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# CODEPENDENCY TRAITS AND THE MERE PRESENCE OF A CELL PHONE

A Thesis

Presented To

Eastern Washington University

Cheney, Washington

In Partial Fulfillment of the Requirements

for the Degree

Masters of Science in Clinical Psychology

By

Brittany Re` Aguila

Spring 2019

THESIS OF Brittany Aguila APPROVED BY

DATE
JILLENE GROVER SEIVER, GRADUATE STUDY COMMITTEE CHAIR
DATE
DANIELLE SITZMAN, GRADUATE STUDY COMMITTEE MEMBER
DATE
WILLIAM MARTIN, GRADUATE STUDY COMMITTEE MEMBER

#### ABSTRACT

#### CODEPENDENCY TRAITS AND THE MERE PRESENCE OF A CELL PHONE

by

Brittany R. Aguila

Spring 2019

The present study was designed to determine whether one's attention could be manipulated by the mere presence of a cell phone, especially when the individual scores high in codependency traits. Previous research suggests that the mere presence of a cell phone is sufficient to inhibit an individual's ability to perform a task. Codependency has been seen as unhealthy or dysfunctional relational patterns, and is often explained as an addiction to relationships. Eastern Washington University students (N=56) participated in cognitively demanding tasks, either with a cell phone present or without, and completed a codependency questionnaire to assess how participants respond interpersonally and the degree to which they depend on the experiences of others. Based on the current research, it does not appear that codependency impacts attention in the mere presence of a cell phone. The present study was however, able to replicate the previous research finding that the presence of a cell phone inhibits performance on an additive cancellation task. Contrary to previous research, performance improved on the Trail Making Test – Part B.

Keywords: Attention, Codependency, Cell Phone, Distraction, Mere Presence

#### Acknowledgements

Six years, six years and we finally did it. I could not have done this without the love and support from my husband. From two years of tests and classes to an additional four years of finishing this thesis. Thank you for standing by my side, pushing me to follow my passion, and to never give up on my goals; Even when I thought I would never get here.

Thank you to my son Liam for being the sweet little baby you are and letting mama work even though I know at times all you wanted to do was play. You inspire me every day to strive to be better and you helped me push myself to achieve. I also want to say thank you to both our nanny and my mom and dad for being there to watch Liam so I could focus on moving forward without reservation. Mom and dad your unconditional support and encouragement throughout my life has gotten me to this point. You have always pushed me to achieve without limits and I am grateful for you both.

I would finally like to thank my committee for supporting my project. A special thank you to my mentor for encouraging me without judgment and allowing me to feel capable throughout this process. I could not have done this if it was not for your pep talks and guidance. You truly have no idea how invaluable your support has been for me and how much I appreciate all the hours you took away from your family to spend talking and working with me.

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#### CODEPENDENCY TRAITS AND THE MERE PRESENCE OF A CELL PHONE

In recent years, the use of mobile technology has become prevalent; a survey conducted by Pew in 2018 reported that at least 95% of people own some type of cell phone, more than 77% of those being identified as smart phones. This is an increase from 2011, when Pew first began investigating cell phone usage, where only 35% of people reported smartphone ownership. These devices lead to instantaneous results and reactions, and the discreet size of devices facilitates prolonged use throughout the day, whether at work, home, or school. This presence of cell phones offers more opportunity for distraction during everyday tasks. Thornton, Faires, Robbins, & Rollins (2014) conducted a study on the mere presence of a cell phone causing distraction, and they concluded that, in fact, having a cell phone present (whether it belonged to the researcher or belonged to the participant) impedes one's ability to perform more complex cognitive tasks.

