Individual Differences in Risk-Taking Preference of Undergraduate Students*

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Abstract

Risk-taking preference is an important contributor to undergraduates' decisions and behavior. This study aims to explore the associations between risk-taking preference and demographic factors and psychological traits. Undergraduates from Bogazici University (N=177, 42% female) completed questionnaires during a lab session. Risk-taking preference was measured by a well-established general risk question. The results showed that individuals who are older, male, and have higher income exhibit higher risk-taking preference. Furthermore, those with higher extraversion, agreeableness, openness and self-esteem, and with lower neuroticism and trait anxiety, had higher risk-taking preference. Gender differences among these associations and implications for students' behavior is discussed.

Keywords: Risk-taking, individual differences, personality, gender, undergraduate students
JEL Classification: D0, D81, C91, J10

Üniversite Öğrencilerinin Risk Alma Tercihinde Bireysel Farklılıklar

Özet

Risk alma tercihi lisans öğrencilerinin kararlarını ve davranışlarını önemli derecede etkiler. Bu çalışmanın amacı, risk alma tercihiyle demografik faktörlerin ve psikolojik özelliklerin arasındaki ilişkileri incelemektir. Boğaziçi Üniversitesi'nden lisans öğrencileri (*N*=177, %42 kadın) bir laboratuvar seansında ölçekler doldurmuştur. Risk alma tercihi iyi bilinen bir genel risk sorusuyla ölçülmüştür. Sonuçlara göre, daha yaşlı, erkek ve yüksek gelirli bireylerde risk alma tercihi daha yüksek çıkmıştır. Ayrıca, yüksek dışadönüklük, uyumluluk, açıklık ve benlik saygısı ve düşük duygusal denge ve sürekli kaygı da yüksek risk alma tercihiyle ilişkili bulunmuştur. Bu ilişkilerdeki cinsiyet farklılıkları ve bunların öğrencilerin davranışlarına yansımaları tartışılmıştır.

Anahtar Kelimeler: Risk alma, bireysel farklılıklar, kişilik, cinsiyet, lisans öğrencileri
JEL Sınıflandırması: D0, D81, C91, J10

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Introduction

Background

Risk-taking preference influences most of our daily decisions. However, both the varieties in its measurement and the influence of relevant individual differences render understanding individuals' risk-taking preference challenging. In order to measure risk-taking preference, various studies have been conducted utilizing different approaches, from self-reports to behavioral paradigms, and these suggest that risk-taking preference has both general and domain-specific components. While there may be domain-specific components across the behavioral tasks used, these studies have proposed that a general component exists that preserves its stability over time, particularly when risk-taking preference is measured by self-reports (Dohmen et al., 2011; Frey et al., 2017). Comparing multiple measures, Dohmen et al. (2011) suggested that the general component of risk-taking preference is best measured by asking individuals to rate their risk-taking preference (0: not at all willing to 10: very willing), calling this "the general risk question" (p. 524). Compared to behavioral tasks, Gurdal et al. (2017) demonstrated that individuals' real-life choices of risk-taking are best predicted by this general risk question. Furthermore, this type of a risk-taking preference measure was proposed to exhibit similar psychometric properties to psychological traits, such as personality traits (Mata et al., 2018). Psychological traits encompass a wide range of emotions and behaviors that are influenced both by genetic and psychosocial factors (Duman & Canli, 2010). Therefore, similar to risk-taking preference, these traits also have stable and dynamic properties and are influenced by a combination of demographic, genetic and psychosocial factors (Duman & Canli, 2010; Figner & Weber, 2011; Kuhnen & Chiao, 2009; Schildberg-Hörisch, 2018). This study investigates how the general construct of risk-taking preference is related to individual demographic factors and psychological traits in undergraduate students. Given that the period of university education as an important neurodevelopmental, psychosocial and socioeconomic transition to adulthood, together with reports of increased instances of risky behavior during this time (reviewed in Pharo et al., 2011), investigating these relationships in undergraduate populations is important for identifying risk and resilience factors contributing to their behavior and health.

