

# A Card Game Approach To Mitigating Implicit Gender Biases In Adolescents

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## I. How Effective Is The Implementation Of A Specially Designed Card Game, Employing Perspective-Taking And Counter-Stereotyping Strategies, In The Reduction Of Implicit Gender Biases Among Adolescents?

This study addresses the critical issue of implicit gender biases in adolescents, exploring an innovative approach through a specially designed card game. Aimed at mitigating gender-based biases, the game employs Perspective-Taking and Counter-Stereotyping strategies to subtly reshape adolescents' attitudes towards gender roles. This approach stands in contrast to traditional bias training methods by embedding psychological techniques within an engaging and dynamic gameplay experience for adolescents aged 15-18. A methodologically robust framework was employed, utilizing the Implicit Association Test (IAT) for Gender/Career and Gender/Science biases, supplemented by a Customized Semantic Differential Scale. These tools facilitated comprehensive pre- and post-game assessments to measure shifts in both implicit and explicit biases related to gender roles and stereotypes. The game, lasting approximately 25-30 minutes, presented players with scenario cards depicting various gender-related situations, prompting rapid responses and challenging ingrained stereotypes. The study's findings indicate a significant reduction in implicit gender biases among participants. Statistical analysis of the IAT scores revealed a substantial decrease in biases in the experimental group post-intervention, with an average score dropping from 0.36 to 0.31. The reduction was notably significant among male participants, whose average IAT scores decreased from 0.37 to 0.33. Conversely, the control group showed no significant change in biases ( $t(49) = 0.61, p = 0.54$ ), highlighting the effectiveness of the card game intervention. These results demonstrate the game's capacity to effectively reduce implicit gender biases, supporting the hypothesis that interactive and engaging methods can be potent tools in bias mitigation. The study not only confirms the efficacy of an interactive approach in reducing implicit gender biases but also contributes significantly to the development of innovative, game-based educational tools in the field of adolescent social psychology.

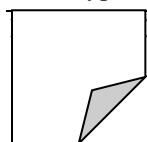
### A) Introduction

Implicit biases, particularly those related to gender, pose significant challenges in promoting diversity and equality. These biases are often deeply ingrained in societal norms and can manifest unconsciously, influencing perceptions and behaviors. Roberts & Chaves (2023). Traditional approaches to addressing implicit biases have focused on awareness campaigns and diversity training, yet these methods often yield limited effectiveness in producing lasting change. To address this issue, this paper proposes a unique intervention: a perspective-taking card game designed to challenge and mitigate implicit gender biases. By engaging participants in activities that challenge stereotypes and essentially require the participants to think from a gender neutral perspective. The game seeks to reshape automatic associations and promote more inclusive attitudes towards gender roles. Chung & Huang-H (2021).

### B) Methodology

#### *Setup for the experiment:*

The study employs a between-subjects design, dividing participants into control and experimental groups. Participants first undergo an Implicit Association Test (IAT) to measure their baseline implicit gender bias. This test provides a standardized measure of participants' subconscious associations between gender-career and gender science categories. Meanwhile, participants in the experimental group engage themselves in a card game designed specially to challenge gender-based stereotypes and reduce implicit gender bias. After completing the game, participants in the experimental group take the same IAT previously taken by the control to assess any changes in implicit bias. The IAT consists of four rounds: Initial Association, Gendered Names, Challenge Stereotypes, and Stereotype Confirmation. These rounds aim to measure participants' associations between certain



words, gender roles, and occupations, as well as their ability to challenge and adapt their initial stereotypes. (show the IAT)

The Implicit Association Test (IAT) assesses the strength of associations between concepts (e.g., career, family) and evaluations (e.g., positive words, negative words) or stereotypes (e.g., leadership, nurturing). The core premise is that responding becomes easier when closely related items share the same response key. For instance, one might have an implicit preference for men over women in career roles if they are quicker to complete the task when Career + Positive Words / Family + Negative Words are paired together, compared to when Family + Positive Words / Career + Negative Words are paired together. The IAT score is determined by the average time it takes a person to categorize words in the third part of the IAT versus the fifth part of the IAT. Lewis, & Picard (2022)