#### **Codependency Definitions and Constructs**

The ability to have an interpersonal connection at the touch-of-a-hand exacerbates the symptoms of codependency. Laign (1989) looked at codependency in terms of how one interacts with others, and he describes an individual having compulsive patterns of behaviors, motivated by someone else. He discusses the key factors of approval, which include identity, safety and self-worth. Codependency has also been described as "...a dysfunctional pattern of relating to others with an extreme focus outside of oneself, lack of expression of feelings, and personal meaning derived from relationships with others" (Fischer, Spann, & Crawford, 1991, p. 87). Symptoms of codependency include other-focused and self-neglect (Hughes-Hammer, Martsolf, & Zeller, 1998), excessive reliance on others for approval and identity, as well as self-defeating interpersonal behaviors (Dear, 2002). The term was coined in the field of chemical dependency, as "symptoms of codependency were thought to be caused by the stress of living with an addicted person"

(Hughes-Hammer, et al., 1998, p. 264). It was later found that once the addicted person improved, the symptoms of codependency remained, and this provided a basis for the hypothesis that codependency is a learned behavior (Hughes-Hammer, et al., 1998).

Bowen's family system theory asserts that there are two forces that guide our behaviors: Closeness and individuality. When there is a lack of balance between these forces, it will create a poorly differentiated self. "Poorly differentiated individuals have little or no sense of a basic self; rather, their sense of self is defined by the feelings of others," (Fagan-Pryor & Haber, 1992, p. 25). Codependency is explained in connection with Bowen's Theory as a continuum in which one seeks approval from others along with sensing others' emotional state (Fagan-Pryor & Haber, 1992). Bowen's concepts are similar to the components of Self-Determination Theory (SDT; Gagné & Deci, 2005). Bowen's concept of closeness is analogous to SDT's component of relatedness, which is the intrinsic motive explore social connections in a satisfactory way (Gagné & Deci, 2005). Bowen's concept of individuality is analogous to SDT's component of autonomy, which is the intrinsic motive to be an agent in one's own outcomes, "endorsing one's actions at the highest level of reflection" (Gagné & Deci, 2005, p.334). Based on these theories, codependency could be described as high levels of closeness/relatedness, and low levels of individuality/autonomy. As a result of these patterns, behavior would be more extrinsically motivated.

It is important to note that not all scholars agree with the concept of codependency. Some attempt to define codependency as a disease, while others shy away from it, saying the criteria are too broad and ill-defined (Anderson, 1994). Dear (2002) has commented that the more this construct has been studied, the further away scholars become from a consensus. Messner put a finer point on it, stating, ". . .as the treatment industry further studied this condition, larger

segments of the population were found to exhibit the same symptoms. This gave rise to a host of broad and sometimes widely divergent definitions of codependency, many emerging from popular sources," (Messner,1996 p.101). Others view codependency as being bred from a culture that has been overly pathologized; every behavior must be pulled out and labeled to change what is deemed different or unacceptable (Weegmann, 2006).

Codependency is a term often used in the substance use disorder community to describe individuals who are close to the "addict," and who get lost in their relationship and their role of supporting the addict, while losing their sense of self and separate identity. If we go back to the definition by Fischer et al., "extreme focus outside of oneself" (1991, p. 87) is an important characteristic. When someone is putting another's needs first, at the detriment of their own, dysfunction is practically inevitable. If someone ties their value or meaning in life to another person's experience of them, their behaviors can be dictated by others. Weegmann (2006) touched on this idea that "no one gets sick alone" (pg. 34). While someone with addiction struggles, there is someone without an addiction that is right there with them, suffering. Researchers often describe it as being done "unwittingly," and can be compulsive (Weegmann, 2006). Having a compulsion, or a pull to something outside of oneself, may make one more easily distractible. Our cell phone is an extension of our community, and it "unites individuals in a community and enriches the relationships," (Vidales-Bolaños & Sádaba-Chalezquer, 2017, p. 20). Feeling like it is a positive thing to have easy access to communication with someone with whom a codependent person is attached, can blur boundaries and hinder their ability to be present and to focus on their own needs.

### **Cell Phones and Distraction**

The influence of technology in today's society has become so prevalent that new laws have been enacted to manage the distractions created by personal electronic devices. As of July 23<sup>rd</sup>

2017, Washington State implemented RCW 46.61.672, which makes driving and using a personal electronic device a ticketable offence (Washington Traffic Safety Commission, 2018). This most recent law is not the first law in regards to cell phones. For the last decade, both texting and holding a phone up to your ear has been ticketable (Jansen, 2017). On the Target Zero webpage, they suggest that people turn their cell phones off and place them inside the glove box to eliminate distraction for those who cannot resist. They go on to emphasize how much cell phones play a role in distracted driving: "71 percent of distracted drivers engage in the most dangerous distraction, cell phone use behind the wheel," (Washington Traffic Safety Commission, 2018). Washington is not the only state or municipality to evaluate the connection between cell phones and distraction.