Among the demographic factors, there are conflicting findings in terms of the influence of age, mostly due to the cross-sectional nature of the studies, as well as the measurement of risk-taking preference. Considering Dohmen's general risk question, Mamerow et al. (2016) reported lower risk-taking with increased age in a large sample of participants from age 18 to 90. This pattern of reduced risk-taking is replicated in studies with a wide range of age. However, in younger populations, such as in adolescents and young adults, general risk-taking increases with age and the relationship may become more complicated, with additional influences of birth cohort effects and being alone or among peers (Jianakoplos & Bernasek, 2006; Josef et al., 2016; Gardner et al., 2005). The findings are more consistent for gender, with studies reporting less risk-taking in women compared to men across different risk-taking paradigms (Byrnes et al., 1999; Croson & Gneezy, 2009; Koyluoglu et al., 2019). However, it has been found that the gender gap may differ depending on developmental period and the domain of risk-taking (Byrnes et al, 1999). Socioeconomic status (SES), measured through income, education, occupation, social status and related factors, is another important contributor to individual differences in risk-taking. Research suggests increased risk-taking with increased parameters of SES, which may be moderated by age,

stressful life experiences, and the nature of the risk-taking tasks utilized (Grable, 2000; Schurer, 2015).

Apart from demographic factors, previous research also investigated the effect of psychosocial factors on risk-taking (Demaree et al., 2008; Figner et al., 2011). While some studies investigated the role of psychosocial factors, such as social support and experiences of stressful life events, the majority of studies in the field of economics focused on the role of psychological traits. In terms of self-reported risk-taking preference, many studies indicated associations with the Big Five personality traits. Among these traits are neuroticism, extraversion, openness, agreeableness and conscientiousness (Costa & McCrae, 2008; John et al., 1991) and they are shown to be associated with different domains of risk-taking behavior in different populations (e.g. students, investors). Although higher risk-taking is commonly associated with higher extraversion and openness to experience, and with lower neuroticism, agreeableness, and conscientiousness, the findings of these studies differ by measurement of risk and demographic characteristics (i.e. age, gender, SES) of the participants (e.g. Hitay & Anbar, 2020; Kalabalik & Aren, 2018; Koyluoglu et al., 2019; Nicholson et al., 2005; Oehler & Wedlich, 2018). In addition to the Big Five personality traits, other psychological traits, such as trait anxiety, self-esteem and life satisfaction were also reported to influence risk-taking. Trait anxiety is typically associated with enhanced sensitivity to threat and risk aversion, and studies related to risk-taking have so far generally considered the role of this trait in clinical populations, such as those with generalized anxiety disorder (Charpentier et al., 2017; Giorgetta et al., 2012; but see Howlett & Paulus, 2017). Fewer studies considered the relationships between risk-taking, self-esteem, and life satisfaction, and they particularly focused on adolescents and young adults' risky behavior. For instance, higher self-esteem (Cakar & Tagay, 2017; Wild et al., 2008) and life satisfaction (MacDonald et al., 2005; Savi-Cakar et al., 2015; Valois et al., 2002) in adolescents were associated with less risky behavior. However, more studies are needed to examine whether similar associations are observed for differences in risk-taking preference and in other age groups.

Among these demographic and psychological traits influencing individual differences in risk-taking preference, an important contributor is gender, which has complex relationships with each of these factors. For instance, in terms of personality traits, women are consistently reported to show higher neuroticism, agreeableness and trait anxiety compared to men. On the other hand, men are generally reported to have higher extraversion, self-esteem and life satisfaction compared to women (e.g. Costa et al., 2001; Weisberg et al., 2011; Wild et al., 2008). Similarly, depending on the gender and social norms of a population, women's risk-taking may be influenced by different parameters of SES, such as income, education, living conditions, and occupation (Grable, 2000; Josephs et al., 1992). Therefore, while investigating the individual differences in risk-taking preference, it is important to investigate these associations separately for each gender.

