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Development and validation of the Multidimensional Current Control Scale

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Keywords
psychometrics, scale development, multidimensional perceived control, general current control

Abstract
The most commonly used perceived control scales focus on persistent general control beliefs or the control over personal reactions. These scales are not applicable to various adult groups and fail to represent main life domains. In addition, previous research shows that current control feelings explain health outcomes better than general control beliefs. This study aimed to develop a general current control scale based on the degree of perceived control at five main life domains, targeting various adult groups. Five main life domains (i.e., health, interpersonal relations, personal growth, economy, and societal issues) and their subsections were determined based on the perceived control literature. Five academics assessed the scale's content validity, and its feasibility was tested via a pilot study. 376 participants (281 females, mean age 30.5) completed Demographic Information Form, the Multidimensional Current Control Scale (MCCS), the Domain General Perceived Control Scale, General Self-Efficacy Scale, and Psychological Wellbeing Scale online. Results show that the scale has a good degree of factor, convergent, and criterion validity. In addition, the scale has high internal reliability (a = .89) and test-retest reliability scores (r = .69) with a two-week interval. These findings helped us develop a multidimensional current control scale targeting various adult groups with good psychometric characteristics.

Anahtar kelimeler
psikometri, ölçek geliştirme, çok boyutlu algılanan kontrol, genel mevcut kontrol

Öz

Çok Boyutlu Mevcut Kontrol Ölçeği geliştirme ve geçerlilik çalışması

Yaygın olarak kullanılan kontrol algısı ölçeklerinin, kolay kolay değişmeyen genel kontrol inançlarına ya da bireysel tepkiler üzerindeki kontrole odaklandığı görülmektedir. Bu ölçeklerin temel yaşam alanlarının tümünü temsil etmediği ve hitap ettikleri yetişkin gruplarının sınırlı olduğu tespit edilmiştir. Dahası araştırmalar, sağlıkla ilgili durumları genel kontrol inançlarından ziyade mevcut kontrol algısının daha geçerli şekilde yordadığını ortaya koymaktadır. Bu çalışmanın amacı her kesimden yetişkine hitap edecek ve yaşamın temel alanlarında algılanan mevcut kontrolü kapsayacak bir algılanan genel kontrol ölçeği geliştirebilmektir. Alanyazın temel alınarak sağlık, kişilerarası ilişkiler, kişisel gelişim, ekonomik durum ve toplumsal olaylar olmak üzere beş temel yaşam alanı ve alt maddeleri belirlenmiştir. Beş akademisyenin yardımıyla ölçeğin kapsam geçerliliği tamamlanmış, bir pilot çalışma ile ölçek ilk şeklini almıştır. Daha sonra, yaş ortalaması 30.5 olan 281'i kadın 376 gönüllü, Demografik Bilgi Formu, Çok Boyutlu Mevcut Kontrol Ölçeği (ÇBMKÖ), Alan Genel Algılanan Kontrol Ölçeği, Genel Öz Yeterlik Ölçeği ve Psikolojik İyi Oluş Ölçeğini çevrimiçi şekilde tamamlamıştır. Analiz sonuçları ölçeğin yapı, kriter ve yakınsak geçerliliklerini karşıladığını göstermektedir. Ayrıca ölçeğin Cronbach alpha değeri (= .89) ve iki hafta aralıklı test-tekrar test korelasyonu yüksek (r = .69) bulunmuştur. Bulgular birçok kesimden yetişkine uygulanabilecek iyi derecede psikometrik özelliklere sahip bir mevcut kontrol ölçeği geliştirilebilmesine imkân sağlamıştır.

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Perceived control has been an important subject of research in the study of psychological and physical well-being since the 1970s (Pagnini et al., 2016; Wallston et al., 1978). This concept refers to the belief in one's capacity to change the way events occur (Skinner, 1996; Strube et al., 2003; Thompson, 1981). High levels of perceived control are related to lower depression and anxiety, better academic and cognitive performance, better productivity and adaptation at the workplace, greater survival, lower risk for heart diseases, and higher psychological resilience during health crises or natural disasters (Chapman et al., 1990; Clements-Croome, 2006; Infurna et al., 2013; Pagnini et al., 2016; Wanberg & Banas, 2000; You et al., 2011; Zheng et al., 2020).

