

# The Possible Determinants and Influences of Gender Bias in Adolescents

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**Abstract – Given the current climate of social discrimination, it has become pertinent to understand why certain groups form biases against their “outgroups”. In this study, the extent to which adolescents (12-19) have gender bias was measured using two contextual factors: 1) relation to family and 2) relation to the country at large. Using a sample of 41 adolescents from 20 cultural backgrounds, the IAT Test was used to measure gender bias alongside three of Hofstede’s dimensions of national culture, which were used as a measure of one’s culture. Employing a mixed-methods approach framed within a Simmelian perspective on group affiliations, it was found that a higher assessment of individualism and masculinity in one’s country significantly increased one’s tendency to stereotype. In regard to family-level characteristics, the presence of a working mother was identified to lower the severity of gender stereotypes. This study contributes to an understanding of the predictors of gender bias in adolescents and can be utilized by policymakers combating the climate of gender discrimination and educators fostering children during their process of identity formation.**

*Key Words* – in-group, out-group, individualism, masculinity, Georg Simmel

## INTRODUCTION

It has been widely recognized that the societal standards concerning women and their role in the workplace have changed drastically throughout the last few decades. From the ratification of the 19th Amendment in the U.S. in the early 20th century to a global female labor force participation rate (LFPR) of 48.47 percent<sup>[1]</sup>, the systemic barriers separating men from women seem to have diminished greatly. However, the legacies of such disparity between the two sexes remain to this day on a global scale, with men entering Science, Technology, Engineering, and Mathematics (STEM) fields at a hugely disproportionate rate when compared to women overall<sup>[2]</sup>. Another case of remaining conformity to traditional gender roles can be observed in Japan, which—despite being a highly developed country—ranks 110th out of 144 countries in terms of gender inequality<sup>[3]</sup>.

However, the focus should not be on the particular instances of gender inequality that can be observed today, but the agents of socialization and culturalization that together form

a basis for those situations to flourish. This is where the work of Georg Simmel holds relevance. As argued by Simmel, the unique characteristics held by one are shaped by the multiple group affiliations one holds<sup>[4]</sup>. Explaining the influence of these diverse relationships on an individual’s frame of mind, Simmel writes,

*“The number of different social groups in which the individual participates, is one of the earmarks of culture. The modern person belongs first of all to his parental family, then to his family of procreation and thereby also to the family of his wife. Beyond this he belongs to his occupational group, which often involves him in several interest-groups.”*

In this statement, Simmel explains that the interplay of multiple group affiliations—ties to one’s family, peer groups, and the society at large—come to ultimately form a cohesive way of thinking. The lasting relevance of Simmel in fields of sociological research is demonstrated by the work of many researchers<sup>[5]</sup> as they use his theory of culture as a foundational basis to their studies. Amongst these various social factors proposed by Simmel, the study maintains that group affiliations with both the family and the country as a collective are most influential in shaping one’s societal perspective and thence, the extent to which one forms gender biases.

As aforementioned, the focus is on the social and cultural contexts that shape one’s gender biases. For this reason, the research is centered on the age group of 12 to 19 year-olds, otherwise labeled as adolescents. Adolescents are a demographic uniquely different from that of children or adults as they tend to have more diverse social circles<sup>[6]</sup> and have “biographical availability”<sup>[7]</sup> which allows for them to engage in higher-risk activities. Additionally, adolescence is a critical time for the emotional and physical development of the brain and its functions as youngsters transition from child to adult. For instance, the brain’s limbic and prefrontal regions have been observed to significantly develop throughout adolescence<sup>[8][9]</sup> alongside the formation of one’s identity and lifelong values. Such a period of rapid development and identity formation may also be the time when particular stereotypes and norms are formed and solidified. Thus, examining this demographic of 12 to 19 year-olds may be an indispensable part of uncovering the social factors that influence one’s gender bias. Below is a

review of the conceptual toolkit utilized to study the above topics.

