meslek aşı ve işe adanmışlık arasındaki süreçleri anlamalarına katkı sağlamaktır. Okul yöneticileri ve öğretmenler çalıştıkları kurumları geliştirmek adına bir çalışmanın sonuçlarından yararlanabilirler.

Anahtar Kelimeler: Meslek aşkı, işe adanmışlık, öz belirleme kuramı, işi anlamlı bulma

Work constitutes an essential part of peoples' lives. However, people view their work differently. Some are motivated to work to make a living, seeing it as unpleasant but necessary, while others view work as a crucial component of their lives, derive meaning, and feel positive about it because they believe they contribute to society. Employees who feel like the latter may be experiencing *calling*. Perception of a calling pertains to a sense of purpose that includes values and goals oriented to other people, and motivation to work to contribute to the welfare of society (Dik & Duffy, 2009). For some occupations, the perception of a calling is particularly important. For example, the perception of a calling is crucial for teachers because of the chief role teaching plays in contributing to society. In this sense, the current research focuses on the calling perceptions of teachers and investigates in what ways the perception of a calling relates to work engagement.

Calling has many individual and organizational benefits; it contributes to well-being and life satisfaction because it provides meaningful goals in life (Duffy et al., 2013). The research focused on the impact of calling on many work-related outcomes such as job satisfaction and organizational identification (Duffy et al., 2011; 2012; 2018). Employees who experience a calling find their work fulfilling and regard their work role as a significant part of their identity (Dik & Duffy, 2009). Employees who perceive a calling are engaged in their work role because they have personally and socially inspiring purposes (Dik & Duffy, 2009). Consequently, research has shown a positive association between calling and work engagement (Hirschi, 2012). However, how and why the perception of a calling predicts work engagement is under-researched. Revealing the processes that underlie the association between calling and work engagement is important to better understand how the perception of a calling leads to an energetic and happy state of mind. Duffy and colleagues (2018) proposed work as a calling theory (WCT) and highlighted the importance of examining the mediating variables in the link between calling and positive organizational outcomes (i.e., job satisfaction and job performance). To this end, it is argued that experiencing a calling is related to work engagement because such an experience satisfies the three basic psychological needs (i.e., autonomy, competence, and relatedness), leading to a state characterized by a high work meaning. In other words, this paper aims to examine the mediating roles of psychological needs satisfaction and work meaning in the link between perceiving a calling and being engaged in one's work.

Self-determination theory (SDT) suggests that people have three basic needs: autonomy, competence, and relatedness (Deci & Ryan, 2000). When these needs are fulfilled, people are intrinsically motivated to act. Studies show that intrinsically motivated employees have higher levels of well-being, performance, and engagement (Kuvaas & Dysvik, 2009; Ryan & Deci, 2000). Although the intermediary processes between calling and work engagement were examined (i.e., Xie et al., 2016), no study focused on the role that satisfaction of needs plays in the calling–work engagement relationship. This study aims to fill this gap. Meaningful work is an important component of the welfare of the employees (Robitschek & Woodson, 2006). Studies showed that employees feel meaning in their work when their needs are satisfied (Kim & Allan, 2020; Martela & Riekki, 2018). Satisfaction of employees' needs is an antecedent of work meaning. It was argued that if employees can satisfy their basic psychological needs, they can experience meaningful work. Moreover, it is contended that the satisfaction of needs and the meaning of work will sequentially mediate the link between calling and work engagement.

The Teaching Occupation and Calling in Turkish Culture

Two characteristics of Türkiye put teaching in a central position in society and associate teaching with the experience of a calling. First, many reforms, including in education, were made after the establishment of the Turkish Republic in 1923. Important among these was the adoption of the Latin alphabet and educational secularism (Bozaslan & Çokoğullar, 2015). Atatürk was regarded as a "head teacher" who devoted himself to the modernization of Türkiye. Connotation of a "teacher" included being devoted and acting as a role model, which was highly related to the operationalization of "calling". Atatürk's statement, "Teachers, the generations to come will be shaped by you", clearly exemplifies this notion of teaching. Although reforms brought about change and Westernization in the education system, the Islamic doctrine also regards teaching similarly. A proverb from a prophet, "I would do all for somebody who would teach me a letter", highlights the sacred aspect of the teaching occupation in Islam.

