Youth Impulsivity Levels: Disordered Gambling and Substance Abuse

Word Count: 5167

INTRODUCTION

Gambling and substance abuse are two addictive disorders that affect people of all ages. Posing as serious health conditions, they may cause damage to neural functions in the brain and contribute to negative mental and physical consequences. However, adolescents may be more severely affected by these harmful effects (Romer 2010). Due to their young age, the onset of one problem behavior can induce other problem behaviors as well (Romer 2010). Furthermore, young adults' brains do not fully develop until the early 20's, and therefore, the introduction of gambling or substance abuse has an even greater harmful effect on adolescents (Romer 2010). To avoid the problem of excessive gambling and substance abuse for youth in the future and to identify potential intervention points and enhance effective treatment/prevention strategies, the origin of the problem must be identified. This study furthers the exploration of impulsivity levels in adolescents and the validity of impulsivity as a precursor of engaging in excessive gambling and substance abuse in the future. The research question states: "Can levels of impulsivity in young adult indicate an inclination/risk towards substance abuse and gambling?"

LITERATURE REVIEW

Addiction Pathway and Impulsivity

On addressing the common molecular pathway for addiction, Eric Nestler, Chairman of the Department of Neuroscience at the Mount Sinai Medical Center, reveals evidence from both animals and humans that shows how drugs of abuse, though having different reaction mechanisms, converge on the brain's reward pathways (Nestler 2005). Drugs of addiction carry two main, interrelated functions (Schultz 2011). First, they mimic natural rewards, in that they promote learning, emotions, and positive feelings (Schultz 2011). Second, they alter the brain's physiological reward system (Schultz 2011). The direct influence of addictive drugs is most evident in the dopamine system, the neurotransmitter system involved with learning and reward processing (Schultz 2011). Addictive substances change the course of the dopamine system in the body, drastically affecting motor and cognitive function. (Schultz 2011). The altering of dopamine is directly shown by changes of impulsivity, the tendency to act before thinking, characterized by behavior that has little or no forethought, reflection, or consideration of the

consequences (International Society for Research on Impulsivity). Impulsivity has long been linked to dopamine, and therefore, measures of impulsivity levels are used to examine the effects of addictive behaviors.

The concept of impulsivity has been variously defined due to significant disagreement among researchers and between laboratories regarding their understanding of impulsivity and how it should be measured. Therefore, in alignment to the foundational literature, this study will utilize the definition by the International Society for Research on Impulsivity as stated above, in which impulsivity also includes traits of sensation seeking, the tendency and desire to pursue "varied, complex, novel, and intense" acts of excitement just for the sake of experience (American Psychological Association 2006; Romer 2009; Zuckerman 1978).

Commonalities Between Disordered Gambling and Substance Abuse

Building upon the common pathways of addiction and the altering of impulsivity levels, this study investigated impulsivity levels relating to two types of addiction that frequently co-occur together: disordered gambling and substance abuse. Substance abuse is characterized by the harmful use (and possibly dependence) on an addictive substance, especially alcohol or drugs (World Health Organization). Addictive gambling, on the other hand, can not clearly be defined because of the many nuanced subcategories of gambling. The severity of a gambling disorder is ranked by the Diagnostic and Statistical Manual of Mental Disorders, in which a higher score corresponds to a greater addiction to gambling (American Psychiatric Association). Thus, in keeping with recent literature and following the study of Daniela Lobo, assistant professor at the University of Toronto, this study uses the term "disordered" gambling (DG) to represent the full spectrum of gambling-related disorders (Lobo 2015). Because this study focuses both on the addiction of disordered gambling and substance abuse, a closer look at the established connection between the two must be examined.

Robert Leeman, associate professor in the Department of Health Education and Behavior at University of Florida College of Medicine, synthesizes research findings that compare and contrast pathological gambling and substance abuse disorders with a focus on neurocognitive tasks, brain function, and neurochemistry. Pathological gambling (PG) is characterized by a

"persistence maladaptive pattern of gambling behavior" and is included in the broadened term "disordered gambling" (Grant 2002).

Leeman's synthesis revealed several similarities between pathological gambling and substance use disorders (SUDs), including risk/reward decision-making; poor performance on neurocognitive tasks, specifically regarding impulsive and compulsive choices and responses; and cognitive flexibility associated with impulsivity (Leeman 2011). Leeman's findings suggest that similar brain regions (i.e. prefrontal cortex and ventral striatum) and similar neurotransmitter complexes (i.e. dopamine and serotonin) were dysfunctional in both pathological gamblers and substance abusers (Leeman 2011). The involvement of dopamine in PG and SUDs is also alike, in that both disorders have been linked with the release of dopamine (Ritz et al. 1987; Leeman 2011). A difference between the two groups is that while many studies suggest that the brain's ventral striatum activity regarding risk/reward decision-making processes is diminished in pathological gambling, these findings have not shown to be consistent with drug addiction (Leeman 2011). Therefore, it can be implied that exposure to drugs may affect striatal function and activities that are related to that. According to the studies Leeman cites, multiple brain regions, including the frontal cortices, striatum, and insula, have been affected in PG and SUDs (Leeman 2011). Leeman summarized with his conclusion that though there are differences between the two addictions, many similarities exist and, thus, the two can be closely studied together.

Impulsivity in Adult Gamblers and Substance Abusers

Several studies have been conducted to show the effect of gambling and substance abuse on impulsivity in adults. A major contributor to the field of psychiatry is Dr. Nancy Petry, who received her PhD in Psychology at Harvard University and is currently a faculty member of UConn Health Center. Dr. Petry is on the editorial board of seven academic journals. Her research focuses on behavioral treatments of addictive disorders, ranging from substance use disorders to pathological gambling. One of her prominent studies was conducted in 2001, in which she evaluated impulsivity in three types of people: pathological gambling substance abusers (n=27), non-pathological gambling substance abusers (n=63), and non-pathological gambling/non-substance abusing controls (n=21) (Petry 2001). Six tests (the Stanford Time

Perception Inventory (STPI), the Zuckerman Sensation Seeking Scale, the Eysenck Impulsivity Scale, the Barratt Impulsivity Scale, and the Bechara Card Task), each measuring a different aspect of impulsivity, were taken by the subjects. Results in each of these tests indicated higher impulsivity levels for pathological gamblers and substance abusers. For example, in the Present Fatalism subcategory in the STPI test, the mean score for controls was 3, for substance abusers was 3.5, and for pathological gamblers was 4 (Petry 2001). Present Fatalism refers to the belief of an externally controlled default future rather than a future controlled by choice (Zimbardo 1992). Therefore, the higher scores in the substance abusers and pathological gamblers reveal that these subjects live a more impulsive and spontaneous life since "whatever will be, will be." In the Zuckerman Sensation Seeking Scale, sample mean scores for the Experience Seeking subcategory showed a 6 for controls, 7.5 for substance abusers, and 9 for pathological gamblers, again indicating an increase in score and a greater desire for novel experiences (Petry 2001). This trend was illustrated once more in the Bechara Card Task, in which the mean hypothetical amount for controls was -$37, -$355 for substance abusers, and -$578 for pathological gamblers (Petry 2001). The hypothetical amount of money loss in the pathological gamblers and substance abusers show the subjects' disregard for future consequences and the desire for a fleeting feeling of satisfaction. From these results, Petry concluded that impulsivity increased with the severity of substance abuse and pathological gambling.

Another study supporting the increased impulsivity in gamblers and substance abusers was done by Andrew Lawrence, a psychologist at the University of Cambridge whose research strives to understand cognitive function and dysfunction. In his 2009 study that consisted of 21 problem gamblers, 23 alcohol-dependents, and 27 healthy controls, Lawrence compared the effects of these two addictions (Lawrence 2009). Problem gambling is a type of impulse control disorder that is slightly less harmful than pathological gambling (Lawrence 2009). In a cross-sectional design, subjects participated in the stop-signal test as part of a neuropsychological assessment, in which subjects either responded to a go signal or a stop signal by pressing a button. The mean go reaction time was 485 ms for alcohol-dependents, 412 ms for problem gamblers, and 394 ms for healthy controls (Lawrence 2009). Go reaction times significantly differed, as alcohol-dependents responded slower in comparison to the controls

($p<0.0001$) and problem gamblers ($p=0.063$) (Lawrence 2009). Similarly, the mean stop-signal reaction time was 212 ms for alcohol-dependents, 185 ms for problem gamblers, and 184 ms for healthy controls, again revealing that the alcohol-dependent group's time was longer than controls' ($p=0.008$) (Lawrence 2009). In conclusion, Lawrence's study showed how the presence of problem gambling and alcohol resulted in a slower psychomotor speed and behavioral adjustment.

In both Lawrence's and Petry's study, all subjects were male. This is based on the commonly accepted assumption that women tend to be less impulsive than men (Eysenck et al. 1985; Spunt 2002; Potenza 2008; Petry 2007; Lawrence 2009; Slutske 2000). Petry states that women appear to develop gambling problems at lower rates than men (Petry 2000). In this study, male and female responses will be analyzed and compared to address this assumption as well.

Impulsivity in Adolescents

This study specifically focuses on the impulsivity levels in youth. Varying researchers have expressed differing beliefs regarding the role of impulsivity in identifying future addictive behaviors.

Studies by research scientists, including Jeffrey Arnett, Lene Jensen, and Gunnar Breivik, whose focus revolves around impulsivity and adolescence, have linked high levels of sensation seeking to drug use, careless driving, risky sexual behavior, and antisocial behaviors (Arnett & Jensen 1994; Hansen & Brivik 2001; Wagner 2001).

Lia Nower, professor and director of the Center for Gambling Studies at the Rutgers School of Social Work, explored the relationship between impulsivity and substance use and disordered gambling in her study in 2004, which consisted of over 1,000 youth aged 17-21 years old. She found that high impulsivity and intensity seeking levels were indeed predictors of disordered gambling in male and female youth, as impulsivity levels increased with increased gambling involvement (Nower 2004). Her results showed that male and female youth gamblers had a strong preference for sensory experiences but did not show an appeal towards novel experiences, a trait that is consistent with the repetitive but stimulating nature of gambling (Nower 2004). Nower's study ultimately establishes the importance of exploring impulsivity in youth in identifying intervention and education programs for addictive behaviors.

Grace Barnes, research scientist at the University at Buffalo, also studied impulsivity in adolescents in her study involving over 2,000 U.S. youth aged 14-21 years old. She provided a comparative analysis of the links between gambling, other addictive behaviors (alcohol, tobacco, and marijuana use), and conduct disorder. After extensive phone interviews, including questions from the South Oaks Gambling Screen Revised for Adolescents, Fisher DSM-IV-MR-J scale for adolescents, and Diagnostic Interview Schedule (DIS-IV), Barnes found that 68% gambled in the past year (Barnes 2011). 82% of those who drank in the past year also gambled as compared to the 53% of those who did not drink and gambled (Barnes 2011). Among those who smoked and used marijuana in the past year, 82% and 86%, respectively, gambled in contrast to the 62% and 64% who gambled among nonsmokers and those who did not use marijuana (Barnes 2011). While comparing conduct disorders, Barnes found that 56% of those without conduct disorder gambled in the past year as compared to 76% with conduct disorders who gambled (Barnes 2011). There were also strong associations between having gambling problems and having substance abuse problems or conduct disorder (Barnes 2011). Barnes' findings with all of the problem behaviors considered showed strong associations with gambling. Therefore, Barnes shows how impulsivity levels can indicate greater addictive behaviors.

However, in contrast to Nower and Barnes, other studies suggest that impulsivity's stronger growth during adolescence must also be taken into consideration (Chambers & Potenza 2003; Casey, Getz, & Galvan 2008; Spear 2000; Chambers et al. 2003). Some even argue that impulsivity is evident in children as young as 3 years old and continues on into adolescence (Moffitt 1993). Research shows that specifically sensation seeking, the appeal towards exciting and novel experiences, will significantly increase during the adolescent phase and cause a peak in the release of dopamine into the brain's ventral striatum and prefrontal cortex (Chambers et al. 2003; Romer & Hennessy 2007; Spear 2000). This implies that increased impulsivity in youth is a natural phenomenon that occurs during the development into adulthood.

Daniel Romer, research director at the Annenberg Public Policy Center at the University of Pennsylvania, explores this natural occurrence of increased impulsivity in youth in his longitudinal study in 2010, which consisted of 387 youth aged 10-12 years old. After assessing impulsivity, risk behavior, working memory, cognitive control, and reward processing through a

series of questionnaires and tasks, Romer confirmed that there is a tendency to take risks during adolescence. His findings also confirmed the widely accepted assumption that males are more impulsive than females, as the male youth tended to have higher sensation seeking levels, to participate more often in risk behaviors, and to perform worse on a reward processing task (Romer 2010). Romer further found that youth who were older had higher impulsivity levels and participated in more risk behavior (Romer 2010).

HYPOTHESIS

After considering the different perspectives of the present literature, the hypothesis for this study is that high levels of impulsivity may indicate an increased risk for addictive behaviors in the future.

METHODOLOGY

This study closely aligns with Nancy Petry's study, which analyzes the impulsivity levels of adults with backgrounds of gambling and substance, and Lia Nower's study, which examines the relationship between impulsivity and substance abuse in youth gamblers.

Participants

Participants in this study included 100 youth (50 females, 50 males) who ranged in age from 13-18 years old (Mean = 16.1 years). The youth were gathered from a large public suburban high school (SHS), consisting of over 4,200 students in 9th-12th grade. It is both economically and ethnically diverse, with 38.3% Latino, 28.8% White, 26.2% Asian, 4.3% Black, and 2.5% other race and with 52% of students eligible for California's Reduced-price meal program. These students were chosen as the target population due to the convenience of reduced cost and time needed to conduct this study, both of which were important factors that made widespread data collection possible. With these qualifications, it is believed that SHS represents the typical high school and that SHS students can be a proxy for middle income high schools in California. The students represented at this school fit the purpose of this study.

Data Collection

A stratified random sample was chosen as the best method of data collection for this study. This design ensured that all students of the SHS population were equally likely to be selected. An initial examination was done to conclude that students could be exclusively distributed to a single gate of initial entry into school each morning. The population was then subdivided into seven stratums (Flagpole Gate, Zelzah Gate, Service Road East Gate, Hiawatha Lot Gate, Service Road West Gate, J Gate, and Kingsbury Gate), and percentages of students who entered each of those main entry gates were found. These percentages were enforced into this study to ensure that the entire student body was represented and chi-squared analysis was conducted to ensure that the observed distribution of students per gate matched the expected distribution (Figure 1).

Figure 1. SHS Map and Distribution Table

Color	Student Entry Points	# of Population SHS Students Entering	% of Population SHS Students Entering	# of Sample SHS Students Entering	% of Sample SHS Students Entering
	Flagpole	1194	28%	28	28%
	Zelzah	955	22%	22	22%
	Service Road East	176	5%	5	5%
	Hiawatha Lot	261	7%	7	7%
	Service Road West	496	11%	11	11%
	J Gate	129	3%	3	3%
	Kingsbury	991	24%	24	24%
	Total	**4202**	**100%**	**100**	**100%**

Between January 23 to January 31, 2017, all subjects were randomly recruited in the morning between the times of 7:25 A.M. to 8:20 A.M. from each of the seven entry gates. Every third person was asked if he/she would be willing to take a survey that will be emailed later on in the day. Student I.D. numbers were mechanically collected into the Chromebooks. Nonrespondents

were recorded as well. Emails were sent out at 3 P.M. that same day, and subjects were given 24 hours to complete the survey. Any response after that was considered a nonrespondent.

Measures

This study gathered quantitative and categorical data on elements that link to impulsivity: thrill and adventure seeking, experience seeking, disinhibition, attention, motor, self-control, cognitive complexity, perseverance, and cognitive instability. The surveys, formatted online with Google Forms, was non-disguised, in which subjects were aware of the data collection process. All subjects were anonymous. Though foundational sources, such as Petry's and Nower's, were able to categorize subjects into three groups (gamblers, substance abusers, and control) based on an initial background assessments, this could not be done in this study because asking explicit questions regarding gambling and substance abuse is inappropriate in the high school setting. Therefore, surveys were conducted without knowledge of the student's gambling and substance abuse background. The two questionnaires employed in this study were directly taken from the foundational literature, in which these questionnaires have been widely accepted and used as two of the most common instruments to assess impulsivity levels associated with gambling and substance use disorders.

Zuckerman Sensation Seeking Scale. The 40-item Zuckerman Sensation Seeking Scale (Zuckerman 1978) assessed the personality traits of sensation seeking, which is related to impulsivity. It included four subscales: Thrill and Adventure Seeking (e.g. "I would like to take up the sport of water skiing"), Experience Seeking (e.g. "I often find beauty in the 'clashing' colors and irregular forms of modern paintings"), Disinhibition (e.g. "It's better if two married persons begin their sexual experience with each other"), and Boredom Susceptibility (e.g. "I like the comfortable familiarity of everyday friends"). In this questionnaire, subjects chose one of two opposing statements that most described their likes and feelings. One point was earned for each high sensation seeking answer, and all points were counted for a summed score out of a maximum of 40 points. Higher scores revealed higher levels of sensation seeking.