### *Theory*

Based upon Georg Simmel's theories of the impact of membership in multiple group settings and the literature introduced above, the study deduces that country-level cultures such as the extent to which a country is collectivist and family-related characteristics such as a parent's educational background are most influential in shaping an adolescent's tendency to form gender biases. Gender bias, in the context of the study, is defined as the inclination to associate certain roles to each gender. For instance, one may hold a high level of gender bias if they firmly believe that women should be restricted from participating in the workforce. Conversely, one may also hold strong gender bias if they associate males with domestic activities and females with work-related activities, though this is a less common form of bias. The country-level cultures that were thought to most impact one's gender bias were selected using Geert Hofstede's Six Dimensions of Culture<sup>[10]</sup> and were chosen as 1) Collectivism vs. Individualism, 2) Uncertainty Avoidance, and 3) Masculinity. As for family-related characteristics, parents' educational attainment level and their employment status were deemed most important in shaping one's tendency to form gender stereotypes. Through the research of these two levels of culture— country-level and family-level— the key influences that give rise to gender bias in adolescents may be learned.

### *The Present Research*

There were several major limitations to the studies reviewed and mentioned above. Firstly, the majority of the studies either focused on the formation of stereotypes across one or two cultures. This poses a threat to the generalizability of these studies' findings, as systematic differences across many cultures may warrant great disparity when applying their findings in other cultural contexts. In contrast, the present research sampled 41 participants collectively sharing 23 different nationalities. This diversified sampling perhaps adds to the population validity of this study as the sample represented a range of cultures that were rated contrastingly on Hofstede's scale of cultural dimensions. The examination of the development of gender stereotypes on such a globalized scale may ensure less setting threat to the validity of the research. Additionally, the structure of the research ensures reduced demand characteristics and social desirability bias with regards to measuring the extent of one's gender bias. The specific implicit-association test used measured one's response time autonomously and took into account whether the examinee had had prior experience with the test. Thus, the chances of the results of the test being manipulated to the participants may decrease, minimizing threats to internal validity. The present study is framed within

the Simmelian perspective regarding group affiliations introduced above and focuses on these primary hypotheses:

H<sub>1</sub>: Adolescents' stereotypes on traditional gender roles is likely to be more severe if their cultural background is more collectivist, masculine, and has higher uncertainty avoidance.

H<sub>2</sub>: Adolescents' tendency to form gender bias is likely to be less severe if their mother is working or has attained academic degrees.

H<sub>3</sub>: Adolescent females will be more likely to be influenced by country-level cultures and family-level characteristics than adolescent males. However, this will hold little influence on females' tendency to form gender stereotypes compared to males.

## **METHOD**

### *Design*

Using a mixed-methods approach coupled with an independent measures design, the study quantified variables of interest and ran multiple regression analyses to assess the extent to which the independent variables influence one's gender stereotyping. More specifically, ordered probit regression was used over ordinary linear regression as the dependent variable, level of gender bias, is an ordered categorical variable. Thus, it was more fitting for the study to use this type of regression analysis. By employing these statistical methods, age, gender, ethnicity, and parents' educational and work background were able to be controlled. Qualitative data were used from conglomerated interviews and were utilized to contextualize the results of the data. Though following an independent measures design, the method of random allocation was not employed in the study as it would be highly inefficient and futile, especially when considering the scope of the research.

### *Participants*

This study draws data on 41 adolescents aged 12-19 from various academic institutions and communities on a globalized scale. Of these, the majority of adolescents sampled were in middle adolescence (15-17) ( $n = 23$ ). The sample comprised of adolescents of various ethnicities; those of Hispanic/Latino ( $n = 3$ ), East Asian ( $n = 10$ ), South Asian ( $n = 13$ ), Black or African American ( $n = 1$ ), Pacific Islander ( $n = 1$ ), and Caucasian/White ( $n = 19$ ) descent were represented in the sample. The sample consisted of three age groups: early adolescents (10-14 years;  $M = 13.36$  years,  $SD = 0.67$ ;  $n = 11$  [8 females]), middle adolescents (15-17 years;  $M = 16.56$  years,  $SD = 0.66$ ;  $n = 23$  [19 females]), and late adolescents (18-20 years;  $M = 18.29$  years,  $SD = 0.49$ ;  $n = 7$  [4 females]).