Calling among employees in teaching careers has been investigated in Türkiye, including some studies conducted among nurses, and a single study conducted among social workers. Uzunbacak and colleagues (2022) investigated how calling was affected by the COVID-19 pandemic. They found that nurses have experienced positive changes, ranging from job significance to a desire to serve humanity, but also negative chang-

es, such as exhaustion, disengagement, and unappreciated overtime. Another study among nurses in Türkiye showed that the presence of a calling was positively linked to happiness and work satisfaction (Uzunbacak et al., 2019). The relationship between calling and prosocial behaviors was examined among social workers in Turkey, and a positive relationship was found. This relationship was mediated by meaning in life (Arısoy & Taş, 2021).

As stated earlier, few studies have been conducted in Türkiye on the motivations of teachers and, none of these studies examined calling on teachers. One study focused on the intrinsic and extrinsic motivations of teachers. Prospective elementary school teachers stated altruistic reasons as more important than extrinsic factors such as job security or a steady income (Saban, 2003). In another study, Gürbüz and Sülün (2004) investigated the motivations of prospective biology teachers, finding that an interest in biology was considered more important than job security. The Turkish Ministry of Education declared general competencies for the teaching occupation, including: "Carrying out his/her profession with enthusiasm and with a positive attitude." This highlights the importance of examining the concept of calling among teachers in Türkiye.

Calling and Work Engagement

Work engagement refers to working positively and energetically. It is a state of mind characterized by vigor, dedication, and absorption (Bakker et al., 2008). Work engagement is related to many important outcomes such as an increase in financial means (Xanthopoulou et al., 2009), higher task performance (Christian et al., 2011), and enhanced organizational effectiveness (Gruman & Saks, 2011). In addition, research has shown that engaged workers are more likely to help their colleagues, improving team performance (Tims et al., 2013). Engaged workers also experience work-to-family facilitation, which in turn was positively associated with employee happiness (Shimazu et al., 2020). These studies indicate that work engagement is not only essential for employees but also for organizations. Therefore, revealing the factors that enhance work engagement is critical for advancing the work engagement theory as well as the work practices. Research has shown that personal sources such as self-efficacy and optimism, and job resources including performance feedback, autonomy, and coaching are among the antecedents of work engagement (Xanthopoulou et al., 2009). Calling was also shown as an antecedent that facilitates work engagement (Hirschi, 2012; Xie et al., 2016). An explanation for the positive association between calling and work engage-

ment may be their conceptual similarity such that they both share a dedication toward one's work. However, research indicated that they are related yet distinct constructs (Dobrow & Tosti-Kharas, 2011). Notably, Britt (2003) reported that integrating one's work into his identity is a key element of work engagement. Employees who perceive calling are engaged in their work role because they want to fulfill their personal and social goals (Dik & Duffy, 2009).

Calling, Work Engagement, and Psychological Needs Satisfaction at Work

SDT distinguishes between motivation types that are autonomous or controlled. These two forms of motivation are considered along a continuum. Intrinsic motivation is defined as an autonomous type and external motivation is a controlled type (Gagné & Deci, 2005). SDT also defines the basic needs of autonomy, relatedness, and competence that are essential for people to feel satisfied, to feel motivated and for growth. Autonomy refers to the desire for freedom and discretion over actions, competency refers to the desire to feel efficient and competent, and relatedness is the willingness to feel related to others (Deci & Ryan, 2000). The premise of SDT is that employees will show interest and intrinsic motivation in their work if these needs are recognized and satisfied (Deci & Ryan, 2000). A meta-analytical study indeed demonstrated that the satisfaction of psychological needs was positively linked to intrinsic motivation and well-being (van den Broeck et al., 2016). Intrinsic motivation pertains to liking the activity itself (Gagné & Deci, 2005). Notably, experiencing a calling typically involves doing one's work with passion, deriving meaning from work, and seeing oneself as a contributing member of society (Dobrow, 2013; Duffy et al., 2018). Consequently, calling experience is likely to be associated with intrinsic motivation, and satisfaction of three psychological needs that maintain intrinsic motivation.