Distraction by cell phones appears to be a cross cultural issue. A study done in England led to the conclusions that "even if a student does not own a phone themselves, their presence in the classroom may cause distraction" (Beland, & Murphy, 2016, p. 3). This study found that when there was a cell phone ban put in place, students displayed improved performance in the academic setting. The largest improvement was seen among the low-achieving students; the researchers concluded that "banning mobile phones could be a low-cost way for schools to reduce educational inequality." (Beland, & Murphy, 2016, p. 18)

Thornton et al. (2014) were able to establish that the mere presence of a cell phone is indeed distracting. There were two separate studies performed to evaluate distraction and cell phones. The first study was done with pairs of participants working on cognitive tasks, including Trail Making Test – B (TMT-B) and an additive cancellation task, with the researcher placing a cell phone on the desk of one of the participants. The second study was administered in groups, with participants in one group being asked to place their own cell phones on the desk during the cognitive tasks while the other group put their cell phones away. Both studies concluded that the mere presence of

a cell phone does indeed affect performance on attentionally and cognitively demanding tasks, regardless of sex and age (Thornton et al., 2014). In the studies done by Thornton et al., (2014) a possession scale was administered. They found that attachment to device had not correlated with distraction by a cell phone. With this in mind, I wanted to explore how attachment to another by way of codependency might correlate with distraction in regards to cell phones. There had also been mention of an "Attentional Behavior Rating Scale" that Thornton et al., (2014) had adapted. However, due to the lack of information given defining the scale and the inability to procure the original I forwent including that sale in my design.

# Hypotheses

To delve into the relationship between codependency and cell phone distraction, I followed the design of Study 2 from Thornton et al. (2014), with the addition of administering the Spann-Fischer codependency scale as a covariate (Fischer et al., 1991).

Hypothesis 1: The mere presence of a cell phone will result in poorer performance on

#### TMT-B.

Hypothesis 2: The mere presence of a cell phone will result in poorer performance on the additive cancellation test.

Hypothesis 3: Codependency will be a significant covariate on the cognitive tasks.

# Method

#### **Participants**

Participants were comprised of 57 undergraduate students enrolled in lower-division psychology courses at Eastern Washington University who were present in class on the day the study was administered. There were 14 males and 43 females, ranging in age from 17 to 37  $(M_{age}=21)$ , and their instructors offered credit toward their psychology class for participation. This study consisted of two classes of scientific principles. A random number generator determined which class was serving as the control condition (N=16; Males=5) and which class was the experimental condition (N=41; Males=9).

### Materials

The materials were compiled into a packet held together with a staple in the upper left corner and with a blank sheet for the first page. The order of the materials are as follows: Digit cancellation task practice, digit cancellation task, additive cancellation task practice, additive cancellation task, Trail Making Test – Part A sample, Trail Making Test – Part A , Trail Making Test – Part B sample, Trail Making Test – Part B, Spann- Fischer Codependency Scale, and demographics questionnaire.

**Digit cancellation task.** The digit cancellation task consisted of a sheet of paper with 20 rows comprised of 50 randomly-generated single-digit numbers. Preceding each row was a target number that the participants were required to circle, and then the participants crossed off numbers that matched the target number for that row (e.g., 3:96<del>3</del>72<del>3</del>117<del>3</del>...).

Additive cancellation task. The additive cancellation task consisted of a sheet of paper with 20 rows that included 50 single digit numbers, in exactly the same style as the digit cancellation task. Preceding each row was a target number that the participants were required to circle, and then the participants were to "cancel" or cross out two adjacent numbers that when added would sum the target number (e.g., 4:5692289315...).