In regard to the results of the Harvard IAT test all participants took unproctored, nearly half received a result of "Moderate automatic association for male with career and female with

family” ( $n = 17$ ), one value below the extreme of “Strong automatic association or male with career and female for family”. The sample comprised of participants with a range of gender biases; scores of 1 ( $n = 1$ ), 2 ( $n = 2$ ), 3 ( $n = 2$ ), 4, ( $n = 6$ ), 5 ( $n = 10$ ), 6 ( $n = 17$ ), and 7 ( $n = 3$ ) were represented.

### Materials

In the study, a questionnaire comprising Harvard University’s Implicit Association Test (IAT) for Gender-Career [11] and 8 demographic items relating to the participant’s ethnic and family background and cultural identity was used. Additionally, the Country Comparison Tool from Hofstede Insights [12] was used to assess each country’s rating on the cultural dimensions of interest. All three dimensions of interest— Individualism versus Collectivism (IDV), Masculinity versus Femininity (MAS), and Uncertainty Avoidance (UAI)— were assessed on a scale of 1-100, with 1 indicating almost no presence of the dimension in that specific country, and 100 indicating a

TABLE 1: Descriptive Statistics

Variable	<i>n</i>	Percentage	Mean	SD	Min. Value	Max. Value
Gender						
Male	10	24.39				
Female	31	75.61				
Age (years)						
10-14	11	26.83	13.36	0.67	12	14
15-17	23	56.10	16.56	0.66	15	17
18-20	7	17.07	18.29	0.49	18	19
Ethnicity						
Hispanic/Latino	3	6.38				
American Indian or Alaska Native	0	0.00				
East Asian	10	21.28				
South Asian	13	27.66				
Black or African American	1	2.13				
Pacific Islander	1	2.13				
White	19	40.13				
Cultural Identity						
North America	18	43.90				
South America	2	4.88				
Africa	0	0.00				
Asia	14	34.15				
Australia/Oceania	3	7.31				
Europe	4	9.76				

widespread presence. Harvard’s IAT Test was used to measure the strength of associations between both sexes (men and women) and concepts (work and family). The online test consists of a 10-question survey asking to associate certain words with the male or female sex, followed by a section on demographics asking common questions about the participant’s background. Next, participants are asked to sort items such as “Wedding”, “Ben”, “Corporation”, and “Michelle” into one of the following categories: Male, Female, Career, and Family. Using specific keys on their keyboard, subjects were asked to categorize the items as quickly as possible. It is assumed that one will make a response more easily, and therefore, more quickly, when related items have the same key. For example, one may hold more traditional gender stereotypes when they are quicker to respond when [Female + Family] and [Male + Career] are paired together than when [Female + Career] and [Male + Career] are paired.

Results were then analyzed using the statistical software STATA. The use of such software ensured that variables such as age and ethnicity were controlled for and did not have a biasing effect on other variables. Furthermore, multiple regression analyses were run to simultaneously take into consideration a multitude of variables. This way, the extent to which each variable influenced another was able to be examined.

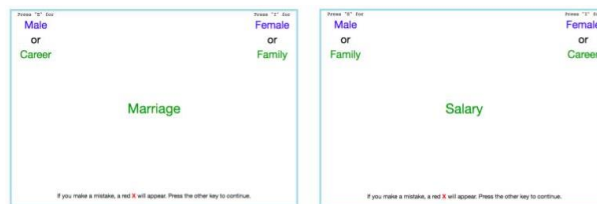


FIGURE 1 : Displays of two of the seven different iterations of the IAT Test that participants must complete. Participants are asked to press the "E" key to sort the given word to the left categories, and the "I" key to sort into the right categories.

### Procedure

Most, if not all participants were recruited via email or text through each researcher’s personal social connections developed in both casual and professional settings. There were great imbalances in terms of the age and sex of the participants, but it was observed that these differences did not affect the extent to which one forms gender stereotypes ( $p = 0.844$  (age),  $r = 0.197$  (sex) ), nor did it influence any other variables tested. Participants were administered an online questionnaire that included an external link to a test measuring their tendency to associate men and women with either career or family. All 41 adolescents received and completed the test in the environment of their choice, with no proctoring of the examinee. In addition, a few of these adolescents were interviewed by phone to gain further contextual information with regards to their results on the IAT and the relationships found in the regression analyses.