SDT provides explanations of how employees' psychological needs satisfaction results in positive employee outcomes (Deci & Ryan, 2000). SDT suggests that workplace conditions have important implications for employees' well-being, satisfaction, motivation, and engagement. Engaged employees appreciate their work, identify with their work goals, and display high motivation toward work (Bakker, 2009). Supporting their association, needs satisfaction was shown to be related to work engagement (Silman, 2014). It is argued that calling and work engagement is likely to be related because perceptions of calling would be related to the satisfaction of the basic psychological needs of teachers, which in turn facilitate feelings of work meaning, and consequently bolster

work engagement. Conway and colleagues (2014) conducted a study among the Church of England clergy that examined the relationship between calling enactment and well-being, which was explained in terms of SDT. Rather than the three different forms of needs, their study focused specifically on intrinsic and identified motivation and found that both mediated the link between calling and well-being. Intrinsic motivation is about performing an activity with fun, and identified motivation refers to considering the activity important. On the other hand, introjected motivation, which is a less autonomous type, was negatively related to daily calling enactment and well-being (Conway et al., 2014). Another study that investigated calling as a precursor of work engagement showed that the relationship between calling and work engagement was mediated by flourishing at work (Erum et al., 2020). In this study, based on the SDT, flourishing at work was conceptualized as having an inner drive to learn and grow, namely, intrinsic motivation (Wiedemann, 2019). According to this study, intrinsic motivation brings about happiness, enjoyment, and interest at work. Van den Broeck and colleagues (2008) found that overall needs satisfaction emerged as a mediator in the link between job resources and work engagement. Putting together the above arguments, it is expected that teachers who perceive a calling in their jobs would be more engaged in their work because the calling perceptions would satisfy three basic needs. In other words, it is predicted that the three forms of psychological need satisfaction will mediate the relationship between calling perceptions and work engagement.

H1a. The relationship between calling and work engagement is mediated by the satisfaction of autonomy needs. Calling is positively associated with autonomy needs satisfaction, which in turn is positively associated with work engagement.

H1b. The relationship between calling and work engagement is mediated by the satisfaction of competency needs. Calling is positively associated with competency needs satisfaction, which in turn is positively associated with work engagement.

H1c. The relationship between calling and work engagement is mediated by the satisfaction of relatedness needs. Calling is positively associated with relatedness needs satisfaction, which in turn is positively associated with work engagement.

Calling, Need Satisfaction, Work Meaning, and Work Engagement

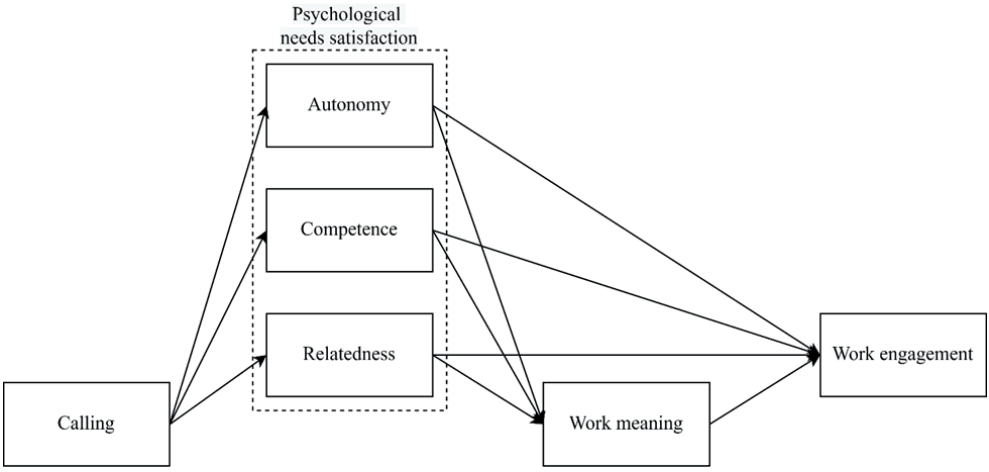
Perceiving one's job as a calling brings life meaning because calling at work is a way of expressing meaning and purpose. WCT has been proposed to identify predictors,

outcomes, mediating, and moderating variables of calling (Duffy et al., 2018). According to WCT, work meaning is likely to mediate the relationship between perceiving calling and positive organizational outcomes, such as job satisfaction and performance. Meaningfulness is the subjective evaluation of the work as worth doing, and intrinsically motivating (Spreitzer, 1995). Work meaning is one's assessment of their job, rather than a motivational construct such as work engagement or intrinsic motivation.

