



AN ANALYSIS OF ENCLOTHED COGNITION AS RELATED TO PERSONALITY  
FACTORS AND ITS INTERDISCIPLINARY IMPLICATIONS

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## **ABSTRACT**

Researchers sought to establish a connection between Enclothed Cognition and multiple personality and cognitive factors. Enclothed Cognition has been addressed by previous researchers as having a measurable impact on selective qualities such as attentiveness (Adam & Galinsky, 2012) and problem solving (Van Stockum & DeCaro, 2014). Thus, the terminology Enclothed Cognition was introduced (Adam & Galinsky, 2012). Enclothed Cognition continues to be a newly evolving field of study and the current study measured a correlation between Enclothed Cognition, Machiavellianism, Resilience and Math scores. While researchers were not successful in finding a significant connection to resilience of math scores, the study revealed a significant correlation between Enclothed Cognition and Machiavellianism. The current research shows a significant positive correlation between Enclothed Cognition and Machiavellistic qualities in the experimental group wearing a white lab coat, simulating the Enclothed Cognition condition. Multiple implications exist. Among those discussed in detail are the impacts on the business world, politics and technology.

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## INTRODUCTION

Individuals routinely make rapid inferences about personality, cognitive ability and occupational roles based on the clothing choice of others (Howlett, Pine, Orakçioğlu, & Fletcher, 2013), with the mere change in clothing style having a significant effect on the perception of the personality of that individual (Howlett, Pine, Orakçioğlu, & Fletcher, 2013). Inferences may not always be intentional, but they serve an important role in personal mental schemas. While these schemas are interesting, they may also help to illustrate why clothing is not used only as a means of protection, but to further differentiate individuals serving to showcase unique styles and personal significance. Uniforms signal to others to what group one belongs, and brands or jewelry symbolize wealth or status. Given that almost everyone wears clothing, it is fair to presuppose that clothing has a degree of importance and necessity to our lives. Researchers have investigated the extent to which a person's choice in clothing changes others' perception of that person's intelligence. Does it influence mental traits, such as an individual's abilities or personality? Research has already found that clothing affects a person's perception of others (Adam & Galinsky, 2012) and strongly guides what the individual chooses to wear (Behling & Williams, 1991). Clothing thus appears to cause individuals to change their behavior (Behling & Williams, 1991) and influences the way others act (Adam & Gilinsky, 2012). Arguably, the importance a person places on clothing is not misplaced, but rather a significant part of an individual's persona (Van Stockum & DeCaro, 2014).

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The term Enclothed Cognition was coined by researchers Adam & Galinsky (2012) after they found that a significant correlation was observed in individuals who were exposed to an Enclothed Cognition stimulus, such as wearing a lab coat. These researchers measured whether the accuracy of decisions can be affected if an individual wore clothing similar to a doctor (Adam & Galinsky, 2012). Their reasoning was simple. Doctors, by all accounts, are inherently expected to make accurate decisions; after all they are often entirely responsible for the health and wellbeing of the patient. Further research confirmed the researchers' hypothesis that the change in attire to more formal clothing elicited positive cognitive measures (Adam & Galinsky, 2012). Even more surprisingly, the participants of the study were affected by the connotation of the clothing worn. Specifically, if a participant was told that the lab coat was a doctor's coat or a painter's coat, there was a change in behavior specific to the symbolic meaning of the coat. Adam & Galinsky (2012) findings seem to imply that the cultural significance of a uniform changes the societal self-perception. This symbolic embodiment of the clothing is particularly noteworthy as it suggests that clothing directly affects perception of self, but the perception is attributed to the symbolic meaning associated with the clothing (Park, Streamer, Huang, & Galinsky, 2013). Professionals typically wear suits and regardless of being in the legal, business or any similar field the image is almost uniform. Similarly construction workers and blue-collar workers typically have their own uniform, whether it be overalls and hard hats, or a shirt that indicates where they work. Dressing according to professional setting is not new, but how many people

consciously consider their dress to affect others. Instead many people choose comfort and ease in their daily wear.

In another easily observed population, college students dress in ways that promote comfort rather than an academic uniform, to the dismay of many a professor, sometimes wearing pajamas to lectures. While no research explicitly links Enclothed Cognition and college completion rate, the literature is clear that college students are prone to abandoning their degree before completion, and that their completion rate has dramatically decreased (Bound, Lovenheim, & Turner, 2007). Education continues to evolve and develop, understandably changing with time, but as education is such an important part of an individual's development, the aforementioned decrease in completion rate does deserve a degree of attention. While many explanations do exist, such as lack of funding, to the increased hours that college students now work part-time to meet the rising cost of college, none of these explanations are absolute. While speculative, I would wager that this relaxing of personal standards may be a contributing factor to college graduation and completion rate. Could this relaxation cause the delayed outcome? Unfortunately, little research has been conducted on the attire worn by college students. However, such relaxed dress is not standard outside of college campuses. Historically, college students wore the similar professional dress that is standard for businessmen and women (Clemente, 2014). Since the change in clothing standards for attending college courses has relaxed so dramatically, could the clothing students wear lead to worse performance? No current literature has investigated this possibility but students are having more difficulty in obtaining higher education and even

graduating (Bound, Lovenheim, & Turner, 2007). Perhaps then this may be in part due to the lowering of the standards in appropriate dress within a university atmosphere.

Of the individuals perceived to be more capable, many belong to the scientific and medical world (Blakeslee et al, 2012). Physicians specifically are perceived as being more hygienic, professional, authoritative and even scientific. Patients also report feeling more confident and better able to communicate with their doctors who wore white lab coats (Gooden, Smith, Tattersall, & Stockler, 2001).