Considering the literature summarized above, it is clear that risk-taking preference is influenced by demographic factors and psychological traits. It is also well-established that understanding these relationships in undergraduate populations is particularly important, due to the various developmental and life transitions they experience. Previous studies examining these associations either utilized a limited number of demographic factors and psychological traits (e.g. Big-Five personality traits only), or utilized a variety of risk-taking measures (i.e. from more dynamic ones to more stable ones). Therefore, in this study, the associations between multiple psychological traits related to risk-taking are considered together with Dohmen's general risk question. By considering the influence of gender on both psychological traits and risk-taking, and

by testing the associations separately for men and women, this study contributes to the literature on individual differences in risk-taking preference.

Aims and Hypotheses

The aim of this study is to explore the associations between self-reported risk-taking preference and demographic factors (age, gender, personal income, parental education), Big Five personality traits, trait anxiety, self-esteem and life satisfaction. For demographic factors, higher risk taking is expected with increased age and personal income, and in men. For the Big Five personality traits, it is hypothesized that higher risk-taking will be associated with higher extraversion and openness, and lower neuroticism, agreeableness and conscientiousness. Higher risk-taking is further expected with lower trait anxiety, and higher self-esteem and life satisfaction. Considering previous research, stronger correlations of risk-taking behavior with neuroticism and trait anxiety are expected in women compared to men, and with self-esteem and extraversion in men compared to women. Investigating the associations between these factors together will contribute to our understanding of the individual differences in risk-taking preference of emerging adults. The results of this initial study will also be important in guiding ongoing research on understanding individual differences across multiple risk-taking domains.

Method

Participants were 177 undergraduate students aged 18 to 29 (M_{age} = 20.62, SD_{age} = 1.80; 42% Female) from Bogazici University, Istanbul, Turkey. Participants were recruited through flyers posted on the Psychology Department's bulletin board and compensated by course credits. Demographic factors, such as age, gender, parental education and source and amount of personal income were collected by self-reports. Source of income was categorized as family, work, scholarship, and other. Amount of personal income was assessed in Turkish Liras with the following categories: 0-250, 251-500, 501-750, 751-1000, 1001-1500, 1501-2000, 2001 or higher. Bogazici University is located in a major city and admits students from different regions of Turkey, with a variety of demographic, socioeconomic and psychosocial characteristics that influence risk-taking behavior. Therefore, the participants are expected to represent the general undergraduate population in Turkey.

Risk-taking preference was measured by Dohmen's general risk question, a single-item self-report measure of general risk-taking preference: "How much are you generally willing to take risks?" It is answered from 0: Not at all to 10: Very much. This measure is shown to be a good predictor of general risk-taking preference and has been widely used in research related to psychological traits (Dohmen et al., 2011; Gurdal et al., 2017). Big Five personality traits were measured by the Big Five Inventory (BFI; Benet-Martinez & John, 1998; John et al., 1991), which is a 44-item scale with subscales of extraversion, agreeableness, conscientiousness, neuroticism, and openness. The inventory includes items such as "I see myself as someone who does a thorough job" and "I see myself as someone who gets nervous easily," rated from 1: Disagree strongly to 5: Agree strongly. For the extraversion and neuroticism subscales, the scores range from 8 to 40. For openness subscale, they range from 10 to 50, and for the remaining subscales, they range from 9 to 45. Higher scores indicate higher levels of the corresponding personality trait. The Turkish translation of the inventory is commonly used (Sümer et al., 2005). The Cronbach alpha coefficients of subscales for this study are between .70 and .82.

Self-esteem was measured from the Rosenberg Self-Esteem Scale, which consists of 5 positively and 5 negatively phrased items rated from 0: Very wrong to 3: Very right (Rosenberg, 1965). Total scores change from 0 to 30 and higher scores indicate higher self-esteem. The Turkish translation is commonly used in undergraduate populations and is reliable and valid (Çuhadaroğlu, 1986). The Cronbach alpha coefficient for this study is .88.

Life satisfaction was measured by the Satisfaction with Life Scale (Diener et al., 1985), which consists of 5 items like "In most ways my life is close to my ideal," rated from 1: Strongly disagree to 7: Strongly agree. Total scores range from 5 to 35 with higher scores indicating higher life satisfaction. The Turkish translation is commonly used in undergraduate populations and has good psychometric properties (Durak et al., 2010). The Cronbach alpha coefficient for this study is .83.