In cross-cultural research, it has been found that basic psychological needs satisfaction is positively linked to work meaning. In three countries, Finland, India, and the USA, the satisfaction of needs was examined to investigate whether they were related to meaningful work (Martella & Riekki, 2018). While all three need satisfactions were positively associated with work meaning in Finland and India, only autonomy and relatedness need satisfactions were associated with work meaning in the USA. Kim and Allan (2020) integrated SDT and meaningful work. They focused on underemployment and meaningful work through the mediation of autonomy, competence, and relatedness, finding that only autonomy was a mediator in the relationship between underemployment and meaningful work. This study is important because it showed that meaningful work was positively associated with psychological need satisfaction. Previous research also showed that work meaning was related to high job performance, organizational commitment, and work engagement (Bunderson & Thompson, 2009). Specifically, a study in South Africa reported that meaningful work was linked with higher commitment and work engagement (Beukes & Botha, 2013). A study among firefighters in Romania also showed a positive link between work meaning and work engagement (Dan et al., 2020). In light of these relationships, a model is hypothsized (see Figure 1). In this model, it is asserted that the relationship between calling and work engagement will be sequentially mediated by satisfaction of three psychological needs and meaningful work.

H2. The relationship between perceiving a calling and work engagement is sequentially mediated by satisfaction of three psychological needs and work meaning (all relationships are positive).

Figure 1
The Study Model



Method

Participants

The participants were 286 Turkish teachers with different majors (math, English, Turkish, geography, etc.) working in various schools in Turkey. The sample consisted of 91 male (32%) and 195 female teachers (68%). The mean age was 40.3 years (*SD* = 9.9 years) and the mean organizational tenure was 4.7 years (*SD* = 4.7 years). The majority had undergraduate degrees (87%) and the rest had graduate degrees (13%).

Measures

Work Engagement

The Turkish version (Eryılmaz & Doğan, 2012) of the Utrecht Work Engagement Scale (UWES; Schaufeli et al., 2002) was used. The scale consist of 17 items (α = 92) and included three subscales namely absorption, vigor, and dedication. Sample items are "At my job I feel strong and vigorous" (vigor), "I am immersed in my work" (absorption), "My job inspires me" (dedication). Participants rated 5-point Likert-type scale items (1 = *definitely untrue*, 5 = *definitely true*). Higher scores indicated greater work engagement.

Calling

The Turkish version of the 12-item calling scale developed by Dobrow and Tos-

ti-Kharas (2011) was used (α = .90). Participants answered 5-point Likert scale questions (1 = *strongly disagree*, 5 = *strongly agree*). A sample item is "My job is always on my mind in some way."

Basic Need Satisfaction at Work

Turkish version of the Basic Need Satisfaction at Work Scale (Baard et al., 2004; Deci et al., 2001) is used. This scale is a 21-item questionnaire measured on a 5-point scale (1 = *strongly disagree*, 5 = *strongly agree*). The need satisfaction scale had three subscales namely autonomy (α = .66), competence(α = .66), and relatedness(α = .83). Sample items are "I am free to express my ideas and opinions on the job" (autonomy), "Most days I feel a sense of accomplishment from what I do" (competence), and "I really like the people I work with" (relatedness).

Work Meaning

The Turkish version of the Work and Meaning Inventory (WAMI; Steger et al., 2012) was used to measure work meaning. The 10-item scale (1 = *strongly disagree*, 5 = *strongly agree*) consisted of three subscales namely positive meaning, meaning-making through work, and greater good motivations. Internal consistench cronbach alpha is .88. Sample items are "I have found a meaningful career" (positive meaning), "I view my work as contributing to my personal growth" (meaning making through work), and "The work I do serves a greater purpose (greater good motivations)."

Procedure

Before data collection, the researchers obtained ethical approval from the Human Subjects Ethics Committee of Izmir University of Economics on 30 June 2022 (protocol number B.30.2.İEÜ.0.05.05-020-225). The researchers contacted the participants by email, phone, or face-to-face and shared a questionnaire via a link over the Internet with participants who agreed to take part. The questionnaires were completed anonymously after participants had signed the "Informed Consent Form" indicating voluntary participation.

Sensitivity power analyses were conducted to estimate the minimum effect size the model can detect with 80% power via the web tool provided by Wang and Rhemtulla (2021). Model parameters was started as input values and changed relevant estimates to find the minimum effect size that can be detected by the model for each endogenous variable. The results showed that the model can detect the standardized relationship of

.13 in predicting work engagement, .11 in predicting work meaning, and .16 in predicting the three basic psychological needs with 80% power.