Further research into the effect a white lab coat can have on others has found that only mentioning that the lab coat used was a doctor's lab coat, as compared to a painter's coat, was enough to measurably improve concentration in participants (Adam & Galinsky, 2012). Researchers were intrigued and sought to find other factors that reacted to an Enclothed Cognitive state using white lab coats. These factors included Resilience, Machiavellianism, and Cognitive Performance, specifically competency in mathematics.

### **Enclothed Cognition**

Clothing affects the perceptions of others, as noted by previous studies (Van Stockum & DeCaro, 2014). Clothing can also affect the degree of affinity for individuals. Perceptions of intelligence and capacity often derive from clothing and has been researched extensively (Adam & Galinsky, 2012). Certainly, taking advantage of these benefits are well touted in media. For instance, women are advised to dress more masculine, because it correlates with greater hiring rates than more feminine dress (Forsythe, 1990); additionally women who

dress provocatively are seen less favorably than women who dress more conservatively (Howlett, Pine, Cahill, Orakçioğlu, & Fletcher, 2015). Although gathering less attention, research testing internal changes in perception or simply the extent individuals are influenced through their own clothing continues. This subtle distinction demonstrates the need for further study into the internal perception and cognitive changes attributed to clothing.

Encloded Cognition remains a relatively new subfield in psychology with much still unknown. As such, the validity of these claims is still subject to question. The original experiment (Adam & Galinsky, 2012) utilized lab coats, where the experimental group wore lab coats and the control group wore none. Lab coats were used under the presumption that individuals wearing lab coats are seen as scientific or more logical. Adam & Galinsky (2012) anticipated the possible critique of using standard lab coats and through their own research they concluded that lab coats are associated with positive attention- and cognitive-related concepts. It was then concluded that participants in their study held associations between attention related constructs with their research revealing significant findings. Accordingly, they then hypothesized that a relationship existed between clothing and attention related task.

Researchers conducted three experiments. In the first experiment researchers Adam & Galinsky (2012) utilized the popular Stroop Task (Stroop, 1935) which tests for selective attention. In the first experiment, the researchers simply split the participants into two groups, one that wore lab coats and one that did not. The participants in experiment one were further split using 20 incongruent trials and 30 congruent trails. Experiment 2 investigated the symbolic meaning of clothing and what this meaning construes. The researchers measured

whether individuals who were told that the coat belonged to a doctor would outperform those who were told the coat belonged to a painter. The final experiment tested sustained attention. The researchers found that almost twice as many errors were made on trials in the group that did not wear lab coats, establishing a consistent model that consisted of two factors: physically wearing the clothes and the symbolic meaning of the clothes.

As previously noted, while Adam & Galinsky (2012) have established a new relationship between clothing and attention related tasks, no further investigation of other traits were conducted. Other studies have found a connection to problem solving (Van Stockum, Jr & DeCaro, 2014) and additionally research has found that wearing relatively formal clothing was closely associated with increased abstract procession (Slepian, Ferber, Gold, & Rutchick, 2015). It was hypothesized that Enclothed Cognition may have implications to other dimensions such as those relating to people's personality. Specifically, the current study sought to utilize multiple personality inventories and a test taking inventory. We thus hypothesized that a relationship may be found between Machiavellianism due to prior research interest. Researchers were also interested in the applications that Enclothed Cognition may hold for individual's test taking abilities and resilience.

### **Machiavellianism**

Similar to Narcissism and Psychopathy, Machiavellistic individuals tend to be more charming. Like narcissistic individuals, Machiavellistic individuals tend to be well positioned to utilize their social influence. Machiavellianism, while part of the dark triad of personality

is not as prone to short term thinking, impulsivity, or aggression as is in comparison to individuals who exhibit high Narcissism and Psychopathy (Jones, 2013). Machiavellianism has been shown to differ from the other parts of the dark triad in some aspects, such as being less impulsive. This disparity seems to indicate that unlike individuals of high levels of psychopathy or narcissism, Machiavellistic individuals tend towards long term strategic behavior, seeming to decrease their reactivity to stressful situations (Noser, Zeigler-Hill & Besser, 2014). These personality traits differentiate individuals who are deemed High Machs (Participants Scoring Highly on MACH-IV, above 60 on a scale of 100). Other research has shown Machiavellistic individuals also tend to be better negotiators (Kapoutsis, Volkema, & Nikolopoulos, 2013) as these individuals tend to more engaging in negotiations than others.

Research indicates Machiavellianism to be a high predictor of leadership position and career satisfaction (Spurk, Keller & Heirschi, 2015). High Machs also perform better on certain areas of job performance (Zettler & Solga, 2013), specifically individuals with High Machs scores show the highest organizational citizenship behaviors. While Machiavellianism seems to carry a negative connotation, as previously noted research suggests it could be of benefit when applied to certain professions (Zettler & Solga, 2013). Research indicates participants who score highly on the Machiavellian personality scale tend to perform better on tasks that require high accuracy and do not show a corresponding increase in stress. Therefore, researchers decided to integrate Machiavellianism into the study and the MACH-IV test was used as a measure. This study attempts to replicate the study conducted by Adam & Galinsky and utilize multiple dependent variables that may make the study more

accessible to participants. Variables such as the math test are expected to imitate the cognitive dependent variables tested in a more indicative fashion of the exams students already take throughout their university career. It was predicted that participants in the experimental group would exceed performance of the control group. Researchers also hypothesized that the participants who already score highly on the MACH-IV test would transcend those with lower MACH-IV scores.

## **RESEARCH QUESTIONS AND HYPOTHESES**

Based on the literature it was hypothesized that a correlational relationship would be established linking Enclothed Cognition to multiple personality metrics specifically Machiavellianism and Resilience, as well as an additional cognitive factor, which was measured using a simple Mathematics test.

