

Evaluating the Relationships among the Sociodemographic Variables and Gender Perceptions of Undergraduate Students in Turkey: A Meta-Analysis Study

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Abstract: This study seeks to examine gender perceptions in Turkey. After completing a literature review, the research compiles and analyzes academic studies on Turkish undergraduate students and their gender perceptions. Of the 763 studies included in the literature review, 15 were included in the meta-analysis. The study uses Comprehensive Meta-Analysis (CMA) Software (Biostat Inc, 2021) for the analysis and has concluded four different sociodemographic variables to be suitable for the meta-analysis. The variables used are undergraduates' (1) gender, (2) school year, (3) mother's education, and (4) father's education. The paper presents the findings for each variable separately. The results show gender assigned at birth to have the biggest effect on undergraduate students' gender perceptions, mother's education to have a small effect, and father's education to have no effect. The most striking and notable result from the meta-analysis is the lack of difference between the gender perceptions of freshman and senior undergraduate students.

Keywords: Turkey, gender perceptions, undergraduate students, meta-analysis, sociodemographic variables.

Öz: Bu çalışmanın temel amacı Türkiye'deki lisans öğrencilerinin toplumsal cinsiyet algısını belirlemek üzere gerçekleştirilen çalışmaların bir araya toplanarak incelenmesidir. Bu çalışmada meta analiz yöntemi kullanılmıştır. Literatür taramasında toplam 763 çalışmaya ulaşılmış olup sadece 15 çalışma meta analize dâhil edilmiştir. Çalışmanın analizleri Comprehensive Meta Analysis (CMA) yazılımı ile gerçekleştirilmiştir. Verilerin analizinde sadece dört farklı sosyodemografik değişkenin meta analize tabi tutulabileceği anlaşılmıştır. Buna göre lisans öğrencilerine ait (1) cinsiyet, (2) sınıf, (3) anne eğitim düzey ve (4) baba eğitim düzeyi değişkenleri arasında bir meta analiz yapılabilmektedir. Bulgular her bir değişken özelinde paylaşılmıştır. Meta analiz sonuçlarına göre cinsiyetin toplumsal cinsiyet algısı üzerinde geniş düzeyde bir etkiye sahip olduğu anlaşılmaktadır. Buna karşın annenin eğitim düzeyi küçük düzeyde bir etkiye sahipken, babanın eğitim düzeyi ise herhangi bir etkiye sahip değildir. Bu araştırmanın en dikkat çekici ve üzerinde durulması gereken sonucu birinci sınıfta bulunan lisans öğrencileri ile son sınıfta bulunan lisans öğrencilerinin toplumsal cinsiyet algıları arasında herhangi bir farkın bulunmuyor olmasıdır.

Anahtar Kelimeler: Türkiye, toplumsal cinsiyet, lisans öğrencileri, meta analiz, sosyodemografik değişkenler.

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Introduction

Almost everyone has a perception of gender, whether they are aware of it or not. Different claims are found about when and by whom the concept of gender was first used. According to common acceptance, the concept of gender was first used by Robert Stoller in the book *Sex and Gender* published in 1968 (Young-Bruehl, 1996; Green, 2010). Various definitions of gender can be seen these days. One of the most common belongs to Connell (1995), who has done important work in the process of theorizing gender. According to him, gender can be defined as the ways in which the reproductive arena is organized and practiced at all levels of social organization, from identities to symbolic rituals (Schippers, 2007). Therefore, gender refers to a feature of collectivities, institutions, and historical processes (Connell, 2013). Connell (2013) has claimed theories on gender to be inventions originating from the Western modern industrial society.

At a time when consumer society tries to standardize people without discriminating between male and female, gender discussions have become increasingly important. The pressure of this consumption system, which sees individuals as a singular and standard consumption tool, is more prevalent in developed and developing countries. However, this system's structure reinforces gender inequality. In Turkish society, which had been governed by a patriarchal and monarchical system until the 20th century, eliminating the inequalities between men and women was attempted within the democratic structure fabricated through the establishment of the Republic. Despite having first gained the right to be elected in the 1930s (Ertan & Aykaç, 2019), the number of women represented in the Turkish parliament is still very small compared to men (Akdal & Sezer, 2020). This representative inequality in Parliament is also encountered in almost every area of society. As in many countries of the world, women in Turkey are generally considered to have secondary status (Yılmaz Şahin, 2020; Erikli, 2020, Tekkas, Kerman, & Betrus, 2020). However, as efforts have increased to address and ensure gender equality in Turkey, various academic studies have been conducted in social, cultural, and political fields of study (Uluğ et al., 2020; Cin et al., 2020). Despite these efforts, Turkey is currently experiencing an intense period of violence against women. Many discussions seen to have occurred on domestic violence, femicide, and gender inequality in the Istanbul Convention. Determining both people's gender perceptions and the factors that affect their perceptions has great importance among all these discussions. In a post-truth (Keyes, 2019) or post-normal (Sardar, 2019) era where perceptions build reality, determining the factors affecting people's gender perceptions can contribute to the construction of

a more equal and fair social structure free of violence, hatred, and discrimination. Gender perceptions are the cultural transferences made in the socialization process that starts in the family and continues throughout life (Scott, 2007). Therefore, institutions that are effective in the socialization process play an important role in preventing gender-based discriminations and inequalities. Educational institutions are also said to have important functions in this regard (Kurtdaş & Tuncer, 2020).