Trait anxiety was measured by the State Trait Anxiety Inventory X (STAI-X) - Trait form (Spielberger et al., 1970), which is a 20-item inventory that assesses trait anxiety symptoms, such as "I feel secure" and "I avoid to be in difficult situations". Items are rated on a 4-point Likert scale from 1: Almost never to 4: Almost always. Total scores range from 20 to 80 and higher scores indicate higher trait anxiety. The Turkish version is commonly used as a trait anxiety measure and has good psychometric properties (Öner & Le Compte, 1985). The Cronbach alpha coefficient for this study is .90.

The study was part of a larger study and all procedures were approved by the Bogazici University Human Research Ethics Committee. Participants were invited to a computer lab where they were informed about the study. They provided oral and written consents. Afterwards, they completed the questionnaires. Following the end of the sessions, debriefing forms were emailed to all participants.

All data analysis was conducted in SPSS version 25. Participants' characteristics were indicated as means, frequencies, and percentages. Gender differences were tested by *t*-test or chi-square analyses. The relationships between risk-taking and demographic and psychological traits were investigated by *t*-tests and Pearson correlations. The power analysis indicated that for a small effect, 177 participants provided 85% power. For all analyses, alpha is taken as 0.05.

Results

Participants' demographic characteristics, such as gender, parental education and source and amount of personal income, are shown in Table 1. As seen from the frequency distribution of the demographic characteristics, there is variety among the participants' socioeconomic characteristics. Participants' fathers were significantly more educated than their mothers ($p < .05$). The most frequent source of personal income was from family and scholarship and was between 501-750 TL. There were no significant differences in age, maternal and paternal education by gender. For women, income from family was significantly more common than men ($p < .05$). Women also had lower personal income than men, such that having 251-500 TL income was significantly more frequent and having 1001 and higher income was significantly less frequent than men ($p < .05$). Personal income was significantly correlated with both paternal ($r = .31$, $p < .001$) and maternal ($r = .28$, $p < .001$) education, similarly for men and women.

Table 1 *Demographic characteristics of participants*

Demographics	*n*	*%*
Gender	177	
Women	74	% 41.8
Men	103	% 58.2
Maternal education	177	
Primary school or lower	49	% 27.7
Middle to high school	64	% 36.1
Undergraduate or higher	64	% 36.2
Paternal education	177	
Primary school or lower	16	% 9
Middle to high school	61	% 34.5
Undergraduate or higher	100	% 56.5
Source of personal income	177	
Family	59	% 33.3
Scholarship	17	% 9.6
Work	1	% 0.6
Family and scholarship	65	% 36.7
Family and work	11	% 6.2
Scholarship and work	9	% 5.1
Family, scholarship and work	15	% 8.5
Personal income[a]	174	
0-250	9	% 5.2
251-500	33	% 19
501-750	41	% 23.6
751-1000	32	% 18.4
1001-1500	30	% 17.2
1501-2000	17	% 9.8
2001 and higher	12	% 6.9

Note. [a] Personal income is shown in Turkish Lira.

Table 2 *Descriptive statistics of participants' risk-taking preference and psychological traits by gender*

Characteristic	Women			Men			
	M	*SD*	*Range*	*M*	*SD*	*Range*	*p*
Risk-taking preference	4.88	2.16	0-10	5.76	1.97	0-10	**
BFI Personality traits[a]							
Extraversion	24.82	5.12	11-39	25.07	5.92	8-38	
Aggreeableness	31.50	4.21	23-42	30.41	5.27	15-45	
Conscientiousness	31.19	4.93	18-45	30.71	5.71	17-43	
Neuroticism	25.59	4.71	15-37	22.97	6.59	9-36	**
Openness	37.36	5.72	20-49	37.86	6.39	21-50	
Life satisfaction[b]	22.77	5.22	5-31	22.42	6.05	7-31	
Self-esteem[c]	19.04	4.41	10-29	19.85	5.60	5-30	
Trait anxiety[d]	47.53	7.78	32-69	43.34	8.94	25-66	***