Hypothesis 1. It was predicted that participants in the Enclothed Cognition group would experience an increase in Machiavellistic tendencies and Resilience when compared to the control group.

Hypothesis 2. It was hypothesized that individuals would also experience an increase in cognitive performance as previous studies have already established significant correlation between cognitive factors and Enclothed Cognition.

Research Question 1: Is there a positive correlation between Machiavellianism, Resilience and Enclothed Cognition?

Research Question 2: Is there a relationship between cognitive factors and Enclothed Cognition.

## METHOD

### Participants

Ninety-seven undergraduate students (19 Males and 78 Females; average age=21.16, SD=2.48) were recruited from a mid-sized university in the Southwest. Participants volunteered in order to fulfill a course requirement or receive extra credit for a course. The participants' age ranged from 17 to 43 (M = 20.53, SD 4.33). A majority of the students identified as Caucasian with the next largest group being Hispanics: 43 Caucasians, 8 African Americans, 39 Hispanics, 4 Asians, and 3 Multicultural individuals (see Table 1). The majority of the students identified as being Freshman (43.2%), while significant populations identified as being Sophomores (22.7%) and Juniors (21.6%).

Race/Ethnicity	Frequency	Percent
Caucasian	43	44.3
Black/ African American	8	8.2
Latino/a or Hispanic	39	40.2
Asian/ Asian American	4	4.1
Other (please specify)	3	3.1
Total	97	99.9

**Table 1: *Ethnicity of Participants***

## **Materials**

In the current study the investigators used the following four instruments: Demographic survey, Machiavellianism questionnaire (MACH-IV), Resilience questionnaire (RS 14) and lastly a Math test. In addition, the participants were randomized so that researchers had an almost equal number of participants in the experimental section and the control group.

**Demographic Data.** This questionnaire consisted of 6 questions and required participants to indicate their age, ethnicity, gender, marital status, and current classification (see Appendix A).

**Machiavellianism Questionnaire.** The 20-item MACH-IV Test (MACH-IV Christie & Geis, 1970), which contained 20 5-point Likert items that measured subclinical psychopathy (see Appendix B), was used to assess a person's Machiavellistic tendencies. The MACH-IV is assessed on an ordinal scale from 'Strongly Disagree' to 'Strongly Agree'. With items such as "There is an excuse for lying to someone else" and "The best way to handle people is to tell them what they want to hear" measured on a scale ranging from 1 (Strongly Disagree) to 5 (Strongly Agree). These answers are then converted to a numerical value and scored from 20-100; individuals scoring above 60 are considered to be high Mach's or individuals with high Machiavellian qualities. The MACH-IV has been found to be a global measure for Machiavellianism (McHoskey, Worzel, & Szyarto, 1998) and has been utilized extensively in social science research.

**Resilience Questionnaire.** The 14-Item Resilience Scale (RS-14, Wagnild & Young, 1993) is used to assess participants' resilience to external stressors and is also used to gauge their abilities to cope with said stressors (see Appendix C). The participants answered items such as "My life has meaning" and "I feel that I can handle many things at a time" which the participants then answered on a nominal scale from 1-7, with 1 indicating strong disagreement to 7 being strong agreement. Scores range from 14-98 with scores above 64 indicating high resilience.

**Cognitive Ability.** A modified version of a math test was designed to remove any questions that would require external knowledge, such as formulas or specific understanding of algebra. The questions are all of a high school graduate's level of comprehension as set by the Graduate Education Development (see Appendix D). These questions were not graded on speed but on accuracy. Some of the questions required simple numerical skills such as calculating the cost of an individual item based on a group price, to more complex skills such as inferring an answer presuming that all other answers would be unreasonable given the question's variables.

## **Experimental Materials**

**Enlothed Cognition.** The benefits of wearing specific clothing have long been established, with uniforms conveying a sense of authority and competence. The current study attempts to simulate the effect found in previous studies (Adam & Galinsky, 2012) which have found measurable difference in cognitive components such as attention. Participants in the experimental condition wore a white lab coat while taking the tests similar to the experiment

conducted by previous researchers (Adam and Galinsky, 2013) which found white lab coats to exemplify a degree of competence as it is often associated with doctors or other individuals of scientific ability.