Data Analysis

First, the translation-back-translation technique was used to translate the Calling, Basic Need Satisfaction at Work, and Work Meaning scales in Turkish. Specifically, the authors of the present research translated the original English items into Turkish, and then, an English professor translated the Turkish items back into English. Finally, the authors and an industrial-organizational psychologist collaborated to solve the discrepancies between translations.

Before analyses, statistical assumptions was controlled including univariate normality, residual normality, and univariate and multivariate outliers. Four outlier cases were detected and removed from further analyses.

Confirmatory factor analyses (CFAs) were conducted and calculated diagnostic information related to the convergent and discriminant validity of the scales that were translated in this study following Hair and colleagues (2017). Specifically, model fit information, Cronbach alpha estimates, composite reliability estimates, and average variance extracted (AVE) were investigated. Cronbach alpha > .70, composite reliability > .70, and AVE > .50 were set as acceptable criteria (Hair et al., 2017). For the model fit assessment, the root mean square error of approximation (RMSEA) was investigated, comparative fit index (CFI), and Tucker-Lewis index (TLI). The cutoffs for an acceptable model fit were RMSEA < .08, CFI > .90, and TLI > .90 (Hu & Bentler, 1999). The analyses were conducted using SPSS v26, JASP (JASP team, 2022), and Mplus 8 (Muthén & Muthén, 1998/2017).

Path analysis was used, a single-indicator technique in the structural equation family, to test the model, which allowed us to examine hypotheses in a single model. The covariances between the three needs satisfaction dimensions were set free. The indirect effects were analyzed by computing 95% bias-corrected confidence intervals with 1,000 bootstrapped resamples.

Results

Preliminary Analyses

Item-level CFAs (Wirth & Edwards, 2007) were conducted to examine the factorial

structure of the Calling Scale, Basic Need Satisfaction at Work Scale Scale, and Work and Meaning Scale. The initial analyses showed that two items (Items 3 and 11) of the Basic Need Satisfaction at Work Scale had low factor loadings and consequently were removed. Table 1 displays the model fit information and other evaluation information of the translated scales. The model fits were acceptable for the three scales, the factor loadings were higher than .40, and the composite reliability scores were higher than .70. The cronbach alpha scores and AVEs were higher than the cutoff values except for autonomy and competence subscales of Basic Need Satisfaction at Work Scale Scale. Notably, the values (e.g., Cronbach alpha scores) obtained in this study were comparable with those reported by Deci and colleagues (2001).

Before the model test, the discriminant validity of the model was investigated by running CFAs with competing factor structures. Specifically, a six-factor hypothesized model was compared with a five-factor model where work engagement and work meaning were combined into a single factor and a four-factor model that combined three needs satisfaction dimensions into a single factor. Item parcels were created to improve sample size to parameter ratio (Kline, 2005). Table 1 provides the model fit information of the compared models. Six-factor model provided a good fit to the data. The fit of the six-factor model was better than the five-factor model, $\Delta\chi^2(5) = 250.56$, $p < .001$, and the four-factor model $\Delta\chi^2(9) = 136.01$, $p < .001$. Overall, these results confirm that the study variables represent distinct constructs.

Table 1

The Model Fit, Reliability, and Validity Information for the Scales Translated in the Present Study and for the Measurement Model

	χ^2	*df*	RMSEA	CFI	TLI	CA (α)	CR	L (λ) range	AVE
Scales translated in the present study									
Calling[a]	321.55	54	.08	.99	.99	.90	.93	.63–.84	.55
Needs satisfaction	441.26	149	.08	.94	.93				
Autonomy						.66	.77	.49–.71	.36
Competence						.66	.79	.59–.75	.43
Relatedness						.83	.90	.64–.80	.54
Work meaning[a]	72.31	33	.07	1.00	1.00	.88	.93	.58–.90	.58
The measurement model and comparison models									
Four-factor	434.50	129	.09	.91	.89				
Five-factor	549.05	125	.11	.87	.84				
Six-factor[b]	298.49	120	.07	.95	.93				
Calling						.90	.91	.84–.90	.77
Autonomy						.64	.65	.57–.68	.39