Barratt Impulsivity Scale. The 30-item Barratt Impulsivity Scale (Patton et al. 1995) examined three factors linked to impulsiveness: Non-Planning (e.g. "I am a careful thinker"), Motor (e.g. "I spend or charge more than I earn"), and Attention (e.g. "I concentrate easily").

Subjects indicated on a 1 to 4 scale how applicable each of the 30 items was to him/herself. Scores were summed up for all items, with higher scores relating to higher levels of impulsivity. Selected items were specifically worded to indicate nonimpulsiveness in order to avoid a response set. Those questions were scored accordingly by reversing the score.

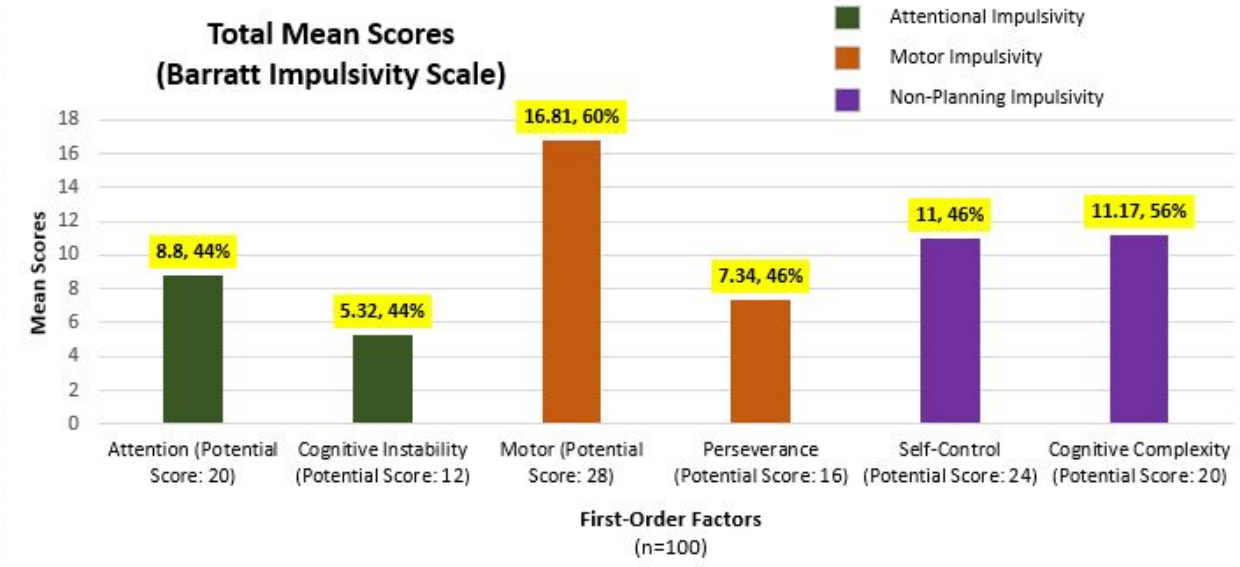
Data Analysis

After the data collection process concluded, the data from Google Forms was directly downloaded into an Excel Spreadsheet, where statistical analysis was conducted using Excel Statistics Tool Pack. Descriptive statistics were used to evaluate the mean impulsivity scores on the different subscales of the two questionnaires. In addition, two-sample tests of significance were applied to determine differences between male and female responses. Data was also best presented using histograms to show the distributions of responses and to align with the foundational literature. All statistics addendum are included in the appendix below.

FINDINGS AND ANALYSIS

Barratt Impulsivity Scale

Figure 2. SHS Student Population - Barratt Impulsivity Scale Mean Scores

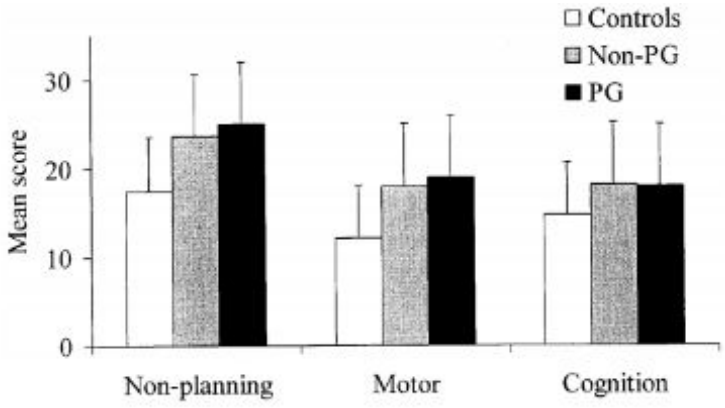


Overall Analysis. Figure 2 displays the total mean scores for each first-order factor, drawing attention towards two factors whose scores were notably higher: the Motor component (Mean = 16.81 ; Potential Total = 28) and the Cognitive Complexity component (Mean = 11.17 ;

Potential Total = 20). Overall, Motor Impulsivity and Non-Planning Impulsivity had the highest scores.

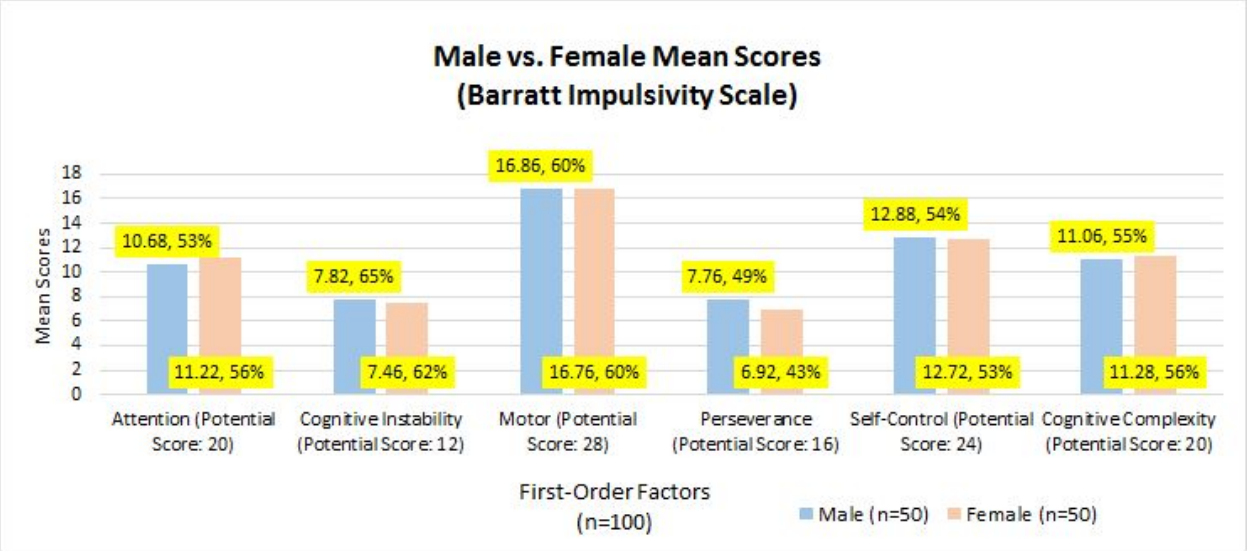
Motor Impulsivity of the Barratt Impulsivity Scale has been established as accurately measuring impulsivity because it relates mostly to the tendency to act before thinking. The high scores obtained by the subjects in Non-Planning and Motor Impulsivity aligns with Nancy Petry's study, in which there was a steady, significant increase in these two components in the pathological gamblers and substance abusers (Figure 3). Therefore, it can be implied that Non-Planning and Motor Impulsivity specifically can be indicative of an addictive behavior in the future. Though this may be the case, it should be pointed out that the Cognitive Complexity factor, which expresses the cognitive ability for complexity, scored high as well. This gives evidence to support the natural phenomenon of impulsivity, as adolescent brains are still in the process of development, and therefore, may engage in rash actions without the ability to be aware of consequences.

Figure 3. Petry's Study Population - Barratt Impulsivity Scale Mean Scores



Female/Male Analysis. Consistent with prior research claiming that males are more impulsive than females, when comparing total mean scores for each first order factor, males scored higher in four of the six categories: Cognitive Instability (Mean = 7.82), Motor (Mean = 16.86), Perseverance (Mean = 7.76), and Self-Control (Mean = 12.88) (Figure 4).

Figure 4. Males vs. Female Mean Scores (Barratt)



After analyzing individual questions within each first order factor through two sample t-tests of significance, it was found that though there was mostly evidence showing no statistically significant data by gender, results showed statistically significant data for four items, three of which males scored significantly higher (Figure 5).

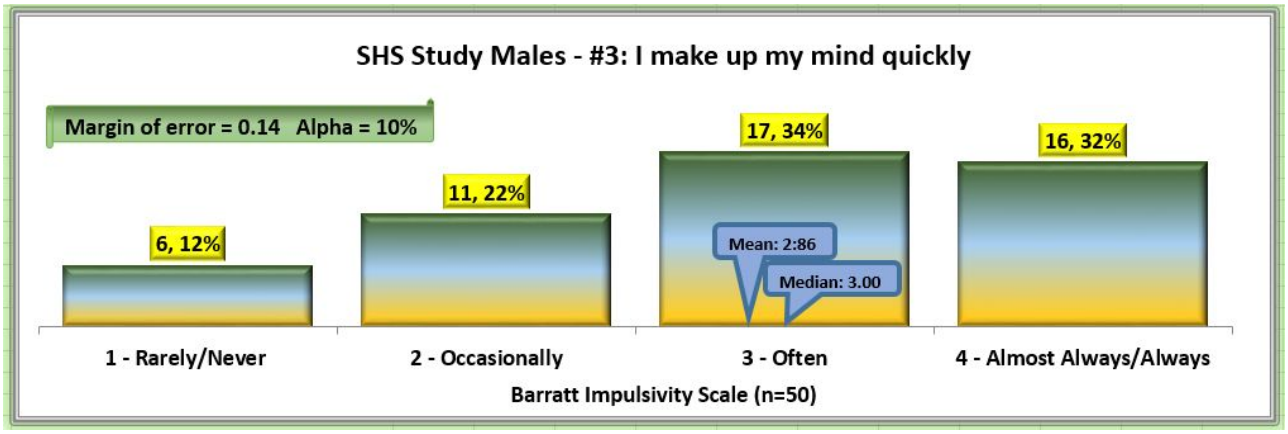
Figure 5. SHS Student Population - Barratt Impulsivity Scale (Male and Female Comparison)

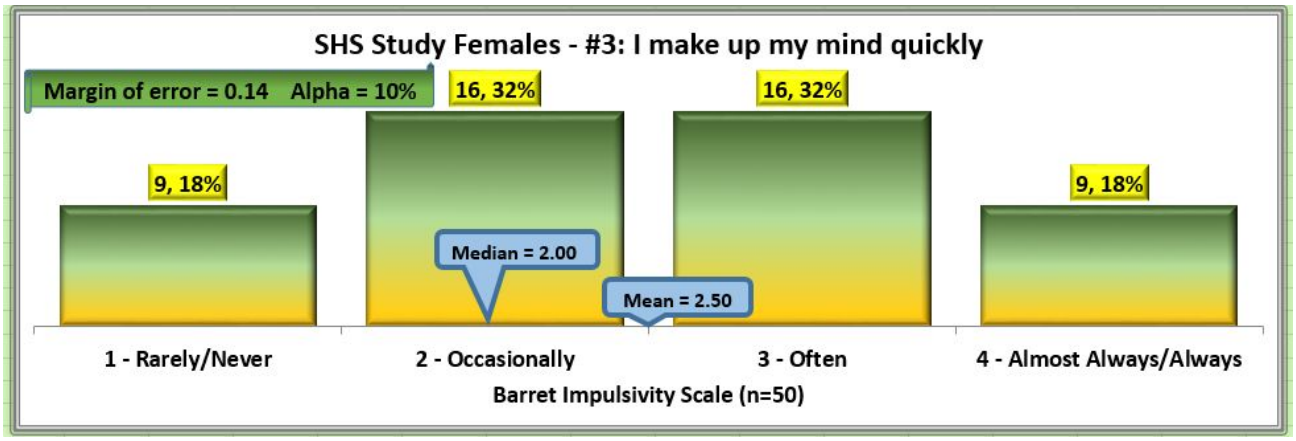
Item No.	Abbreviated Item Content	Subdomain (First-Order Factor)	Higher-Order Factor	Item Mean (Total)	Item Mean (Male)	Item Mean (Female)	P-Value (α =0.10)
5	Don't pay attention	Attention	Attentional	2.07	1.98	2.16	0.310
9*	Concentrate easily	Attention	Attentional	2.51	2.57	2.49	0.684
11	Squirm at plays or lectures	Attention	Attentional	2.16	2.20	2.12	0.686
20*	Am a steady thinker	Attention	Attentional	2.85	2.94	2.80	0.406
28	Am restless at the theater	Attention	Attentional	2.08	1.98	2.18	0.348
6	Have racing thoughts	Cog Instability	Attentional	2.62	2.74	2.5	0.252
24	Change hobbies	Cog Instability	Attentional	2.32	2.26	2.38	0.585
26	Have extraneous thoughts	Cog Instability	Attentional	2.70	2.82	2.58	0.207
2	Do things without thinking	Motor	Motor	2.37	2.34	2.4	0.750
3	Make up my mind quickly	Motor	Motor	2.68	2.86	2.5	0.080
4	Am happy-go-lucky	Motor	Motor	2.72	2.64	2.8	0.400
17	Act on impulse	Motor	Motor	2.34	2.38	2.3	0.667
19	Act on spur of the moment	Motor	Motor	2.44	2.48	2.40	0.678
22	Buy things on impulse	Motor	Motor	2.22	2.22	2.22	1.000
25	Spend more than earn	Motor	Motor	2.04	1.94	2.14	0.327
16	Change jobs	Perseverance	Motor	1.61	1.8	1.42	0.019
21	Change residences	Perseverance	Motor	1.64	1.72	1.56	0.396
23	Think about only one thing	Perseverance	Motor	2.11	2.18	2.04	0.501
30*	Am future oriented	Perseverance	Motor	3.02	3.12	2.94	0.297
10*	Save regularly	Cog Complexity	Non-Planning	2.68	2.61	2.78	0.440
15*	Like to think about problems	Cog Complexity	Non-Planning	2.94	3.12	2.73	0.041
18	Bored solving problems	Cog Complexity	Non-Planning	2.14	2.14	2.14	1.000
27	Interested in present	Cog Complexity	Non-Planning	2.33	2.38	2.28	0.599
29*	Like puzzles	Cog Complexity	Non-Planning	2.68	2.69	2.67	0.929
1*	Plan tasks carefully	Self-Control	Non-Planning	2.79	2.73	2.90	0.346
7*	Plan trips ahead of time	Self-Control	Non-Planning	2.71	2.49	2.96	0.020
8*	Am self-controlled	Self-Control	Non-Planning	3.2	3.31	3.12	0.252
12*	Am a careful thinker	Self-Control	Non-Planning	2.91	3.00	2.82	0.280
13*	Plan for job security	Self-Control	Non-Planning	2.89	2.96	2.86	0.586
14	Say things without thinking	Self-Control	Non-Planning	2.3	2.28	2.32	0.836

* Reverse Scored Items

Higher Impulsivity Statistically Significant Data By Gender

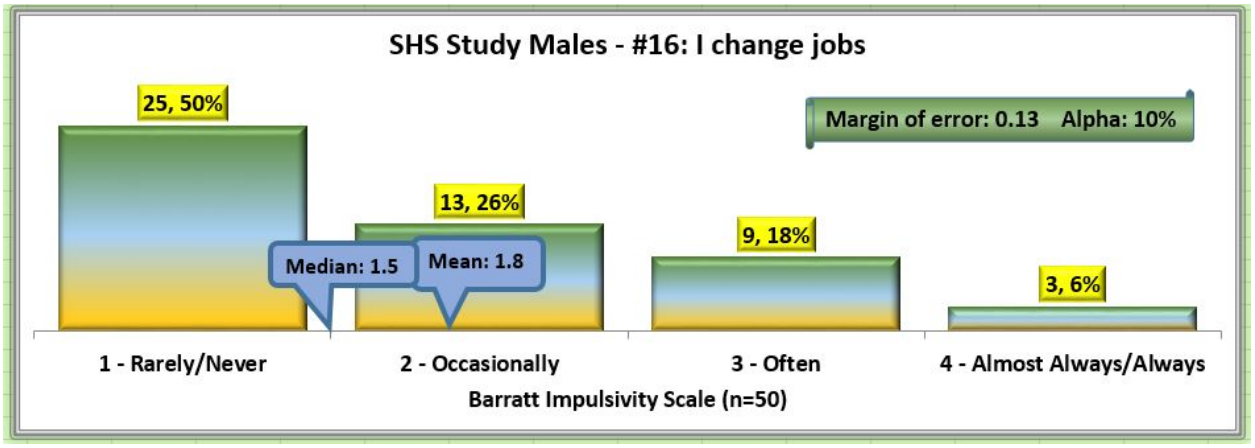
Figure 6. Question #3 (Barratt)