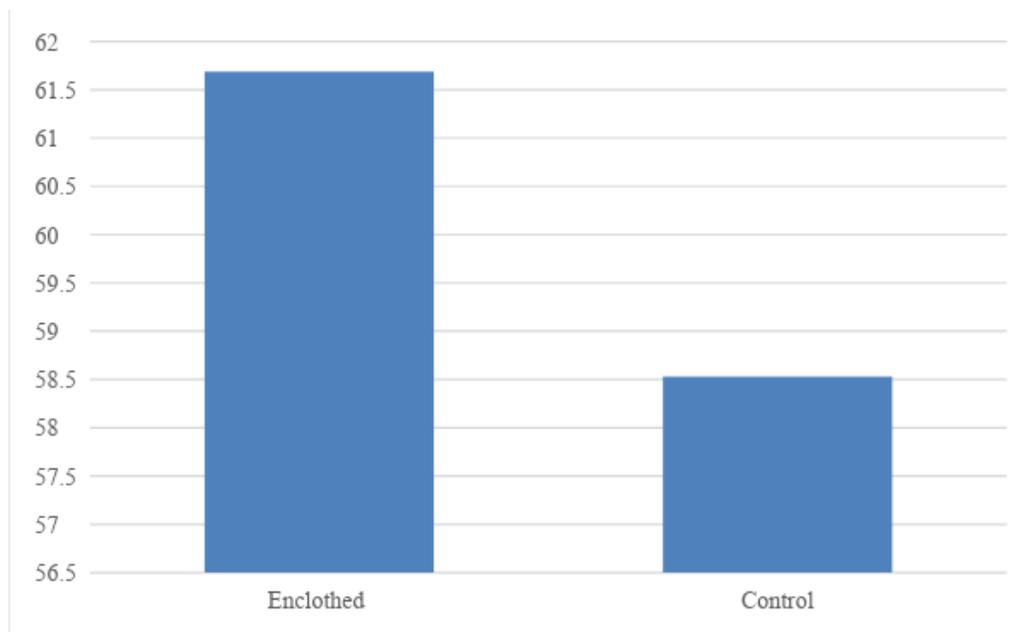
### **Procedure**

This study benefited from a faculty mentored research grant and concurrently received approval from the Institutional Review Board. It was conducted using the software PsychData on a computer in an approved laboratory, supervised by a research assistant. A maximum of three participants were allowed at a time.

Participants in the experimental group were asked to wear a white lab coat prior to the start of the study while the participants in the control group simply began the study. The participants in the control group completed identical questionnaires as those in the experimental group, except they were wearing a white lab coat. After the participants completed the informed consent, they were directed to a computer where they completed the aforementioned questionnaires. First, they completed the MACH-IV, after which the Modified Math Test and lastly the participants completed the RS-14 questionnaire. Finally, the participants were fully debriefed.

## RESULTS

An independent sample t-test was conducted (Figure 1) in which researchers found individuals who wore a lab coat during the test had significantly higher MACH-IV scores ( $M=61.68$ ,  $SD=5.70$ ) than individuals in the control group who did nothing to modify their attire ( $M= 58.53$ ,  $SD=5.21$ ),  $t(95) = 2.84$ ,  $p<0.01$ . However, Pearson bivariate correlations found no such significant correlation between resilience and cognitive performance.



**Figure 1: *MACH-IV***

A one-way multivariate analysis of variance on the Enclothed Cognition condition (Enclothed Cognition vs. control) revealed a significant main effect for Machiavellianism and Resilience, as indicated by Wilks'  $\Lambda = .95$ ,  $F(2, 97) = 4.24$ ,  $p = .017$ , partial eta

squared = .083. Power to detect the effect was .730. Significant univariate effects were found in Machiavellianism scores between the Enclothed Cognition condition ( $M = 61.68$ ,  $SD = 5$ , and the control group ( $M = 58.53$ ,  $SD = 5.21$ ). Conversely, participants' Resilience scores were not significantly different between the Enclothed Cognition group ( $M = 80.95$ ,  $SD = 9.11$ ) compared to those in the control ( $M = 82.06$ ,  $SD = 9.59$ ).

In addition a one-way multivariate analysis of variance was conducted on ethnicity (Caucasian vs. Black vs. Hispanic vs. Asian vs. other) and revealed a significant main effect for Machiavellianism, Resilience, and Math Scores as indicated by Wilks'  $\Lambda = .95$ ,  $F(2, 97) = 2.184$ ,  $p = .014$ , partial eta squared = .117. Power to detect the effect was .896.

## CONCLUSION

Researchers investigated whether individuals engaged in an Enclothed Cognitive state would show increased Machiavellistic traits as well as show increased resiliency and cognitive performance. Researchers conducted a study using two already established tests known as the MACH-IV (Paulhus & Williams, 2002) and the 14-Item Resilience Scale (RS-14, Wagnild & Young, 1993). These tests have already been rigorously tested and utilized by multiple researchers (Paulhus & Williams, 2002; Wagnild & Young, 1993). A math portion was also designed so that participants would require no specialized knowledge. The initial research has emphasized attention to detail and mental acuity (Adam & Galinsky, 2012). Researchers built upon this work in an attempt to examine other variables besides attention and cognitive performance.

While the data revealed no correlation between Resilience and Cognitive performance, a strong correlation was noted between Machiavellianism and Enclothed Cognition. There is no preexisting material that has linked Machiavellianism and Enclothed Cognition prior to this study and the full implications have not yet been explored. Regardless, while there is minimal prior research on personality traits to Enclothed Cognition, I am confident that a significant effect has been established in connecting Machiavellianism and Enclothed Cognition. Clothing has been shown to impact social interactions and judgment between people and the way they perceive others (Howlett, Pine, Orakçioğlu, & Fletcher, 2013). Typically, people know that first impressions matter and others will judge on how a person looks, but it was not as commonly understood that an individual's clothing

would affect their personality or cognitive functioning.

These results have many implications as the literature (Adam & Galinsky, 2012 ; Van Stockum & DeCaro, 2014) and the current research would indicate that the extent to which an individual's personality is affected by the clothing worn is not minimal, but far-reaching. Particularly significant was the immediate effect was found in Machiavellistic tendencies in the experimental group. The specific qualities of Machiavellianism that are well known and easily substantiated are confidence, lack of empathy (Jones, 2013), risk taking and stress management (Noser, Zeigler-Hill & Besser, 2014). From public speaking to negotiations these qualities come heavily into play. Unsurprisingly, Machiavellistic leaders tend to convey a sense of charm and charisma and often advance far more rapidly than others (Spurk, Keller & Heirschi, 2015). This is not to advocate for Machiavellianism but to illustrate a potential applied usage of these findings.