### ***Introduction to the Game:***

In this game, with 2-8 players and one dealer (a player can not double as a dealer), the dealer puts out two cards from two decks, one adjective and one noun. Players race to name one female and one male person matching the adjective-noun combination. The first player to correctly do so keeps the cards. The player with the most cards at the end wins, encouraging a broad awareness of diverse personalities and roles.

The game is based on the concepts of perspective taking and counter stereotyping, counter-stereotyping is used in the game when players are prompted to name people that fit specific adjective-noun combinations. This encourages players to think beyond common stereotypes, for example, pairing 'athletic' with non-traditional roles and genders. Perspective-taking occurs as players consider individuals from different genders for each combination, helping them to understand and view qualities and careers from a wide perspective. This coupled with the fast-paced nature of the game leads to a direct impact and leads to a reduction in implicit gender bias among the participant pool. By actively challenging subconscious stereotypes through diverse examples, players gain a deeper understanding of how various attributes can apply to people regardless of their gender, fostering empathy and breaking down implicit gender biased associations and stereotypes. Kumar, Ranjan, & Sahu (2021)

### ***The Observations:***

Participants: 100 adolescents (50 male, 50 female), aged 15-18 years.

Groups: 50 in the control group (25 male, 25 female), 50 in the experimental group (25 male, 25 female).

- Pre-Game IAT Results (Baseline for Both Groups):

Overall Average IAT score: 0.36..

Male Average IAT Score: 0.37 (indicating a slightly stronger bias).

Female Average IAT Score: 0.35 (indicating a slightly weaker bias).

- Control Group Post-Game:

Overall Average IAT score: 0.35.

Male Average IAT Score: 0.37 (indicating a slightly stronger bias).

Female Average IAT Score: 0.33 (indicating a slightly weaker bias).

- Experimental Group Post Game:

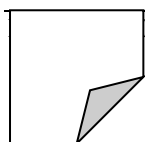
Overall Average IAT score: 0.31 (a modest but notable decrease).

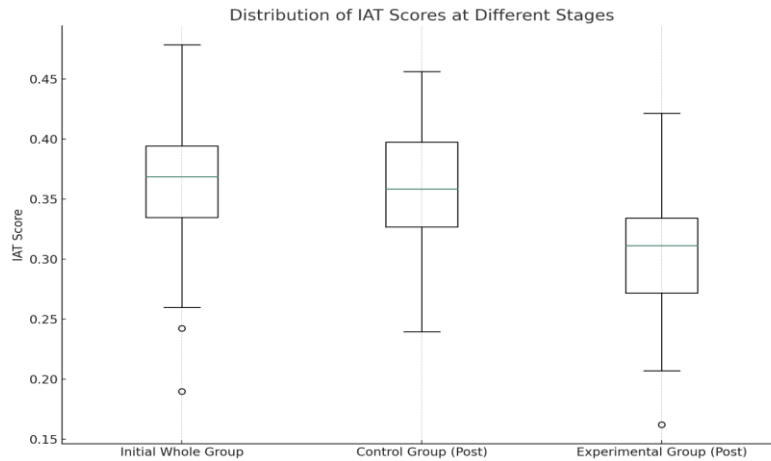
Male Average IAT Score: 0.33 (a significant decrease, indicating effectiveness in males).