**Trail making test.** The Trail Making Test (TMT), is comprised of two parts. TMT-A consists of a series of sequentially-numbered circles, and the participant must draw one consecutive line connecting the circles in ascending order (e.g., 1-2-3-4-...), without lifting the pencil. TMT-B consists of a series of circles which contain numbers or letters. The participant is to

draw a line joining the circles in ascending order, alternating between numbers and letters (e.g., 1-A-2-B-3-C-4-...).

**Codependency assessment.** The Spann-Fischer Codependency Scale (Fischer et al., 1991), a 16-item instrument, was used to assess degree of codependency traits. Participants indicates their level of agreement (from 1= strongly disagree to 6= strongly agree) on questions such as, "I seem to have relationships where I am always there for them but they are rarely there for me." Scores for codependency are determined by summing relevant scores with two of the scores utilizing reverse scoring, and high scores indicate elevated levels of codependency. Cronbach's alpha = 0.81.

### Procedure

A random number generator determined which class would serve as the experimental group, and which would serve as the control. Prior to the start of the experimental group administration, students were asked to clear their desks of all belongings, but to place their cell phones on their desks. There was no mention of cell phones in the control group; students were simply asked to clear their desks of all belongings. This was consistent with the design set forth by Thornton et al. (2014).

Participants were told to wait until instructed to turn to the next page, and to wait after completion of a task until the researcher had indicated it was time to turn the page to the next task. Prior to each timed cognitive task, participants were provided a practice page to insure they understood how to complete each task. After attempting each of the sample pages, participants were shown a PowerPoint presentation which provided a demonstration of how they should have proceeded through the practice page they just completed. Participants were also given an opportunity to ask questions about each practice test prior to being timed with each task. The researcher monitored the participants for signs of collaboration, and none was detected. All participants completed tasks in the same order: The digit cancellation task, was allotted 90 seconds; the additive cancellation task, was allowed 3 minutes; the Trail Making A test, was allocated 15 seconds; the Trail Making B test, granted 30 seconds; and the Spann-Fischer codependency scale, which was untimed.

#### Results

The digit cancellation tasks were scored for total number of correct cancellations and for number of lines achieved. Performance was measured for the cancellation by taking the number of targets possible and subtracting the errors or missed cancellations. The lines were measured by the total number of lines completed based on the initial target number being circled in a line. The Trail Making tests (TMT) were scored for number or circles that were correctly connected. A multivariate analysis of covariance (MANCOVA) was performed, with cell phone presence/absence and sex as the independent variables, the cognitive tasks (digit cancellation, additive cancellation, TMT A, and TMT B) as the dependent variables, and the score on the Spann-Fischer codependency scale as a covariate. As predicted, and consistent with Thornton et al. (2014), sex was not a statistically significant predictor of codependency or performance on the cognitive tasks. Once this was determined, the data was collapsed across sex for the remainder of the analyses. Only outcomes p≤.05 will be discussed.

#### **Digit Cancellations**

There was no significant main effect of cell phone presence/absence on any outcome related to the digit cancellation task. The number of lines achieved in the additive cancellation task was significant (F(1, 52)=6.47, p<.015), with more lines achieved in the cell phone absent condition (M=11.38, SD=3.981) than in the cell phone present condition (M=9.37, SD=2.245),

when controlling for degree of codependency (see Figure 1). No other significant main effects were found.

### **Trail Making**

There were no significant main effects of cell phone presence/absence on either Part A or Part B of the TMT when controlling for degree of codependency. However, the scores on the Trail Making B test nearly reached significance (F(1, 52)=3.95, p<.053), with slightly higher scores in the cell phone present condition (M=14.51, SD= 4.812) than in the cell phone absent condition (M=12.13, SD= 4.272; see Figure 1).

#### **Ancillary Analyses**

Correlations were computed among the individual differences assessments (age and codependency) and the cognitive performance measurers (see Table 1). There was a significant positive correlation between codependency and Trail Making A (r=.279, p<.05). There were no significant correlations between the cognitive performance measures and the individual difference assessments.

#### Discussion

The present study partially supports Thornton et al.'s (2014) study two findings – in which the mere presence of a cell phone caused poorer performance on the additive cancellation task and the TMT-B – as my study found that the number of lines achieved in the additive cancellation task was greater in the cell phone absent group than in the cell phone present group, while controlling for the degree of codependency. In addition, like Thornton, et al., I did not find evidence of cognitive disruption in the cognitively simple tasks of TMT-A or the digit cancellation task.