Perceived control is mainly assessed through locus of control (LOC) and self-control approaches. LOC is the level of control people believe they have over their lives and fate, and it is based on two general expectations: the internal and the external locus of control (ILC and ELC, respectively). People with a high ELC attribute the causes of events to external factors (e.g., luck, fate), while people with a high ILC perceive the effects of their own behaviors as the main causative event factors (Rotter, 1966). Another common way to measure perceived control is self-control assessments. This approach specifically focuses on the control of personal reactions, such as thoughts and emotions (Heatherton & Baumeister, 1996; Rezaei & Jeddi, 2020; Tangney et al., 2004). In addition to the LOC and self-control approaches, experimental studies with control manipulations have tested the effects of perceived control directly (Fisher & Johnston, 1996; Warburton et al., 2006).

We are aware of only a few studies that examined the effects of present or current perceived control. Unfortunately, even these studies only focus on specific areas, such as control over stress or recovery processes (Frazier, 2003; Frazier & Caston, 2015; Frazier et al., 2005, 2011). Thus, the goal of this study is to develop and validate a general current perceived control scale called the Multidimensional Current Control Scale (MCCS). The MCCS differs from other widely used perceived control scales in several perspectives. Notably, the MCCS concerns perceived current control unlike LOC which is based on general control beliefs. Research shows that current control predicts greater health-related outcomes beyond the effects of general control beliefs (Bennett et al., 1991; Frazier et al., 2011). Furthermore, in contrast to self-control, the MCCS addresses not only control over personal reactions, but also control over environmental factors that affect one's life.

Existing perceived control approaches have some drawbacks that the MCCS aims to overcome as well. Most pressing, previous approaches have content and external validity issues, with most perceived control scales cover a limited number of critical life areas (Lang & Heckhausen 2001; Lown, 2011; Pallant, 2000; Paulhus, 1983; Rotter, 1990; Wallston et al., 1978; Zimmerman & Zahniser, 1991). Although there have been attempts to cover specific domains into one scale such as health or intellectual functioning (Lachman & Weaver, 1998), main life domains such as personal growth and psychological health are still overlooked in the literature. It is important to assess control over main life domains that are recognized as critical for perceived control assessments such as health, interpersonal relations, personal growth, economy, and societal issues (Claassens et al., 2014; Furnham, 1986; Grob et al., 1995; Halpert & Hill, 2011; Lachman & Weaver, 1998; Lang & Heckhausen 2001; Lown, 2011; Pallant, 2000; Paulhus, 1983; Wallston et al., 1978; Zimmerman & Zahniser, 1991). Another drawback the MCCS will address is that some perceived control scales target university students only (Dağ, 1991; Rotter, 1990). The MCCS's content is structured to apply to various adult groups from elders to young adults, from academics to primary school graduates, in favor of external validity.

To sum, although extensive research exists on perceived control, it either concerns general control beliefs or personal reactions. We thus need more instruments based on current control, especially given their advantages over measures on general control beliefs. In addition, the present perceived control measures have content and external validity issues. As a result, this study can make an important contribution to the perceived control literature by developing a general current control scale that obviates these drawbacks.

Two Additional Control-Related Concepts

The literature contains a large number of studies on the psychology of control and its effects and correlates. These studies highlight two other control-related concepts: desire for control and self-efficacy. *Desire for control* is the level of control people wish to have in their lives (Burger, 1992), and *self-efficacy* refers to the belief in one's capacity to attain goals in general or in a specific area of life (Luszczynska et al., 2005; Rosenberg, 1965).

Even though desire for control and perceived control are two different concepts, they should be examined together. In other words, desire for control and perceived control have only a small correlation, and they are correlated with the same psychological variables but at different strengths (Auerbach & Pegg, 2002; Burger, 1992; Hatton et al., 1989; Irwin, 2000). Nonetheless, the interaction between desire for control and perceived control can predict various psychological states; for example, high desire for control and low perceived control are related to psychological problems such as anxiety and depression (Garant & Alain, 1995; Logan et al., 1991; Moulding & Kyrios, 2007; Wilkinson & Camove, 1992).