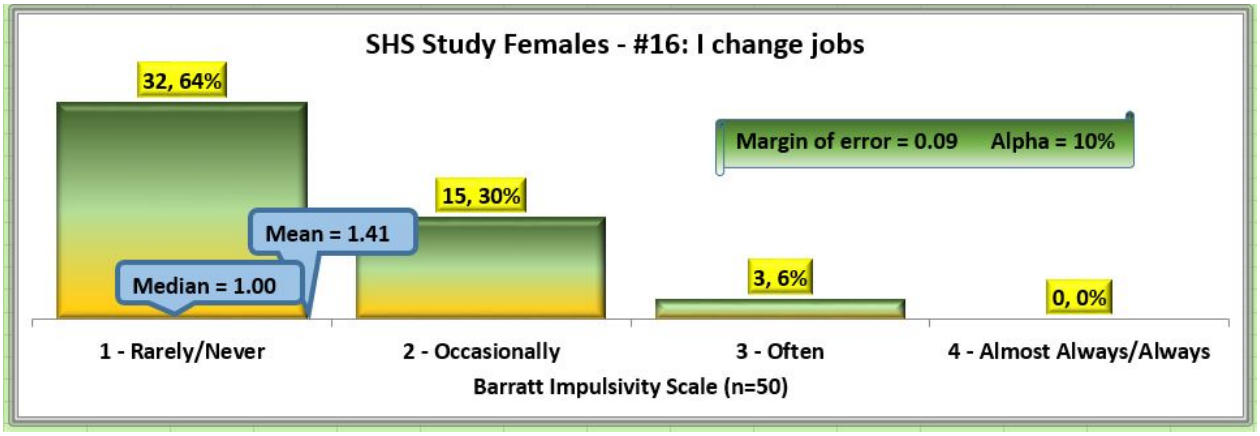




Question #3 on the Barratt Impulsivity Scale measured motor impulsivity, specifically the control of motor actions and the tendency to act on the spur of the moment. Histograms of the score distributions between males and females show that while the male distribution is slightly skewed to the left, the female distribution appears to have an approximately normal shape. The histograms show that while 50% of females make up their mind quickly often or almost always, 66% of males make up their mind quickly often or almost always, showing how males acted on the spur more often. Males scored higher with a mean of 2.86 compared to the female mean of 2.50, again emphasizing that the males had less control of their motor actions than the females.

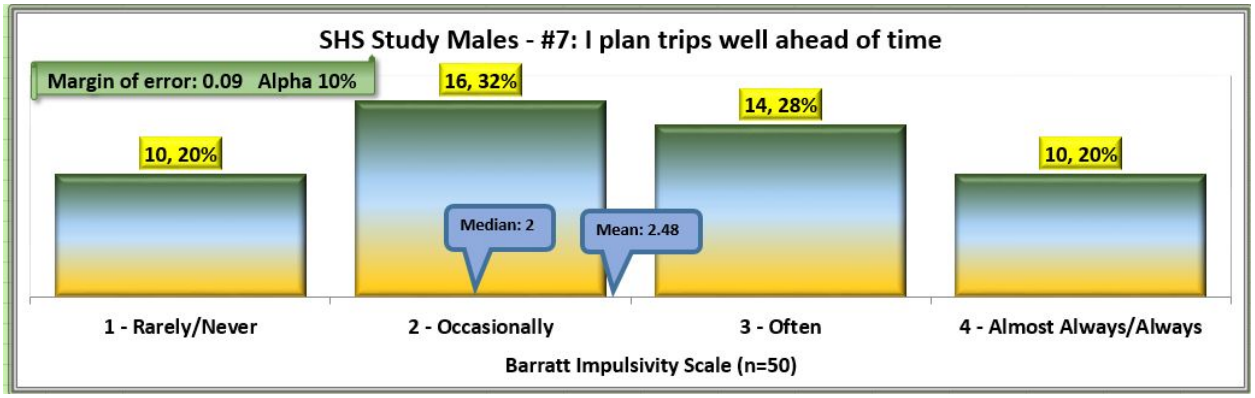
Figure 7. Question #16 (Barratt)

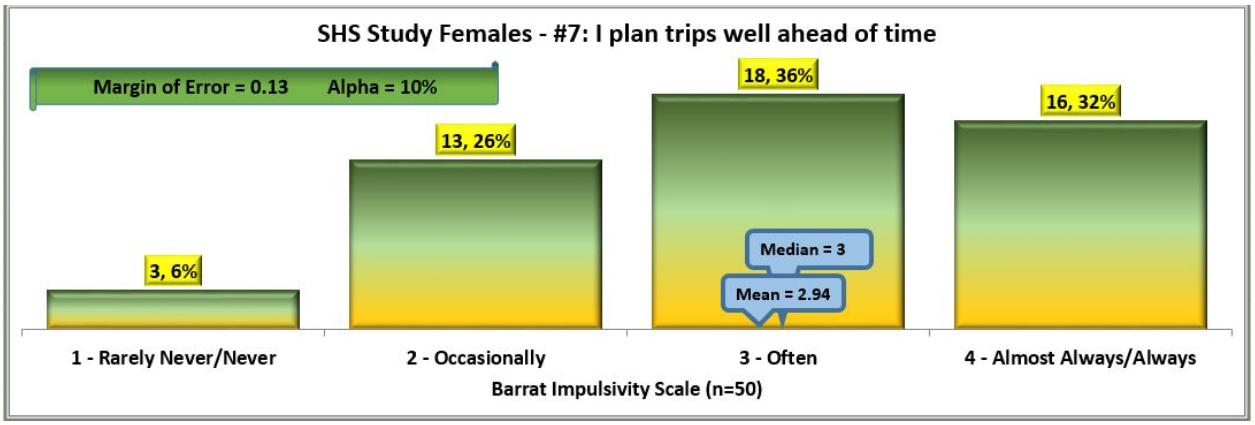




Question #16 similarly measured motor impulsivity, but focused on the perseverance component, in which refers to the ability to maintain focus on boring or difficult tasks (Whiteside 2001). Individuals who are able to complete projects despite any distracting stimuli are low in the lack of perseverance. High scorers, therefore, "cannot force themselves to do what they want themselves to do" (Costa and McCrae 1992). Histograms of the score distributions between males and females show that both the female and male distribution are skewed to the right, indicating an overall low lack of perseverance. Regardless, the histograms show that while 6% of the females change jobs often or almost always, 24% of males change jobs often or almost always, illustrating that females persevere better in holding off on impulsive actions. Males scored higher with a mean of 1.80 compared to the female mean of 1.41, emphasizing the higher impulsivity in males.

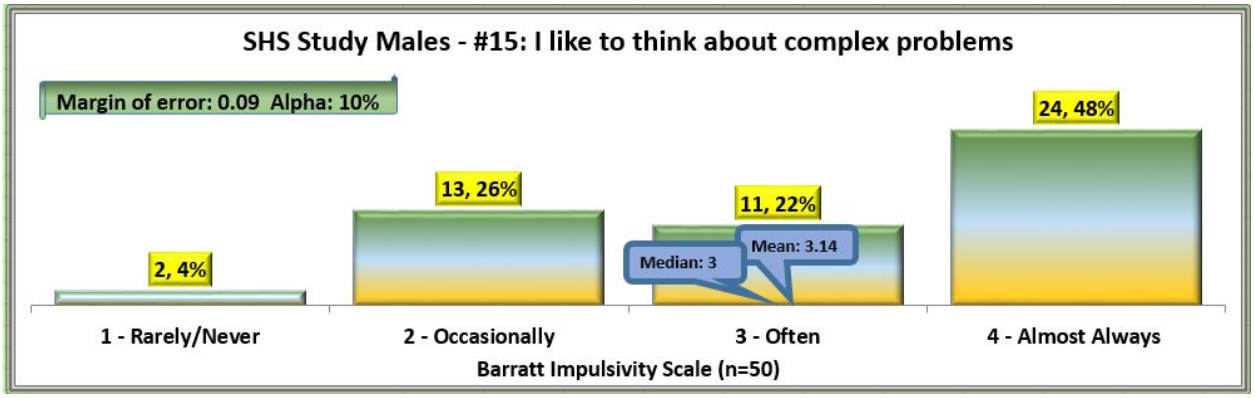
Figure 8. Question #7 (Barratt)

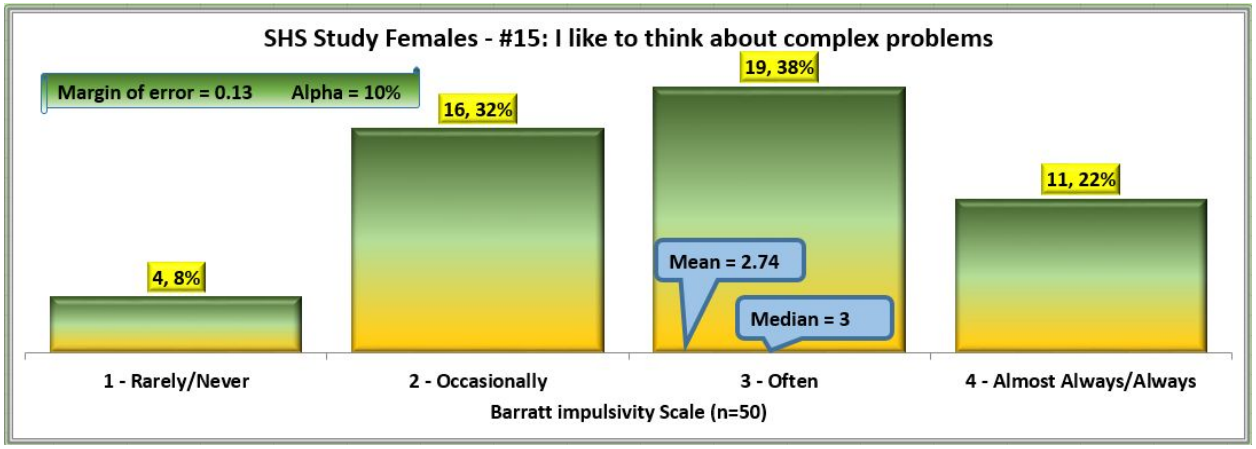




Question #7 measured nonplanning impulsivity with a focus on the self-control component, which is the ability to plan and think deliberately. This question was reversely scored with a lower score indicating higher impulsivity. Histograms of the score distributions between males and females show that the male distribution is approximately normal while the female distribution appears to be slightly skewed left. Males scored lower with a mean of 2.48 compared to the female mean of 2.94, indicating that the males had less self control in planning for their future. The histograms also showed that while 68% of females plan trips well ahead of time often or almost always, only 48% of the males did so, showing the higher impulsivity in males.

Figure 9. Question #15 (Barratt)

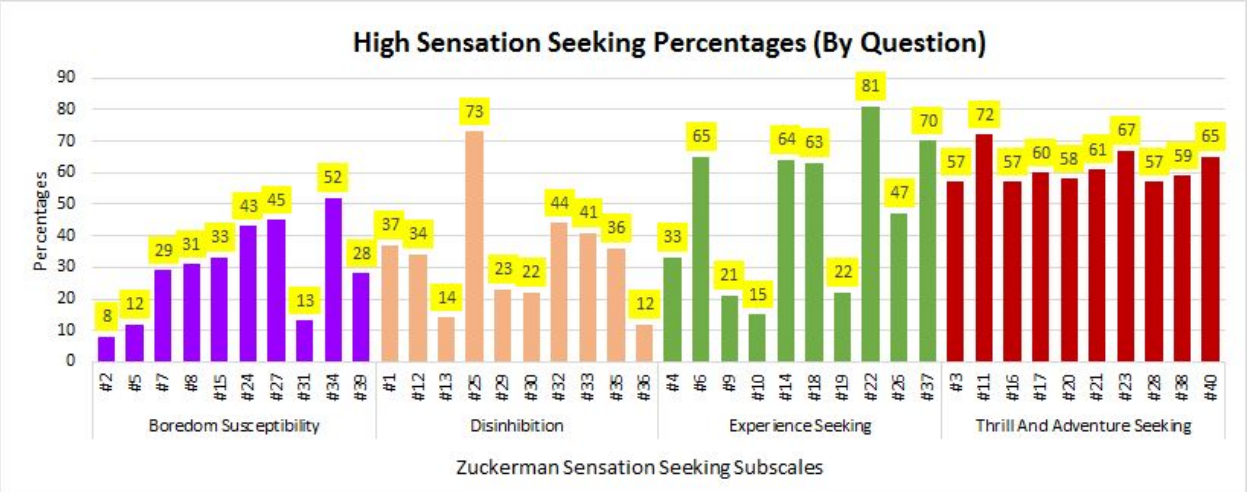




Question #15 similarly measured non-planning impulsivity, but focused on the cognitive complexity component, which is the enjoyment of mental changes. This question is also reversely scored. Unlike the other statistically significant questions where males showed to be more impulsive than females, females in this question showed to be more impulsive than males. Histograms of the score distributions between males and females show a skewed left distribution for the male responses and an approximately normal shape for the female responses. While 70% of males like to think about complex problems often or almost always, only 60% of females like to do so often or almost always, indicating that males enjoyed mental changes more.

Zuckerman Sensation Seeking Scale

Figure 10. SHS Student Population - Zuckerman Sensation Seeking Scale



Overall Analysis. Figure 10 shows the percentages of high sensation seeking responses broken down per question and grouped into the four subscales of sensation seeking. The total mean sensation seeking score for all subjects was 17.14 out of a possible score of 40, indicating low/medium sensation seeking levels. The results from Figure 10 indicate that the Thrill and Adventure Seeking component received the highest rankings among the group, and the Experience Seeking component received the second highest.

This finding is consistent with Powell, Hardoon, Derevensky, and Gupta's 1999 study of college gamblers, who scored significantly higher in the Thrill and Adventure Seeking and Intensity Seeking (Experience Seeking) components (Powell et al. 1999). Lia Nower's study also showed that female and male youth gamblers had strong preferences for sensory experiences but no pulling towards novel experiences (Nower 2004). However, this finding is also consistent with Nancy Petry's study in which adults of all three categories (control, substance abusers, and pathological gambling substance abusers) scored high in both the Thrill and Adventure Seeking component and Experience Seeking component (Petry 2001). Though the Experience Seeking component score varied in these different studies, the high Thrill and Adventure Seeking component score was consistent throughout this study and Petry's, Nower's, and Powell's. Therefore, this finding draws evidence towards the possibility of Thrill and Adventure Seeking specifically as an indication towards addictive behaviors in the future.

Female/Male Analysis. Splitting the sample by gender yielded data that was not statistically significant data. Though males (Mean=17.52) scored higher than females (Mean=16.76), a two sample t-test of significance revealed that there was not sufficient evidence to conclude that males have higher sensation seeking than females (p=0.538).

DISCUSSION

Review of Findings

This current study found that specific components of impulsivity can be a possible indication of an inclination towards disordered gambling and substance abuse in the future. The youth scored high in Non-Planning and Motor impulsivity, which is the tendency to act on the spur of the moment. Though these high scores may be attributed to the incomplete development of the young subjects' brains and the inability to fully comprehend consequences, there is an alignment with Petry's study, in which the high Non-Planning and Motor impulsivity scores found in her study corresponds to the high scores in this study. Without the subjects' gambling and substance use background, this alignment to Petry's study cannot be fully established. However, because of the significantly high Non-Planning and Motor impulsivity scores in this study and the steady increase of these scores in pathological gamblers and substance abusers in Petry's study, it can be implied that high Non-Planning and Motor impulsivity scores may show a risk towards disordered gambling and substance abuse.

In regards to sensation seeking, subjects scored the highest on the Thrill and Adventure Seeking component, consistent with the foundational literature. Therefore, this sensation seeking component may show an engagement in addictive behaviors in the future.

When male and female results were compared, it was found that males tend to be more impulsive but did show significantly different sensation seeking traits when compared to females.

Bias

Because this study replicated actual impulsivity tests from the foundational literature, the items of bias present in this study were the same as those of the foundational studies, which have undergone extensive peer review. Because the surveys were sent through email, nonresponse

bias was present in this study, as many students failed to take the survey either within 24 hours or at all. Response bias and social desirability bias were also present because some questions asked in the questionnaires were explicit, and students might have perceived that they would be judged by their answers despite the reassurance of anonymity.

