

**ADULT IMPULSIVITY AND THE ROLE OF PARENTAL SMOKING:
THE ROLE OF GENDER**

An Undergraduate Research Scholars Thesis

by

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ABSTRACT

Adolescent Impulsivity and the Role of Parental Smoking: The Role of Gender

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Literature Review

Research confirms that parental smoking is a consistent risk factor for an individual's smoking habits (e.g. Tyas and Pederson, 1998; Biglan, et al., 1995). There has been minimal research exploring the effect a single parent has on an individual (Reynolds et. al., 2009). In 2014, Herrick, Thamothara, Sferra, Lange and Fields explored parental smoking effects on an individual's impulsivity. In this study we will further explore this topic through gender differences in adult impulsivity.

Thesis Statement

The current research objective is to find gender differences among adult impulsivity related to parental smoking. A secondary objective is to examine the role of parental smoking on adult smoking.

Theoretical Framework

A short self-report questionnaire will be used to collect basic demographic information from each participant. Each participant will also complete the Delay Discounting Questionnaire (Richards et al., 1999). Both of these tasks will be administered through the SONA online testing service and there will be no direct interaction with the participants.

Project Description

The current study will investigate the relationship between parental smoking status and impulsivity (as measured by a delay discounting task) in a random adult population. The study will also investigate whether parental smoking affects an individual's likelihood to smoke. Ultimately, we will compare gender differences in impulsivity among the adult population. In order to do this, we will use a self-report questionnaire and a DDQ assessment. The self-report questionnaire will include gender, age, ethnicity, and parental smoking status. The DDQ will provide the level of impulsivity of each subject.

It is expected that when the father is the only reported smoker, the females will show higher impulsivity than the males. It is also expected that when the mother is the only reported smoker, the males will show higher impulsivity than the females. Furthermore, it is expected that when both parents are reported smokers, males will show higher impulsivity than females.

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KEY WORDS

DDQ Delayed Discounting Questionnaire

INTRODUCTION

An individual's behavior tends to be highly influenced by external factors such as their peers and parents (Krosnick, & Judd, 1982). Given this background, it is important to bring light to factors that may cause individuals to participate in risk-taking decisions such as smoking, substance abuse, or sexual relations. One of the many studied factors affecting smoking behaviors is impulsivity. Impulsivity is a highly researched topic in the field of psychology due to its impact on health issues such as alcohol consumption and smoking behaviors (Granö, Virtanen., Vahtera, Elovainio, & Kivimäki, 2004). The present study will specifically explore the role of parental smoking on adults and its relationship to impulsivity. Furthermore, we will compare gender differences among the participants.

Previous studies have found significant relationships between different types of impulsive behavior and smoking, thus allowing us to conclude that impulsivity can be a precursor to smoking behaviors (Balevich, Wein, & Flory, 2013). Impulsivity in some of these studies has been measured on participants through the Delayed Discounting Questionnaire (Richards et al., 1999). This measure is also used in the current study to measure the impulsivity levels of the participants. The Delayed Discounting Questionnaire can be described as “the extent to which an individual discounts the value of a reward (e.g. money, food, weight loss, etc.) as a function of having to wait for it” (Reynolds, Richards, Horn, & Karraker, 2003).

There is a myriad of studies that significantly connect delayed discounting with risk-taking behaviors including smoking (Amlung & MacKillop, 2014). An example of this can be seen in Reynolds, Richards, Hons, and Karraker (2004). This study showed that adult smokers tended to discount significantly more than adult non-smokers thus demonstrating a concrete link

between smoking habits and impulsivity. There is a recurring pattern from these studies showing that smokers tend to discount more than non-smoking participants (Reynolds et al., 2004; Amlung & MacKillop, 2014). These results show there is a clear connection between impulsivity and smoking habits.

On the other hand there are some studies that demonstrate the opposite of this as in higher amount of cigarette intake is correlated with the rate of discounting. In Reynolds and Brady (2004) participants with a higher cigarette consumption were more likely to discount which opposed the idea that smokers have predisposed discounting. Several studies have shown parental smoking increasing the risk of adolescent smoking (e.g. Tyas and Pederson, 1998). However, none have looked at parental smoking increasing the risk of adult smoking.

According to Tyas and Pederson (1998), some studies have shown parental smoking having a significant effect on female adolescents but not for males. In one study, it was found that adolescents discounted significantly more when they had mothers who smoked than adolescents who did not (Reynolds et. al., 2009).

The research above leads the present study to explore whether paternal or maternal smoking has an effect on adult smoking and whether the same gender effects hold true. Herrick et. al. (2014) suggests that having one parent who smokes has a significant impact on adolescent impulsivity while having two parents who smoke does not. In this study, the gender of participants will be examined to investigate the different impact maternal or paternal smoking has.

Given the wide amount of research revolving adolescent impulsivity and its correlation to smoking habits, our study will look at the correlation between adult impulsivity and smoking

habits. Although adolescence is the most sensitive stage for substance use in an individual's life, it is important to bring light to the causes of substance use in adults as well.

CHAPTER I

METHODS

Participants

This study consists of 322 adults with an average age of 34. The female to male ratio was 158 to 163 thus making it fairly balanced. 106 participants were active smokers. There were 55 male smokers and 51 female smokers. The participants were predominantly white (75.2%) but also included Hispanic (6.5%), Black (9%), Asian (6.8%), Native American (.9%), and Other (.9%) races. Participants were gathered through the online MTurk Amazon system and they were each rewarded \$1 dollar for their participation when they completed the survey. The money was transferred to their Amazon account and was available for retrieval after the experiment.