The main objective of this study is to collectively analyze academic studies conducted on determining the gender perceptions of undergraduate students in Turkey. Thus, this study investigates the effects and levels of the sociodemographic factors that cause gender equality and inequality. This study focuses on a younger population for the target groups because, according to social learning theory and cultural views, gender perceptions begin to take shape in childhood and become permanent with the identity formed in adolescence (Rudman & Glick, 2008). Working with undergraduate students as the target group additionally makes sense because the educated young population are believed will shape the future of the country. In reviewing the literature on the subject, many studies have been conducted about gender perceptions of undergraduate students in Turkey; however, these studies have not been analyzed through a meta-analysis. This determination reveals the originality of the current study.

Literature Review

Gender studies have become increasingly common since the 1970s (Naples, 2020). Having gender studies focused on women and men allows for a more comprehensive analysis of social perceptions toward women. An increase in gender studies has also occurred in Turkey (Demirhan & Çakır-Demirhan, 2015; Yamak et al., 2016; Ozbay & Soybakis, 2020; Özdin & Bayrak Özdin, 2020). A query done in Google Scholar (2020) with gender as the keyword returned 46 studies for 2000, 650 for 2010, 1,570 for 2015, and 2,940 for 2019. These studies discuss gender through different perspectives such as gender equality (Zand & Apaydin, 2015), gender inequality (Elveren, 2018), gender roles (Caner et al., 2016; Elgün & Alemdar, 2017), gender policies (Alniçak et al., 2017; Cindoglu & Unal, 2017), gender stereotypes (Kasa & Şahan, 2016), gender effects (İpek et al., 2015) and gender perceptions (Altuntaş & Altınova, 2015; Esen et al., 2018).

This study focuses on the relationship between the gender perceptions and the sociodemographic characteristics of undergraduate students in Turkey. The literature review identified undergraduate students' perceptions of gender to have been

considered in relation to various variables. Accordingly, Özpulat (2017) examined the relationship between undergraduate students' perceptions of gender and their tendency to commit violence. Esen et al. (2017) addressed undergraduate students' gender perceptions with respect to gender roles and the variable of gender. Altuntaş and Altınova's (2015) research examined the relationship between undergraduate students' gender perceptions and socioeconomic variables. Selçuk et al. (2018) investigated undergraduate students' attitudes toward violence on dates and the relationship between gender perceptions and exposure to violence. The study Kaygın and Şimşek (2020) conducted at Kafkas University investigated the relationship between under graduates' gender perceptions and entrepreneurial intentions. In another study, Gönenç et al. (2018) examined the effect a gender course had on undergraduate students' perceptions of gender. Studies have also involved students in social studies teaching departments (Kurtdaş & Tuncer, 2020) and medical faculties (Varol et al., 2016), as well as university students from other departments and faculties (Kahraman Yüce et al., 2015).

As can be understood from these studies, many have been conducted in Turkey related to undergraduate students' gender perceptions. However, none of these have involved a meta-analysis of gender perceptions. The criteria for the studies to be included in the meta-analysis in this study are presented in detail in the following section.

Method

This study used the meta-analysis methodology, which has been widely used in recent years in quantitative research. This methodology is often used to combine the findings from previous studies conducted on the same subject but at different times and locations. Meta-analyses aim to reveal facts about the subject and reach the most reliable facts quantitatively by increasing the number of samples (Ipek et al., 2015). Meta-analyses are a quantitative method that synthesizes empirical research results in the form of effect sizes (Card, 2015). Although meta-analyses are defined as an analytical technique used to combine, compare, and summarize the results from many different studies, it is also a research method. In the meta-analysis methodology, researchers do not collect data from the field. Instead, they synthesize and reinterpret the findings from accumulated studies using values such as the correlation coefficients and effect sizes from the reports of previous independent studies (Gürbüz & Şahin, 2018, p. 393). The present study utilizes the databases and search engines from Google Scholar, Dergipark (management system for Turkish journals), Turkey's Council of Higher Education Thesis Center,

EBSCOhost Research Platform, and Web of Science databases to determine the studies to be included in the meta-analysis. The database search utilized gender perception and undergraduate students as the keywords. A total of 763 studies in Turkey regarding gender perceptions were accessed.

Inclusion Criteria for Selecting the Studies

Only 15 of the 763 studies the literature review returned have been included in the meta-analysis. Of these studies, 12 are articles published in peer-reviewed journals, and three are master's theses. In order to meet the criteria for the study selection, the studies must have:

- (1) been conducted in Turkey,
- (2) investigated gender,
- (3) consisted of undergraduate students,
- (4) used the Perception of Gender Scale developed in Turkey by Altınova and Duyan (2013),
- (5) included at least one of the following variables in addition to gender: university department, school year/age, family structure, family income, education level of mother/father and place of residence as well as the mean (M) and standard deviation (SD) for the scores from the scale.

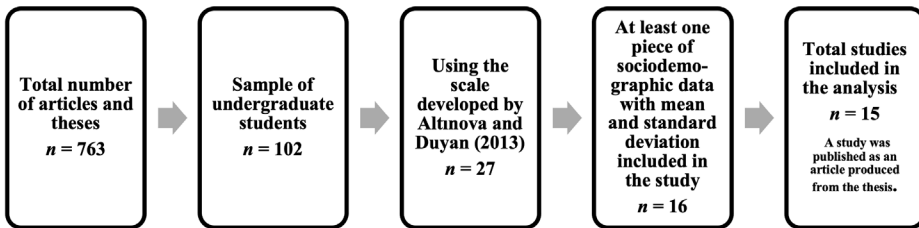


Figure 1. Flow chart for the study selection process.