According to Litt (1988), "Perceived control refers to one's perception of the availability of a response,

whereas self-efficacy refers to one's confidence in the ability to effect that response" (p. 149). For Bono and Judge (2003), self-efficacy is one way of self-evaluation by which people can build their self-concept, which relates to motivation, health behaviors, psychological wellbeing, and cognitive performance (Bandura, 1993; Bandura et al., 1999; Gwaltney et al., 2009; Sadri & Robertson, 1993). Research has further shown that self-efficacy and perceived control are highly correlated (Bono & Judge, 2003; Judge et al., 2002; Leone & Burns, 2000; Luszczynska et al., 2005; Rosenberg, 1965).

Similar to the studies on desire for control and self-efficacy, perceived control has been found to be strongly related to psychological and physical wellbeing. Specifically, while levels of ELC are correlated with negative feelings and psychological disorders (Presson & Benassi, 1996; Watson, 1998), levels of ILC are correlated with psychological and physical wellbeing and high performance (Ng et al., 2006). In addition, perceived self-control was found to be related to better psychological wellbeing and performance and stronger interpersonal relationships (Heatherton & Baumeister, 1996; Rezaei & Jeddi, 2020; Tangney et al., 2004). Lastly, experimental studies with perceived control manipulations revealed similar findings. Specifically, as the level of perceived control participants reported in those experiments increased, their psychological and physical wellbeing improved (Fisher & Johnston, 1996; Warburton et al., 2006).

To summarize, each of these constructs, perceived control, desire for control and self-efficacy can be understood as distinct, while also being highly correlated (Leone & Burns; 2000). Parallel to the literature, the MCCS scale was expected to be highly correlated with general perceived control, self-efficacy, and psychological wellbeing.

Another Approach to the Perceived Control

In 1996, Skinner identified different types of control based on various dimensions including targets, sources, and consequences. Later in 2001, Frazier et al. emphasized the importance of temporal dimension as an essential predictor of health-related outcomes. They divided the construct in three as past (e.g., control over previous traumatic events), present (e.g., control over symptoms that medical patients have) and future (e.g., control over outcomes of an illness) control. Research shows that these three forms of control are differentially related with health-related outcomes (Frazier et al., 2011). Specifically, the lack of present control is correlated with worse adjustment and low levels of wellbeing (Frazier, 2003; Frazier & Caston, 2015; Frazier et al., 2005, 2011; Langer & Rodin, 1976) and it is more strongly related to physical and psychological wellbeing than general control beliefs are (Bennett et al., 1991; Frazier et al., 2011).

The MCCS aims to assess current control perceived at main life domains (i.e., health, interpersonal relations, personal growth, economy, and societal issues). Current control refers to present control feelings that can fluctuate as a result of changes in one's life (e.g., job promotions, health problems, moving from one place to another). Given the critical role of current control on wellbeing, the findings from this study can make an important contribution to the perceived control literature by developing a comprehensive scale on current control.

Age, Gender, Education and Perceived Control

Previous studies have reported that old age, female gender, and low levels of education are related to low levels of perceived control (Barrett & Buckley, 2009; Infurna et al., 2011; Mirowsky & Ross, 2007; Specht et al., 2013). Research also recognizes that unemployment, low income, and education level are prevalent among females and the elderly, which leads to low levels of perceived control among these groups (Feingold, 1994; Infurna et al., 2011; Lachman & Firth, 2004; Ross & Mirowsky, 2002). In this study, we expected that high levels of education would be related to high levels of perceived control. In terms of gender and age, the direction of correlation would depend on other characteristics of the sample such as education level.

To sum up, this research proposes a new approach to the assessments of perceived control. The purpose is to develop a reliable and valid scale on the level of current perceived control at five main life domains. This scale aims to address various adult groups and to represent all critical life areas.

METHODS

Sample

The academic ethics board of the Hacettepe University approved this research. 376 participants were recruited via snowball and convenience sampling. The sample was composed of 281 females (75%) aged between 18-65, with a mean age of 30.5 (*SD* = 11.36). Table 1 shows general characteristics of the sample.

Measures

Demographic Information Form Participants were asked to report their age, gender, and education level in the beginning of the study. Participants entered their age manually and completed multiple-choice questions to report their gender and education.