Note. [a] Big Five Inventory, [b] Satisfaction with Life Scale, [c] Rosenberg Self-Esteem Scale, [d] State-Trait Anxiety Inventory-X Trait Form. $^{**}p < .01$, $^{***}p < .001$

Participants' descriptive statistics for risk-taking preference and psychological traits by gender are summarized in Table 2. For all measures, there were participants covering the range of the scales. As hypothesized, women reported significantly lower risk-taking preference than men ($t(175) = 2.81$, $p < .01$). Women also reported significantly higher neuroticism ($t(175) = -3.09$, $p < .01$) and trait anxiety ($t(175) = -3.24$, $p < .001$) than men.

The correlations between risk-taking preference and psychological trait measures are summarized in Table 3. Among the Big Five personality traits, extraversion was significantly and negatively correlated with neuroticism and positively correlated with openness. Conscientiousness was significantly and negatively correlated with neuroticism and positively correlated at a trend level with agreeableness. In addition to these personality traits, there were significant correlations considering the measures of life satisfaction, self-esteem, and trait anxiety. As life satisfaction increased, self-esteem, extraversion, agreeableness, and conscientiousness significantly increased, whereas neuroticism and trait anxiety significantly decreased. Self-esteem significantly and positively correlated with extraversion, conscientiousness, and life satisfaction, and negatively correlated with neuroticism and trait anxiety. Trait anxiety was significantly and positively correlated with neuroticism, and negatively correlated with extraversion, life satisfaction, and self-esteem. As the personal income of participants increased, extraversion ($r = .15$, $p < .05$), openness ($r = .19$, $p < .05$), and self-esteem ($r = .26$, $p < .001$) increased, while neuroticism ($r = -.16$, $p < .05$) and trait anxiety ($r = -.23$, $p < .01$) decreased. Age was not significantly associated with any of the psychological traits.

Table 3 *Correlations between risk-taking preference and psychological traits*

Variable	1	2	3	4	5	6	7	8	9
1.Risk-taking preference	—								
2. Extraversion	.32***	—							
3. Agreeableness	.18*	.12	—						
4. Conscientiousness	-.06	.12	.13†	—					
5. Neuroticism	-.18*	-.24**	-.12	-.20**	—				
6. Openness	.20**	.21**	.06	.01	.12	—			
7. Life satisfaction	.09	.20**	.19*	.25***	-.20**	-.07	—		
8. Self-esteem	.28***	.27***	.08	.27***	-.42***	.07	.51***	—	
9. Trait anxiety	-.30***	-.29***	-.10	-.05	.69***	.04	-.40***	-.64***	—

Note. †$p < .1$, *$p < .05$, **$p < .01$, ***$p < .001$.

When associations with risk-taking preference were investigated, risk-taking was shown to be significantly correlated with multiple demographic factors and psychological traits (Table 3). As age increased, risk-taking significantly increased ($r = .17$, $p < .05$), primarily driven by women ($r = .23$, $p < .05$) but not men ($r = .14$, $p > .05$). However, when scatterplots were observed, it was seen that the 29-year old male participant as an outlier for age may influence this association. Without this participant, men also showed a significant correlation with age ($r = .23$, $p < .05$). Personal income was significantly and positively correlated with risk-taking preference ($r = .18$, $p < .05$), suggesting higher risk-taking preference with higher personal income. Parental education was not significantly associated with risk-taking.

Risk-taking preference was significantly increased by higher extraversion ($r = .32$, $p < .001$), agreeableness ($r = .18$, $p < .05$), openness ($r = .20$, $p < .01$), and self-esteem ($r = .28$, $p <$

.001). On the other hand, it was significantly decreased with higher neuroticism (r = -.18, p < .05) and trait anxiety (r = -.30, p < .001).