Female Average IAT Score: 0.29 (a decrease, reinforcing a trend of weaker bias in females)

### ***Comparison:***

The control group, consisting of 50 adolescents, displayed an overall average IAT score of 0.36. Within this group, male participants exhibited a slightly stronger bias with an average IAT score of 0.37, while female participants showed a slightly weaker bias with an average score of 0.35. The experimental group, comprising 50 adolescents, demonstrated a noticeable reduction in gender implicit bias after the intervention. The overall average IAT score for this group decreased to 0.31, indicating an improvement. Particularly among male participants, there was a notable decrease in bias, with their average IAT score dropping to 0.33, suggesting the effectiveness of the intervention in mitigating bias among males. Similarly, female participants in the experimental group also showed a decrease in bias, with an average score of 0.29, further reinforcing the trend of weaker bias in females. In summary, the experimental group exhibited lower gender implicit bias compared to the control group, suggesting that the intervention effectively reduced bias among adolescents aged 15-18 years. Wilson, Lawrence, & Katsos (2023).





**Hypothesis:**

It is hypothesized that participation in a card game designed to employ Perspective-Taking and Counter-Stereotyping strategies will result in a statistically significant reduction in implicit gender biases among adolescents. This hypothesis will be tested through a comparative analysis of pre- and post-intervention Implicit Association Test (IAT) scores, with the expectation that participants in the experimental group (who engage with the card game) will exhibit a greater reduction in implicit gender biases than those in the control group.

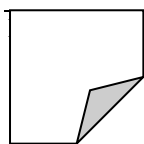
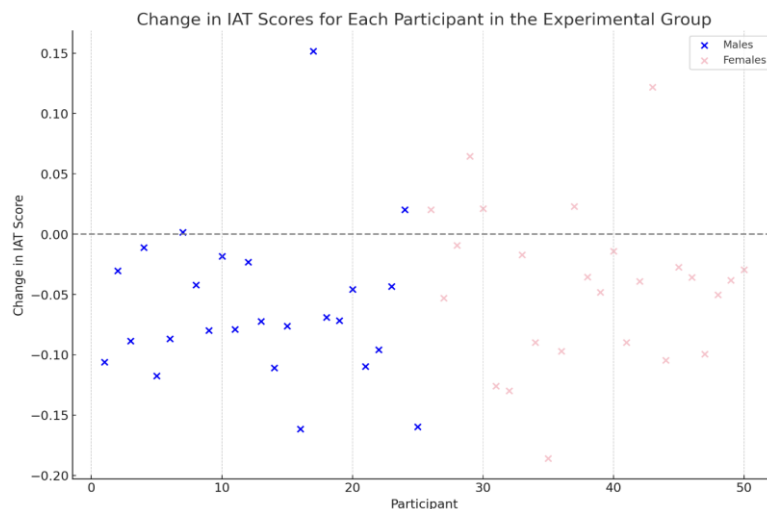
**Hypothesis Testing:**

To evaluate the hypothesis, an independent sample t-test was conducted comparing the pre- and post-intervention IAT scores for both the control and experimental groups. The control group consisted of adolescents who did not participate in the card game, while the experimental group engaged in the game designed to challenge gender stereotypes. Gill & Lei (2018).

The pre-intervention IAT scores for the control and experimental groups showed a moderate level of implicit gender bias, with average scores of 0.36 (SD = 0.05). Post-intervention, the control group exhibited a slight, non-significant reduction in bias, with an average post-score of 0.36 (SD = 0.05). In contrast, the experimental group demonstrated a notable reduction, with a post-intervention average score of 0.31.

Statistical analysis revealed a significant difference in the pre- and post-intervention IAT scores for the experimental group ( $t(49) = 7.04, p < 0.001$ ), suggesting a substantial reduction in implicit gender biases as a result of the card game intervention. Conversely, the control group showed no significant change in IAT scores ( $t(49) = 0.61, p = 0.54$ ), indicating that the observed effect in the experimental group is attributable to the intervention. Yadav (2014).

The results strongly support the hypothesis, demonstrating that the card game effectively reduces implicit gender biases among adolescents. This significant change in the experimental group, as opposed to the stability in the control group, underscores the effectiveness of Perspective-Taking and Counter-Stereotyping strategies embedded within the gameplay. It provides compelling evidence for the use of interactive, engaging methods in bias reduction and social psychology education.