Table 1. General Characteristics of the Sample

Variables	Subcategories	*n (%)*
Gender	Female	281 (75)
	Male	95 (25)
Age (years)	18-20	110 (29)
	21-30	106 (28)
	31-40	74 (20)
	41-50	66 (18)
	50+	20 (5)
Education (degree)	high school or lower	31 (8)
	college	302 (80)
	graduate	43 (12)

The Multidimensional Current Control Scale (MCCS) This scale is aimed to measure current control level depending on five main life domains in the following order: health, interpersonal relations, personal growth, economy, and societal issues. Participants report the level of their perceived control for 23 situations on a 5-point Likert scale (0 = no control at all; 4 = complete control). One can score between 0 and 92; and higher scores indicate higher levels of perceived control.

The Domain General Perceived Control Scale This six-item scale is designed to measure perceived general control on a four-point Likert scale (1 = completely disagree; 4 = completely agree). In 2007, Eryılmaz showed that it has sufficient internal and test-retest reliability.

General Self-Efficacy Scale The revised version of Schwarzer and Jerusalem's (1995) General Self-Efficacy scale is used to assess the capacity to deal with challenges with 10 items on a four-point Likert scale (1 = not at all true; 4 = exactly true). The Turkish version of the scale has high internal and test-retest reliability scores (Aypay, 2010).

Psychological Wellbeing Scale The Psychological Wellbeing Scale includes autonomy, personal growth, positive relationships and purpose in life domains. This eight-item scale on seven-point Likert scale (1 = strongly disagree; 7 = strongly agree) was developed by Diener and her colleagues in 2009 and adapted to Turkish culture by Telef in 2013. Turkish version of the scale revealed high internal and test-retest reliability scores.

Scale Creation

To be able to determine main life domains, we examined both general control belief scales and domain specific perceived control measures in the literature. Our search revealed several domains as follows: health, work, finances, social or sociopolitical issues, politics, internal states, development, spiritual issues, mental states, interpersonal relations, and academics (Claassens et al., 2014; Dağ, 1991; Furnham, 1986; Grob et al., 1995; Halpert & Hill, 2011; Lachman & Weaver, 1998; Lang & Heckhausen, 2001; Lown, 2011; Pallant, 2000; Paulhus, 1983; Rotter, 1990; Wallston et al., 1978; Zimmerman & Zahniser, 1991). We concluded that these domains can be categorized under five main life domains: health, interpersonal relations, personal growth, economy, and societal issues. To be able to address various adult groups from unemployed people to academics, from undergraduates to elders, the domains such as school success, work, and academics were represented by the "personal growth" domain in the MCCS. Social, interpersonal, and financial aspects of work were assessed under "societal issues", "interpersonal relations", and "economics" domains, respectively. The "interpersonal relations" domain in the scale represented all possible relations, including family, friends, and others. Not only proximal but also distal relationships were included in the scale via the "interpersonal relationships" and the "societal issues" domains. In addition, the "health" domain comprised both physical and psychological health and the "societal issues" domain comprised both social and political issues. Last but not least, the MCCS aimed to examine not only control over the environment (e.g., access to health services), but also control over personal reactions (e.g., financial expenses, health behaviors).

Five scholars in social and educational sciences checked the first draft of the MCCS scale. They rated the representativeness of each life domain and their subitems on a 7-point scale (1 = definitely not representative, 7 = definitely representative). They were also asked to share their recommendations if they had any. When we analyzed their reports, we decided to make two changes. First, we added four subitems to the related domains depending on the literature and then we removed one subitem from the scale since its mean score was below 5.5 out of 7. The same scholars re-rated the revised version of the scale with five life domains and 23 items. The mean scores of all items and domains in the revised scale were above 5.5 out of 7 as expected. In this initial version of the scale, 23 items were divided into five life domains as follows: six items for the health domain; three items for the interpersonal relations domain, four items for the personal growth domain, six items for the economy domain, and four items for the societal issues domain.

Procedure

The scale was applied to 15 people with a mean age of 28 for pilot study. They volunteered to complete the scale with the paper-pencil method. They reported that the scale took less than 3 minutes on average and the items were easy to follow.