Competence	.68	.68	.56–.64	.42
Relatedness	.85	.86	.74–.89	.68
Work meaning	.89	.89	.81–.91	.73
Work engagement	.91	.91	.85–.92	.77

Note. $N = 286$. [a]Two residual covariances for calling (Item 1–Item 3, Item 9–Item 10) and work meaning (Item 1–Item 2, Item 7–Item 9) scales were allowed to covary based on the inspection of modification indices. [b]The information about the scales represent calculations based on item parcels. df: degrees of freedom, RMSEA: root mean square error of approximation, CFI: comparative fit index, TLI: Tucker-Lewis index, CA: Cronbach's alpha, CR: Composite reliability, L range: range of the item loadings, AVE: average variance extracted.

Hypothesis Tests

Descriptive statistics, Cronbach alpha estimates, and correlations between the study variables are shown in Table 2. The model accounted for about 60% of the variance in work engagement, 52% in work meaning, 14% in satisfaction of autonomy needs, 15% in satisfaction of competence needs, and 9% in satisfaction of relatedness needs.

Table 2
Means, Standard Deviations, and Intercorrelations among Variables

Scale	*M*	*SD*	1	2	3	4	5	6
1. Calling	3.61	.67	(.90)	.37**	.39**	.30**	.65**	.66**
2. Autonomy	3.93	.54		(.66)	.63**	.61**	.50**	.54**
3. Competence	4.09	.52			(.66)	.53**	.44**	.58**
4. Relatedness	4.07	.55				(.83)	.45**	.43**
5. Work meaning	4.04	.54					(.88)	.63**
6. Work engagement	4.01	.58						(.92)

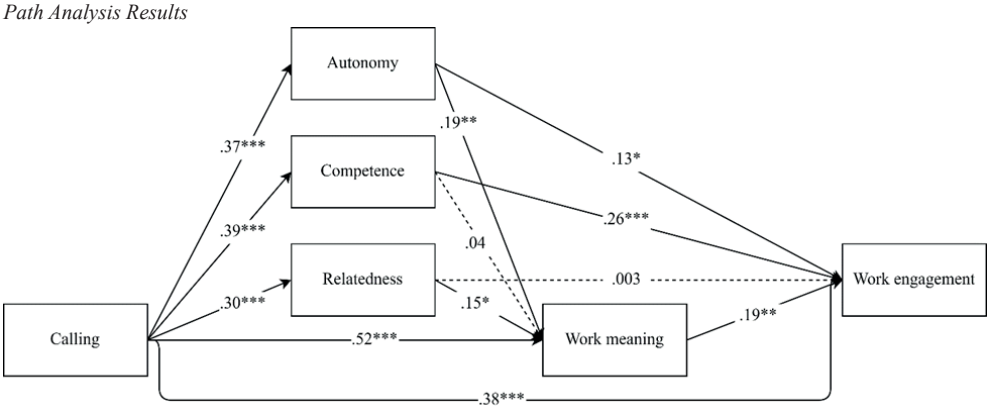
**$p < .01$

H1 stated that the relationship between calling and work engagement will be mediated by satisfaction of (a) autonomy, (b) competence, and (c) relatedness needs. The results of path analysis showed that calling significantly predicted satisfaction of autonomy, $\beta = .37$, $p < .001$, competence $\beta = .39$, $p < .001$, and relatedness needs $\beta = .30$, $p < .001$, and work engagement, $\beta = .38$, $p < .001$. Work engagement was significantly predicted by satisfaction of autonomy, $\beta = .13$ $p = .02$, and competence $\beta = .26$ $p < .001$, but not by relatedness needs, $\beta = .003$, $p = .96$. The mediation analyses showed that satisfaction of autonomy ($B = .04$, $SE = .02$, 95%CI [.01, .08]) and competence (b = .09, $SE = .02$, 95%CI [.05, .14]) needs mediated the relationship between calling and work engagement. Overall, the results supported *H1a* and *H1b*, but not *H1c*.

H2 predicted that the relationship between calling and work engagement would be sequentially mediated by the satisfaction of needs and work meaning. The standardized estimates of path analysis were provided in Figure 2. The results showed that all rela-

tionships were significant except for the relationship between competence and work meaning (see Figure 2). The model accounted for about 60% of the variance in work engagement, 52% in work meaning, 14% in autonomy, 15% in competence, and 9% in relatedness needs satisfaction.