However, the pattern for the TMT-B in my data, which only trended toward significance, was opposite of Thornton, et al.'s; perhaps a larger sample size would have produced significant results. Thornton, et al. found that the mere presence of a cell phone interfered with performance of the TMT-B, whereas my participants performed better with their cell phone present than with it absent. My data is consistent with a study performed by Cheever, Rosen, Carrier, and Chavez (2014), who explored how students are impacted by restricted access to their wireless mobile devices (WMD). They found "that over time, students who did not possess their device felt significantly more anxious, and those who had heavy daily WMD use showed steadily increasing anxiety over time" (p. 295). This provides insight into how the lack of access to a cell phone could affect one's ability to perform cognitive tasks. Cheever et al., hypothesized that regardless of where a cell phone is located, if it is not visible, the participants experienced anxiety over the lack of access to the cell phone. This supports the trending poorer performance in my control group; they had been asked to have their desk cleared, removing access to their cell phones. Because the TMT-B was the fourth of four tests, the negative effects of separation from their cell phones may have been cumulating, especially for the heavy daily cell phone users.

Przybylski, Murayama, DeHaan, & Gladwell (2013) explored "fear-of-missing-out" (FoMO), which could contribute to participants struggling cognitively when they do not have access to their cell phone. Their hypothesis was that "individuals who have had their basic needs for competence, autonomy, and relatedness satisfied on a day-to-day basis would be lower in fear-of-missing-out" (p. 1844). This hypothesis was supported, and they also found that there was a negative association between FoMO and life satisfaction and mood in general. Perhaps the participants in the cell phone absent group in my study were experiencing FoMO by the time they got to the TMT-B, and their performance suffered as a result.

Self-Determination Theory (SDT; Ryan & Deci, 2000) explores how relatedness and autonomy "appear to be essential for facilitating optimal functioning of the natural propensities for growth and integration, as well as for constructive social development and personal well-being," (p.68). A cell phone can be seen as an extension of self and community, and its use or abuse can be an expression of unsatisfied intrinsic motives. SDT explores the idea that we are drawn to things that excite us and which enhance our performance and creativity. It is important to note that we are often drawn to something, thinking that we know how it will be experienced in our lives, but the reality can be far different from expectation. Cell phones are a case in point; they are often praised for their value and for the convenience they provide, yet research is finding the presence of a cell phone can hinder one's ability to perform on cognitively challenging tasks. Possibly because of their very ability to allow for maintenance of social connections, cell phones contribute to FoMO and, as a result, interfere with complex cognitive task performance.

I chose not to administer the possession survey or the cell phone usage survey because Thornton, et al., (2014) did not find any relationship between those variables and the cognitive measures. Instead, I administered the codependency scale, thinking that the cell phone may not be distracting directly, but through its ability to gain access to the social connections the codependent type seeks. However, codependency was not related to performance on the additive cancellation task or the TMT-B.

When reviewing the data in the current study, there was a main effect of sex on line completion in the simple digit cancellation task, with men completing more lines than their female counterparts. While looking at the raw data, I was able to identify an outlier male who completed all of the lines; however, he had done all of the cancellations incorrectly. Had his data been dropped, I suspect that this sex difference would disappear. Other than this anomaly, there were no effects of sex. Bowen's family systems theory points out that the poorly differentiated self is not dependent on sex; it affects men and women equally. My data supports this.(Brown, 1999)

# Limitations

With self-reporting, there is always potential for participants to safeguard answers in order to appear in a more favorable light. While reviewing the physical data, one of the participants filled in "older" when prompted to report age. This response indicated the participant was uncomfortable disclosing basic demographic information, and leaves potential for discrepancies in other answers given that would be perceived as more sensitive in nature. Even when there is no way to tie participants' to their individual responses, it appears there can still be a bias in reporting. As a result, it is possible that the scores on the Codependency Scale do not accurately reflect the level of codependency within the sample.