Then, 376 volunteers completed the scales online via Google forms. They first completed the Informed Consent Form which introduced the study as a two-pha-

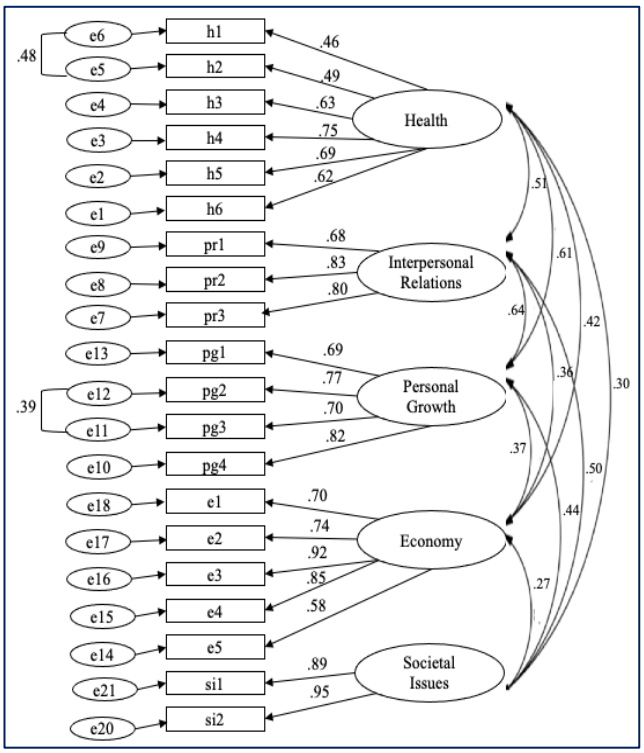

Figure 1. Final Factor Loadings Obtained from Confirmatory factor analysis (CFA) with AMOS

se research study. In the first phase, participants completed the scales each on a separate page in the same order. Two weeks after the first implementation, they were asked to complete the MCCS scale only via Google forms.

Statistical Analysis

Initially, the construct validity of the scale was tested. Specifically, SPSS was used for the exploratory factor analysis (EFA) and AMOS for the confirmatory factor analysis (CFA). While the criterion validity of the scale was analyzed via regression, t-test and one-way ANOVA; Pearson correlation analysis was used to test the convergent validity of the scale. Importantly, the internal reliability of the scale was assessed in two ways, as a one-factor scale and a five-factor-scale based on Cronbach alpha values. Lastly, Pearson correlation analysis was used to analyze the test-retest reliability of the scale.

RESULTS

Validity Analyses

Construct Validity In the EFA, Kaiser Meyer Olkin (KMO) value was .88, as expected, and Bartlett's Test of Sphericity test was significant ($\chi^2(253) = 4892.86$, $p = .005$) (Çokluk et al., 2010; Leech et al., 2005). The CFA with AMOS revealed that the initial model with 23 items and 5 factors did not fit with the data well ($\chi^2(220) = 1028.164$, $p < .001$, *GFI* = .80, *CFI* = .83, *RMSEA* = .09). Modification indices reported that two subitems from the *societal issues* domain and two subitems from the *economy* domain showed high levels of covariance, meaning that they measured almost the same tendencies. Standardized residual covariances also reported that two subitems from *societal issues* domain that have been mentioned above revealed residual covariances higher than 2.58 (for $a = .01 \pm 2.58$). As a result, two subitems from the *societal issues* and one subitem from the *economy* domain were removed from the scale.

In addition, depending on the modification indices, we added covariances between the error terms of the first two subitems of the *health* domain and between the error terms of two subitems of the *personal growth* domain. Both of these *health* subitems refer to control over getting help when necessary. Furthermore, both of those *personal growth* subitems refer to control over access to education. The analysis of the final model indicated that the model was a good fit to the data ($\chi^2(158) = 411{,}824$, $p < .001$, *GFI* = .90, *CFI* = .93, *RMSEA* = .06). As shown in Figure 1, factor loadings ranged from .46 and .75 for the health domain, .68 and .80 for the interpersonal relations domain, .69 and .82 for the personal growth domain, .58 and .92 for the economy domain, and .89 and .95 for the societal issues domain.