## **FUTURE RESEARCH**

The current study has benefited from many researchers' curiosity and hard work, and it is hoped that this research adds further to the understanding of Enclothed Cognition as it is an especially interesting and unconventional field. In the future, research could be replicated with a larger sample of males to ensure that a more generalized statement could be made as to the effect of Enclothed Cognitions' relationship to sex. Researchers hypothesized that a strong correlation would be found which would establish the benefits or rather unconscious impact that clothing can impart on an individual's personality, regardless of sex. This prediction would counter much of the current literature supporting that males exceed females in Machiavellistic qualities, researchers expected the increase gained by the Enclothed Cognition group would be significant enough to offset the natural differential.

Additionally, further research should be conducted on other personality measures. Researchers acknowledge that Machiavellianism is an extremely specific dimension which does restrict the degree of inference that can be made between the causal relationships to Enclothed Cognition. Evident of this is the lack of correlation between resilience and Enclothed Cognition, despite a strong correlation between Machiavellianism and Resilience. This relationship shows that while resilience may be one of the factors of Machiavellianism it is not the factor being increased, rather the relationship is much less evident. Such a test would help to remove the variability found and draw a more conclusive relationship to the specific dimension of personality impacted.

Researchers also hope that this study would be expanded to include cultural variations of clothing. While the current study and other research have found a significant effect using a lab coat, we hypothesize utilizing less well-known clothing could reveal significant findings. Researchers hypothesize that if an individual wore clothing that is of great personal importance to themselves, measurable changes may be found (Orakcioglu, Orakcioglu and Fletcher, 2016). An example could be as simple as wearing religious clothing that befits a person's beliefs. Researchers predict both a change in cognitive and personality factors as seen in previous studies.

## IMPLICATIONS

These findings have significant implications, possibly most notably are those where individuals' clothing matters significantly or those where individuals engage in frequent contact with the public. The following sections will examine these in more detail. Drawing from multiple research sources and an interdisciplinary examination of the relevant literature has found implications in many fields. While a thorough examination of every implication would be interesting, it would not be practical. We have thus confined our analysis to business, politics and law, technology and the health fields while addressing any relevant relationship to gender.

The positive efficacy of clothing choice in relation to an individual's status such that it benefits the wearer's social standing are not what this study has sought to investigate. Less examined is the full extent and direction that these effects may follow; for instance, does the effect gained through Enclothed Cognition always exist in a positive state of influence and how can these positives be measured? The current study would imply that an individual in an Enclothed Cognition state also experiences a significant increase in Machiavellistic tendencies. While the implications of this research will be discussed accordingly, the current study seems to imply that an individual wearing a suit, which has a similar effect on cognition as does a lab coat (Slepian, Ferber, Gold, & Rutchick, 2015), has a responsibility to those around them as much as they do to themselves. After all, these results imply that the degree and direction that would be experienced by the individual would be unconscious and

unlikely to be noted. This implies an unseen change in personality. To what extent is there a responsibility to actively monitor clothing choices, and to what end should companies endeavor in setting standards for their employees?

With the focus on the relationship found between Machiavellianism and Enclothed Cognition, what new dimension can be applied to such an evolving field? While the cognitive benefits found in previous studies (Adam & Galinsky, 2012) are easily acknowledged as advantageous, research on Machiavellianism has rarely been portrayed in as positive light. Ultimately the image associated with Machiavellianism typically utilizes selfishness, deception and manipulation (Christie & Geis, 1970) as a preliminary descriptor. Yet in the same light, a High Machs individual is seen by peers in their field as more intelligent and attractive (Cherulnik, Way, Ames, & Hutto, 1981). They also seem to be more likely to be in leadership positions, which illustrates the complexity of Machiavellianism. While Machiavellianism may not be a completely positive quality, whether it is a negative quality is not as conclusive. Thus, researchers will review the possible implications of the aforementioned fields.

### **Implications in Business**

Research on Enclothed Cognition has evident applications to multiple fields but researchers suspect that it may be extremely applicable to the business world in particular. The business world has been defined by their formal attire for much of the modern era, and today more than ever there is a push back against the business world's standards of clothing (Smith, 2012). The tech industry is fighting the hierarchy and dressing more casually, by

introducing a new norm in areas where it would have previously been frowned upon. This is not a coincidence but seems to signal a paradigm shift where the rules of business are no longer designed by those industry leaders but by up and comers. Observing the behaviors of industry leaders such as Mark Zuckerberg and Steve Jobs, where they disdain the corporate suit in favor for a much more casual attire, there seems to be a trend or rather a new normal (Smith, 2012). Much research is needed to understand the far-reaching consequences to these changes in formal work wear.

The clothing people wear serves more purpose than typically credited. Research on negotiation found that individuals who wear business suits tend towards being significantly better at negotiating with fewer concessions as compared to their counterparts who were dressed more casually (Kraus & Mendes, 2014). The findings while significant are not striking, as it does corroborate the current study's findings. Research has shown individuals high in Machiavellianism also tend to be better negotiators (Kapoutsis, Volkema, & Nikolopoulos, 2013) as these individuals tend to be more engaging in negotiations than others. What research has found is that a link between Machiavellianism and Enclothed Cognition shows an apparent advantage in the use of formal clothing to impact a situational negotiation. While useful, these results only reflect the benefits gained through other's behavioral changes not a change in the perception of ourselves. The present research would imply that clothing can elicit a change in the wearer's personality suggesting that they would become more Machiavellistic. Taking certain perspectives from the Machiavellianism

personality type this correlation no longer seems as striking as connections were already established within dimensions that exist in Machiavellianism and Enclothed Cognition.