## RESULTS

From the multiple regression analyses ran, it can first be assumed by looking at Model 1 that level of uncertainty avoidance, one of three country-level cultural characteristics examined, does not influence one's tendency to form gender stereotypes ( $p = 0.212$ ). However, a country's level of individualism and masculinity seem to have a great influence ( $p = 0.034, p = 0.057$ ) on participants' scores on the IAT. These results partially reject Hypothesis 1, which assumes that one's gender bias is likely to be more severe if their cultural background is more collectivist, masculine, and has higher uncertainty avoidance. Likewise, the regression model shown in the first column shows that gender bias consistently decreases with an increase in individualism and increases with the level of masculinity, while holding little relation to uncertainty avoidance ( $p = 0.212$ ). These two culture-related variables and their strong relation to the tendency to form stereotypes seems to be a continuing trend throughout the regression analyses, as elaborated on in later sections.

Model 2 isolates family-level characteristics such as one's parents' educational attainment from country-level characteristics that were examined before and investigates the effect these family-level characteristics directly have on gender bias. Contrary on Hypothesis 2, the level of educational attainment of the mother was positively related to the formation of traditional gender stereotypes, though not in any way that was statistically significant ( $p = 0.431$ ) (college degree);  $p = 0.997$  (Masters & Ph.D.)) When examining a father's educational attainment level in relation to the formation of traditional gender stereotypes, it was observed that the higher the degree obtained, the greater gender bias one tends to have. However, the p-values of these observations ( $p = 0.323$  (college degree),  $p = 0.135$  (Masters & Ph.D.)) suggest a weak relationship between these variables. As hypothesized, adolescents with low gender bias tend to be in a household where their mother is one of the breadwinners ( $p = 0.137$ ), and the presence of a working father is linked to a greater level of gender bias ( $p = 0.508$ ). Even so, these values were overall not statistically significant, which may indicate that these variables themselves do not directly affect one's tendency to form gender stereotypes.

Thirdly, it was analyzed if the effects of country-level characteristics (e.g. Individualism vs. Collectivism) and family-related variables (parents' work status, educational attainment) remained robust when those two social contexts were considered simultaneously. In this regression model, both individualism ( $p = 0.000$ ) and masculinity ( $p = 0.001$ ) held statistically significant relationships to one's level of gender bias. Once more, it was found that a higher score of individualism is linked to less gender bias and that a higher score of masculinity is associated with greater gender bias. In regard to the family-related characteristics that were analyzed, adolescents had more gender bias when in a household with a mother that had completed tertiary

education and above. To specify, a mother's attainment of a college degree ( $Coef. = 1.640$ ) had a greater impact on the formation of gender stereotypes than if they had obtained a attainment of an academic degree had a positive relation to the tendency to stereotype. Notably, adolescents whose fathers had completed a master's or Ph.D. degree were most likely to have gender bias ( $p = 0.031$ ).

TABLE 2: Ordered Probit Regression on Gender Bias

	(1)	(2)	(3)	(4)
Individualism	-0.0150* (.0071)		-.0324*** (.0090)	-.0309*** (.0095)
Uncertainty Avoidance	-.0108 (.0087)		-.0129 (.0097)	-.0010 (.0101)
Masculinity	.0383** (.0201)		.0843*** (.0255)	.0853** (.0271)
Mother's educational attainment (Ref. $\leq$ high school diploma)				
College degree		.4310 (.5478)	1.640* (.6580)	1.524* (.6854)
Masters or Ph.D.		.0023 (.6323)	.0487 (.6737)	.0204 (.6975)
Father's educational attainment (Ref. $\leq$ high school diploma)				
College degree		.5267 (.5334)	.3701 (.5806)	.5299 (.6565)
Masters or Ph.D.		.8879 (.5933)	1.393* (.6473)	1.512* (.6674)
Mother's working status (Ref. not working)				
Working		-.6199 (.4167)	-.8783* (.4431)	-1.024* (.4794)
Father's working status (Ref. not working)				
Working		.4421 (.6685)	.6022 (.7232)	.5299 (.7706)
Sex				.5593 (.4331)
Race (Ref. White)				
Asian				.2723 (.4275)
Other				.1853 (.6273)
Age				.0220 (.1120)
Pseudo R2	0.0554	0.0647	0.2082	0.2253
Observations	41	41	41	41
Cut1	-1.513 (1.304)	-1.319 (.8149)	.9020 (1.774)	1.997 (2.828)
Cut2	-.8679 (1.268)	-.7867 (.7595)	1.627 (1.755)	2.749 (2.821)
Cut3	-.5499 (1.265)	-.4603 (.7538)	2.033 (1.768)	3.187 (2.830)
Cut4	.0251 (1.272)	.1690 (.7395)	2.807 (1.791)	3.986 (2.847)
Cut5	.7231 (1.273)	.9000 (.7530)	3.773 (1.822)	4.971 (2.868)
Cut6	2.308 (1.309)	2.491 (.8124)	5.850 (1.939)	7.124 (2.997)