Study Coding

The coding process was started once the eligible studies were retrieved. In this process, the researcher developed an Excel spreadsheet using studies in the literature (Brown, Upchurch, & Acton, 2003; Card, 2015). This spreadsheet contains: (1) study identification information, (2) type of publication, (3) sample size, (4) variables in

each study, (5) the scale used, and (6) the statistical data; these were coded separately for each study. Table 1 provides detailed information about the coding process.

Table 1

Information on Studies Included in the Study

Author(s), Year	Group	<i>n</i>	<i>M</i>	<i>SD</i>	<i>d</i>	<i>g</i>
Akkoç, 2018	Females	506	99.25	18.47	1.400	0.848
	Males	206	84.49	16.28		
Balcı Akpınar et al., 2019	Females	1,589	71.87	8.13	0.406	0.567
	Males	763	76.95	9.71		
Alabaş et al., 2019	Females	1,101	101.63	15.337	0.681	0.973
	Males	1,159	85.88	17.009		
Bakır et al., 2019	Females	227	93.98	16.92	1.689	0.950
	Males	137	78.9	14.77		
Balcı Devrim, 2019	Females	128	68.85	9.30	2.184	0.342
	Males	47	72.89	13.87		
Çuhadaroğlu & Akfırat, 2017	Females	305	104.4	13.34	1.836	0.975
	Males	110	89.22	17.51		
Esen et al., 2017	Females	1,238	98.77	13.69	0.594	1.002
	Males	1,017	84.74	14.32		
Geçer et al., 2017	Females	300	89.11	15.77	1.520	1.136
	Males	190	70.62	16.77		
Korkmaz, 2020	Females	287	119.00	9.89	2.322	1.140
	Males	59	102.96	17.26		
Özpuat, 2016	Females	118	95.84	11.54	1.639	1.837
	Males	129	72.09	14.18		
Özpuat & Özvarış, 2019	Females	283	101.8	12.23	2.034	1.109
	Males	77	85.59	16.67		
Turan et al., 2017	Females	180	99.94	11.71	2.733	1.163
	Males	35	84.08	15.32		

Kul Uçtu & Karahan, 2016	Females	406	97.74	15.23	2.261	1.049
	Males	80	79.65	19.06		
Ünal et al., 2017	Females	230	101.63	14.91	1.813	1.409
	Males	100	80.4	15.23		
Üstgörül et al., 2020	Females	160	114.3	9.00	3.126	1.517
	Males	23	95.90	14.6		
Total		11,190				

M: mean SD: standard deviation d: Cohen's *d* g: Hedges' *g*

Data Analysis

The studies have been analyzed using the program Comprehensive Meta-Analysis (CMA) Software. In the case of a small sample size, Hedges' *g* is used in place of Cohen's *d*. The following ranges are used for *g* (effect-size level; Rothstein, Higgins, Borenstein, & Hedges, 2014):

$0 < |g|$ (or $|d|$) < 0.15 negligible effect

$0.15 < |g|$ (or $|d|$) < 0.40 small effect

$0.40 < |g|$ (or $|d|$) < 0.75 moderate effect

$0.75 < |g|$ (or $|d|$) < 1.10 large effect

$1.10 < |g|$ (or $|d|$) < 1.45 very large effect

$1.45 < |g|$ (or $|d|$) extreme effect

Q and *I*² statistics have been used to test homogeneity and decide which fixed effect or random model to use. The study performs the Egger test to analyze publication bias; Duval and Tweedie's trim-and-fill test is used to reveal possible missing studies and to determine the effect these studies have on the meta-analysis. Kendall's Tau-*b* test has been employed to determine the relationship between the number of studies (size) used and the effect size. Rosenthal's classical fail-safe *N* and Orwin's fail-safe *N* tests have been used to determine how many studies are needed to refute the results from the obtained effect sizes.

Findings

The data analyses have concluded only four different sociodemographic variables to be able to be subjected to the meta-analysis. Accordingly, the meta-analysis was conducted over the variables of: undergraduate students' (1) gender, (2) school year, (3) mother's education level, and (4) father's education level. The findings are presented separately for each variable.

Gender Perception Meta-Analysis Results Regarding Student Gender

The meta-analysis includes a total of 15 impact factors within the scope of comparing gender perceptions based on gender. A total sample size of 11,190 was reached with these. This includes 7,058 women and 4,132 men. The study weights included in the analysis in the random effect model (expected value $100/15 = 6.67\%$) are between 6.26% and 6.85%; they are more evenly distributed compared to the fixed effects model.

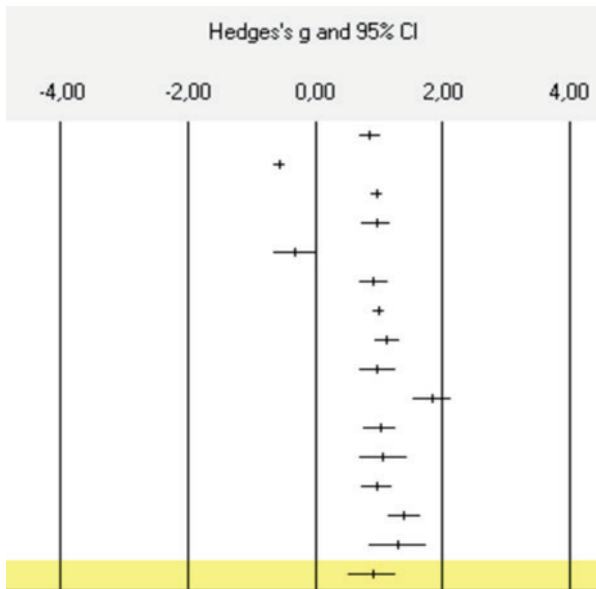


Figure 2. Effect-size chart (Hedges' g at a 95% CI).