In the final model, the *societal issues* domain was represented by only two subitems. Even though this is not preferable, according to Worthington and Whittaker (2006), it is acceptable under some conditions. First of all, items in question should be highly intercorrelated, and they should be correlated with other items in the scale with a low ratio. These two items were highly correlated ($r = .84$) and their correlation with other items in the scale was much lower than this correlation ($r < .50$).

The exploratory factor analysis of the last version revealed that one factor explains 34% of the total variance. According to Çokluk and his colleagues (2010), 30% explained variance is sufficient for one-factor scales. Scree graph also supports one-factor approach. Table 2 shows item-factor loadings for each subitem.

Criterion Validity Linear regression analysis showed that age did not significantly predict perceived control scores ($R^2 = .01$, $\beta = .09$, $F(3, 374) = 1.95$, $p = .16$). In addition, even though women scored higher than men on the scale, the difference was not significantly different according to t-test analysis, $t(374) = 1.29$, $p = .20$. Lastly, the effect of education was tested with one-way ANOVA analysis. Results revealed that as the level of educational degree increased, the level of perceived control increased too. Table 3 represents the results of the ANOVA analysis. In short, even though age and gender were not related to the MCCS scores, education level significantly predicted the MCCS scores.

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Table 2. Factor Structure of The Multidimensional Current Control Scale (MCCS)

Domains and Their Subitems	Factor Loadings
Health	
1. Getting help for physical health problems when needed	.48
2. Getting help for psychological problems when needed	.55
3. Being able to exercise	.51
4. Being able to have a healthy diet	.57
5. Being able to sleep adequately and regularly	.52
6. Being able to protect yourself from stressful situations	.61
Interpersonal relations	
7. Being able to influence family relations	.60
8. Being able to influence friendship relations	.67
9. Being able to influence relationships with people other than family and friends	.62
Personal growth	
10. Being able to discover your talents	.63
11. Being able to receive education in the desired field	.65
12. Being able to get the quality education you want	.62
13. Being able to achieve your goals	.69
Economy	
14. Being able to have a regular income	.63
15. Being able to spend the amount you have in the direction you want	.46
16. Being able to make savings	.59
17. Being able to manage unexpected expenses	.50
18. Being able to manage the income-expenditure balance	.53
Societal issues	
19. Being able to give your opinion when there is a problem in the wide environment (e.g., city, country)	.56
20. Being able to influence events in the wide environment	.62
Eigenvalue	6.77
Explained Variance	33.86

Note. In this study, Turkish version of the scale was developed. The English version in this table was created for demonstration purposes. The scale should be used as one factor scale.

Table 3. One-Way ANOVA Results: Education Based Group Comparison in terms of the MCCS scores. *N* = 376

Group	*M (SD)*	*F*	*p*	Tukey
1	44.64 (15.44)	3.80	.02	group 1 < group 3
2	48.24 (11.98)			
3	52.51 (13.08)			

Note. Group 1: participants with high school degree or lower; group 2: college students and the ones with college degree; group 3: participants with graduate degree. Tukey: Significant group difference depending on Tukey post hoc analysis.

Convergent Validity As expected, the results of Pearson correlation analysis showed that the MCCS scores were significantly correlated with the scores of the Domain General Perceived Control Scale (r = .56; p < .001), the General Self-Efficacy Scale (r = .47; p < .001), and the Psychological Wellbeing Scale (r = .50; p < .001). Five domains of the scales were also positively correlated with these three scales. Correlation coefficients ranged from .29 and .41 for the General Self-Efficacy Scale, .28 and .46 for the Psychological Wellbeing Scale, .33 and .48 for the Domain General Perceived Control Scale (p < .001 for all). Table 4 shows the summary of the results.