\* $p < .05$ . \*\* $p < .01$ . \*\*\* $p < .001$ .

Note. Values are given as Std. Err. (Coef.).

The tendency to stereotype decreased, however, when participants lived in a household with a working mother and increased with the presence of a working father. These findings further support the first two hypotheses introduced in the above section. To conclude, variables that had statistically significant relationships with gender bias in the

last two regression models remained significant, only to a greater extent.

Model 4 was used to examine whether these results would remain robust when controlling for demographic variables such as ethnicity and sex. This model revealed that the significance of certain variables did indeed remain consistent with the above findings. A greater level of individualism suggested a lower tendency to gender stereotype ( $p = 0.001$ ), and a greater level of masculinity in countries was linked to more gender bias in adolescents ( $p = 0.002$ ), providing further empirical evidence for Hypothesis 1. As for the family-level characteristics hypothesized to heavily influence the development of one's stereotypes, the trends observed in the last few models remained, with a parent's attainment of a college degree or higher increasing gender bias the most. In regard to the employment status of the parents and their influence, the presence of a working mother held statistically significant relationships to a lower tendency to stereotype ( $p = 0.033$ ), and the presence of a working father held rather weak relationships ( $p = 0.444$ ). However, this may be due to the huge variety of jobs that these parents hold. Concerning the demographic variables that were controlled, females tended to have greater gender bias ( $p = 0.197$ ), and those who identified as Asian held more bias when compared to Caucasian and Other (Hispanic/Latino, African American, etc.) ( $p = 0.524$ ). Higher age was also very loosely related to more gender bias ( $p = 0.844$ ). However, the p-values of these control variables suggest that they hold little influence in shaping one's gender stereotypes. It can be concluded that significant relationships between masculinity, individualism, and mother's working status and parents' educational attainment remain, even with control of demographic variables.

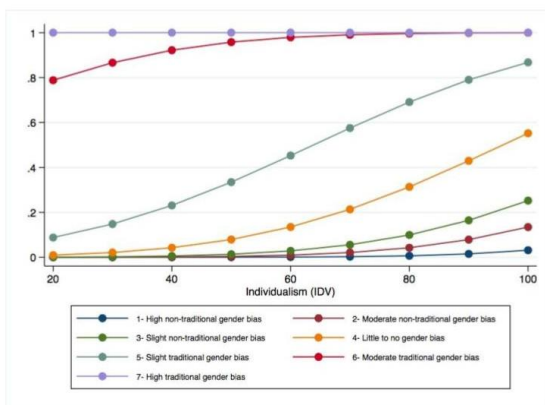


FIGURE 2: Cumulated Predicted Probabilities (Individualism Dimension)

As another form of analysis cumulated predicted probabilities for each of Hofstede's dimensions of interest were run. As displayed in Figure 3, the probability of forming traditional gender stereotypes (i.e. men should be the sole breadwinner) increases as a country is more individualistic.

Notably, the probability of adolescents that hold slight traditional gender bias seems to increase by four-fold in a country with individualist scores in the 90s when compared to a country with scores in the 40s. The large fluctuations in the probability of forming traditional gender biases suggest a strong relationship between the level of individualism a culture has and the tendency to form gender bias.

The cumulated predicted probability model examining the masculinity dimension shows that the probability of one having non-traditional gender biases (ie. All women should participate in the workforce) decreases as the level of masculinity increases. This relationship between lower masculinity and less gender bias provides further support for Hypothesis 1, along with findings from Figure 2.