However, cautious steps were taken in this study in order to attempt to maximize response rate and reduce bias. First, the questionnaires were created and distributed online, which made it convenient for students to access the surveys and submit their answers at their own leisure. The questionnaires were also preceded by clear, concise instructions that were non-threatening and non-intimidating, ensuring that there were no right or wrong answers and encouraging subjects to answer in a truthful manner. There were no leading questions, and all answer options were mutually exclusive.

Limitations

This study was affected by notable limitations due to resource and time availability. First, the data was derived from a relatively small, but heterogeneous and random, sample of high schoolers. The constraints of resource costs and time required the sample be minimized to a reasonable size. Second, the time constraint also contributed to the number of impulsivity tests employed in this study. Due to the extensive length of each impulsivity test and the substantial data analysis required for each test, only two questionnaires were used to assess impulsivity in order to: (1) maximize the response rate, (2) still produce enough data to establish valid and credible findings, and (3) allow for thorough data analysis to be conducted in the given time frame. As an individual high school researcher on a time schedule, analyzing over 70 questions for more than 100 subjects would prove to be infeasible.

CONCLUSION

Significance

Despite the limitations, this study further establishes the importance of studying impulsivity in youth. While researchers have conducted studies given the patients' background gambling and substance abuse history and have strong evidence that links these addictive behaviors to higher impulsivity levels, this study focused on studying impulsivity patterns as a

precursor to these addictive behaviors. This study attempted to address the gap in the field of knowledge by exploring impulsivity as a precautionary measure.

Call for Future Research

While this study was able to identify specific components of impulsivity as possible precursors, to confirm this finding, a longitudinal study should be carried out. This longitudinal study should be conducted over several years to compare impulsivity levels possibly once during high school and again during college. This would further assess the validity of impulsivity readings as an indication of addictive behavior in the future. Furthermore, this research could be further expanded by investigating the difference between impulsivity and sensation seeking as it relates to males and females. This could potentially draw conclusions to specific indicators for specific genders (i.e. high impulsivity shows high risk for addiction in males, high sensation seeking shows high risk for addiction in females). Ultimately, if impulsivity can be definitely proven to predict future addictive behaviors, several harmful effects can be prevented and more effective treatments can be created to help youth combat engaging in disordered gambling and substance abuse.

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Appendix #1
Inventory of Survey Questions

Inventory of Survey Questions

Barratt Impulsivity Scale (30 Questions)

1	I plan tasks carefully.
2	I do things without thinking.
3	I make-up my mind quickly.
4	I am happy-go-lucky.
5	I don't "pay attention."
6	I have "racing" thoughts.
7	I plan trips well ahead of time.
8	I am self controlled.
9	I concentrate easily.
10	I save regularly.
11	I "squirm" at plays or lectures.
12	I am a careful thinker.
13	I plan for job security.
14	I say things without thinking.
15	I like to think about complex problems.
16	I change jobs.
17	I act "on impulse."
18	I get easily bored when solving thought problems.
19	I act on the spur of the moment.
20	I am a steady thinker.
21	I change residences.
22	I buy things on impulse.
23	I can only think about one thing at a time.
24	I change hobbies.
25	I spend or charge more than I earn.
26	I often have extraneous thoughts when thinking.
27	I am more interested in the present than the future.
28	I am restless at the theater or lectures.
29	I like puzzles.
30	I am future oriented.

Inventory of Survey Questions

Zuckerman Sensation Seeking Scale (40 Questions)

1 A: I like “wild” uninhibited parties
B: I prefer quiet parties with good conversation
2 A: There are some movies I enjoy seeing a second or even a third time
B: I can't stand watching a movie that I've seen before
3 A: I often wish I could be a mountain climber
B: I can't understand people who risk their necks climbing mountains
4 A: I dislike all body odors
B: I like some for the earthly body odors
5 A: I get bored seeing the same old faces
B: I like the comfortable familiarity of everyday friends
6 A: I like to explore a strange city or section of town by myself, even if it means getting lost
B: I prefer a guide when I am in a place I don't know well
7 A: I dislike people who do or say things just to shock or upset others
B: When you can predict almost everything a person will do and say he or she must be a bore
8 A: I usually don’t enjoy a movie or play where I can predict what will happen in advance
B: I don’t mind watching a movie or play where I can predict that will happen in advance
9 A: I have tried marijuana or would like to
B: I would never smoke marijuana
10 A: I would not like to try any drug which might produce strange and dangerous effects on me
B: I would like to try some of the new drugs that produce hallucinations
11 A: A sensible person avoids activities that are dangerous
B: I sometimes like to do things that are a little frightening
12 A: I dislike “swingers” (people who are uninhibited and free about sex)
B: I enjoy the company of real “swingers”
13 A: I find that stimulants make me uncomfortable
B: I often like to get high (drinking liquor or smoking marijuana)
14 A: I like to try new foods that I have never tasted before
B: I order the dishes with which I am familiar, so as to avoid disappointment and unpleasantness
15 A: I enjoy looking at home movies or travel slides
B: Looking at someone's home movies or travel slides bores me tremendously
16 A: I would like to take up the sport of water skiing
B: I would not like to take up water skiing
17 A: I would like to try surf boarding
B: I would not like to try surf boarding
18 A: I would like to take off on a trip with no preplanned or definite routes, or timetable
B: When I go on a trip I like to plan my route and timetable fairly carefully
19 A: I prefer the “down to earth” kinds of people as friends
B: I would like to make friends in some of the “far out” groups like artists or “punks”
20 A: I would not like to learn to fly an airplane
B: I would like to learn to fly an airplane
21 A: I prefer the surface of the water to the depths
B: I would like to go scuba diving
22 A: I would like to meet some persons who are homosexual (men or women)
B: I stay away from anyone I suspect of being "gay" or "lesbian"
23 A: I would like to try parachute jumping

B: I would never want to try jumping out of a plane with or without a parachute

24 A: I prefer friends who are excitingly unpredictable
B: I prefer friends who are reliable and predictable

25 A: I am not interested in experience for its own sake
B: I like to have new and exciting experiences and sensations even if they are a little frightening, unconventional, or illegal

26 A: The essence of good art is in its clarity, symmetry of form and harmony of colors
B: I often find beauty in the “clashing” colors and irregular forms of modern paintings

27 A: I enjoy spending time in the familiar surroundings of home
B: I get very restless if I have to stay around home for any length of time

28 A: I like to dive off the high board
B: I don’t like the feeling I get standing on the high board (or I don’t go near it all)

29 A: I like to date members of the opposite sex who are physically exciting
B: I like to date members of the opposite sex who share my values

30 A: Heavy drinking usually ruins a party because some people get loud and boisterous
B: Keeping the drinks full is the key to a good party

31 A: The worst social sin is to be rude
B: The worst social sin is to be a bore

32 A: A person should have considerable sexual experience before marriage
B: It’s better if two married persons begin their sexual experience with each other

A: Even if I had the money I would not care to associate with flight rich persons like
33 those in the “jet set”
B: I could conceive of myself seeking pleasures around the world with the “jet set”

34 A: I like people who are sharp and witty even if they do sometimes insult others
B: I dislike people who have their fun at the expense of hurting the feelings of others

35 A: There is altogether too much portrayal of sex in movies
B: I enjoy watching many of the “sexy” scenes in movies

36 A: I feel best after taking a couple of drinks
B: Something is wrong with people who need liquor to feel good

37 A: People should dress according to some standard of taste, neatness, and style
B: People should dress in individual ways even if the effects are sometimes strange

38 A: Sailing long distances in small sailing crafts is foolhardy
B: I would like to sail a long distance in a small but seaworthy sailing craft

39 A: I have no patience with dull or boring persons
B: I find something interesting in almost every person I talk to

40 A: Skiing down a high mountain slope is a good way to end up on crutches
B: I think I would enjoy the sensations of skiing very fast down a high mountain slope

Appendix #2

Data As Presented in Excel

(Data file available upon request.)

SHS Study

Barratt Impulsivity Scale (30 Questions)

Survey Design: Stratified Random Sample

n=100 (50 Female, 50 Male)

Timestamp	Biological Gender	Age	Date of Survey	Gate	I plan tasks carefully.	I do things without thinking.	I make-up my mind quickly.	I am happy-go-lucky.	I don't "pay attention."	I have "racing" thoughts.
1/31/2017 11:48:52	Female	15	1/31/2017	Hiawatha (Student Pa	3	3	4	4	2	3
1/31/2017 18:24:29	Female	17	1/31/2017	Hiawatha (Student Pa	1	2	2	4	1	1
1/31/2017 12:34:23	Female	17	1/31/2017	Hiawatha (Student Pa	1	2	2	4	1	1
1/24/2017 16:49:04	Female	16	1/24/2017	Kingsbury (Main Offic	2	3	2	4	2	2
1/24/2017 16:58:46	Female	16	1/24/2017	Kingsbury (Main Offic	2	2	3	2	1	4
1/24/2017 17:05:35	Female	14	1/24/2017	Kingsbury (Main Offic	4	3	4	2	3	3
1/24/2017 17:15:40	Female	14	1/24/2017	Kingsbury (Main Offic	3	3	1	3	3	4
1/24/2017 17:31:56	Female	17	1/24/2017	Kingsbury (Main Offic	2	1	2	2	1	3
1/24/2017 17:38:20	Female	14	1/24/2017	Kingsbury (Main Offic	1	4	4	3	2	3
1/24/2017 19:20:08	Female	14	1/24/2017	Kingsbury (Main Offic	2	4	3	3	4	2
1/24/2017 19:38:16	Female	15	1/24/2017	Kingsbury (Main Offic	4	3	3	1	1	1
1/24/2017 21:17:50	Female	15	1/24/2017	Kingsbury (Main Offic	2	3	3	2	2	1
1/24/2017 22:29:01	Female	16	1/24/2017	Kingsbury (Main Offic	2	1	3	3	2	2
1/25/2017 9:18:40	Female	18	1/24/2017	Kingsbury (Main Offic	1	3	2	3	2	3
1/25/2017 10:59:41	Female	18	1/24/2017	Kingsbury (Main Offic	2	2	1	4	2	2
1/25/2017 14:00:26	Female	14	1/24/2017	Kingsbury (Main Offic	3	1	3	2	3	3
1/25/2017 18:21:24	Female	16	1/24/2017	Kingsbury (Main Offic	2	2	1	3	3	2
1/31/2017 12:36:17	Female	17	1/31/2017	Kingsbury (Main Offic	2	1	1	2	1	1
1/31/2017 12:39:49	Female	17	1/31/2017	Kingsbury (Main Offic	3	2	1	2	4	3
1/26/2017 14:47:31	Female	15	1/26/2017	Flagpole (Library)	2	1	3	3	1	2
1/26/2017 16:47:16	Female	17	1/26/2017	Flagpole (Library)	1	2	4	4	1	1
1/26/2017 17:52:38	Female	14	1/26/2017	Flagpole (Library)	3	3	3	2	2	4
1/26/2017 19:31:19	Female	15	1/26/2017	Flagpole (Library)	2	2	2	2	3	3
1/27/2017 19:18:35	Female	15	1/27/2017	Flagpole (Library)	2	2	2	3	2	4
1/28/2017 19:50:09	Female	17	1/27/2017	Flagpole (Library)	2	2	2	4	2	2

1/28/2017 23:29:35	Female	14	1/27/2017	Flagpole (Library)	2	3	1	1	2	1
1/26/2017 11:09:29	Female	14	1/26/2017	Flagpole (Library)	2	3	2	4	2	3
1/26/2017 14:27:16	Female	15	1/26/2017	Flagpole (Library)	1	3	3	2	1	1
1/26/2017 13:26:28	Female	14	1/26/2017	Flagpole (Library)	2	4	4	3	2	4
1/31/2017 11:51:58	Female	17	1/31/2017	Flagpole (Library)	2	2	1	2	3	2
1/31/2017 11:58:58	Female	17	1/31/2017	Flagpole (Library)	2	3	4	3	2	4
1/31/2017 12:00:32	Female	18	1/31/2017	Flagpole (Library)	4	2	1	4	4	4
1/31/2017 12:29:45	Female	17	1/31/2017	Flagpole (Library)	2	4	3	2	3	2
1/31/2017 12:32:09	Female	17	1/31/2017	Flagpole (Library)	3	4	3	3	4	4
1/31/2017 12:41:50	Female	16	1/31/2017	Flagpole (Library)	1	1	1	4	4	4
1/24/2017 14:51:11	Female	15	1/23/2017	Surface Road East (b	4	2	4	3	3	1
1/30/2017 16:24:05	Female	15	1/30/2017	Surface Road West (r	1	2	2	3	1	3
1/30/2017 18:45:59	Female	15	1/30/2017	Surface Road West (r	2	3	2	2	2	1
1/31/2017 13:01:27	Female	16	1/30/2017	Surface Road West (r	3	1	2	2	2	2
1/31/2017 9:48:47	Female	17	1/30/2017	Surface Road West (r	1	2	3	3	1	2
1/31/2017 11:00:21	Female	16	1/30/2017	Surface Road West (r	3	2	3	3	2	4
1/31/2017 12:32:49	Female	17	1/31/2017	Surface Road West (r	3	4	4	4	1	3
1/31/2017 12:46:09	Female	16	1/31/2017	Surface Road West (r	1	2	3	3	2	3
1/25/2017 15:20:19	Female	17	1/25/2017	Zelzah Parking Lot (B	2	2	4	4	2	2
1/25/2017 17:21:14	Female	17	1/25/2017	Zelzah Parking Lot (B	1	2	2	3	2	1
1/25/2017 18:27:29	Female	14	1/25/2017	Zelzah Parking Lot (B	2	3	2	2	3	3
1/31/2017 11:41:53	Female	17	1/31/2017	Zelzah Parking Lot (B	3	4	2	3	3	3
1/31/2017 12:01:43	Female	16	1/31/2017	Zelzah Parking Lot (B	1	1	2	2	1	3
1/31/2017 12:07:04	Female	17	1/31/2017	Zelzah Parking Lot (B	2	2	3	2	3	2
1/31/2017 12:34:08	Female	17	1/31/2017	Zelzah Parking Lot (B	2	2	3	2	2	3
1/31/2017 11:41:20	Male	14	1/31/2017	Hiawatha (Student Pa	4	4	1	1	4	1
1/31/2017 18:19:38	Male	18	1/31/2017	Hiawatha (Student Pa	2	2	1	2	1	2
1/31/2017 22:30:02	Male	15	1/31/2017	Hiawatha (Student Pa	3	2	1	3	2	3
2/1/2017 0:06:48	Male	18	1/31/2017	Hiawatha (Student Pa	3	2	4	4	3	3
1/24/2017 15:15:33	Male	18	1/24/2017	Kingsbury (Main Offic	2	4	3	4	2	1
1/24/2017 17:52:23	Male	16	1/24/2017	Kingsbury (Main Offic	3	2	2	3	3	3
1/25/2017 8:33:18	Male	14	1/24/2017	Kingsbury (Main Offic	4	3	2	3	1	2
1/25/2017 12:31:59	Male	16	1/24/2017	Kingsbury (Main Offic	3	3	2	3	3	4
1/25/2017 23:01:40	Male	14	1/24/2017	Kingsbury (Main Offic	3	2	3	3	2	4
1/31/2017 12:01:02	Male	17	1/31/2017	Kingsbury (Main Offic	2	4	2	2	3	1
1/31/2017 12:48:53	Male	18	1/31/2017	Kingsbury (Main Offic	3	3	4	3	2	4
1/31/2017 12:49:14	Male	17	1/31/2017	Kingsbury (Main Offic	1	2	4	4	3	3
1/27/2017 20:43:06	Male	15	1/27/2017	Flagpole (Library)	2	3	4	1	1	3
1/30/2017 11:20:03	Male	17	1/26/2017	Flagpole (Library)	2	3	3	3	2	2
1/26/2017 19:16:41	Male	17	1/26/2017	Flagpole (Library)	3	1	3	2	1	1