While the current research has value intrinsically, the value gained is much more inclusive than this. Research in the field of business on clothing has also found a demonstrated significant number of business-oriented individuals who value the importance of the clothing they wear (Peluchette, Karl, & Rust, 2006). Yet the advice given to potential job seekers is often that dressing formally is on the decline (Kiddie, 2009) and that many technical jobs do not require any significant dress code. The history of casual wear is complicated and filled with details such as the lengthy history of clothing, but one factor remains unchanged in every story, and that is the rise of Silicon Valley casual wear (Clemente, 2017). While no true single event can be said to be responsible for the loosening of stringent standards it stands difficult to argue against.

Yet these changes only detract from the main issue. Much of work relates to not only how others interact, but how an individual communicates with others. Patients for instance report higher levels of confidence and comfort in doctors who do wear white lab coats (Landry, Dornelles, Hayek, and Deichmann, 2013). The current study implies that a person's interaction with others is shaped significantly by self-monitoring of an individual's perceptions, without any acknowledgement of a change, such as the change elicited by Enclothed Cognition. These perceptions affect people's behavior far more than society credits them. Yet rarely do people make a conscious task-based decision considering every possible factor involved. Indeed, so important are the unconscious factors that researchers

have long established a connection between something as simple as the temperature of a coffee beverage and interpersonal warmth (Williams & Bargh, 2008). Why then would it be unrealistic to consider the effect our clothing has to empathy and other soft factors. While no research has been conducted on the 2008 financial crisis and clothing certainly this is an interesting direction worth investigating.

Benefits garnered using formal attire in a situation that requires negotiation and persuasion may be important. These benefits raise an interesting counter question, as these benefits seem to imply that what people wear has an impact on themselves as much as it does on others. An interesting question then is the effect that formal wear has in fields that require extensive exposure to the public. In business related fields that do not emphasize power but empathy, one would presume that the clothing would elicit the perception of empathy and care to the wearer and the observer. Perhaps roles such as human resources and counseling services could utilize the research and benefit from wearing clothing with a connotation of warmth and approachability. Just as Silicon Valley transformed the clothing of the technologically savvy to break free of their perceived corporate shackles, so too can people argue that certain fields may benefit from following suit.

### **Implications in Law and Politics**

This study has significant implications on the suggested attire for those in the legal or political fields. Politicians are held to high standards and wearing newer fashion would not be condoned nor traditional; equally in the legal profession there are very stringent standards for what is appropriate. One federal Judge went so far as to suggest that both men and

women adhere to standards that are Reserved, Conservative, and Authoritative (Howard, 2009). These standards would imply a degree of stringency, yet if the current feelings about workwear continue then understandably like the business world both professions would see a relaxing of standards.

However, the research suggests wearing formal clothing has multiple benefits that are especially applicable to these fields. Men who wore suits tended to be perceived as more dominant which was measured by negotiation profits and concessions (Kraus & Mendes, 2014). This explicit benefit seems to stand in a clear alignment to the goals of both fields as politicians and lawyers are regularly required to negotiate. With their very objectives often involving thorough achievement of their particular agenda, be it for their political alignment or for their client, the goal remains the same. Achieving the “best possible deal” may be a crude and somewhat antiquated way to describe their jobs but it does suffice.

As such the study would suggest that in particular circumstances wearing clothing with a specific connotation is not only beneficial for goal achievement but for the individual. Previous research (Kraus & Mendes, 2014) found that individuals who wore clothing that symbolized higher status such as a suit were significantly more successful in negotiations and also had significantly higher testosterone levels when compared to participants who wore clothing that signified lower status such as sweatpants. These data correspond to the increases noted in the current study. While researchers did not measure single qualities such as negotiation, as previously noted Machiavellianistic individuals have consistently been

found to be better at negotiation and are consistently seen as more engaged when negotiating (Kapoutsis, Volkema, & Nikolopoulos, 2013).

These data have a critical implication not yet fully encapsulated as while benefits may indeed be gleaned from an Enclothed state, certain responsibilities should then also be noted. As discussed in the business world, certain responsibilities are afforded to those who manage the future of others. Therefore politicians and lawyers have a degree of responsibility to others to engage in self-monitoring when interacting with others. As previously noted multiple detrimental qualities are associated with Machiavellianism and if public interest is to be taken into consideration, an individual and organization should be compelled to be more conscious of the effect that suggested clothing may have on decision making.

### **Implications to the Healthcare Professions**

While Healthcare professionals typically work closely with patients and interact regularly with family members or affected parties, there is not a consensus of the degree of empathy needed for a physician or healthcare professional to be successful in the profession (Hojat, et al., 2002). Upon further review of the literature, a resounding theme seems to be that an increase in empathy may impact the treatment of patients positively (Hojat, et al., 2011). The literature thus confirms that empathy is predictive of clinical competence as seen by patients, as well as positive patient outcomes. Prior studies have found that the degree of empathy through multiple professions vary, with psychiatrists being the most empathetic, even after controlling for gender (Hojat et al ,2002). These findings while not surprising do seem to point to empathy being a useful trait for physicians and others in the health care

professions if they wish to be more effective to their patients. Additionally, these findings also corroborate the notion that physicians wearing white lab coats are seen as more knowledgeable and also elicit greater feelings of comfort and confidence by their patients (Landry, Dornelles, Hayek, Deichmann, 2013).

Presuming that previous literature establishes the importance of empathy to the medical field, it is relevant that empathy is inversely correlated with Machiavellianism, such that an increase in Machiavellianism is associated with a decrease in empathy (Ali, Amorim, & Chamorro-Premuzic, 2009). As the current study has established a correlation between an increase in Machiavellianism and empathy, I feel that there is sufficient evidence to suggest that the current attire used by medical professionals could be improved if Machiavellianism is assumed to be a negative trait in a field where empathy is necessary.