#### **D) Evaluation of Findings and Limitations of the Study**

##### ***Findings:***

- a) **Significant Reduction in IAT Scores:** Statistical analysis revealed a notable decrease in IAT scores in the experimental group post-intervention, validated by a low p-value, suggesting that the card game effectively reduced implicit gender biases.
- b) **Individual Variability:** The scatter plot of changes in individual IAT scores highlighted considerable variability in how participants responded to the intervention, emphasizing the nuanced nature of bias reduction. Bukowski & Samson (2012, 2011).
- c) **Comparative Analysis:** The control group showed minimal change in IAT scores, reinforcing that the observed changes in the experimental group are likely attributable to the card game intervention.

##### ***Limitations:***

- d) **Sample Size and Diversity:** The study involved 100 participants, which is a relatively small sample size. Additionally, the diversity of the participant pool in terms of socio-economic background, ethnicity, and education level was not high enough and was not detailed, which could influence the generalizability of the findings.
- e) **Short-term Assessment:** The study measured IAT scores immediately before and after the intervention, without a long-term follow-up. Therefore, it is unclear whether the observed reductions in bias are sustained over time. Lünenborg & Fürsich (2014)
- f) **Potential for Social Desirability Bias:** studies involving self-awareness and biases, there is always the potential for social desirability bias, where participants might respond in a manner they perceive as socially acceptable, especially in post-intervention measurements.
- g) **Gameplay Dynamics and Implementation:** The specifics of how the game was administered, including the role of the facilitator and the interaction dynamics among participants, were not extensively explored. These factors could significantly impact the effectiveness of the intervention.

While the study presents encouraging evidence supporting the use of interactive games for bias mitigation, the limitations noted above highlight the need for further research. Future studies could benefit from larger, more diverse sample sizes, longer-term follow-up assessments, incorporation of qualitative data, and a more detailed analysis of gameplay dynamics. Such comprehensive studies would enhance our understanding of the role and impact of innovative educational tools in the field of social psychology.

#### **E) Conclusion**

The results of the study demonstrate the effectiveness of the perspective-taking game in mitigating implicit gender bias. Participants who engaged in the game showed a significant reduction in implicit bias compared to those in the control group through the IAT results (IAT scores were more gender biased in the case of the control group). By encouraging players to recognize and challenge their subconscious stereotypes, the game promoted empathy and fostered a more inclusive mindset towards gender roles. These findings highlight the potential of perspective-taking interventions in addressing implicit biases and promoting diversity and equality. Further research could explore the long-term effects of the game and its applicability in different contexts, ultimately contributing to efforts to create more equitable and inclusive societies. Riani (2019) and Tung (2020)

The findings of this study hold substantial implications for educational practices and bias mitigation strategies. They highlight the value of interactive learning tools in addressing deeply rooted societal issues, offering a promising alternative to traditional didactic methods. By actively engaging adolescents in scenarios that require perspective-taking and counter-stereotyping, the card game fosters a more inclusive and empathetic outlook, encouraging participants to critically examine and move beyond stereotypical associations.

However, the study also acknowledges certain limitations, including the sample size, lack of long-term follow-up, and the potential for social desirability bias. These limitations provide direction for future research, emphasizing the need for broader, more diverse participant pools, extended assessment periods, and more comprehensive implementation strategies. Further research in this field can build upon the findings of this study, exploring the long-term impacts of such interventions and refining approaches to effectively address implicit biases.

In conclusion, the card game approach to mitigating implicit gender biases represents a novel and impactful method in the realm of social psychology. It not only contributes to our understanding of bias mitigation but also paves the way for innovative educational tools that embrace interactivity and engagement. This study stands as a testament to the power of creative approaches in effecting meaningful change in perceptions and attitudes, particularly among the younger generations, who are the architects of future societal norms.