According to the Q ($Q_{24} = 1,034.99; p < 0.01$) and I^2 ($I^2 = 98.65; I^2 > 75$) for the heterogeneity and homogeneity of the studies, a high level of variance (heterogeneity) has been found, which identifies the random effects model as the appropriate model. Based on the effect-size level obtained from this meta-analysis, the variable of gender

is found to have a large effect on gender perceptions ($g = 0.90$; $Z = 4.67$; $p < 0.05$). The effect size has been determined to vary between 0.52 (moderate effect) at its lowest and 1.28 (very large effect) at its highest at a confidence interval of 95%. According to the group averages and the Z coefficient in the research results, female undergraduate students have significantly higher gender perceptions scores than male undergraduate students.

Table 2

Results Regarding Publication Bias

Test	Symbol/ Coefficient	Obtained value	Result
Egger	Egger	5.496	p > 0.05 indicating no publication bias.
	SE	4.295	
	T	1.279	
	p	0.222	
PE ¹ / PE ²			
Duval and Tweedie's trim-and-fill test*	Point estimation	0.902 / 0.902	Observed - Adjusted = 0 indicating no publication bias.
	95% (lower limit)	0.523 / 0.523	
	95% (upper limit)	1.281 / 1.281	
D ¹ / D ²			
Kendal's Tau b test	Tau b	-0.181 / -0.171	p > 0.05 indicating the number of studies used to not impact effect size.
	Z	0.940 / 0.891	
	P	0.347 / 0.373	
Fail-safe N (Rosenthal-classic)	Z (observed)	32.015	
	p (observed)	0.0000	
	N (observed)	15	
Fail-safe N (Orwin)	N (p > 0.05)	3,988	
	g (observed)	0.651	
	g (Average g from missing studies)	0.000	

t = Comparison statistics of groups; p = significance level; Z = standardized coefficient; SE = Standard Error; PE¹ / PE² = Observed / adjusted; D¹ / D² = No correction / continuity correction; * = corrected mean (random effects)

The Duval and Tweedie trim-and-fill test shows the effect of missing potential studies in a meta-analysis. Using this test, the difference between the observed values and the corrected values shows the effect from publication bias to be 0 (Observed value-corrected value = 0). As this finding shows, the missing studies have had no effect on the meta-analysis. According to the results from Kendall's Tau-*b* test, which was performed to determine the relationship between study size (number) and effect size, the number of studies included in the meta-analysis was determined to have no impact on the effect size obtained from this study (Tau-*b* = -0.18; *Z* = 0.94; *p* > 0.05). Rosenthal and Orwin's fail-safe *N* test results have been used to determine the number of studies needed in order to refute the effect-size results obtained in the meta-analysis. These results showed 32 studies to have invalidated the effect-size results. Thus, the average effect size from the other studies assumed to be missing from the study should be 0 (*g* = 0.00). According to the publication bias test results in Table 2, the meta-analysis results obtained from the study are seen to not have publication bias.

Gender Perception Meta-Analysis results Regarding Participants' School Year

Eight studies with analyzable impact factors (i.e., Akkoç, 2018; Balcı Akpınar et al., 2019; Alabaş et al., 2019; Bakır et al., 2019; Balcı Devrim, 2019; Özpulat, 2016; Özpulat & Özvarış, 2019; Üstgörül et al., 2020) were included in the meta-analysis in order to compare the gender perceptions of undergraduate students related to their school year. The studies included in the meta-analysis contain a total of 3,944 samples, 2,840 of which are freshman and 1,104 are seniors. The weight distribution of the studies (expected value $100 / 8 = 12.5\%$) included in the analysis was determined to be unbalanced in the fixed effects and random effect models.

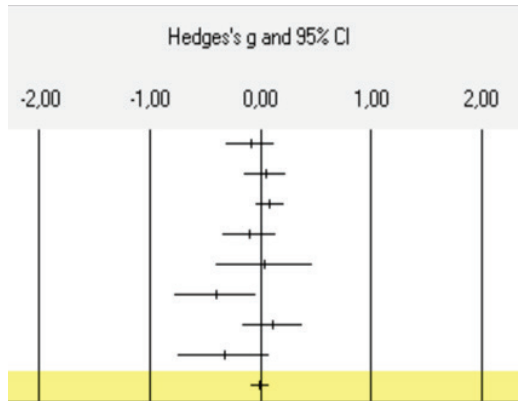


Figure 3. Effect size chart (Hedges' *g* 95% CI).

Due to the low level of variance (homogeneity) with respect to the Q ($Q_{24} = 10.91$; $p < 0.01$) and I^2 ($I^2 = 35.85$; $I^2 > 75$) tests, the fixed effects model was determined to be appropriate for use. As a result of the analysis performed using the fixed-effects model, the variable of school year was determined to have no effect on gender perceptions ($g = 0.00$; $Z = -0.02$; $p > 0.05$). The effect size at a 95% confidence interval was determined to vary between 0.04 (no effect) at its lowest and 0.00 (no effect) at its highest.