Figure 2
Path Analysis Results



Note. $N = 286$. The standardized values were reported. The dashed lines show non-significant paths. The covariances between the three needs satisfaction dimensions were not included in the diagram for parsimony purposes. *$p < .05$, **$p < .01$, ***$p < .001$.

The analysis results for all indirect effects are provided in Table 3. The results indicated that calling was significantly related to work engagement through sequential mediation of autonomy needs satisfaction and work meaning ($r = .013$, $SE = .007$, 95%CI [.003, .03]), and through sequential mediation of relatedness needs satisfaction and work meaning (b = .008, $SE = .004$, 95%CI [.002, .02]). These results provided partial support for *H2*, as the sequential mediation through autonomy and relatedness needs satisfaction was confirmed, but not the sequential mediation through competence needs satisfaction.

Table 3
The Indirect Effect Estimates with 1,000 Bootstrap Resamples

Path	*B*	*SE*	95% CI
DV: Work meaning			
Calling → Autonomy → Work meaning	.06	.02	[.02, .11]
Calling → Relatedness→ Work meaning	.04	.02	[.01, .08]
DV: Work engagement			
Calling → Autonomy → Work engagement	.04	.02	[.01, .08]
Calling → Competence → Work engagement	.09	.02	[.05, .14]
Calling → Work meaning → Work engagement	.09	.03	[.03, .17]
Autonomy → Work meaning → Work engagement	.04	.02	[.01, .09]
Relatedness → Work meaning → Work engagement	.03	.02	[.01, .08]
Calling → Autonomy → Work meaning → Work engagement	.012	.007	[.003, .03]
Calling → Relatedness → Work meaning → Work engagement	.008	.004	[.002, .02]

Note. CI: The upper and lower 2.5% confidence intervals. Coeff: coefficient, SE: standard error. $N = 286$.

Discussion

This study aimed to investigate the relationship between calling and work engagement using the self-determination theory framework. It was found that autonomy and competence needs satisfaction mediated the relationship between calling and work engagement. Moreover, the results showed that the positive relationship between calling and work engagement was sequentially mediated through autonomy and needs satisfaction–work meaning and relatedness needs satisfaction–work meaning. The results contribute to the literature by explicating the intermediary processes through which the experience of calling relates to work engagement. The theoretical and practical contributions of the findings was discussed in the following section.

Satisfaction of Needs as Mediating Processes

This research contributes to the literature by showing that competence and autonomy needs satisfaction underlie the relationship between calling and work engagement. Research revealed calling and work engagement are connected (Hirschi, 2012). Advancing this line of research, this study showed that satisfaction of basic needs may explain the calling–work engagement association. According to SDT, autonomy captures the feeling of psychological freedom while working. Autonomy also refers to the role of internal force in engagement in work activities, rather than external rewards and punishments (Deci & Ryan, 2000). The most important component of autonomy is acting with a sense of choice and willingness. The study findings suggest that seeing work as a calling leads to an engaged state of being about one's work through positive experiences as a result of autonomy needs satisfaction. In other words, the satisfaction of autonomy

needs is required to translate the perception of calling into cognitive and emotional immersion in work. This finding is important because it highlights the contextual factors in examining calling, as suggested by Duffy and colleagues (2018).

Competency needs imply the need to feel mastery and to develop new skills (Deci & Ryan, 2000). The findings showed that the satisfaction of competency needs mediated the relationship between calling and work engagement. On the other hand, relatedness needs satisfaction did not emerge as a mediator in the model. Although the SDT conceptualized satisfaction of these three needs as a determinant of intrinsic motivation, a meta-analytical review (van den Broeck et al., 2016) concluded that there may be differences between the three needs in terms of their relationships with work variables. A study conducted in China among teachers using SDT as a theoretical background showed that autonomy and competence were related to the adoption of new teaching trends, such as flipped teaching, but relatedness did not appear as a predictor (Jiang et al., 2021). Meng (2020) also found that unlike satisfaction of relatedness needs, autonomy and competence satisfaction were positively related to the self-efficacy beliefs of Chinese teachers. This research also showed that autonomy and competence needs satisfaction were indirectly linked to job satisfaction through self-efficacy, but this did not occur for relatedness needs satisfaction. Meng's (2020) findings seem similar to the findings, indicating that relatedness may diverge from autonomy and competence among teachers. Although the separation of relatedness from other needs was contrary to the expectations, similar results were found in other studies (Klassen et al., 2012; Meng, 2020). Measurement of relatedness in two different forms was recommended (Klassen et al., 2012). Teachers' interaction involves not only colleagues but also students; therefore investigating teachers' relatedness needs satisfaction with a focus on their students may have merits. The conceptualization of teachers' relatedness in two different forms may be an avenue for future research. Satisfaction of teacher-student relatedness may mediate the relationship between calling and work engagement.