Yet, as noted previously, patients do in fact experience an increase in confidence in their physicians who wear white lab coats (Landry, 2003). While these results would suggest that medical staff who do wear white lab coats and dress more formally (Landry, 2003) may experience an increase in Machiavellianism, and thus a decrease in empathy, the positives of Machiavellistic individuals is that they do elicit feelings of greater confidence in others.

Fundamentally, these data have significant implications towards initiating a greater degree of communication and collaboration between patients and physicians, a factor already established to increase a patient's treatment efficacy and physician competencies (Hojat et al., 2002). Without making an immense leap in reasoning no concrete suggestion can be

made without further study, and the benefits need to be weighed heavily against the possible consequences before any real action is taken.

### **Implications in Technology**

These data can also have future implications on how wearable technology is adapted by individuals and companies alike. The technical world has seemingly absconded traditional work wear in favor of more utilitarian clothing, which is more befitting of their technical roles (Clemente, 2017). While not clothing, the tech industry has created a new type of accessory, wearable technology. Newly designed wearables such as the google glass, Fitbit and the iWatch, are all cutting edge and had not even existed until recently. These new technology accessory hybrids would debatably have an immense impact on us, implications of which are unprecedented in that the very existence of wearable technology had not truly existed in its current form. This new technology begets the questions on who should wear this technology and what advantages or disadvantages may result.

Understandably the claim that wearable technology could have an effect on our cognition of personality, despite its almost intuitive impression is still only a claim, and is a claim deserving significant evidence. Unfortunately, the research is very limited towards smart watches and the like; however, there is another wearable technology that has stood the test of time. The simple wristwatch may not seem like a technical marvel or a device capable of affecting our mental faculties, but research has found otherwise. In a study that considered the big five traits between individuals who regularly wear a standard wristwatch and those that do not, significantly higher levels of conscientiousness were observed in those who

regularly wear a wristwatch (Ellis & Jenkins 2015). In the study the individuals who wore a wrist watch also arrived significantly earlier to appointments in comparisons to those who did not. What Ellis & Jenkins (2015) noted is that while wearing a wristwatch could be thought of as a social marker for conscientiousness, it could also be explained by Enclothed Cognition, suggesting that the wristwatch affects the individual's ability to be conscientious. This hypothesis is one I would happily test if I were given the opportunity.

While these findings may not be groundbreaking, they illustrate a clear marker by which our personality can be affected by the technology we wear. Research on cell phones for instance offer widely varying conclusions, from immense claims of it affecting our creativity and cognition to it augmenting our mental processing, what Wilmer, Sherman and Chein (2017) have concluded is that while the technology certainly may have an immense effect on us, there is no solid conclusion towards the extent we are influenced. Researchers (Wilmer, Sherman and Chein, 2017) similarly argue that much research is needed, especially with technology being adopted by many more people and becoming more mainstream. As concerned citizens and researchers we have a responsibility to investigate the degree by which technology will affect our daily lives and if indeed the technology has negative consequences then as previous researchers have pointed out, we will need practical methods in dealing with these consequences. Personally, the question of what future implications these technologies could have on us is an exciting one worth examination in and of itself.

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## APPENDIX A

### Demographic Questionnaire

**Directions:** Please answer each question by circling the most accurate response.

1. What is your age?

- 18-19
- 20-21
- 22-24
- 25 and above

2. What is your ethnic background?

- African American
- Asian
- Hispanic/Latino
- Native American
- White
- Multicultural
- Prefer not to answer

3. What is your gender?

- Male
- Female
- Transgender
- Prefer not to answer

4. What is your current classification?

- Freshman
- Sophomore
- Junior
- Senior

5. What is your marital status?

- Single
- Married
- Divorced
- Widow/Widower

6. Do you consider yourself to be a/an:

- International Student
- Veteran
- Traditional Student
- Non-traditional Student

## APPENDIX B

### MACH-IV

(Test of Machiavellianism)

To what extent do each of the following statements accurately describe you? Please indicate the degree to which you personally agree or disagree with each of the following statements by choosing a number from the scale below that reflects your opinion.

1=Strongly Disagree, 2=Disagree, 3=Neutral, 4=Agree, 5=Strongly Agree

1) Never tell anyone the real reason you did something unless it is useful to do so.

1      2      3      4      5

2) The best way to handle people is to tell them what they want to hear.

1      2      3      4      5

3) One should take action only when sure it is morally right.

1      2      3      4      5

4) Most people are basically good and kind.

1      2      3      4      5

5) It is safest to assume that all people have a vicious streak and it will come out when they are given a chance.

1      2      3      4      5

6) Honesty is the best policy in all cases.

1      2      3      4      5

7) There is no excuse for lying to someone else.

1      2      3      4      5

8) Generally speaking, people won't work hard unless they're forced to do so.

1      2      3      4      5

9) All in all, it is better to be humble and honest than to be important and dishonest.

1      2      3      4      5

10) When you ask someone to do something for you, it is best to give the real reasons for wanting it rather than giving reasons which carry more weight.

1      2      3      4      5

11) Most people who get ahead in the world lead clean, moral lives.

1      2      3      4      5

12) Anyone who completely trusts anyone else is asking for trouble.

1      2      3      4      5

13) The biggest difference between most criminals and other people is that the criminals are stupid enough to get caught.

1      2      3      4      5

14) Most people are brave.

1      2      3      4      5

15) It is wise to flatter important people.

1      2      3      4      5

16) It is possible to be good in all respects.

1      2      3      4      5

17) P.T. Barnum was wrong when he said that there's a sucker born every minute.

1      2      3      4      5

18) It is hard to get ahead without cutting corners here and there.

1      2      3      4      5

19) People suffering from incurable diseases should have the choice of being put painlessly to death.