Table 3

Results Regarding Publication Bias

Test	Symbol/ Coefficient	Obtained value	Result
Egger	Egger	-2.085	$p > 0.05$ indicating no publication bias
	SE	0.910	
	T	2.290	
	P	0.062	
		PE^1 / PE^2	
Duval and Tweedie's trim-and-fill test*	Point estimation	-0.001 / -0.001	Observed - Adjusted = 0 indicating no publication bias.
	95% (lower limit)	-0.008 / -0.008	
	95% (upper limit)	0.008 / 0.008	
		D^1 / D^2	
Kendal's Tau b test	Tau-b	-0.428 / -0.393	$p > 0.05$ indicating the number of studies used to not impact effect size.
	Z	1.484 / 1.361	
	P	0.137 / 0.173	
Fail-safe N (Rosenthal-classic)	Z (observed)	-0.881	
	p (observed)	0.378	
	N (observed)	8	
	N ($p > 0.05$)	-	

t = comparison statistics of groups; p = significance level; Z = standardized coefficient; PE^1 / SE = Standard Error; PE^2 = observed/adjusted; D^1 / D^2 = no correction / continuity correction; * = corrected mean (random effects)

According to the Egger test results shown in Table 3, no effect on publication bias was found present in the studies (Egger = -2.08; $t = 2.29$; $p > 0.05$). As indicated by Duval and Tweedie's trim-and-fill test, the difference between the observed values and the corrected values has been found to be 0 (Observed value - corrected value = 0). Therefore, the missing studies have no effect on the meta-analysis. Kendall's

Tau-*b* test revealed the number of studies included in the study to have not impacted the effect size obtained from this study (Tau-*b* = -0.43; *Z* = 1.48; *p* > 0.05). Because the effect size obtained in this study is 0 (*p* > 0.05), the null hypothesis cannot be refuted. Based on the publication bias test results shown in Table 3, the meta-analysis results obtained from this study have been determined to contain publication bias.

Gender Perception Meta-Analysis Results Regarding Mother's Education Level

A total of 11 studies (i.e., Akkoç, 2018; Balcı Akpınar et al., 2019; Bakır et al., 2019; Balcı Devrim, 2019; Çuhadaroğlu & Akfırat, 2017; Geçer et al., 2017; Korkmaz, 2020; Özpulat & Özvarış, 2019; Turan et al., 2017; Kul Uçtu & Karahan, 2016; Üstgörül et al., 2020) with impact factors were used to compare gender perceptions within the scope of the meta-analysis in relation to students' mothers' education level. These studies contain 3,525 mothers who've completed their primary education and 567 with a university degree. A total of 4,092 samples were used in the analysis. The weights of the studies included in the analysis in the random-effects model were determined to be between 6.42% and 10.82% (expected value $100 / 11 = 9.09\%$) and to be more balanced than the fixed effects model.

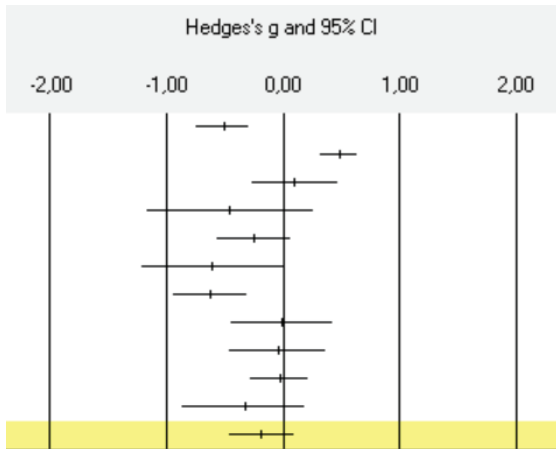


Figure 4. Effect size chart (Hedges' g at a 95% CI).

The test performed for the heterogeneity and homogeneity of the studies found a high level of variance (heterogeneity) for the Q ($Q_{24} = 79.54; p < 0.01$) and I^2 ($I^2 = 87.43; I^2 > 75$) tests. This result shows the random effects model to be appropriate for use in the meta-analysis. The effect size obtained from the meta-analysis performed using the random effects model indicate the variable of mother's education level to have a small effect ($g = -0.18$) on gender perceptions. As the analysis revealed, this effect size varied between -0.46 (large effect) at its lowest and 0.09 (very large effect) at its highest at a 95% confidence interval; however, it is not statistically significant ($Z = -1.30; p > 0.05$). After examining the group averages and d and g coefficients in the research results, the effect direction was found to be positive in two studies (Akpınar et al., 2019; Bakır et al., 2019) and to have affected the statistical significance. Thus, due to different results in the studies, while mother's education level did have a small effect on gender perceptions, it was determined to not be significant.

Table 4
Results Regarding Publication Bias

Test	Symbol/ Coefficient	Obtained value	Result
Egger	Egger	-3.546	p > 0.05 indicating no publication bias.
	SE	1.844	
	T	1.922	
	P	0.086	
PE^1 / PE^{2**}			
Duval and Tweedie's trim-and-fill test*	Point estimation	-0.183/-0.183	Observed-Adjusted =0: There is no publication bias.
	%95 (lower limit)	-0.460 / -0.460	
	%95 (upper limit)	0.093 / 0.093	
D^1/D^2			
Kendal's Tau-b test	Tau-b	-0.091 / -0.072	p > 0.05 indicating the number of studies used to not impact effect size.
	Z	0.389 / 0.311	
	P	0.697 / 0.377	
Fail-Safe N (Rosenthal-classic)	Z (observed)	-2.465	
	p (observed)	0.013	
	N (observed)	11	
	N (p > 0.05)	7.00	

	g (observed)	-0.025
Fail-Safe N (Orwin)	g (Average g from missing studies)	0.000
	g (observed)	

t = comparison statistics of groups; *p* = significance level; *Z* = standardized coefficient; *SE* = Standard Error; *PE*¹ / *PE*² = observed / adjusted; *D*¹ / *D*² = no correction / continuity correction; * = corrected mean (random effects)