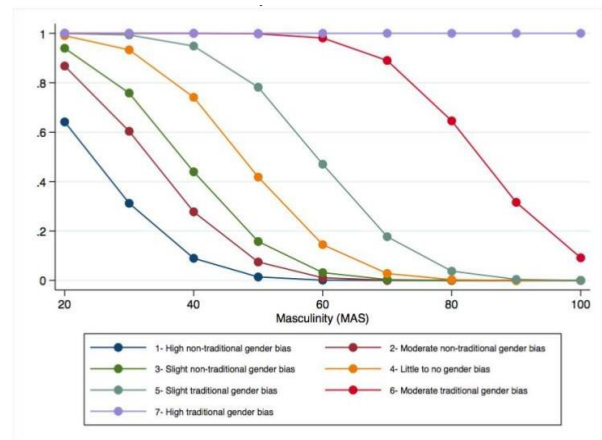


FIGURE 3: Cumulated Predicted Probabilities (Masculinity Dimension)

### Interviews

In order to gain further insight into the country-level characteristics and the family-level characteristics that influence one's tendency to form gender bias, several interviews were conducted with adolescents of varying cultural and family backgrounds. One persistent trend in a couple of the interviews was the overlapping of two dimensions in one's daily life. For example, one respondent expressed that the classroom environment she was in leaned towards a collectivist culture, whilst her family environment emphasized individuality. This reveals yet another level of culture that were not addressed in the study, which is namely the school-level characteristics that may shape one's gender bias. This trend also leads us to consider other cultural levels which may influence adolescents' gender bias such as the types of media they are exposed to and the overall culture of the neighborhood they are raised in. When one respondent was asked about the differences that coexist in their household, they answered, "I don't really see much differences in terms of cultures, but there are definitely differences in religion in my household." This shows yet another facet of one's background that was not addressed in the study— religion. From several interviews, it was derived

that one's religious views could also be relevant in determining how collectivist and masculine one's background may be, along with several other factors that were noted above.

## DISCUSSION

This research examined the predictors and influences of gender stereotyping in adolescents 12-19 years of age. The absence of these biases could generally be associated with a lower assessment on the masculinity dimension ( $p < .002$ ) and a higher assessment on the individualist dimension ( $p < .001$ ) in addition to the presence of a mother participating in the workforce ( $p < .05$ ). These findings align with research previously conducted on the cultural factors that shape biases and stereotypes of out-groups<sup>[13][14][15]</sup>. These studies have attributed the avoidance of heterogeneity in collectivist cultures as a key reason that explains less-positive views regarding one's out-group. Therefore, it can be said that those in collectivist countries tend to strive for social inclusion, and in the process, conform to traditional gender norms that have been rooted in their respective countries for centuries. In summary, the results provide empirical evidence that two of three country-level characteristics examined— individualism and masculinity— play a significant role in shaping one's tendency to form gender stereotypes. However, it should be noted that the sample in the study was not representative of the population. Therefore, several threats to validity exist.

In regard to family-level characteristics, a higher level of educational attainment was shown to be a significant factor in decreasing one's gender bias, which dovetail previous research<sup>[16][17]</sup>. An irregular finding was that demographic variables were overall not that influential in determining one's tendency to stereotype, which may have been due to the study's small sample size. This contrasts research previously conducted on adolescents<sup>[18][19]</sup> which demonstrate that implicit bias and stereotyping increase as one ages.

### Addressing Gender Bias

Considering that adolescence is a time of identity formation in which particular stereotypes and values are formed and solidified, the present study's results hold great relevance to policymakers in education and teachers alike. The results may lend insight into certain classroom structures and cultures that may effectively lower a child's tendency to develop extreme gender biases in the future. For instance, classrooms could adopt more individualistic classroom cultures with elements of cooperation and modesty, in contrast to a more masculine culture. As the findings derived from the study show, adolescents have already internalized traditional gender roles from a young age, and they remain in later adolescence as well. Therefore, the changes in policy and culture that should follow must directly intervene with one's own way of differentiating between the two genders to

truly combat the current climate of inequality around the globe.

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