As previously mentioned, there was a participant who incorrectly completed one of the tasks. With group administration, it is impossible to catch and correct errors in real time. If this study had been done individually, errors on the practice page could have been corrected specifically, or more explanation could have been provided. Participants were asked whether they had questions, but there were still errors. In some cases, the codependency scale was not completed, which also could have been addressed and explored had administration been one-on-one. However, this was a replication, so the group administration had to be implemented.

This study also had disproportionate group size. The control group consisted of 16 participants, while the experimental group consisted of 41. The sample size as a whole was consistent with Thornton et al., (2014) which had 47 total participants. However, that study had a consistent split of 24 and 23 participants the respective groups. It is possible that the control group in the current study contained only unusual performers, and that a larger group might have

produced a different outcome. However, the standard deviations of the control and experimental groups were quite comparable on all measures, suggesting that the control group's size may have been adequate.

In using samples who were in their 50-minute college classes, I was limited in the length of the codependency assessment that I could administer. The Spann-Fischer Codependency Scale best met our needs based on validity and length. It is possible that the study could have benefited from a longer assessment that might have been more sensitive to slight variations in codependency.

#### Implications

Understanding the role that cell phones play in distraction is vital to our society. This experiment was carried out in a classroom setting, which leads consideration of how technology impacts the academic environment. The results of the additive cancellation task show that students bringing their cell phones to class could negatively impact their performance and can hinder the educational process. This will offer support to educational systems looking to remove distraction in the classroom. As mentioned previously schools in England have already started working towards the reduction of cell phone in a school setting. As mentioned previously "even if a student does not own a phone themselves, their presence in the classroom may cause distraction" (Beland, & Murphy, 2016, p.3). The additive cancellation results support the idea that the presence of a cell phone in a classroom would lead to distraction. However, the results from the TMT-B suggest the opposite; that for students who are high daily cell phone users and/or who suffer from FoMO, the absence of their cell phone may be problematic. Clearly, more research needs to be done to determine which effect is more powerful and concerning. While I was able to show trending towards significant results with the TMT-B, it is important to note that the timeline of the study was not as extensive as the study performed by Cheever, et al., (2014). In that study, the

participants were monitored in twenty minute intervals, which was approximately the time frame of the entirety of this experiment including instructions, distribution and collection of materials.

As discussed previously, 95% of people own a cell phone (PEW, 2018). Being that a cell phone is mobile and easily transported, owners are keeping them on their person the majority of the time. This question about the impact of the presence of a cell phone is not merely academic; employers, schools, and municipalities must determine whether cell phones are more helpful or harmful in various situations.

#### **Recommendations for Future Research**

The current research finds that technology which is readily available to users impacts their attention just by being present or absent. It could be important to explore adolescents with regard to the mere presence of a cell phone. Research has shown differences in adolescent brains compared to adult brains, largely due to the pruning process, where many of the synapses formed in childhood are removed (Konrad, Firk, & Uhlhaas, 2013). "Adolescent brain development is characterized by an imbalance between the limbic and reward systems, which mature earlier, and the not yet fully mature prefrontal control system. This imbalance may be the neural substrate for the typical emotional reactive style of adolescence, and it may promote risky behavior," (p.430). Risky behaviors tend to stem from poor impulse control, and if adolescents are unable to manage their impulses, it would be appropriate to hypothesize that adolescents would be more distracted by the mere presence of a cell phone. Given that adolescents tend to be high in relational motivation, looking into this would better inform schools on how their students are impacted by cell phones.

This would also have implications for distracted driving in adolescents. Distracted driving is becoming more prevalent, and gaining knowledge about who would be more susceptible to distraction of cell phones could better support safe-driving educational efforts. Moving research from a classroom setting to a vehicle or simulation could better support distracted driving laws and inform practical application of changes. This research could support change on how to reduce distraction and better support safe driving.

Technology is not going anywhere, but as researchers, we can do more to inform and protect the public.