After examining the Egger test results shown in Table 4, no effect was found on publication bias in the studies included in the meta-analysis (Egger = -3.55; *t* = 1.92; *p* > 0.05). The difference between the values observed in Duval and Tweedie’s trim-and-fill test and the corrected values that emerged to correct the effect of publication bias was determined to be 0 (Observed value - corrected value = 0). Therefore, the missing studies have no effect on the meta-analysis. The number of studies included in the analysis in Kendall’s Tau-b test was concluded to not impact the effect size obtained from this analysis (Tau-b = -0.09; *Z* = 0.39; *p* > 0.05). Rosenthal and Orwin’s fail-safe N test was used to determine how many studies are needed to refute the effect-size result obtained in this study. As a result, seven studies were needed to invalidate the effect-size results obtained in this study. Therefore, the average effect size from the other studies assumed not to be included in the study should be 0 (*g* = 0.00). As shown by the results in Table 4, the meta-analysis results obtained from the study have no publication bias.

Gender Perception Meta-Analysis Results Related to Father’s Education Level

Nine studies (i.e., Akkoç, 2018; Balcı Akpınar et al., 2019; Bakır et al., 2019; Balcı Devrim, 2019; Çuhadaroğlu & Akfırat, 2017; Korkmaz, 2020; Özpulat & Özvarış, 2019; Turan et al., 2017; Üstgörül et al., 2020) were found with usable effect values that were included in the meta-analysis conducted to compare the relationship between the gender perceptions of undergraduate students and the education level of their fathers. These studies show 2,235 fathers to have completed a primary education level and 1,085 fathers to have completed a university level education. A total of 3,320 fathers are included in the sample. The weights of the studies included in the analysis were determined to be between 8.65% and 13.72% in the random effect model (expected value 100 / 11 = 11.11%) and more evenly distributed than the fixed effects model.

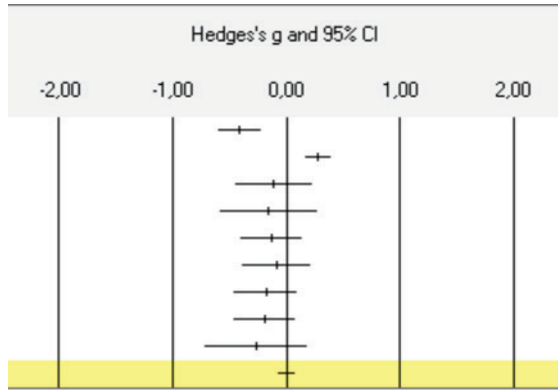


Figure 5. Effect size chart (Hedges' *g* at 95% CI).

The high level of variance (heterogeneity) found in the Q ($Q_{24} = 49.61; p < 0.01$) and I^2 ($I^2 = 83.88; I^2 > 75$) tests performed for the heterogeneity and homogeneity of the studies determined the random effects model to not be appropriate for use. As a result of the meta-analysis performed with the random effect model, the variable of father's education level was found to not impact the effect size for gender perceptions ($g = 0.13; Z = 1.20; p > 0.05$). At a 95% confidence interval, this effect size was found to vary between 0.08 (no effect) at its lowest and 0.34 (small effect) at its highest.

Table 5

Results Regarding Publication Bias

Test	Symbol/ Coefficient	Obtained value	Result
Egger	Egger	-3.472	p > 0.05 indicating no publication bias.
	SE	1.528	
	T	2.272	
	P	0.057	
PE ¹ / PE ^{2**}			
Duval and Tweedie's trim-and-fill test*	Point estimation	-0.128 / -0.128	Observed - Adjusted = 0 indicating no publication bias.
	95% (lower limit)	-0.338 / -0.338	
	95% (upper limit)	0.081 / 0.081	
D ¹ / D ²			

Kendall's Tau-b test	Tau-b	0.111 / 0.083	p > 0.05 indicating the number of studies to not impact effect size.
	Z	0.417 / 0.312	
	p	0.676 / 0.754	
Fail-Safe N (Rosenthal- classic)	Z (observed)	-1.992	
	p (observed)	0.046	
	N (observed)	9	
	N (p > 0.05)	1.00	
Fail-Safe N (Orwin)	g (observed)	0.001	
	g (Average g from missing studies)	0.000	
	g (observed)		

t = comparison statistics of groups; p = significance level; Z = standardized coefficient;

SE = Standard Error; PE^1 / PE^2 = observed / adjusted; D^1 / D^2 = no correction / continuity correction; * = corrected mean (random effects)

As indicated by the Egger test results in Table 5, no effect was found on publication bias in the studies included in the analysis (Egger = -3.47; $t = 2.27$; $p > 0.05$). The difference between the values observed in the Duval and Tweedie's trim-and-fill test and the corrected values that emerged to correct the effect of publication bias was determined to be 0 (Observed value -corrected value = 0). According to this finding, the missing studies had no effect on the meta-analysis. The results from Kendall's Tau- b test confirm that the number of studies included in the analysis do not impact the effect size obtained from the present study (Tau- $b = 0.11$; $Z = 0.42$; $p > 0.05$). Because the effect size obtained in this study is 0 ($p > 0.05$) the null hypothesis cannot be refuted. As seen in Table 5, the publication bias test results show the meta-analysis results obtained from the study to have no publication bias.