1/26/2017 10:12:38	Male	17	1/26/2017	Flagpole (Library)	3	2	3	2	1	3
1/31/2017 11:56:09	Male	17	1/31/2017	Flagpole (Library)	2	1	4	3	1	2
1/31/2017 11:56:29	Male	17	1/31/2017	Flagpole (Library)	2	1	1	1	2	3
1/31/2017 12:05:31	Male	17	1/31/2017	Flagpole (Library)	1	1	2	3	1	3
1/31/2017 12:32:33	Male	17	1/31/2017	Flagpole (Library)	3	4	4	4	2	4
1/31/2017 12:36:53	Male	17	1/31/2017	Flagpole (Library)	2	3	2	4	1	2
1/31/2017 12:45:43	Male	17	1/31/2017	Flagpole (Library)	2	2	4	3	1	2
1/31/2017 12:45:47	Male	16	1/31/2017	Flagpole (Library)	4	3	4	1	2	3
1/31/2017 12:47:21	Male	16	1/31/2017	Flagpole (Library)	2	2	3	3	2	2
1/23/2017 17:31:55	Male	14	1/23/2017	Surface Road East (b	1	2	3	3	2	4
1/23/2017 18:40:17	Male	15	1/23/2017	Surface Road East (b	3	3	3	2	3	3
1/23/2017 20:19:31	Male	15	1/23/2017	Surface Road East (b	3	3	4	3	3	3
1/23/2017 21:13:16	Male	14	1/23/2017	Surface Road East (b	3	3	2	2	3	4
1/30/2017 16:40:15	Male	16	1/30/2017	Surface Road West (r	2	2	3	1	2	1
1/30/2017 16:45:34	Male	15	1/30/2017	Surface Road West (r	2	1	3	1	2	2
1/31/2017 10:51:17	Male	17	1/30/2017	Surface Road West (r	2	1	4	4	1	4
1/31/2017 12:38:24	Male	17	1/31/2017	Surface Road West (r	3	3	3	2	1	1
1/25/2017 14:47:23	Male	15	1/25/2017	Zelzah Parking Lot (B	2	3	4	4	3	4
1/25/2017 14:52:58	Male	16	1/25/2017	Zelzah Parking Lot (B	2	3	3	3	2	4
1/25/2017 16:45:29	Male	16	1/25/2017	Zelzah Parking Lot (B	3	2	3	2	1	3
1/25/2017 17:12:11	Male	17	1/25/2017	Zelzah Parking Lot (B	2	3	3	3	2	2
1/25/2017 18:16:04	Male	16	1/26/2017	Zelzah Parking Lot (B	2	1	2	3	1	1
1/25/2017 20:01:59	Male	17	1/25/2017	Zelzah Parking Lot (B	1	2	1	1	2	2
1/25/2017 20:07:11	Male	14	1/25/2017	Zelzah Parking Lot (B	2	3	3	2	1	2
1/26/2017 8:33:40	Male	14	1/25/2017	Zelzah Parking Lot (B	1	2	4	3	1	2
1/26/2017 9:46:01	Male	15	1/25/2017	Zelzah Parking Lot (B	1	2	4	4	2	3
1/26/2017 9:46:21	Male	18	1/25/2017	Zelzah Parking Lot (B	2	1	2	1	2	2
1/31/2017 11:50:11	Male	17	1/31/2017	Zelzah Parking Lot (B	1	3	4	4	2	4
1/31/2017 12:32:51	Male	17	1/31/2017	Zelzah Parking Lot (B	1	2	2	2	2	3
1/31/2017 12:34:46	Male	17	1/31/2017	Zelzah Parking Lot (B	2	3	4	1	4	4
1/31/2017 12:43:11	Male	18	1/31/2017	Zelzah Parking Lot (B	1	1	1	4	2	4
1/31/2017 12:44:39	Male	17	1/31/2017	Zelzah Parking Lot (B	4	4	4	4	3	4
1/30/2017 19:49:24	Male	15	1/30/2017	J Gate	2	1	2	2	1	3
1/30/2017 23:42:46	Male	17	1/30/2017	J Gate	3	2	3	4	3	4
1/31/2017 10:45:29	Male	18	1/30/2017	J Gate	3	2	3	2	2	3

I plan trips well ahead of time.	I am self controlled.	I concentrate easily.	I save regularly.	I "squirm" at plays or lectures.	I am a careful thinker.	I plan for job security.	I say things without thinking.	I like to think about complex problems.	I change jobs.	I act "on impulse."	I get easily bored when solving thought problems.	I act on the spur of the moment.
3	2	4	3	1	2	3	3	2	2	4	2	4
2	2	2	2	2	1	1	2	2	1	2	1	2
1	1	2	1	2	2	1	1	3	1	1	3	1
3	2	3	4	3	2	3	3	3	3	3	3	3
3	2	2	2	2	1	2	4	2	2	2	4	3
3	2	4	3	2	4	3	4	3	2	2	3	2
3	2	4	3	4	3	2	2	2	2	2	1	2
1	1	2	2	1	1	1	1	1	2	1	2	1
1	2	1	3	1	2	4	4	1	2	2	1	3
3	2	4	4	1	3	3	4	4	1	2	4	4
4	1	1	1	1	2	3	4	1	1	2	1	1
1	1	1	1	3	2	2	3	1	1	3	1	3
2	2	4	3	2	2	2	2	3	1	1	1	2
2	1	1	2	2	2	3	1	2	1	1	1	2
2	2	3	3	3	3	3	2	3	1	2	2	2
3	1	3	1	1	1	2	1	2	1	2	4	3
2	3	4	1	2	2	2	3	2	1	1	2	3
2	1	2	3	1	3	2	1	3	1	1	1	2
4	3	4	4	4	3	2	3	3	1	3	3	1
2	1	2	2	1	3	4	1	3	1	3	2	3
1	1	1	1	2	3	1	2	1	1	1	1	1
3	2	3	3	1	2	4	2	2	1	3	1	3
2	2	2	2	2	2	2	2	3	2	2	2	2
2	2	1	2	2	3	3	1	2	2	2	2	3
2	2	2	2	2	3	2	2	3	1	1	1	2

4	4	2	1	4	2	2	3	4	3	1	4	1
3	1	4	4	2	2	4	2	2	2	2	2	2
1	1	1	2	2	2	3	2	3	1	1	3	2
2	2	2	1	1	2	1	3	1	2	3	1	3
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1	3	3	1	4	1	1	1	1	1	4	2	3
2	4	4	3	2	4	3	4	3	1	4	1	3
3	2	2	2	4	1	2	1	1	2	3	3	3
1	1	4	3	1	1	1	2	2	1	2	2	2
1	4	3	4	1	3	4	3	4	1	3	3	3
1	2	2	3	2	1	1	2	2	2	3	2	3
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3	3	4	4	3	3	3	4	3	1	3	2	3
3	2	3	2	4	3	1	3	2	1	3	2	4
2	2	3	3	3	2	2	2	2	1	2	4	2
2	1	2	2	2	2	2	2	1	1	2	1	2
2	2	1	1	2	2	1	1	3	1	2	2	2
3	2	3	2	2	2	3	3	2	1	3	3	2
1	1	2	1	1	1	1	2	2	1	4	4	4
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1	1	3	2	2	3	2	2	3	1	4	3	2
2	3	4	1	2	1	1	2	2	1	3	2	3
3	3	3	3	2	2	3	4	1	4	4	4	1
2	2	2	3	2	3	2	2	2	1	2	1	1
2	3	3	4	2	3	3	2	2	1	2	2	2
4	2	3	3	1	3	2	1	3	2	3	1	4
1	1	1	1	1	1	1	4	1	3	1	3	1
3	2	2	2	2	3	2	2	3	3	3	3	4
2	3	3	2	2	2	3	3	1	4	3	3	4
3	3	3	3	2	2	3	4	2	2	3	2	3
3	1	4	3	3	3	3	2	3	1	2	1	2
3	1	2	3	1	3	3	2	3	2	2	2	2
2	3	4	2	2	3	2	2	2	1	3	2	2
1	1	1	2	2	1	2	3	2	1	2	4	2
2	2	1	1	1	2	1	2	4	1	1	2	1
4	2	4	1	2	2	2	1	2	2	3	1	3
3	2	2	2	2	1	1	1	1	1	1	1	2

4	1	2	2	2	2	2	1	2	1	1	1	3
2	1	1	4	3	1	1	1	2	1	1	3	4
4	2	3	4	4	3	2	3	3	1	2	2	2
2	1	1	2	1	1	4	2	1	3	4	4	2
3	3	3	2	4	2	3	3	1	1	3	2	4
2	2	3	1	2	3	3	3	3	1	2	3	2
3	1	1	3	2	1	1	3	1	1	2	2	2
4	1	3	3	1	2	4	1	1	1	3	1	4
3	1	3	3	3	3	1	2	3	1	2	1	3
1	1	2	1	2	1	1	1	1	3	3	1	3
4	1	3	1	3	1	2	1	2	3	3	3	2
3	2	3	2	3	3	1	3	3	2	3	3	3
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3	2	2	2	2	2	2	2	2	2	2	2	2
2	2	2	1	2	2	3	1	1	1	1	1	1
4	1	1	3	1	1	1	2	1	1	3	2	3
2	1	3	2	2	2	2	3	1	2	4	1	4
3	1	1	4	1	3	3	2	1	2	4	3	4
3	2	3	3	4	2	3	3	1	2	3	3	4
4	2	4	4	2	3	3	2	1	1	2	1	1
3	2	2	3	2	2	2	3	3	1	2	2	2
1	1	2	3	1	1	1	1	1	3	1	1	1
1	1	2	2	1	1	1	2	1	1	1	1	1
3	2	3	4	2	3	3	3	3	1	2	2	3
2	1	2	1	1	1	1	2	1	2	2	3	2
1	2	2	1	4	2	1	3	1	1	1	1	3
2	1	2	1	2	2	2	2	2	2	2	2	2
1	1	2	2	4	1	2	4	4	3	4	4	4
1	3	3	3	3	2	2	2	3	1	3	2	2
4	2	4	4	4	3	3	2	1	3	3	4	2
1	1	3	1	4	1	1	3	1	1	2	4	3
4	2	1	1	3	1	1	4	1	1	3	2	4
1	1	2	2	2	1	2	2	1	3	2	2	1
2	2	3	4	1	2	2	3	1	4	4	2	4
2	2	3	2	1	2	1	1	3	2	1	1	1

I am a steady thinker.	I change residences.	I buy things on impulse.	I can only think about one thing at a time.	I change hobbies.	I spend or charge more than I earn.	I often have extraneous thoughts when thinking.	I am more interested in the present than the future.	I am restless at the theater or lectures.	I like puzzles.	I am future oriented.	Averages
3	2	4	2	4	4	3	2	2	4	3	2.9
2	1	2	1	3	2	2	2	1	1	1	1.7
2	1	1	2	1	1	3	2	2	4	1	1.7
3	1	2	2	2	3	3	2	2	4	2	2.633333
2	3	4	3	2	3	4	2	3	4	2	2.566667
4	2	2	3	4	3	3	2	2	1	3	2.833333
3	2	1	3	3	1	1	1	4	2	3	2.433333
1	1	1	4	2	3	3	2	2	2	2	1.7
2	1	1	3	4	4	4	1	1	4	1	2.333333
3	1	1	3	2	2	2	4	4	4	1	2.8
2	1	1	1	1	1	4	3	1	2	2	1.833333
2	1	3	2	3	2	2	3	2	4	1	2.033333
2	1	1	1	2	3	2	3	2	4	3	2.133333
2	1	2	1	2	1	2	2	2	2	2	1.8
2	1	2	2	2	2	2	2	2	2	3	2.2
1	3	2	2	2	1	1	3	1	3	2	2.033333
3	1	1	1	4	1	4	3	3	1	2	2.166667
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2	1	4	3	1	3	2	2	4	1	1	2.566667
3	1	2	1	3	3	2	2	2	1	2	2.066667
1	1	4	1	2	2	2	2	2	1	1	1.633333
3	2	1	2	2	2	3	4	2	3	4	2.5
2	1	3	2	3	1	2	2	2	3	3	2.166667
2	4	1	1	1	2	4	1	2	1	2	2.1
2	1	1	2	1	1	1	2	1	1	3	1.833333

3	1	1	4	4	1	3	1	4	4	1	2.4
4	2	2	1	3	3	2	2	1	1	3	2.4
2	1	2	1	2	2	4	3	1	3	2	1.933333
1	3	4	2	1	2	2	1	4	2	2	2.233333
3	2	3	4	1	1	2	3	2	4	1	2.3
1	3	4	2	4	4	4	3	4	1	1	2.466667
1	2	3	4	2	2	4	2	2	2	1	2.333333
4	1	3	4	1	3	2	1	2	3	2	2.666667
2	1	2	1	2	3	4	4	3	1	3	2.533333
4	4	4	1	4	2	4	1	1	1	1	2.166667
3	4	1	2	1	4	1	2	1	4	1	2.6
1	3	2	2	3	2	4	4	3	1	1	2.133333
2	1	2	4	4	3	2	2	2	2	2	2.133333
3	2	2	2	2	2	2	2	2	4	2	2.166667
2	1	2	1	3	1	2	2	1	1	1	1.633333
3	1	4	1	3	4	3	2	3	4	1	2.833333
1	1	2	2	1	2	4	4	4	3	4	2.666667
2	2	2	2	3	2	2	2	2	3	2	2.266667
2	1	1	3	1	1	2	3	2	2	1	1.9
2	1	1	1	1	1	1	2	2	4	2	1.7
2	1	3	2	2	1	3	2	2	1	3	2.266667
1	1	4	1	4	1	4	3	4	1	1	2.266667
2	1	1	1	1	1	1	3	2	2	2	1.833333
3	1	4	3	4	4	2	2	2	2	2	2.4
1	1	3	2	2	3	3	2	1	1	1	2.033333
3	3	2	2	3	2	3	4	4	1	2	2.7
2	3	1	2	2	1	2	3	1	2	3	1.9
3	2	3	2	1	2	3	2	2	4	2	2.366667
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4	1	1	4	4	4	1	4	4	2	4	2.3
2	3	3	3	2	2	3	3	3	2	2	2.6
3	4	4	3	4	4	3	4	2	2	2	2.833333
3	2	3	2	3	2	3	3	2	2	2	2.666667
3	1	2	1	1	1	2	3	1	3	3	2.3
3	4	2	3	3	2	2	2	2	3	3	2.4
3	4	2	2	1	1	4	2	1	2	2	2.433333
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2	1	1	3	1	2	1	2	1	2	2	1.766667
3	1	3	2	1	1	4	1	1	4	1	2.2
2	2	1	2	2	1	2	3	1	2	3	1.733333

2	2	1	1	3	1	3	3	2	2	3	2.033333
1	1	3	1	2	4	3	2	1	4	1	2.033333
3	2	4	4	2	3	3	4	1	4	3	2.6
1	2	3	1	2	4	4	1	1	2	1	2.033333
2	1	2	1	1	1	4	4	4	4	3	2.733333
3	1	4	2	3	2	3	4	1	1	1	2.3
1	1	3	1	3	2	2	1	1	2	1	1.833333
2	1	1	1	2	1	2	4	1	2	4	2.233333
2	1	2	3	4	2	3	2	3	3	3	2.366667
1	2	2	1	4	1	3	1	1	1	1	1.8
1	3	2	1	2	2	4	4	3	2	2	2.4
2	1	2	3	2	2	2	2	2	3	2	2.533333
3	1	1	2	4	3	2	2	4	1	3	2.766667
2	2	2	1	2	2	2	2	2	1	3	1.966667
2	1	2	2	1	1	2	1	2	1	1	1.566667
1	1	4	1	1	3	4	1	1	1	1	1.966667
2	2	2	2	3	1	2	3	1	2	2	2.133333
1	1	4	3	4	2	3	4	1	2	2	2.633333
2	1	4	2	2	2	3	2	4	3	3	2.7
3	3	3	4	1	2	4	2	1	3	2	2.4
3	1	1	2	1	1	2	2	2	3	3	2.166667
1	1	1	1	2	1	2	2	1	1	1	1.4
1	1	1	2	1	1	4	2	1	3	1	1.433333
3	2	3	3	2	3	2	2	1	3	3	2.466667
1	1	2	1	3	1	3	4	4	1	2	1.9
2	1	1	1	1	1	3	1	1	1	1	1.766667
2	1	1	1	1	1	2	2	2	1	2	1.666667
1	4	4	3	3	3	3	4	4	4	2	2.966667
3	2	3	3	2	2	4	2	2	4	2	2.366667
2	1	4	4	1	4	4	2	4	4	3	3
1	1	1	3	4	1	3	1	4	2	1	2.033333
2	1	4	4	3	2	2	1	3	1	2	2.533333
2	3	1	4	4	1	3	2	2	2	1	1.933333
2	1	2	3	4	4	4	2	1	4	2	2.733333
3	1	1	1	2	2	3	1	2	2	2	1.9

SHS Study

Zuckerman Sensation Seeking Scale (40 Questions)

Survey Design: Stratified Random Sample

n=100 (50 Female, 50 Male)