1      2      3      4      5

20) Most people forget more easily the death of their parents than the loss of their property.

1      2      3      4      5

## APPENDIX C

### **The 14-Item Resilience Scale (RS-14) Wagnild & Young, 1993**

Please read the following statements. To the right of each you will find seven numbers, ranging from "1" (Strongly Disagree) on the left to "7" (Strongly Agree) on the right. Circle the number which best indicates your feelings about that statement. For example, if you strongly disagree with a statement, circle "1". If you are neutral, circle "4", and if you strongly agree, circle "7", etc.

Circle the number in the appropriate column	Strongly Disagree      Strongly Agree						
1. I usually manage one way or another.	1	2	3	4	5	6	7
2. I feel proud that I have accomplished things in life.	1	2	3	4	5	6	7
3. I usually take things in stride.	1	2	3	4	5	6	7
4. I am friends with myself.	1	2	3	4	5	6	7
5. I feel that I can handle many things at a time.	1	2	3	4	5	6	7
6. I am determined.	1	2	3	4	5	6	7
7. I can get through difficult times because I've experienced difficulty before.	1	2	3	4	5	6	7
8. I have self-discipline.	1	2	3	4	5	6	7
9. I keep interested in things.	1	2	3	4	5	6	7
10. I can usually find something to laugh about.	1	2	3	4	5	6	7
11. My belief in myself gets me through hard times.	1	2	3	4	5	6	7
12. In an emergency, I'm someone people can generally rely on.	1	2	3	4	5	6	7
13. My life has meaning.	1	2	3	4	5	6	7
14. When I'm in a difficult situation, I can usually find my way out of it.	1	2	3	4	5	6	7

## APPENDIX D

### Modified Math Test

1. A 15-foot ladder is leaning against a 30-foot wall. The bottom end of the ladder is 9 feet from the wall. How many feet above the ground does the ladder touch the wall?
  - A) 1.7
  - B) 6
  - C) 12
  - D) 17.5
  - E) 144
  
2. Mrs. Falbo bought 9 adult tickets and 5 children's tickets for the recital. The total she paid was \$67. Mrs. Ustinov bought 7 adult tickets and paid \$38.50. How much does each type of ticket cost?
  - A) adult = \$7.44; children's = \$13.40
  - B) adult = \$5.50; children's = \$3.50
  - C) adult = \$6.59; children's = \$7.70
  - D) adult = \$3.50; children's = \$5.50
  - E) adult = \$13.40; children's = \$47.44
  
3. On a certain compact disc, three songs have the following playing times:  
Song A: 4 minutes and 56 seconds  
Song B: 2 minutes and 30 seconds  
Song C: 10 minutes and 16 seconds  
What is the average playing time of these three songs?
  - A) 5 minutes and 8 seconds
  - B) 5 minutes and 54 seconds
  - C) 6 minutes
  - D) 6 minutes and 7 seconds
  - E) 17 minutes and 42 seconds

4. Armando is a barber. He gets 40% of what each of his customers is charged. If the customer leaves a tip, Armando gets 100% of the tip. How much does Armando earn on an \$8.50 haircut if the customer tips him \$1.30?
- A) \$9.80
  - B) \$6.40
  - C) \$5.30
  - D) \$4.70
  - E) \$3.92
5. The shirt you want to buy is 15% off from \$32.50. How much will your shirt be?
- A. \$27.63
  - B. \$30.00
  - C. \$17.50
  - D. \$37.38
6. Alice needs 36 inches of ribbon to complete her art project. At the store she buys four and a half feet of ribbon. How many inches of ribbon is Alice going to have to cut off?  
(hint: There are 12 inches in one foot)
- A. 36 inches
  - B. 24 inches
  - C. 18 inches
  - D. 5 inches
7. Bill gets a shipment of 4 crates with each crate holding 120 pounds of chicken. Bill paid a total of \$1,920.00 for the chicken. What was the price per pound of chicken that Bill paid?
- A. \$1.60
  - B. \$4.00
  - C. \$10.00
  - D. \$3.00

8. In 1999 the population of Pioneer, South Dakota was 22,500. In 2000 the population had grown to 24,600. When the local factory closed in 2001, the population dropped to 23,800. How much did the population increase from 1999 to 2000?
- A. 800
  - B. 2,100
  - C. 1,300
  - D. 1,400
  - E. 2,001
9. Mrs. Borden is planning to treat her third-grade class to ice cream sandwiches for Valentine's Day. She can buy dozen packs at Fast Mart for \$7.00 each. How much will she spend for her 28 students?
- A. \$28.00
  - B. \$24.00
  - C. \$14.00
  - D. \$21.00
  - E. \$26.00
- 10 Mr. Anderson is building a gazebo for his patio. When it's finished, he is going to get new patio furniture at the 20% off fall sale. About how much will he save on the furniture set that was \$299.95?
- A. \$240.00
  - B. \$30.00
  - C. \$250.00
  - D. \$50.00
  - E. \$60.00

## **BIOGRAPHY**

Vikash Ramnanan is originally from Trinidad and Tobago. He grew up on Trinidad and moved to San Angelo for his university studies in 2014. He will be graduating in May 2018 with his Bachelor of Science in Psychology with a minor in Philosophy. He will be graduating with Highest University Honors in May 2018. He has been involved with multiple organizations on campus and off campus and has presented research at conventions both in state and nationally. He has worked closely with Dr. Crystal Kreitler since 2016 and his research has won multiple scholarship awards and grants. He has benefited immensely from the opportunities afforded to students at Angelo State University and through the Honors program and will continue to work towards academic excellence. He and his wife, Katharine look forward to moving on to new adventures and opportunities.

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