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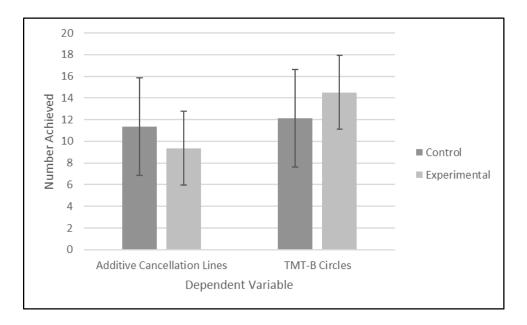
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		1	2	3	4	5	6	7	8	9
1.	Total cancellation	1								
2.	Digit- lines	.085	1							
3.	Digit- cancellations	.950**	207	1						
4.	Total additive cancellations	.384**	.027	.379**	1					
5.	Additive cancellations	.096	.062	.076	.728**	1				
6.	Additive Lines	.322*	.045	.314*	.412**	190	1			
7.	Trail Making A	.336**	105	.371**	085	211	.123	1		
8.	Trail Making B	.217	012	.211	.115	.087	.027	.138	1	
9.	Codependency	.005	042	.037	.082	.068	.032	.279*	.199	1
10.	Age	032	072	025	011	.008	.070	080	089	058

Table 1. Correlations among individual difference variables and cognitive performance measures

*Note.* \**p* < .05; \*\**p* < .01



*Figure 1*. Mean scores of number achieved for the control and experimental group with the additive cancellation lines and the Trail Making Test – B.

# Vita

Author: Brittany Re` Aguila

# **Education:**

Master's of Science, Clinical Psychology	June 2019		
Eastern Washington University, Cheney			
Bachelor of Arts, Psychology	June 2013		
Eastern Washington University, Cheney			
Licenses:			
Chemical Dependency Counselor	CP 60686202		
Research Experience:			
Research Assistant	2010 - 2015		
Personality Laboratory. Psychology Department, Eastern Washington University, Cheney			

# **Presentations:**

- Korst, M., **Myers, B.R.,** Erickson, A., Haugen, B., Williams, W., & , Stellwagen, K. (April, 2014). Contextual priming of emotion ratings to graphic images. Poster presented at the 2014 Convention of the Western Psychological Association, Portland, OR.
- Christian, B., Korst, M., Myers, B. R., Whitlow, M., Arens, R., & Erikson, A. (May,2013) Contextual Priming of Emotion Ratings to Graphic Images. Annual Spring Creative Works Symposium, Eastern Washington University, Cheney, WA 99004.
- Myers, B. R., Ahrens, R., Chui, P. H., Erikson, A., Fry, T. & Neinhuis, A. (May, 2013) Credibility of Contextual Primes as Graphic Image Descriptors. Annual Spring Creative Works Symposium, Eastern Washington University, Cheney, WA 99004
- Wiese, J. Whitlow, M., Myers, B.R., Korst, M., & Flodin, B. (2011). Do Parenting Styles Influence the Development of a Machiavellian Personality? Student Research and Creative Works Symposium, Eastern Washington University, Cheney, WA.

# **Committees**:

Member Student Disciplinary Counsel Student Rights and Responsibilities, Eastern Washington U	2013 University, Cheney
<b>Design Committee Member</b> Learning Commons. Eastern Washington University, Chen	<b>2012</b>
Member Undergraduate Advisory Committee Psychology Department, Eastern Washington University, C	<b>2009-2010</b> Cheney
Professional Development:	
<b>Chemical Dependency Counselor</b> CHAS Opioid Recovery Clinic, CHAS, Spokane, WA	March 2018-Present
Chemical Dependency CounselorSSTEPPS, YFA Connections, Spokane, WA	eptember 2014 - March 2018
<b>Clinical Psychology Practicum</b> STEPPS, YFA Connections, Spokane, WA	June 2014-June 2015
<b>Child and Family Advocate</b> Crisis Residential Center, YFA Connections, Spokane, WA	April 2013-August 2014
<b>Group Counseling Skills Instructor: DBT</b> Daybreak Youth Services, Spokane, WA	December 2012- July 2013
<b>Primary Counselor Intern: DBT</b> Daybreak Youth Services, Spokane, WA	December 2012- July 2013
Crisis Line Operator Sep First Call for Help, Spokane Mental Health, Spokane, WA	tember 2010- December 2012