Table 4. Bivariate Correlation Scores of the MCCS with Other Scales

Scale	Min-Max	*M (SD)*	Correlation with the MCCS
The Domain General Perceived Control Scale	6-24	19.18 (2.84)	.56***
General Self-Efficacy Scale	10-40	30.78 (5.88)	.47***
Psychological Wellbeing Scale	8-56	43.81 (8.80)	.50***

Note. *** $p < .001$; Min: possible minimum score, Max: possible maximum score

Reliability Analyses

Internal Reliability Internal reliability of the 20-item scale was assessed in two ways, as a one-factor scale and a five-factor-scale. For one-factor model, confirmatory factor analysis yielded a high internal reliability (a = .89) and item-total correlations ranged between .41 and .61. In terms of five-factor model, Cronbach alpha value was .79 for health domain, .85 for personal growth domain, .81 for interpersonal relations domain, .86 for economy domain, and .91 for societal issues domain of the scale. Item-total correlations ranged between .48 and .61 for health, .56 and .76 for personal growth, .60 and .70 for interpersonal relations, .53 and .82 for economy, and.84 for societal issues. According to Büyüköztürk (2010), item-total correlations should be at least .30. Therefore, it was concluded that all subitems are sufficiently distinct and internal reliability of the scale is high.

Test-Retest Reliability Scale scores for a two-week interval was significantly correlated (r = .69; $p < .001$, n = 98). In 2013, Whitley and Kite reported that test-retest correlation for a scale should be at least .50. As a result, the MCCS is a reliable scale with high test-retest and internal reliability scores.

DISCUSSION

Perceived control is mainly assessed by two approaches, which are LOC and self-control. LOC focuses on persistent general control beliefs and the LOC scales are not applicable for various adult groups. Neither the LOC nor the self-control scales can sufficiently measure control over main life domains. Even though there is a limited number of studies on the effects of current control, research shows that the level of current control feelings are better predictors for health outcomes compared to the general control beliefs. This study aimed to develop a general current control scale, which aimed to address various adult groups. Findings revealed that the MCCS with five main life domains shows good content, criterion, convergent, and construct validity. In addition, its internal and test-retest reliability was high.

One can exercise control in three ways: through decisions, cognitions, or behaviors. Decisional control refers to the degree of control one has over decisions about personal issues. Cognitive control refers to the degree of control one has over his cognitive processes such as perspective taking and concentration. Lastly, behavioral control represents the level of control one has over his behaviors that can potentially affect his current state (Esmark et al., 2016; Wallston et al., 1987). Some domains of the MCCS meet all three ways through which one can exercise control and some meet only one of them. Specifically, while "control over decisions about expenses" may represent decisional aspects, "control over health behaviors (e.g., exercise)" may represent behavioral aspects, and "control over discovery of personal skills" may represent cognitive aspects. Importantly, "control over interpersonal relationships" and "control over avoidance from stress" may comprise all three ways since one can attain their goals in these domains by changing their behaviors, decisions and/or thinking patterns.

For the last four decades, various domain specific locus of control scales have been developed (Lang & Heckhausen, 2001; Lown, 2011; Pallant, 2000; Paulhus, 1983; Wallston et al., 1978; Zimmerman & Zahniser, 1991). However, according to some researchers, LOC should be assessed as a whole tendency. Therefore, domain specific LOC measures cannot sufficiently measure LOC tendencies (Carton & Nowicki, 1994; Dağ, 2002; Peterson & Stunkard, 1992). In the same vein, the MCCS aimed to assess general control feelings based on five major life domains, but not domain specific perceived control level. Exploratory factor analysis also supported a one-factor model for the MCCS. In conclusion, the MCCS focuses on current control feelings across various life domains; however, it assesses these tendencies as a whole.

Even though currently available perceived control scales cover different life domains (Dağ, 1991; Rotter, 1990), they fail to represent all critical life areas. In addition, those scales are not applicable to various adult groups. Five major life domains in the MCCS are structured to address various adult groups. These domains were selected based on current literature, and the scholars on this area of research helped us criticize whether these domains represent main life areas and whether they were applicable to various adult groups. At the end, we used more general life domains (e.g., personal growth) instead of specific life domains (e.g., school success) in the previous scales (Rotter, 1990). Furthermore, the scale was composed of items on control over both personal reactions and environmental factors. Consequently, the external and content validity of the MCCS could be improved as compared to the

previous perceived control scales.

As it has been mentioned in the results section, the societal issues domain was represented by only two subitems. Even though this is not preferable, the analyses showed that two items satisfied the conditions that Worthington and Whittaker (2006) stated. In addition, the MCCS is not a domain specific scale, instead it measures general perceived control based on five main life domains together. Therefore, the scale should be used as one factor scale, in parallel to its main purpose.