Procedures

Each participant completed a survey with two sections. The first section involved a short self-report questionnaire that was used to collect basic demographic information. This included gender, age, ethnicity, and parental smoking status. The second section of the survey involved completing the Delay Discounting Questionnaire. The DDQ provided the level of impulsivity in each subject. Before each task, participants were given detailed instructions to read beforehand. The duration of this survey was about 10 to 15 minutes.

Delay Discounting

The Delayed Discounting Questionnaire utilized in this study showed participants choices between \$1000 available for them within varying delays (1 day, 7 days, 30 days, 90 days, and 365 days) or a smaller amount \$500 available instantly (e.g., “Would you rather have \$500 now or \$1000 in 2 days). This task derives indifference values between the delayed reward (1000 in 1

day, etc.) and the immediate reward (\$500 instantly) by using an adjusting amount procedure. The indifference point value projects the lower immediate reward (\$500) instead of the standard delayed reward (\$1,000). Higher rates of delay discounting (i.e. smaller indifference values) are often associated with addiction and indicate that a person is not behaviorally controlled by temporally distant events (Reynolds et al., 2003).

The order of the choice of the questions were presented in the exact same way for every participant. Participants were not told they would receive their delayed or immediate money but they knew they would be automatically awarded after finishing the experiment by the Amazon system with \$1. See Reynolds et al. (2003) for participant instructions for the DDQ. Each participant completed a survey with two sections. The first section involved a short self-report questionnaire that was used to collect basic demographic information. This included gender, age, ethnicity, and parental smoking status. The second section of the survey involved completing the Delay Discounting Questionnaire. The DDQ provided the level of impulsivity in each subject. Before each task, participants were given detailed instructions to read beforehand. The duration of this survey was about 10 to 15 minutes.

Statistical Analysis

The area under the curve (AUC) method was used to analyze the data from the DDQ (Myerson et al., 2001). In the AUC method, a steep curve or smaller values means higher discounting and impulsivity. The analyses in this study were conducted using the SPSS version 20.0 (Somers, NY, USA). The data was analyzed using a 2x2x2 univariate analysis of variance. In other words, 2(male, female) x2(mom smoke yes, mom smoke no) x2(dad smoke yes, dad smoke no). The data from the DDQ was compared with maternal/paternal smoking and adult gender.

CHAPTER II

RESULTS

The collection and analysis of data took place in the Health Behavior Research Group laboratory at Texas A&M University. From the data analysis we discovered that there was no significant interaction between maternal/paternal smoking and adult impulsivity based on gender. Aside from this, we also found that paternal smoking had no significant effect on adult impulsivity or likelihood to smoke. There was no significant difference in an adult's impulsivity if they had one parent who smokes compared to those who had two parents who smoke. On the other hand, maternal smoking habits had a significant effect on adult impulsivity or likelihood to smoke ($F(1, 322) = 3.901, p < .05$).

CONCLUSION

This research adds important details on how impulsivity and parental roles are associated with substance use (Hicks, Fields, Davis & Gable, 2014; Sferra, Thamocharan & Fields, 2015). The primary objective to find gender differences among adult impulsivity related to parental smoking was not found in the present study. However, the secondary objective to examine the role of parental smoking on adult smoking was successful.

According to the analysis, maternal smoking has a significant effect on adult impulsivity and smoking habits. On the other hand, paternal smoking showed no significant effect on the adult impulsivity and smoking habits. These results support past research studies on the effect of maternal smoking on adolescent impulsivity (Reynolds et al., 2009). The results shed light on how a father's role and influence has a lesser impact on their offspring. The differing parental effects also questions the importance of the paternal role. Since no significant interaction between maternal/paternal smoking and adult impulsivity based on gender was found, it is concluded that parental smoking habits have an equal effect on male and female offspring.

Some limitations in this study include racial diversification. Our participants consisted of a predominantly white racial background. Therefore, it is difficult to generalize our results to a larger population. Another limitation is our study is that participants self-reported their personal smoking status and their parents' smoking status. While this information is most likely accurate, it would be beneficial to verify the truth of this information with the participant's parents. Furthermore, it could also be beneficial to know whether the participants lived with both or just one of their parents growing. Knowing this could provide a better understanding on the actual influence parents have on participant smoking habits and impulsivity. Lastly, the lack of regional

information in the survey could be considered a limitation. Participants were not asked where they currently live so the location to which these results most closely apply to is unknown.

Despite our limitations, our current study brought about some interesting associations between maternal and adult impulsivity/smoking habits. Future research should focus on closing the diversification gap by testing participants of varying racial backgrounds. It would also be interesting to explore if there are any racial differences in the relationship of parental smoking and adult impulsivity/smoking habits. Other improvements could be made by conducting a face-to-face questionnaire to avoid self-report ambiguity. Lastly, verifying current parental and adult smoking status with the participants' parents would potentially solidify our results.

Our study confirmed previous research which shows the significant effect that maternal smoking habits have on their children's impulsive behavior (Reynolds et al., 2009). As the data shows, impulsivity is affected by the mother even in adult participants. These findings promote the importance of having parents remain smoke-free to encourage better decision-making and avoid risky behaviors in their offspring.

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