When the correlations were investigated by gender, there were some significant differences among men and women (Table 4). The relationship of conscientiousness (r = -.35, p < .01) and neuroticism (r = -.27, p < .05) with risk-taking was only significant for women, but not for men (rs < .1, p > .05). For trait anxiety, women exhibited a stronger correlation with risk-taking preference (r = -.31, p < .01) than men (r = -.24, p < .05). In contrast, the relationship of openness (r = .27, p < .01), agreeableness (r = .22, p < .05), self-esteem (r = .35, p < .001) and life satisfaction (r = .24, p < .05) with risk-taking was only significant for men, but not for women (p > .05). For extraversion (r = .36, p < .001), men had a stronger correlation with risk-taking preference than women (r = .27, p < .05).

Table 4 *Correlations between risk-taking preference and psychological traits by gender*

	Women	Men	Total
Variable			
1. Risk-taking preference	—	—	—
2. Extraversion	.27*	.36***	.32***
3. Agreeableness	.19	.22*	.18*
4. Conscientiousness	-.35**	.14	-.06
5. Neuroticism	-.27*	-.08	-.18*
6. Openness	.09	.27**	.20**
7. Life satisfaction	-.10	.24*	.09
8. Self-esteem	.15	.35***	.28***
9. Trait anxiety	-.31**	-.24*	-.30***

Note. †p < .1, *p < .05, **p < .01, ***p < .001.

Discussion

The study results identified modest but significant relationships between risk-taking preference, demographic factors, and psychological traits in emerging adults. As expected, men exhibited higher risk-taking preference, and as age and personal income increased, risk-taking preference increased. These findings are in line with previous research (e.g. Schurer, 2015), including those from Turkey (reviewed in Ones, 2019; Gurdal et al., 2017; Ozkan & Oztemel, 2018). The gender difference is attributed to many theories in the field; one theory, for example, speculates that whereas men view risk as a challenge to overcome, women view it more as a threat (Croson & Gneezy, 2009). In terms of age, the findings suggest increased risk-taking with increased age, similar to previously reported findings for young adults (Josef et al., 2016). This increased risk-taking by age may also be related to personal income as supported by positive associations between the two. Similarly, while parental education was not associated with risk-taking, it was positively associated with personal income, suggesting a potential influence on risk-taking together with personal income (Grable, 2000). These results suggest higher risk-taking preference in undergraduates who are males, older, and have higher personal income.

In terms of the relationships between risk-taking and psychological traits, there were weak to moderate but significant associations, some of which varied by gender. Among the Big Five

traits, higher risk-taking preference was associated with higher extraversion and openness and lower neuroticism as expected. These findings are in line with previous studies reporting associations with risk-taking preference, risk tolerance and investment decisions (Hitay & Anbar, 2020; Josef et al., 2016; Koyluoglu et al., 2019; Nicholson et al., 2005; Oehler et al., 2018; Pan & Statman, 2013; Pinjisakikool, 2017) but conflict with others (Filbeck et al., 2005; Prinz et al., 2014). Extraversion and neuroticism showed stronger correlations with risk-taking in men and women, respectively. Agreeableness was weakly but positively associated with risk-taking, driven mostly by men, a finding opposed to our hypothesis but in line with other studies, that suggest its relevance to thrill seeking behavior in early age (Koyluoglu et al., 2019; Prinz et al., 2014). On the other hand, higher conscientiousness was associated with lower risk-taking in women but not in men (Baffour et al., 2018). Risk-taking preference also increased as self-esteem increased and trait anxiety decreased, confirming our hypothesis and supporting previous research (Giorgetta et al., 2012; Khosravi et al., 2016). However, life satisfaction and risk-taking were significantly related only in men. The influence of self-esteem was stronger for men, while trait anxiety was stronger for women, supporting studies investigating gender differences in risky behavior in relation to self-esteem (Rosenthal et al., 1991; Tian et al., 2019). These differences may be particularly important for establishing gender roles and social influences, especially in countries like Turkey (Ongen, 2007). On the contrary, trait anxiety was both higher in women and more strongly associated with risk-taking in women than men, in line with studies reporting gender differences in relation to trait anxiety and decision-making (de Visser et al., 2010). These results indicate that risk-taking behavior is significantly influenced by demographic factors and psychological traits, reflecting the importance of genetic and psychosocial factors on behavior. Furthermore, considering the assessment of risk-taking by a single self-report question, this study also supports the validity of the use of this assessment in research as an efficient measure (Dohmen et al., 2011; Gurdal et al., 2017).