Timestamp	Biological Gender	Age	Date of Survey	Gate	#1	#2	#3	#4	#5	#6
1/31/2017 11:48:52	Female	15	1/31/2017	Hiawatha (Student Pa	A: I like "wi	A: There are	A: I often w	A: I dislike	B: I like the	A: I like to e
1/31/2017 18:24:29	Female	17	1/31/2017	Hiawatha (Student Pa	A: I like "wi	A: There are	A: I often w	A: I dislike	A: I get bor	A: I like to e
1/31/2017 12:34:23	Female	17	1/31/2017	Hiawatha (Student Pa	B: I prefer (	A: There are	A: I often w	A: I dislike	B: I like the	A: I like to e
1/24/2017 16:49:04	Female	16	1/24/2017	Kingsbury (Main Offic	A: I like "wi	A: There are	B: I can't u	A: I dislike	B: I like the	B: I prefer a
1/24/2017 16:58:46	Female	16	1/24/2017	Kingsbury (Main Offic	B: I prefer (	A: There are	B: I can't u	A: I dislike	B: I like the	A: I like to e
1/24/2017 17:05:35	Female	14	1/24/2017	Kingsbury (Main Offic	A: I like "wi	A: There are	B: I can't u	B: I like sor	A: I get bor	A: I like to e
1/24/2017 17:15:40	Female	14	1/24/2017	Kingsbury (Main Offic	B: I prefer (	A: There are	A: I often w	B: I like sor	B: I like the	A: I like to e
1/24/2017 17:31:56	Female	17	1/24/2017	Kingsbury (Main Offic	B: I prefer (	A: There are	B: I can't u	A: I dislike	B: I like the	B: I prefer a
1/24/2017 17:38:20	Female	14	1/24/2017	Kingsbury (Main Offic	A: I like "wi	B: I can't sta	B: I can't u	B: I like sor	A: I get bor	B: I prefer a
1/24/2017 19:20:08	Female	14	1/24/2017	Kingsbury (Main Offic	A: I like "wi	A: There are	B: I can't u	A: I dislike	B: I like the	A: I like to e
1/24/2017 19:38:16	Female	15	1/24/2017	Kingsbury (Main Offic	B: I prefer (	A: There are	B: I can't u	B: I like sor	B: I like the	B: I prefer a
1/24/2017 21:17:50	Female	15	1/24/2017	Kingsbury (Main Offic	A: I like "wi	A: There are	A: I often w	A: I dislike	B: I like the	A: I like to e
1/24/2017 22:29:01	Female	16	1/24/2017	Kingsbury (Main Offic	B: I prefer (	A: There are	B: I can't u	A: I dislike	B: I like the	B: I prefer a
1/25/2017 9:18:40	Female	18	1/24/2017	Kingsbury (Main Offic	A: I like "wi	A: There are	A: I often w	A: I dislike	B: I like the	B: I prefer a
1/25/2017 10:59:41	Female	18	1/24/2017	Kingsbury (Main Offic	B: I prefer (	A: There are	B: I can't u	A: I dislike	B: I like the	B: I prefer a
1/25/2017 14:00:26	Female	14	1/24/2017	Kingsbury (Main Offic	B: I prefer (	A: There are	A: I often w	A: I dislike	B: I like the	A: I like to e
1/25/2017 18:21:24	Female	16	1/24/2017	Kingsbury (Main Offic	B: I prefer (	A: There are	B: I can't u	B: I like sor	B: I like the	B: I prefer a
1/31/2017 12:36:17	Female	17	1/31/2017	Kingsbury (Main Offic	B: I prefer (	A: There are	A: I often w	A: I dislike	B: I like the	A: I like to e
1/31/2017 12:39:49	Female	17	1/31/2017	Kingsbury (Main Offic	B: I prefer (	A: There are	B: I can't u	A: I dislike	B: I like the	B: I prefer a
1/26/2017 14:47:31	Female	15	1/26/2017	Flagpole (Library)	B: I prefer (	A: There are	A: I often w	A: I dislike	B: I like the	A: I like to e
1/26/2017 16:47:16	Female	17	1/26/2017	Flagpole (Library)	A: I like "wi	A: There are	B: I can't u	A: I dislike	B: I like the	A: I like to e
1/26/2017 17:52:38	Female	14	1/26/2017	Flagpole (Library)	B: I prefer (	A: There are	A: I often w	A: I dislike	B: I like the	A: I like to e
1/26/2017 19:31:19	Female	15	1/26/2017	Flagpole (Library)	B: I prefer (	B: I can't sta	A: I often w	A: I dislike	B: I like the	B: I prefer a
1/27/2017 19:18:35	Female	15	1/27/2017	Flagpole (Library)	A: I like "wi	A: There are	A: I often w	B: I like sor	B: I like the	A: I like to e
1/28/2017 19:50:09	Female	17	1/27/2017	Flagpole (Library)	B: I prefer (	A: There are	A: I often w	B: I like sor	B: I like the	A: I like to e
1/28/2017 23:29:35	Female	14	1/27/2017	Flagpole (Library)	B: I prefer (	A: There are	B: I can't u	A: I dislike	B: I like the	B: I prefer a
1/26/2017 11:09:29	Female	14	1/26/2017	Flagpole (Library)	B: I prefer (	A: There are	B: I can't u	A: I dislike	B: I like the	B: I prefer a
1/26/2017 14:27:16	Female	15	1/26/2017	Flagpole (Library)	B: I prefer (	A: There are	A: I often w	B: I like sor	B: I like the	B: I prefer a
1/26/2017 13:26:28	Female	14	1/26/2017	Flagpole (Library)	B: I prefer (	A: There are	B: I can't u	A: I dislike	B: I like the	B: I prefer a

1/31/2017 11:51:58	Female	17	1/31/2017	Flagpole (Library)	B: I prefer (	A: There are	B: I can't u	A: I dislike	B: I like the	B: I prefer a
1/31/2017 11:58:58	Female	17	1/31/2017	Flagpole (Library)	B: I prefer (	A: There are	A: I often w	B: I like sor	B: I like the	A: I like to e
1/31/2017 12:00:32	Female	18	1/31/2017	Flagpole (Library)	B: I prefer (	A: There are	B: I can't u	B: I like sor	B: I like the	A: I like to e
1/31/2017 12:29:45	Female	17	1/31/2017	Flagpole (Library)	B: I prefer (	A: There are	A: I often w	B: I like sor	B: I like the	B: I prefer a
1/31/2017 12:32:09	Female	17	1/31/2017	Flagpole (Library)	B: I prefer (	A: There are	A: I often w	B: I like sor	A: I get bor	A: I like to e
1/31/2017 12:41:50	Female	16	1/31/2017	Flagpole (Library)	A: I like "wi	A: There are	B: I can't u	B: I like sor	A: I get bor	B: I prefer a
1/24/2017 14:51:11	Female	15	1/23/2017	Surface Road East (b	B: I prefer (	A: There are	B: I can't u	A: I dislike	B: I like the	A: I like to e
1/30/2017 16:24:05	Female	15	1/30/2017	Surface Road West (I	B: I prefer (	A: There are	A: I often w	A: I dislike	B: I like the	A: I like to e
1/30/2017 18:45:59	Female	15	1/30/2017	Surface Road West (I	A: I like "wi	A: There are	A: I often w	A: I dislike	B: I like the	A: I like to e
1/31/2017 13:01:27	Female	16	1/30/2017	Surface Road West (I	B: I prefer (	A: There are	A: I often w	B: I like sor	B: I like the	B: I prefer a
1/31/2017 9:48:47	Female	17	1/30/2017	Surface Road West (I	B: I prefer (	A: There are	A: I often w	A: I dislike	B: I like the	A: I like to e
1/31/2017 11:00:21	Female	16	1/30/2017	Surface Road West (I	A: I like "wi	A: There are	B: I can't u	B: I like sor	B: I like the	A: I like to e
1/31/2017 12:32:49	Female	17	1/31/2017	Surface Road West (I	A: I like "wi	A: There are	A: I often w	B: I like sor	B: I like the	A: I like to e
1/31/2017 12:46:09	Female	16	1/31/2017	Surface Road West (I	A: I like "wi	A: There are	B: I can't u	A: I dislike	B: I like the	A: I like to e
1/25/2017 15:20:19	Female	17	1/25/2017	Zelzah Parking Lot (B	A: I like "wi	B: I can't sta	A: I often w	A: I dislike	B: I like the	A: I like to e
1/25/2017 17:21:14	Female	17	1/25/2017	Zelzah Parking Lot (B	B: I prefer (	A: There are	A: I often w	B: I like sor	B: I like the	B: I prefer a
1/25/2017 18:27:29	Female	14	1/25/2017	Zelzah Parking Lot (B	B: I prefer (	A: There are	B: I can't u	A: I dislike	B: I like the	A: I like to e
1/31/2017 11:41:53	Female	17	1/31/2017	Zelzah Parking Lot (B	A: I like "wi	A: There are	A: I often w	B: I like sor	B: I like the	A: I like to e
1/31/2017 12:01:43	Female	16	1/31/2017	Zelzah Parking Lot (B	A: I like "wi	A: There are	B: I can't u	A: I dislike	B: I like the	A: I like to e
1/31/2017 12:07:04	Female	17	1/31/2017	Zelzah Parking Lot (B	B: I prefer (	A: There are	A: I often w	A: I dislike	B: I like the	B: I prefer a
1/31/2017 12:34:08	Female	17	1/31/2017	Zelzah Parking Lot (B	B: I prefer (	A: There are	A: I often w	A: I dislike	B: I like the	A: I like to e
1/31/2017 11:41:20	Male	14	1/31/2017	Hiawatha (Student Pa	A: I like "wi	A: There are	B: I can't u	A: I dislike	B: I like the	A: I like to e
1/31/2017 18:19:38	Male	18	1/31/2017	Hiawatha (Student Pa	B: I prefer (	A: There are	A: I often w	B: I like sor	B: I like the	A: I like to e
1/31/2017 22:30:02	Male	15	1/31/2017	Hiawatha (Student Pa	A: I like "wi	A: There are	B: I can't u	A: I dislike	B: I like the	A: I like to e
2/1/2017 0:06:48	Male	18	1/31/2017	Hiawatha (Student Pa	B: I prefer (	A: There are	B: I can't u	A: I dislike	A: I get bor	A: I like to e
1/24/2017 15:15:33	Male	18	1/24/2017	Kingsbury (Main Offic	B: I prefer (	A: There are	B: I can't u	B: I like sor	B: I like the	A: I like to e
1/24/2017 17:52:23	Male	16	1/24/2017	Kingsbury (Main Offic	A: I like "wi	A: There are	A: I often w	A: I dislike	B: I like the	B: I prefer a
1/25/2017 8:33:18	Male	14	1/24/2017	Kingsbury (Main Offic	B: I prefer (	A: There are	A: I often w	A: I dislike	B: I like the	B: I prefer a
1/25/2017 12:31:59	Male	16	1/24/2017	Kingsbury (Main Offic	B: I prefer (	A: There are	B: I can't u	A: I dislike	B: I like the	B: I prefer a
1/25/2017 23:01:40	Male	14	1/24/2017	Kingsbury (Main Offic	A: I like "wi	A: There are	A: I often w	A: I dislike	B: I like the	A: I like to e
1/31/2017 12:01:02	Male	17	1/31/2017	Kingsbury (Main Offic	B: I prefer (	A: There are	B: I can't u	A: I dislike	B: I like the	B: I prefer a
1/31/2017 12:48:53	Male	18	1/31/2017	Kingsbury (Main Offic	B: I prefer (	A: There are	A: I often w	A: I dislike	B: I like the	A: I like to e
1/31/2017 12:49:14	Male	17	1/31/2017	Kingsbury (Main Offic	A: I like "wi	A: There are	A: I often w	A: I dislike	B: I like the	A: I like to e
1/27/2017 20:43:06	Male	15	1/27/2017	Flagpole (Library)	A: I like "wi	A: There are	A: I often w	A: I dislike	B: I like the	B: I prefer a
1/30/2017 11:20:03	Male	17	1/26/2017	Flagpole (Library)	B: I prefer (	A: There are	A: I often w	A: I dislike	B: I like the	A: I like to e
1/26/2017 19:16:41	Male	17	1/26/2017	Flagpole (Library)	A: I like "wi	A: There are	B: I can't u	A: I dislike	B: I like the	A: I like to e
1/26/2017 10:12:38	Male	17	1/26/2017	Flagpole (Library)	B: I prefer (	A: There are	A: I often w	B: I like sor	B: I like the	A: I like to e
1/31/2017 11:56:09	Male	17	1/31/2017	Flagpole (Library)	A: I like "wi	A: There are	B: I can't u	A: I dislike	B: I like the	B: I prefer a
1/31/2017 11:56:29	Male	17	1/31/2017	Flagpole (Library)	B: I prefer (	A: There are	B: I can't u	A: I dislike	B: I like the	B: I prefer a
1/31/2017 12:05:31	Male	17	1/31/2017	Flagpole (Library)	B: I prefer (	A: There are	A: I often w	B: I like sor	A: I get bor	A: I like to e

1/31/2017 12:32:33	Male	17	1/31/2017	Flagpole (Library)	B: I prefer (	A: There are	A: I often w	A: I dislike	A: I get bor	A: I like to e
1/31/2017 12:36:53	Male	17	1/31/2017	Flagpole (Library)	B: I prefer (	B: I can't sta	A: I often w	A: I dislike	B: I like the	A: I like to e
1/31/2017 12:45:43	Male	17	1/31/2017	Flagpole (Library)	B: I prefer (	A: There are	A: I often w	A: I dislike	B: I like the	A: I like to e
1/31/2017 12:45:47	Male	16	1/31/2017	Flagpole (Library)	A: I like "wi	A: There are	B: I can't u	B: I like sor	A: I get bor	A: I like to e
1/31/2017 12:47:21	Male	16	1/31/2017	Flagpole (Library)	A: I like "wi	A: There are	B: I can't u	A: I dislike	B: I like the	B: I prefer a
1/23/2017 17:31:55	Male	14	1/23/2017	Surface Road East (b	A: I like "wi	A: There are	B: I can't u	A: I dislike	B: I like the	A: I like to e
1/23/2017 18:40:17	Male	15	1/23/2017	Surface Road East (b	B: I prefer (	A: There are	A: I often w	B: I like sor	B: I like the	A: I like to e
1/23/2017 20:19:31	Male	15	1/23/2017	Surface Road East (b	B: I prefer (	A: There are	B: I can't u	A: I dislike	B: I like the	A: I like to e
1/23/2017 21:13:16	Male	14	1/23/2017	Surface Road East (b	A: I like "wi	A: There are	A: I often w	A: I dislike	A: I get bor	A: I like to e
1/30/2017 16:40:15	Male	16	1/30/2017	Surface Road West (I	B: I prefer (	A: There are	A: I often w	A: I dislike	B: I like the	A: I like to e
1/30/2017 16:45:34	Male	15	1/30/2017	Surface Road West (I	B: I prefer (	A: There are	B: I can't u	A: I dislike	B: I like the	A: I like to e
1/31/2017 10:51:17	Male	17	1/30/2017	Surface Road West (I	B: I prefer (	A: There are	B: I can't u	A: I dislike	B: I like the	A: I like to e
1/31/2017 12:38:24	Male	17	1/31/2017	Surface Road West (I	A: I like "wi	A: There are	A: I often w	A: I dislike	A: I get bor	B: I prefer a
1/25/2017 14:47:23	Male	15	1/25/2017	Zelzah Parking Lot (B	A: I like "wi	B: I can't sta	A: I often w	A: I dislike	B: I like the	A: I like to e
1/25/2017 14:52:58	Male	16	1/25/2017	Zelzah Parking Lot (B	A: I like "wi	A: There are	A: I often w	B: I like sor	B: I like the	A: I like to e
1/25/2017 16:45:29	Male	16	1/25/2017	Zelzah Parking Lot (B	B: I prefer (	B: I can't sta	A: I often w	B: I like sor	B: I like the	B: I prefer a
1/25/2017 17:12:11	Male	17	1/25/2017	Zelzah Parking Lot (B	B: I prefer (	A: There are	B: I can't u	A: I dislike	B: I like the	A: I like to e
1/25/2017 18:16:04	Male	16	1/26/2017	Zelzah Parking Lot (B	B: I prefer (	A: There are	A: I often w	A: I dislike	B: I like the	B: I prefer a
1/25/2017 20:01:59	Male	17	1/25/2017	Zelzah Parking Lot (B	B: I prefer (	A: There are	A: I often w	A: I dislike	B: I like the	A: I like to e
1/25/2017 20:07:11	Male	14	1/25/2017	Zelzah Parking Lot (B	A: I like "wi	A: There are	A: I often w	A: I dislike	B: I like the	A: I like to e
1/26/2017 8:33:40	Male	14	1/25/2017	Zelzah Parking Lot (B	B: I prefer (	A: There are	A: I often w	B: I like sor	B: I like the	B: I prefer a
1/26/2017 9:46:01	Male	15	1/25/2017	Zelzah Parking Lot (B	B: I prefer (	A: There are	B: I can't u	A: I dislike	B: I like the	A: I like to e
1/26/2017 9:46:21	Male	18	1/25/2017	Zelzah Parking Lot (B	B: I prefer (	B: I can't sta	A: I often w	B: I like sor	B: I like the	B: I prefer a
1/31/2017 11:50:11	Male	17	1/31/2017	Zelzah Parking Lot (B	B: I prefer (	B: I can't sta	A: I often w	B: I like sor	B: I like the	A: I like to e
1/31/2017 12:32:51	Male	17	1/31/2017	Zelzah Parking Lot (B	B: I prefer (	A: There are	A: I often w	B: I like sor	B: I like the	B: I prefer a
1/31/2017 12:34:46	Male	17	1/31/2017	Zelzah Parking Lot (B	B: I prefer (	A: There are	B: I can't u	A: I dislike	B: I like the	A: I like to e
1/31/2017 12:43:11	Male	18	1/31/2017	Zelzah Parking Lot (B	A: I like "wi	A: There are	B: I can't u	B: I like sor	B: I like the	B: I prefer a
1/31/2017 12:44:39	Male	17	1/31/2017	Zelzah Parking Lot (B	A: I like "wi	A: There are	A: I often w	B: I like sor	B: I like the	A: I like to e
1/30/2017 19:49:24	Male	15	1/30/2017	J Gate	A: I like "wi	A: There are	B: I can't u	A: I dislike	B: I like the	A: I like to e
1/30/2017 23:42:46	Male	17	1/30/2017	J Gate	B: I prefer (	A: There are	A: I often w	B: I like sor	B: I like the	A: I like to e
1/31/2017 10:45:29	Male	18	1/30/2017	J Gate	B: I prefer (	A: There are	A: I often w	A: I dislike	A: I get bor	A: I like to e