Discussion

In Turkey and many other parts of the world, human rights discriminations against women are increasing. During this time of increased gender violence, studies on gender perceptions, femicide, and sexual discrimination have gained importance (Yazıcı & Şahbaz, 2020; Doğruçan & Yıldırım, 2020). According to 2019 data (Turkish Statistical Institute, 2020), Turkey has a total population of 83,154,997. Of this population, 12,955,672 fall into the 15 to 24 year-old age group, which means youths

account for 15.6% of the total population. The fact that this age group will shape the future of the country increases the importance of youth studies. Universities are institutions tasked with educating those who will shape and impact the future. Accordingly, various research has focused on undergraduate students (educated young population) in Turkey. While these studies seek to determine an agenda that leads to change or improves aspects of life and society, they also provide data used to make predictions about the future. Thus, numerous studies have been conducted and need to continue being conducted in order to determine the gender perceptions of undergraduate students in Turkey. An examination of the studies included in this meta-analysis, shows that gender perceptions should be examined in relation to different variables.

Table 6

List of Variables

Variables	Author(s), date	Variables	Author(s), date
gender role	Esen et al., 2017; Kul Uçtu & Karahan, 2016; Ünal et al., 2017	sexual attitudes & orientation	Üstgörül et al., 2020; Bakır et al., 2019
tendency toward violence	Balcı Akpınar et al., 2019	piety & religion	Geçer et al., 2017
self-efficacy	Özpulat, 2016; Özpulat & Özvarış, 2019	respect for differences	Korkmaz, 2020
women's health and diseases	Turan et al., 2017	dating violence & abuse	Balcı Devrim, 2019
self-construal	Çuhadaroğlu & Akfırat, 2017		

These studies have shown gender perceptions to be able to greatly influence undergraduate students' acquisition of gender roles and how they perform these roles in society (Esen et al., 2017; Kul Uçtu & Karahan, 2016; Ünal et al., 2017). However, the effect of gender perceptions is not just limited to these. Undergraduate students' sexual orientations, tendencies toward violence, self-efficacy, self-constructions, and perceptions of differences are also closely related to their perceptions toward gender. On this point, the effect gender perceptions have on individuals' tendencies toward violence comes to the forefront, especially at a time when violence against women and femicide are rapidly increasing. The results of some studies have revealed that violence, like gender perception, is a phenomenon learned in a socio-cultural

and environmental context (Balcı Akpınar et al., 2019; Balcı Devrim, 2019). So, it is crucial to focus on studies on gender perception as a tool to prevent both violence against women or domestic violence and femicide.

The meta-analysis results show gender assigned at birth to have a large effect on gender perceptions. The studies in the meta-analysis show women to have greater gender perceptions than men (Esen et al., 2017; Kul Uçtu & Karahan, 2016; Ünal et al., 2017; Üstgörül et al., 2020; Bakır et al., 2019). Various studies conducted in Turkey (Aşılı, 2001; Pınar et al., 2008; Bolsoy et al., 2010; Varol et al., 2016; Direk & Irmak, 2017) and around the world (Kulik, 1999; Keith & Jacqueline, 2002; García-González et al., 2019) have found women to have greater gender perceptions than men and women to be more sensitive toward gender equality. These results reveal gender assigned at birth to be an important factor in shaping gender perceptions. Individuals are accepted into society according to the gender assigned at birth and are raised accordingly. The perceptions, thoughts, and behaviors individuals have toward gender roles are shaped from the very beginning as a continuation from what is accepted by society. Thus, the roles individuals have are shaped within their social life and societies. This shows the importance of the relationship between gender perceptions and gender roles (Uzun et al., 2017). Many studies are found to have examined the relationship between individuals' perceptions toward gender and toward gender roles (Vefikuluçay et al., 2007; Kehn & Ruthig, 2013; Caner et al., 2016). In terms of gender roles, the roles of women and men can be classified as: (1) traditional and (2) egalitarian (Boehnke, 2011). The traditional roles assigned to women are comprised of unequal duties focused more on domestic tasks than on furthering a profession or career. One example is focusing on a woman's job as being housework and taking care of children, not as pursuing professional success. Meanwhile, men are charged with the responsibility of being strong and protecting their family. In egalitarian roles, women and men share equal responsibilities in family, professional, marital, social, and educational life (Basow, 1992; Akin & Demirel, 2003; Esen et al., 2017). These roles not only shape gender perceptions but reinforce how gender roles are taught within that household, which then spills out to create societal norms.

The studies included in the meta-analysis have compared the gender perceptions of freshmen and seniors. According to the results, the variable of undergraduate students' school year has no effect on their gender perceptions. The single most striking finding that emerged from the data is that undergraduate students' university education and university life does not contribute to the development of gender

perceptions. However, studies are found in the literature that reveal a connection between education level and gender perceptions; higher education levels lead to a more egalitarian approach toward gender roles (Altuntaş & Altınova, 2015; Kodan Çetinkaya, 2013). Therefore, an increase in an individual's education level is expected to influence them to be more open-minded, objective, and free from prejudice, as well as to be less affected by the society and culture they live in (Kodan Çetinkaya, 2013). In particular, individuals who are university graduates are expected to have gained a contemporary perspective on gender roles (Yılmaz et al., 2009). As revealed in this study, however, no factor was found to affect the gender perceptions of freshman or senior undergraduate students. This result highlights the lack of programs and awareness studies on gender equality in university education. Various studies have been conducted on gender equality within the Turkish higher education system (Maya, 2013; de Lourdes Machado-Taylor & Özkanlı, 2013; Tahtalioğlu, 2016; Çobanoğlu, 2018). When examining these studies, however, gender equality is understood to generally be evaluated based on the number of female students and academicians in universities. Certainly, having an equal distribution of gender quantitatively is important in achieving gender equality. However, studies' qualitative dimensions and content are just as important as their quantitative data. These studies on gender perceptions in universities seem to have not made any qualitative contribution to undergraduate students and their gender perceptions.