Satisfaction of Needs and Work Meaning as Sequential Mediating Processes

In this study, the relationship between calling and work engagement is sequentially mediated by the satisfaction of needs (autonomy and relatedness) and meaningful work, in line with the expectations. A recent longitudinal study demonstrated that satisfaction of social connection needs of workers is an antecedent of meaningful work (Allan et al., 2020), supporting the finding indicating that satisfaction of relatedness needs was posi-

tively related to meaningful work. The results also highlight the importance of autonomy needs satisfaction. Calling was positively related to work engagement through autonomy needs satisfaction and through the sequential mediation of autonomy needs satisfaction and work meaning. These results accord with the propositions of SDT that autonomy is the most influential of the three needs satisfaction (Gagné & Deci, 2005), and with research on meaningful work that emphasizes the importance of autonomy (Bailey et al., 2017).

Contrary to the expectations, competence needs satisfaction was not related to work meaning. However, it is important to note that the bivariate correlation between competence needs satisfaction and work meaning is significant and that the relationship becomes non-significant when the other two needs satisfaction and the calling were controlled. Although speculative, it seems plausible that, in predicting work meaning, autonomy and relatedness need satisfaction, and particularly, the calling experience, take precedence over competence needs satisfaction. A similar result was obtained from one of three samples of Martela and Riekki's (2018) study. Testing whether autonomy, competence, relatedness, and beneficence would independently predict meaningful work across Finland, the USA, and India, they found that all four needs were related to meaningful work in Finland and India, but that competence did not predict work meaning in the USA.

Even though all but two examined associations and mediated relationships were significant, calling remained a strong predictor of both work meaning and work engagement. Thus, it seems that the mediating mechanisms partly account for the relationship between calling and outcomes. Lastly, this research has a unique contribution to calling literature in Türkiye. Studies on calling mainly included healthcare workers, however, this research is among the first research on calling to the occupation of teaching.

As with any research, limitations in this research must be addressed in explaining the findings. First, the study data were collected from one source at a one-time point, raising concerns regarding common method bias, and necessitating caution in interpreting the findings as causal relationships. Even though the factor analysis of the measurement model assured the discriminant validity of the constructs, future studies can benefit from employing multiple-source and multiple time points designs. Second, the reliability scores of the autonomy and competence scales were slightly low. Even though these

scores were comparable to the reliability scores obtained in previous research (e.g., Deci et al., 2001), it remains a limitation. Third, the sample of this study consisted of teachers, which is a convenient sample given the research that teachers experience calling (e.g., Rawat & Nadavulakere, 2015; Willemse & Deacon, 2015). Nevertheless, research with different samples would allow findings to be generalized to a broader range of occupations. Lastly, a limitation and a future avenue for research is the endorsement of the needs satisfaction view in explaining the relationship between calling and work engagement, even though work on psychological needs revealed the existence of needs frustration as a distinct construct (Longo et al., 2016; Vansteenkiste & Ryan, 2013). Thus, novel findings may emerge from examining the calling and work engagement relationship with the needs frustration approach.

Some practical implications must also be mentioned. The present study provides insights for both teachers and school administrations to understand the relationship between calling and work engagement of teachers. This study also emphasized that the satisfaction of needs and work meaning continue to represent a mediating factor in the relationship between calling and work engagement. It showed the important function of autonomy and relatedness in the connection between calling and work meaning. Moreover, autonomy and competence are significant variables in the linkage between calling and work engagement. Psychological needs satisfaction is related to both work meaning and work engagement, but this study indicated differences in their effects on work meaning and work engagement. School principals are not only able to use teachers' autonomy and relatedness as resources to increase work meaning, but also to use teachers' autonomy and competence as resources to increase work engagement. School principals and teachers can employ these findings for the benefit of their organizations.

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