In this study, age and gender did not predict perceived control scores. In terms of group-based criterion validity, the results seem to be inconsistent with the literature. However, the ratio of middle-aged females with a college degree or higher was high in the present sample. Since high levels of perceived control are predicted by middle age and high education (Feingold, 1994; Infurna et al., 2011; Lachman & Firth, 2004; Ross & Mirowsky, 2002; Specht et al., 2013), it can be concluded that the results of the current study were in congruence with the literature.

Conclusion and Future Directions

In conclusion, the MCCS is a comprehensive perceived control scale with good psychometric characteristics. This scale demonstrates another approach for the assessment of perceived control. Contrary to the currently available perceived control scales, it is not based on general control beliefs, but on current control feelings. In addition, it does not only focus on control over personal reactions, but also other major life domains. This 20-item perceived control scale is a practical, reliable, and valid self-report tool, which addresses various adult groups.

In this study, the scale validity and reliability were tested via self-report measures. In addition, we mainly focused concurrent validity of the scale. To develop a full picture of the MCCS's psychometric features, additional studies including other measures and focusing on predictive validity are needed.

Importantly, this study did not include the elderly aged 65 and higher. Therefore, findings cannot be generalized to this group. Before using the scale on elder people, we recommend researchers to assess the scale's reliability and validity on this group first.

In addition, the scale was developed in Turkish and the psychometric features of the scale were tested among Turkish people. Future research should be undertaken to investigate the adaptation of this scale into other languages and cultures.

Lastly, the advantages of this scale compared to other perceived control scales is beyond the aim of this study. Future studies can focus on this comparison.

DECLARATIONS

Compliance with Ethical Standards Approval was obtained from the ethics committee of Hacettepe University on June 11th, 2019 and with the decision numbered as 35853172-900. The procedures used in this study adhere to the tenets of the Declaration of Helsinki. Informed consent was obtained from all participants included in the study.

Conflicts of Interest The author(s) declare that they have no conflict of interest in this study.

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Appendix A
Çok Boyutlu Mevcut Kontrol Ölçeği

Aşağıda yaşamın çeşitli alanlarını temsil eden durumlar sıralanmıştır. Lütfen her bir durum için şu sıralar hissettiğiniz kontrol seviyesini uygun kutucuğu işaretleyerek belirtiniz.

0) hiç kontrolüm yok
1) az kontrole sahibim
2) orta derecede kontrole sahibim
3) oldukça kontrole sahibim
4) tam bir kontrole sahibim

	0	**1**	**2**	**3**	**4**
1. Gerektiğinde fiziksel rahatsızlıklar için yardım alabilme					
2. Gerektiğinde psikolojik yardım alabilme					
3. Egzersiz yapabilme					
4. Sağlıklı beslenebilme					
5. Yeterli ve düzenli uyku uyuyabilme					
6. Stresli durumlardan kendini koruyabilme					
7. Aile içi ilişkilere etki edebilme					
8. Arkadaşlık ilişkilerine etki edebilme					
9. Aile ve arkadaşlar dışındaki kişilerle olan ilişkilere etki edebilme					
10. Yeteneklerini keşfedebilme					
11. İstediği alanda eğitim alabilme					
12. İstediği kalitede eğitim alabilme					
13. Hedeflerini gerçekleştirebilme					
14. İhtiyaçlarını kendi karşılayabilme					
15. Sürekli bir gelir sağlayabilme					
16. Sahip olduğu miktarı istediği doğrultuda harcayabilme					
17. Birikim yapabilme					
18. Beklenmedik masrafları yönetebilme					
19. Gelir gider dengesini düzenli bir şekilde yönetebilme					
20. Yakın çevrede (çalıştığınız kurum, apartmanınız, mahalleniz gibi) bir sorun olduğunda görüş bildirebilme					
21. Yakın çevredeki olaylara etki edebilme					
22. Geniş çevrede (şehriniz, ülkeniz gibi) bir sorun olduğunda görüş bildirebilme					
23. Geniş çevredeki olaylara etki edebilme					
Not. Koyu yazılan maddeler (14., 20. ve 21. maddeler) ölçekten çıkarılmıştır.					