Child education begins in the family. This makes parents' education very important regarding this point; as it will likely determine what kind of education the child will receive. Some studies have found parents' education levels to have a positive effect (Azhar et al., 2014) on their children's education levels and academic achievement. However, some studies have also shown the opposite effect (Gooding, 2001). Research on this subject shows inconsistent results. How do parents' education levels affect gender identity, gender roles, and gender perceptions? Do parents' education levels have an effect on their children's sexual identity, gender roles, and gender perceptions? According to the meta-analysis results, mothers' education levels were concluded to have a small effect on undergraduate students' gender perceptions. Mothers generally have a central position and a certain influence over children's cognitive development, education, and well-being (Harding et al., 2015; Jackson et al., 2017; Cui et al., 2019). However, the studies have shown mothers' education levels to have a very small effect on the development of gender perceptions. Meanwhile, the literature states mothers to have a direct impact on their children's gender roles and perceptions, especially their daughters (Booth & Amato, 1994; Jan & Janssens, 1998). However, these studies were published before 2000, so the

educational, guiding, and directing effects mothers have on children can be argued to have decreased since 2000.

Fathers' education levels show no effect on undergraduate students' gender perceptions. Some studies are found to have shown fathers' gender perceptions and roles to be effective in developing children's gender stereotypes (Güder & Ata, 2018). However, fathers' education levels were determined to have no effect on their children's gender perceptions. This conclusion may have different micro, mezzo, and macro reasons, but in terms of gender perceptions, the mezzo and macro causations may be more explanatory. Since Aristotle (1997), people have known human beings to inherently be social creatures and society to have a greater impact than the individual. Society has a very effective transformative power. With a structure such as gender that belongs to a patriarchal system and functions for the continuity of this system, individuals' perceptions are likely to be shaped through the social (macro) context rather than the individual (micro) or familial (mezzo) contexts. As a result, mothers' education levels can be said to have a small effect and fathers' education levels to have no effect on undergraduate students' gender perceptions. Furthermore, a recent study in Turkey revealed no relationship to exist between parents' gender perceptions and children's gender perceptions and stereotypes (Arabacıoğlu & Bağçeli-Kahraman, 2017).

Conclusion

This study has conducted a meta-analysis focused on undergraduate students in Turkish Universities and their gender perceptions. The results from the study show a significant difference to be found between the gender perceptions of men and women. Women having higher levels of gender perceptions compared to men can be explained through biological theory (Güldü & Ersoy-Kart, 2009), social constructionism (Butler, 2006) and theoretical perspectives on culture (Rudman & Glick, 2008). According to the idea of biology as destiny, biological structures emerge and take shape in line with social expectations. Some responsibilities and expectations are attributed to women just because of their gender. On the other hand, the roles assigned to women are realized with respect to social and cultural expectations rather than biological characteristics. Such a construction process may lead women to have higher levels of gender perceptions. In this case, men may also have lower levels of gender perceptions because they do not experience similar biological, social, and cultural pressures, expectations, and responsibilities as women do.

When looking at the impact parents' education levels have on students' gender perceptions, the results have revealed mothers' education levels to have a small size effect and fathers' education levels to have no effect. Yet, parents do have a profound role in establishing gender perceptions in their children. However, according to social learning theory (Bandura, 1991), social constructionism (Butler, 2006), and cultural theories (Rudman & Glick, 2008), the family and the culture in which children grow up have an important effect on gender perceptions and roles. In this respect, one can argue the social and cultural structures revealed in these theoretical explanations to be more effective than parents' education levels in the construction of undergraduate students' gender perceptions.

The most striking and important result of this research is that no difference is found between the gender perceptions of freshman and senior undergraduate students. This result can be explained through the symbolic interactionism (Longmore, 1998). In terms of this theory, individuals attribute social meanings to basic symbols in terms of any culture or society. When looking at symbolic interactionism in terms of gender, what is important is the meaning people attribute to this concept. These social meanings emerge from the relationships individuals have with other individuals in their daily lives, then became widespread and reinforced. In this aspect, social institutions that work together in society determine activities according to gender (Demirbilek, 2007). Considering that universities as educational institutions are also included in these social institutions, universities are understood to have a similar structure. This structure is a historically shaped patriarchal socio-cultural structure. Individuals within this structure have been observed to maintain a patriarchal perception independent of all the intellectual activities they are involved in at universities such as education, culture, arts, and sports.

All studies included in the meta-analysis were carried out in different universities in Turkey, revealing a common problem in Turkish universities. Thus, the need exists to focus primarily on awareness and information activities and to expand these studies. Activities, workshops, social experiments, seminars, and conferences can be organized on campuses. In addition, gender equality or gender inequality student groups or clubs can be created and function on campuses. Different studies on gender equality can then be conducted on these groups or clubs. By establishing these groups/clubs in all universities, they can then be brought together to form a national federation of student clubs. This would enable students to create lobbying activities that may be effective and have an impact on the Turkish Higher Education Council. These activities may result in the creation of an optional or compulsory

“Gender Equality Course” being added to the education curriculum of all universities. Historically, the Turkish Higher Education Council has taken a role in mandating compulsory courses in university curriculums, such as Turkish language, Turkish History, and English. The addition of a gender equality course would ensure that undergraduate students’ gender perceptions will be challenged and changed, thus providing growth and understanding of gender equality from the first year they come to university.

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