#7	#8	#9	#10	#11	#12	#13	#14	#15	#16	#17	#18	#19	#20
A: I dislike	B: I don't m	B: I would r	B: I would l	B: I someti	B: I enjoy tl	A: I find tha	B: I order tl	A: I enjoy l	A: I would l	A: I would l	A: I would l	A: I prefer t	B: I would l
B: When y	B: I don't m	B: I would r	A: I would r	B: I someti	A: I dislike	B: I often lil	A: I like to t	B: Looking	A: I would l	A: I would l	A: I would l	A: I prefer t	B: I would l
A: I dislike	B: I don't m	B: I would r	A: I would r	B: I someti	A: I dislike	A: I find tha	B: I order tl	A: I enjoy l	A: I would l	B: I would r	A: I would l	A: I prefer t	A: I would r
A: I dislike	B: I don't m	B: I would r	A: I would r	B: I someti	B: I enjoy tl	A: I find tha	B: I order tl	A: I enjoy l	A: I would l	A: I would l	A: I would l	A: I prefer t	B: I would l
A: I dislike	B: I don't m	A: I have tr	B: I would l	B: I someti	A: I dislike	A: I find tha	A: I like to t	A: I enjoy l	B: I would r	B: I would r	A: I would l	A: I prefer t	A: I would r
A: I dislike	B: I don't m	B: I would r	A: I would r	B: I someti	B: I enjoy tl	A: I find tha	B: I order tl	A: I enjoy l	A: I would l	A: I would l	A: I would l	B: I would l	B: I would l
B: When y	A: I usually	B: I would r	A: I would r	A: A sensit	A: I dislike	A: I find tha	A: I like to t	A: I enjoy l	A: I would l	A: I would l	A: I would l	A: I prefer t	A: I would r
A: I dislike	B: I don't m	B: I would r	A: I would r	A: A sensit	A: I dislike	A: I find tha	B: I order tl	B: Looking	B: I would r	B: I would r	B: When I	A: I prefer t	A: I would r
A: I dislike	A: I usually	B: I would r	A: I would r	A: A sensit	A: I dislike	A: I find tha	B: I order tl	B: Looking	A: I would l	A: I would l	B: When I	A: I prefer t	B: I would l
B: When y	A: I usually	A: I have tr	B: I would l	B: I someti	B: I enjoy tl	A: I find tha	B: I order tl	A: I enjoy l	A: I would l	B: I would r	A: I would l	A: I prefer t	A: I would r
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#35	#36	#37	#38	#39	#40	Score	Total
A: There is	B: Somethi	B: People s	B: I would l	B: I find so	B: I think I	25	40
A: There is	A: I feel be	B: People s	A: Sailing l	B: I find so	B: I think I	24	40
A: There is	B: Somethi	A: People s	A: Sailing l	A: I have n	A: Skiing d	9	40
A: There is	B: Somethi	B: People s	B: I would l	B: I find so	A: Skiing d	17	40
A: There is	B: Somethi	B: People s	A: Sailing l	B: I find so	A: Skiing d	12	40
A: There is	B: Somethi	B: People s	A: Sailing l	B: I find so	A: Skiing d	19	40
A: There is	B: Somethi	B: People s	B: I would l	B: I find so	B: I think I	19	40
A: There is	B: Somethi	B: People s	B: I would l	B: I find so	A: Skiing d	6	40
A: There is	B: Somethi	A: People s	B: I would l	B: I find so	B: I think I	16	40
A: There is	A: I feel be	B: People s	B: I would l	A: I have n	A: Skiing d	25	40
A: There is	B: Somethi	B: People s	B: I would l	B: I find so	A: Skiing d	11	40
A: There is	B: Somethi	B: People s	A: Sailing l	B: I find so	A: Skiing d	12	40
A: There is	B: Somethi	A: People s	A: Sailing l	B: I find so	A: Skiing d	0	40
A: There is	B: Somethi	B: People s	B: I would l	B: I find so	B: I think I	19	40
B: I enjoy v	B: Somethi	B: People s	B: I would l	B: I find so	A: Skiing d	19	40
A: There is	B: Somethi	B: People s	A: Sailing l	B: I find so	B: I think I	15	40
A: There is	B: Somethi	A: People s	A: Sailing l	B: I find so	B: I think I	14	40
A: There is	B: Somethi	B: People s	B: I would l	B: I find so	B: I think I	17	40
B: I enjoy v	A: I feel be	B: People s	B: I would l	A: I have n	A: Skiing d	21	40
A: There is	B: Somethi	B: People s	B: I would l	B: I find so	A: Skiing d	10	40
B: I enjoy v	B: Somethi	A: People s	B: I would l	A: I have n	A: Skiing d	20	40
A: There is	A: I feel be	B: People s	B: I would l	B: I find so	B: I think I	19	40
A: There is	B: Somethi	B: People s	B: I would l	B: I find so	A: Skiing d	11	40
A: There is	B: Somethi	B: People s	B: I would l	B: I find so	B: I think I	24	40
A: There is	A: I feel be	B: People s	B: I would l	B: I find so	B: I think I	20	40
A: There is	B: Somethi	B: People s	A: Sailing l	A: I have n	A: Skiing d	6	40
A: There is	B: Somethi	B: People s	B: I would l	B: I find so	B: I think I	11	40
A: There is	B: Somethi	A: People s	B: I would l	B: I find so	B: I think I	16	40
B: I enjoy v	A: I feel be	A: People s	B: I would l	B: I find so	B: I think I	15	40

A: There is	B: Somethi	B: People s	A: Sailing l	A: I have n	A: Skiing d	9	40
A: There is	B: Somethi	B: People s	B: I would l	B: I find so	B: I think I	17	40
A: There is	B: Somethi	A: People s	B: I would l	B: I find so	A: Skiing d	11	40
A: There is	B: Somethi	B: People s	A: Sailing l	A: I have n	A: Skiing d	15	40
B: I enjoy v	A: I feel be	B: People s	B: I would l	B: I find so	B: I think I	27	40
B: I enjoy v	B: Somethi	A: People s	B: I would l	A: I have n	A: Skiing d	21	40
A: There is	B: Somethi	B: People s	B: I would l	B: I find so	A: Skiing d	14	40
B: I enjoy v	B: Somethi	B: People s	B: I would l	B: I find so	B: I think I	21	40
A: There is	B: Somethi	B: People s	A: Sailing l	B: I find so	B: I think I	18	40
B: I enjoy v	B: Somethi	B: People s	A: Sailing l	B: I find so	B: I think I	16	40
B: I enjoy v	B: Somethi	B: People s	A: Sailing l	B: I find so	B: I think I	13	40
B: I enjoy v	B: Somethi	B: People s	A: Sailing l	A: I have n	A: Skiing d	24	40
B: I enjoy v	A: I feel be	B: People s	B: I would l	B: I find so	B: I think I	33	40
B: I enjoy v	B: Somethi	B: People s	A: Sailing l	A: I have n	B: I think I	24	40
A: There is	B: Somethi	B: People s	B: I would l	A: I have n	B: I think I	21	40
B: I enjoy v	B: Somethi	A: People s	B: I would l	A: I have n	A: Skiing d	12	40
A: There is	B: Somethi	B: People s	B: I would l	B: I find so	A: Skiing d	10	40
B: I enjoy v	B: Somethi	B: People s	B: I would l	B: I find so	B: I think I	25	40
A: There is	B: Somethi	B: People s	A: Sailing l	B: I find so	B: I think I	19	40
B: I enjoy v	B: Somethi	B: People s	B: I would l	A: I have n	B: I think I	17	40
B: I enjoy v	B: Somethi	B: People s	A: Sailing l	A: I have n	B: I think I	19	40
A: There is	B: Somethi	B: People s	A: Sailing l	B: I find so	B: I think I	18	40
B: I enjoy v	A: I feel be	B: People s	B: I would l	B: I find so	B: I think I	18	40
A: There is	B: Somethi	B: People s	B: I would l	B: I find so	B: I think I	19	40
A: There is	B: Somethi	B: People s	A: Sailing l	B: I find so	A: Skiing d	15	40
A: There is	B: Somethi	A: People s	B: I would l	B: I find so	A: Skiing d	6	40
A: There is	B: Somethi	A: People s	A: Sailing l	A: I have n	A: Skiing d	12	40
B: I enjoy v	A: I feel be	B: People s	A: Sailing l	B: I find so	B: I think I	13	40
A: There is	B: Somethi	A: People s	A: Sailing l	B: I find so	A: Skiing d	8	40
A: There is	B: Somethi	B: People s	A: Sailing l	A: I have n	B: I think I	20	40
B: I enjoy v	B: Somethi	B: People s	B: I would l	A: I have n	A: Skiing d	15	40
B: I enjoy v	B: Somethi	B: People s	B: I would l	B: I find so	B: I think I	25	40
B: I enjoy v	B: Somethi	B: People s	B: I would l	A: I have n	B: I think I	24	40
A: There is	B: Somethi	B: People s	A: Sailing l	A: I have n	B: I think I	15	40
A: There is	B: Somethi	B: People s	B: I would l	B: I find so	B: I think I	20	40
A: There is	B: Somethi	A: People s	B: I would l	B: I find so	B: I think I	13	40
A: There is	B: Somethi	B: People s	B: I would l	B: I find so	B: I think I	18	40
A: There is	B: Somethi	B: People s	A: Sailing l	A: I have n	B: I think I	13	40
A: There is	B: Somethi	B: People s	A: Sailing l	B: I find so	B: I think I	7	40
B: I enjoy v	B: Somethi	B: People s	B: I would l	B: I find so	B: I think I	24	40

B: I enjoy w	B: Somethi	B: People s	B: I would l	B: I find so	B: I think I	31	40
A: There is	B: Somethi	B: People s	B: I would l	B: I find so	B: I think I	16	40
A: There is	B: Somethi	A: People s	A: Sailing l	A: I have n	B: I think I	21	40
A: There is	B: Somethi	B: People s	B: I would l	B: I find so	B: I think I	25	40
B: I enjoy w	B: Somethi	B: People s	A: Sailing l	B: I find so	B: I think I	20	40
A: There is	B: Somethi	A: People s	B: I would l	A: I have n	B: I think I	15	40
B: I enjoy w	B: Somethi	B: People s	B: I would l	B: I find so	B: I think I	22	40
A: There is	B: Somethi	B: People s	A: Sailing l	A: I have n	B: I think I	19	40
B: I enjoy w	B: Somethi	B: People s	A: Sailing l	B: I find so	B: I think I	22	40
A: There is	B: Somethi	A: People s	B: I would l	A: I have n	B: I think I	13	40
A: There is	B: Somethi	B: People s	A: Sailing l	B: I find so	A: Skiing d	4	40
B: I enjoy w	B: Somethi	A: People s	A: Sailing l	B: I find so	B: I think I	18	40
A: There is	B: Somethi	B: People s	B: I would l	B: I find so	B: I think I	27	40
B: I enjoy w	B: Somethi	A: People s	A: Sailing l	A: I have n	B: I think I	28	40
B: I enjoy w	B: Somethi	A: People s	A: Sailing l	B: I find so	A: Skiing d	18	40
B: I enjoy w	B: Somethi	B: People s	A: Sailing l	B: I find so	B: I think I	23	40
B: I enjoy w	A: I feel be	A: People s	B: I would l	B: I find so	A: Skiing d	16	40
A: There is	B: Somethi	A: People s	A: Sailing l	B: I find so	A: Skiing d	8	40
A: There is	B: Somethi	B: People s	A: Sailing l	B: I find so	B: I think I	16	40
B: I enjoy w	B: Somethi	B: People s	B: I would l	B: I find so	A: Skiing d	16	40
B: I enjoy w	B: Somethi	A: People s	B: I would l	B: I find so	B: I think I	16	40
A: There is	A: I feel be	A: People s	B: I would l	B: I find so	A: Skiing d	24	40
A: There is	B: Somethi	A: People s	A: Sailing l	B: I find so	B: I think I	11	40
A: There is	B: Somethi	B: People s	B: I would l	A: I have n	B: I think I	21	40
A: There is	B: Somethi	A: People s	A: Sailing l	B: I find so	B: I think I	11	40
A: There is	B: Somethi	A: People s	B: I would l	B: I find so	B: I think I	10	40
B: I enjoy w	B: Somethi	A: People s	A: Sailing l	A: I have n	A: Skiing d	18	40
A: There is	B: Somethi	A: People s	B: I would l	B: I find so	B: I think I	23	40
B: I enjoy w	B: Somethi	B: People s	B: I would l	A: I have n	B: I think I	16	40
B: I enjoy w	B: Somethi	B: People s	B: I would l	B: I find so	B: I think I	30	40
A: There is	B: Somethi	A: People s	B: I would l	B: I find so	B: I think I	15	40

Appendix #3

Statistical Analyses in Excel

(Data file available upon request.)

Descriptive Statistics

Barratt Impulsivity Scale

1	
Mean	2.808081
Standard E	0.085758
Median	3
Mode	3
Standard D	0.853286
Sample Va	0.728097
Kurtosis	-0.46767
Skewness	-0.32215
Range	3
Minimum	1
Maximum	4
Sum	278
Count	99
Confidence	0.142406

2	
Mean	2.353535
Standard E	0.091161
Median	2
Mode	2
Standard D	0.907037
Sample Va	0.822717
Kurtosis	-0.73363
Skewness	0.15509
Range	3
Minimum	1
Maximum	4
Sum	233
Count	99
Confidence	0.151377

3	
Mean	2.69697
Standard E	0.100969
Median	3
Mode	3
Standard D	1.004628
Sample Va	1.009276
Kurtosis	-1.01928
Skewness	-0.21906
Range	3
Minimum	1
Maximum	4
Sum	267
Count	99
Confidence	0.167664

4	
Mean	2.737374
Standard E	0.094789
Median	3
Mode	3
Standard D	0.943137
Sample Va	0.889507
Kurtosis	-0.88463
Skewness	-0.19274
Range	3
Minimum	1
Maximum	4
Sum	271
Count	99
Confidence	0.157402

5	
Mean	2.050505
Standard E	0.087774
Median	2
Mode	2
Standard D	0.873344
Sample Va	0.762729
Kurtosis	-0.48595
Skewness	0.463746
Range	3
Minimum	1
Maximum	4
Sum	203
Count	99
Confidence	0.145754

6	
Mean	2.636364
Standard E	0.103986
Median	3
Mode	3
Standard D	1.03465
Sample Va	1.070501
Kurtosis	-1.10894
Skewness	-0.17671
Range	3
Minimum	1
Maximum	4
Sum	261
Count	99
Confidence	0.172674

7	
Mean	2.717172
Standard E	0.100545
Median	3
Mode	3
Standard D	1.000412
Sample Va	1.000825
Kurtosis	-1.02484
Skewness	-0.21365
Range	3
Minimum	1
Maximum	4
Sum	269
Count	99
Confidence	0.16696

8	
Mean	3.212121
Standard E	0.078997
Median	3
Mode	3
Standard D	0.786009
Sample Va	0.617811
Kurtosis	0.185872
Skewness	-0.78223
Range	3
Minimum	1
Maximum	4
Sum	318
Count	99
Confidence	0.131178

9	
Mean	2.515152
Standard E	0.099849
Median	3
Mode	3
Standard D	0.993485
Sample Va	0.987013
Kurtosis	-1.0195
Skewness	-0.04272
Range	3
Minimum	1
Maximum	4
Sum	249
Count	99
Confidence	0.165804

10	
Mean	2.686869
Standard E	0.104176
Median	3
Mode	3
Standard D	1.036541
Sample Va	1.074418
Kurtosis	-1.13706
Skewness	-0.17813
Range	3
Minimum	1
Maximum	4
Sum	266
Count	99
Confidence	0.17299