Some of the associations of demographic factors and psychological traits with risk-taking were stronger than others and differed by gender, such as neuroticism and anxiety (Gambetti & Giusberti, 2012; Soane & Chmiel, 2005). These are also traits that exhibit higher heritability and prominent gender differences that further influence intermediate phenotypes (*endophenotypes*) of risk-taking, such as changes in neural pathways related to fear, anxiety and decision-making (Huo et al., 2020; Studer et al., 2013; Visser et al., 2010). Therefore, future studies investigating these associations may benefit from taking these kinds of endophenotypes into account through brain imaging and other physiological measures. This would also allow us to test the effects of individuals' physiology on risk-taking. For instance, an increasing number of studies suggest that the physiological state of individuals, such as the activation of stress response systems (e.g. cortisol hormone levels), dynamically influence risk-taking behavior (Kandasamy et al., 2014; van den Bos et al., 2014). Further investigating these endophenotypes would thus improve both our understanding of the underlying biological processes related to risk-taking and their influences on it.

Considering the findings of this study, future studies would benefit from considering gender and psychological traits while measuring risk-taking. However, our findings are based on a single general risk question in a limited number of emerging adults. Although the validity of this item is well-established in the literature (Dohmen et al., 2011) and in Turkey in particular (Gurdal et al., 2017), including a combination of self-report and behavioral risk-taking in a larger population would allow us to understand the contribution of individual differences to varying domains of risk-taking (Dohmen et al., 2011; Nicholson et al., 2005). Previous studies have shown

that self-report measures of risk preference, such as the general risk question used in this study, reliably represent the stable component of risk preference and possess similarities with the constructs of psychological traits (Dohmen et al., 2011; Frey et al., 2017; Gurdal et al., 2017). However, focusing on this general and more stable component limits our ability to capture the more dynamic components of risk-taking. For instance, considering previous research, there is evidence that responses to self-reports and behavioral paradigms may differ, as well as the stability of these responses over time. Furthermore, depending on the characteristics and outcomes of paradigms, individuals' risk preference may change. In particular, multiple studies over time emphasized that factors such as the amount of incentives, whether the situation is real or hypothetical, the variability of risk, the consequences of the outcome, and the conditions under which the assessment is performed may influence risk preference (Dohmen et al., 2011; Holt & Laury, 2002; Mata et al., 2018; Schildberg-Horisch, 2018). Therefore, future studies investigating the relation of risk preference to demographic factors and psychological traits would benefit from using paradigms that address these characteristics. In terms of the participant population, while Bogazici University is broadly representative of the undergraduate population in Turkey, considering its location and high rank among universities in Turkey, it may also have students with different psychological traits and risk exposure. Therefore, testing the same effects in emerging adult populations across different universities in Turkey would mitigate this possibly distorting effect. Due to the known genetic influences on psychological traits, considering genetic factors related to risk-taking (Kuhnen & Chiao, 2009), such as those of dopaminergic and serotonergic systems, would also complement the results of this study. Finally, several studies on risk-taking suggest the importance of contextual and social factors on individuals' preferences. For instance, the risk-taking behavior of individuals changes when they are in groups, as well as during active risk-taking situations (e.g. gambling, investing) (Bourgheas et al., 2013; Ozorio & Fong, 2004). In this study, the participants' risk-taking preference was measured during a computer lab session. By conducting the sessions in the same setting, we controlled for some contextual influences. However, findings from studies that investigate risk-taking in different contexts (e.g. during the COVID-19 pandemic) and in real life situations (e.g. Gurdal et al., 2017) would enhance our understanding of changes in risk-taking preference.

This study is important in demonstrating the individual demographic and psychological trait differences related to general risk-taking preference in undergraduate students. Considering the associations between risky behavior and mental health (Hallfors et al., 2005; Mishra et al., 2010; Waller et al., 2006), the results contribute to identifying moderating factors (e.g. gender, personality) that influence these associations. This would allow both identifying populations at risk for mental health problems, as well as develop prevention and intervention programs.

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