11	
Mean	2.161616
Standard E	0.099169
Median	2
Mode	2
Standard D	0.986719
Sample Va	0.973614
Kurtosis	-0.61625
Skewness	0.578034
Range	3
Minimum	1
Maximum	4
Sum	214
Count	99
Confidence	0.164675

12	
Mean	2.909091
Standard E	0.083831
Median	3
Mode	3
Standard D	0.834106
Sample Va	0.695733
Kurtosis	-0.88463
Skewness	-0.1495
Range	3
Minimum	1
Maximum	4
Sum	288
Count	99
Confidence	0.139205

13	
Mean	2.89899
Standard E	0.092487
Median	3
Mode	3
Standard D	0.920237
Sample Va	0.846836
Kurtosis	-0.79316
Skewness	-0.35748
Range	3
Minimum	1
Maximum	4
Sum	287
Count	99
Confidence	0.15358

14	
Mean	2.282828
Standard E	0.095282
Median	2
Mode	2
Standard D	0.948042
Sample Va	0.898784
Kurtosis	-0.79706
Skewness	0.281419
Range	3
Minimum	1
Maximum	4
Sum	226
Count	99
Confidence	0.15822

15	
Mean	2.929293
Standard E	0.094426
Median	3
Mode	4
Standard D	0.939524
Sample Va	0.882705
Kurtosis	-1.0134
Skewness	-0.30912
Range	3
Minimum	1
Maximum	4
Sum	290
Count	99
Confidence	0.156799

16	
Mean	1.585859
Standard E	0.078654
Median	1
Mode	1
Standard D	0.782593
Sample Va	0.612451
Kurtosis	0.476652
Skewness	1.142977
Range	3
Minimum	1
Maximum	4
Sum	157
Count	99
Confidence	0.130608

17	
Mean	2.323232
Standard E	0.091741
Median	2
Mode	2
Standard D	0.912814
Sample Va	0.83323
Kurtosis	-0.7896
Skewness	0.129732
Range	3
Minimum	1
Maximum	4
Sum	230
Count	99
Confidence	0.152341

18	
Mean	2.121212
Standard E	0.098716
Median	2
Mode	2
Standard D	0.982217
Sample Va	0.96475
Kurtosis	-0.77948
Skewness	0.477464
Range	3
Minimum	1
Maximum	4
Sum	210
Count	99
Confidence	0.163924

19	
Mean	2.454545
Standard E	0.095533
Median	2
Mode	2
Standard D	0.950539
Sample Va	0.903525
Kurtosis	-0.87375
Skewness	0.132888
Range	3
Minimum	1
Maximum	4
Sum	243
Count	99
Confidence	0.158637

20	
Mean	2.858586
Standard E	0.084953
Median	3
Mode	3
Standard D	0.845276
Sample Va	0.714492
Kurtosis	-0.63683
Skewness	-0.24167
Range	3
Minimum	1
Maximum	4
Sum	283
Count	99
Confidence	0.14107

21	
Mean	1.626263
Standard E	0.093695
Median	1
Mode	1
Standard D	0.932255
Sample Va	0.869099
Kurtosis	0.750026
Skewness	1.358186
Range	3
Minimum	1
Maximum	4
Sum	161
Count	99
Confidence	0.155586

22	
Mean	2.222222
Standard E	0.111728
Median	2
Mode	1
Standard D	1.111678
Sample Va	1.235828
Kurtosis	-1.17821
Skewness	0.41066
Range	3
Minimum	1
Maximum	4
Sum	220
Count	99
Confidence	0.18553

23	
Mean	2.111111
Standard E	0.104416
Median	2
Mode	1
Standard D	1.038925
Sample Va	1.079365
Kurtosis	-0.94004
Skewness	0.49784
Range	3
Minimum	1
Maximum	4
Sum	209
Count	99
Confidence	0.173388

24	
Mean	2.313131
Standard E	0.109953
Median	2
Mode	2
Standard D	1.094014
Sample Va	1.196867
Kurtosis	-1.20285
Skewness	0.30046
Range	3
Minimum	1
Maximum	4
Sum	229
Count	99
Confidence	0.182582

25	
Mean	2.040404
Standard E	0.102453
Median	2
Mode	1
Standard D	1.019395
Sample Va	1.039167
Kurtosis	-0.73611
Skewness	0.625754
Range	3
Minimum	1
Maximum	4
Sum	202
Count	99
Confidence	0.170129

26	
Mean	2.69697
Standard E	0.095729
Median	3
Mode	2
Standard D	0.952489
Sample Va	0.907236
Kurtosis	-1.04227
Skewness	-0.00505
Range	3
Minimum	1
Maximum	4
Sum	267
Count	99
Confidence	0.158963

27	
Mean	2.313131
Standard E	0.093762
Median	2
Mode	2
Standard D	0.932918
Sample Va	0.870336
Kurtosis	-0.56662
Skewness	0.485312
Range	3
Minimum	1
Maximum	4
Sum	229
Count	99
Confidence	0.155696

28	
Mean	2.060606
Standard E	0.105329
Median	2
Mode	2
Standard D	1.048013
Sample Va	1.09833
Kurtosis	-0.5972
Skewness	0.7456
Range	3
Minimum	1
Maximum	4
Sum	204
Count	99
Confidence	0.174905

29	
Mean	2.666667
Standard E	0.113961
Median	3
Mode	3
Standard D	1.133893
Sample Va	1.285714
Kurtosis	-1.30466
Skewness	-0.29527
Range	3
Minimum	1
Maximum	4
Sum	264
Count	99
Confidence	0.189237

30	
Mean	3.020202
Standard E	0.087311
Median	3
Mode	3
Standard D	0.868729
Sample Va	0.75469
Kurtosis	-0.73301
Skewness	-0.42068
Range	3
Minimum	1
Maximum	4
Sum	299
Count	99
Confidence	0.144984

Female and Male Analysis

Barratt Impulsivity Scale

Two Sample t-Tests of Significance for Means (Assuming Unequal Variances)

1*

	Variable 1	*Variable 2*
Mean	2.897959	2.734694
Variance	0.760204	0.69898
Observations	50	50
Hypothesized Mean Difference	0	
df	96	
t Stat	0.9461	
P(T<=t) one-tail	0.173236	
t Critical one-tail	1.290432	
P(T<=t) two-tail	0.346473	
t Critical two-tail	1.660881	

Variable 1 : Female
Variable 2 : Male

2

	Variable 1	*Variable 2*
Mean	2.40	2.34
Variance	0.86	0.84
Observations	50.00	50.00
Hypothesized Mean Difference	0.00	
df	98.00	
t Stat	0.33	
P(T<=t) one-tail	37.27%	
t Critical one-tail	1.66	
P(T<=t) two-tail	0.75	
t Critical two-tail	1.98	

3*

	Variable 1	*Variable 2*
Mean	2.469388	2.897959
Variance	0.962585	0.968537
Observations	50	50
Hypothesized Mean Difference	0	
df	96	
t Stat	-2.15882	
P(T<=t) one-tail	0.016679	
t Critical one-tail	1.290432	
P(T<=t) two-tail	0.033357	
t Critical two-tail	1.660881	

4

	Variable 1	*Variable 2*
Mean	2.80	2.64
Variance	0.73	1.09
Observations	50.00	50.00
Hypothesized Mean Difference	0.00	
df	94.00	
t Stat	0.84	
P(T<=t) one-tail	20.23%	
t Critical one-tail	1.66	
P(T<=t) two-tail	0.40	
t Critical two-tail	1.99	

5

	Variable 1	*Variable 2*
Mean	2.16	1.98
Variance	0.87	0.71
Observations	50.00	50.00
Hypothesized Mean Difference	0.00	
df	97.00	
t Stat	1.01	
P(T<=t) one-tail	15.73%	
t Critical one-tail	1.66	
P(T<=t) two-tail	0.31	
t Critical two-tail	1.98	

6

	Variable 1	*Variable 2*
Mean	2.5	2.74
Variance	1.112245	1.053469
Observations	50	50
Hypothesized Mean Difference	0	
df	98	
t Stat	-1.15318	
P(T<=t) one-tail	0.125821	
t Critical one-tail	1.660551	
P(T<=t) two-tail	0.251643	
t Critical two-tail	1.984467	

7*

	Variable 1	*Variable 2*
Mean	2.959184	2.489796
Variance	0.831633	1.088435
Observations	50	50
Hypothesized Mean Difference	0	
df	94	
t Stat	2.371218	
P(T<=t) one-tail	0.009885	
t Critical one-tail	1.290623	
P(T<=t) two-tail	0.01977	
t Critical two-tail	1.661226	

8*

	Variable 1	*Variable 2*
Mean	3.122449	3.306122
Variance	0.734694	0.508503
Observations	50	50
Hypothesized Mean Difference	0	
df	93	
t Stat	-1.15312	
P(T<=t) one-tail	0.125908	
t Critical one-tail	1.290721	
P(T<=t) two-tail	0.251816	
t Critical two-tail	1.661404	

9*

	Variable 1	*Variable 2*
Mean	2.489796	2.571429
Variance	1.088435	0.875
Observations	50	50
Hypothesized Mean Difference	0	
df	95	
t Stat	-0.40781	
P(T<=t) one-tail	0.342167	
t Critical one-tail	1.290527	
P(T<=t) two-tail	0.684334	
t Critical two-tail	1.661052	

10*

	Variable 1	*Variable 2*
Mean	2.77551	2.612245
Variance	1.052721	1.117347
Observations	50	50
Hypothesized Mean Difference	0	
df	96	
t Stat	0.77581	
P(T<=t) one-tail	0.219884	
t Critical one-tail	1.290432	
P(T<=t) two-tail	0.439768	
t Critical two-tail	1.660881	

11

	Variable 1	*Variable 2*
Mean	2.12	2.2
Variance	0.924082	1.020408
Observations	50	50
Hypothesized Mean Difference	0	
df	98	
t Stat	-0.40567	
P(T<=t) one-tail	0.342935	
t Critical one-tail	1.660551	
P(T<=t) two-tail	0.68587	
t Critical two-tail	1.984467	

12*

	Variable 1	*Variable 2*
Mean	2.816327	3
Variance	0.736395	0.666667
Observations	50	50
Hypothesized Mean Difference	0	
df	96	
t Stat	-1.08544	
P(T<=t) one-tail	0.140222	
t Critical one-tail	1.290432	
P(T<=t) two-tail	0.280445	
t Critical two-tail	1.660881	

13*

	Variable 1	*Variable 2*
Mean	2.857143	2.959184
Variance	0.916667	0.789966
Observations	50	50
Hypothesized Mean Difference	0	
df	95	
t Stat	-0.54677	
P(T<=t) one-tail	0.292911	
t Critical one-tail	1.290527	
P(T<=t) two-tail	0.585821	
t Critical two-tail	1.661052	

14

	Variable 1	*Variable 2*
Mean	2.32	2.28
Variance	0.997551	0.858776
Observations	50	50
Hypothesized Mean Difference	0	
df	97	
t Stat	0.207595	
P(T<=t) one-tail	0.41799	
t Critical one-tail	1.660715	
P(T<=t) two-tail	0.83598	
t Critical two-tail	1.984723	

15*

	Variable 1	*Variable 2*
Mean	2.734694	3.122449
Variance	0.82398	0.901361
Observations	50	50
Hypothesized Mean Difference	0	
df	96	
t Stat	-2.06642	
P(T<=t) one-tail	0.020741	
t Critical one-tail	1.290432	
P(T<=t) two-tail	0.041482	
t Critical two-tail	1.660881	

16

	Variable 1	*Variable 2*
Mean	1.42	1.8
Variance	0.37102	0.897959
Observations	50	50
Hypothesized Mean Difference	0	
df	84	
t Stat	-2.38529	
P(T<=t) one-tail	0.009658	
t Critical one-tail	1.663197	
P(T<=t) two-tail	0.019316	
t Critical two-tail	1.98861	

17

	Variable 1	*Variable 2*
Mean	2.3	2.38
Variance	0.826531	0.893469
Observations	50	50
Hypothesized Mean Difference	0	
df	98	
t Stat	-0.43133	
P(T<=t) one-tail	0.333588	
t Critical one-tail	1.660551	
P(T<=t) two-tail	0.667175	
t Critical two-tail	1.984467	

18

	Variable 1	*Variable 2*
Mean	2.14	2.14
Variance	0.98	1.020816
Observations	50	50
Hypothesized Mean Difference	0	
df	98	
t Stat	0	
P(T<=t) one-tail	0.5	
t Critical one-tail	1.660551	
P(T<=t) two-tail	1	
t Critical two-tail	1.984467	

19

	Variable 1	*Variable 2*
Mean	2.4	2.48
Variance	0.693878	1.152653
Observations	50	50
Hypothesized Mean Difference	0	
df	92	
t Stat	-0.41629	
P(T<=t) one-tail	0.339083	
t Critical one-tail	1.661585	
P(T<=t) two-tail	0.678167	
t Critical two-tail	1.986086	

20*

	Variable 1	*Variable 2*
Mean	2.795918	2.938776
Variance	0.74915	0.683673
Observations	50	50
Hypothesized Mean Difference	0	
df	96	
t Stat	-0.83542	
P(T<=t) one-tail	0.202778	
t Critical one-tail	1.290432	
P(T<=t) two-tail	0.405557	
t Critical two-tail	1.660881	

21

	Variable 1	*Variable 2*
Mean	1.56	1.72
Variance	0.822857	0.940408
Observations	50	50
Hypothesized Mean Difference	0	
df	98	
t Stat	-0.85201	
P(T<=t) one-tail	0.198142	
t Critical one-tail	1.660551	
P(T<=t) two-tail	0.396284	
t Critical two-tail	1.984467	

22

	Variable 1	*Variable 2*
Mean	2.22	2.22
Variance	1.236327	1.236327
Observations	50	50
Hypothesized Mean Difference	0	
df	98	
t Stat	0	
P(T<=t) one-tail	0.5	
t Critical one-tail	1.660551	
P(T<=t) two-tail	1	
t Critical two-tail	1.984467	

23

	Variable 1	*Variable 2*
Mean	2.04	2.18
Variance	1.018776	1.130204
Observations	50	50
Hypothesized Mean Difference	0	
df	98	
t Stat	-0.6753	
P(T<=t) one-tail	0.250538	
t Critical one-tail	1.660551	
P(T<=t) two-tail	0.501075	
t Critical two-tail	1.984467	

24

	Variable 1	*Variable 2*
Mean	2.38	2.26
Variance	1.22	1.175918
Observations	50	50
Hypothesized Mean Difference	0	
df	98	
t Stat	0.548189	
P(T<=t) one-tail	0.292404	
t Critical one-tail	1.660551	
P(T<=t) two-tail	0.584809	
t Critical two-tail	1.984467	

25

	Variable 1	*Variable 2*
Mean	2.14	1.94
Variance	1.061633	0.996327
Observations	50	50
Hypothesized Mean Difference	0	
df	98	
t Stat	0.985818	
P(T<=t) one-tail	0.163325	
t Critical one-tail	1.660551	
P(T<=t) two-tail	0.32665	
t Critical two-tail	1.984467	

26

	Variable 1	*Variable 2*
Mean	2.58	2.82
Variance	1.064898	0.722041
Observations	50	50
Hypothesized Mean Difference	0	
df	95	
t Stat	-1.26953	
P(T<=t) one-tail	0.103677	
t Critical one-tail	1.661052	
P(T<=t) two-tail	0.207355	
t Critical two-tail	1.985251	

27

	Variable 1	*Variable 2*
Mean	2.28	2.38
Variance	0.69551	1.097551
Observations	50	50
Hypothesized Mean Difference	0	
df	93	
t Stat	-0.52807	
P(T<=t) one-tail	0.299356	
t Critical one-tail	1.661404	
P(T<=t) two-tail	0.598712	
t Critical two-tail	1.985802	

28

	Variable 1	*Variable 2*
Mean	2.18	1.98
Variance	0.966939	1.285306
Observations	50	50
Hypothesized Mean Difference	0	
df	96	
t Stat	0.942339	
P(T<=t) one-tail	0.174192	
t Critical one-tail	1.660881	
P(T<=t) two-tail	0.348384	
t Critical two-tail	1.984984	

29*

	Variable 1	*Variable 2*
Mean	2.673469	2.693878
Variance	1.47449	1.091837
Observations	50	50
Hypothesized Mean Difference	0	
df	94	
t Stat	-0.08918	
P(T<=t) one-tail	0.464566	
t Critical one-tail	1.290623	
P(T<=t) two-tail	0.929132	
t Critical two-tail	1.661226	

30*

	Variable 1	*Variable 2*
Mean	3.122449	2.938776
Variance	0.734694	0.767007
Observations	50	50
Hypothesized Mean Difference	0	
df	96	
t Stat	1.049187	
P(T<=t) one-tail	0.148363	
t Critical one-tail	1.290432	
P(T<=t) two-tail	0.296726	
t Critical two-tail	1.660881	