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DOES PUTTING EACH OTHER IN A BOX BOX IN OUR OWN THINKING? EXAMINING
WHETHER THE NARROW PARAMETERS OF THE GENDER BINARY CONSTRICT
CREATIVE THOUGHT

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ABSTRACT

A great deal of feminist and transgender literature has demonstrated the deleterious effects of gender binary. No research appears to consider the possibility however that a relationship might exist between thinking of gender as a dualism and creative thought. The following study sought to determine if viewing gender as a binary constricted creativity. A 2x2 factorial study was conducted with 190 undergraduate students from The Pennsylvania State University. Participants were primed to see gender as a binary or spectrum, primed to see two genders or more than two genders as perceptually salient, and measured on two creativity scales. A marginally significant main effect was found for gender perspective, suggesting that the cognitive schema one holds of gender can either facilitate or impede divergent creative thinking. It is concluded that widespread adoption of the concept that gender is spectrum might enhance the creative capabilities of the human race as a whole.

Keywords: gender, gender binary, language, linguistic relativity, creativity

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Chapter 1

Introduction

While the gender binary (the notion that gender only takes two, mutually exclusive forms) is well-documented within Women's and feminist studies, it is generally discussed in terms of its social detriments and impact upon marginalized peoples. This framing, however, gives those comfortably living within the binary little to no incentive to want to change the current state of gendered affairs. In an attempt to demonstrate the pernicious nature of the gender binary upon all people – including those who live within and outside of it – I take a social cognitive approach in the following study. Specifically, I propose that the dualistic way in which human beings gender each other influences other modes of thinking. Examining a cognitive process widely considered to be a manifestation of intrinsic ability – creativity – I investigate whether thinking of gender in a binary manner constricts creative thought. While no research thus far has made this connection between the gender binary and creativity, scholars have examined individual facets of this topic. In my subsequent review of the literature each component of this research question is unpacked. I begin with the gender binary itself, progress to the binary's relationships with language, and finally conclude with the association between culture and creativity.

The Gender Binary

By far the most discussed binary within feminist literature is that of the gender binary. This social phenomenon operates on the implicit assumption that only two genders exist within the human condition – man and woman - and that these two genders are distinct from each other in every way (Bem, 1993). This dualistic framing is based on another taken-for-granted polarity that presumes biological sex

differences in the human species can be reduced to male (penis and testes) and female (vagina and ovaries) (Bem, 1995).

Feminist researchers have long contended that the gender binary is a social construct; a narrative woven around the body rather than innate to it (Butler, 1990; De Lauretis, 1987; West & Zimmerman, 1987). A self-sustaining system, the gender binary derives its power not just from notions of naturalism (the idea that gender is inherent to the body and informed by sex markers), but also from its fundamental polarity. Within this framework, “man” and “woman” are mutually exclusive categories and “woman” is defined by what “man” is not (and vice versa). This reliance on contrasts sets up a hierarchical ranking of gender identity. The gender associated with worth and normality thus comes to demarcate the “opposite” gender as worthless and abnormal (Bem, 1995). In other words, with men estimated as valuable and dominant in society, women are consequently disadvantaged at their expense. The normalization of these relations effectively serves to convince individuals that the hierarchies established within the gender binary are stable and alternative gender identities outside this system are infeasible (Lorber, 2011).

The gender binary’s shortcomings are evidenced by its complicity in gendered, sexed, and sexual oppression. It has been used to justify the subordination of women socially, economically, and politically (Lorber, 2011; Butler, 1990) and to alienate butch lesbian women for not conforming to societal expectations of femininity (Halberstam, 1998; Inness, 1998). Leaving no room for intersex bodies, the gender binary has also sanctioned the medical establishment’s “corrective” surgeries of ambiguous genitalia for decades, effectively denying the autonomy of intersex individuals (Carrera, DePalma, & Lameiras, 2012; Kaldera, 1998). Furthermore, the binary has censured and villainized transgender and non-binary gender identities, causing countless people physical, psychological, and emotional distress (Waters, 1998; Carrera, DePalma, & Lameiras, 2012; Enke, 2016).

Language

Language is argued by trans and feminist theorists to be one of the primary mediums through which the gender binary is constructed and perpetuated. According to Halberstam, “naming confers, rather than reflects, meaning” (1998, pg. 25). Within this framing, the words “man” and “woman” are not simply objective representations of human manifestation nor are they meaningless labels. These linguistic practices work to influence how the body is read and shape the environment’s receptivity to the body (Enke, 2016). By Judith Butler’s account, “the subjects regulated by [gendered] structures are, by virtue of being subjected to them, formed, defined, and reproduced in accordance with the requirements of those structures” (1990, pg. 2). In other words, the individual is produced within the confines of language system and cannot exist independently outside it.

Because of the gender binary’s inadequacy at capturing all human variation (i.e.: gendered, sexed, and sexual bodies), researchers and activists have advocated for non-dualistic gender qualifiers (genderqueer, genderfluid, agender, etc.). The existence of people who live outside the binary challenges its very stability (Butler, 1990; Carrera, DePalma, & Gameiras, 2012). Its usefulness as a schematic tactic is discredited by the fact that a language of precision has been developed for many other facets of life, yet the vocabulary of gender is still vague and inefficient (Halberstam, 1998). “Exploding or proliferating” gender categories is thought to not only disrupt systems of gender privilege and oppression but also provide a better approximation of the diversity of the human race (Bem, 1995; Carrera, DePalma, & Gameiras, 2012).

Psychologists suggest that language may indeed have the potential to shape our thinking and color our perception. This theory, known as the Whorfian-Sapir Hypothesis, the Whorfian Hypothesis, or linguistic relativity, posits that language structures our reality (Whorf, 1965). Particularly relevant to this paper are investigations that have demonstrated that language may influence category learning and perceptual salience (Lupyan, Rakison, & McClelland, 2007; Waxman and Markow, 1995; Boroditsky, Schmit, & Phillips, 2003). Category learning is the process by which we form mental concepts or

schemas. A schema is a clever cognitive proof informed by our prior experiences that helps us quickly and efficiently make sense of the world around us (Colman, 2015). Perceptual salience is a “spotlight” that governs what we attend to in the world, highlighting some aspects of our environment while minimizing others. Research on color perception and grammatical gender has demonstrated that the mental categories we use to interpret our environment frame our perception of that environment.

For example, studies conducted on color perception and language find that the discrimination of certain hues tends to depend on whether words exist for those colors in the speaker’s native language (Whorf, 1965; Thierry, Athanasopoulos, Wiggett, Dering, Kuipers, & Ungerleider, 2009). Research in this area has examined cross-cultural differences between many world languages, including English, German, Turkish, Russian, Hopi, and African dialects. When asked to pick out color variations, those whose languages lacked terminology for certain colors failed to discern those particular color distinctions. Schemas are largely implicated here, as one’s vocabulary for different types of color comes from their cognitive classification of color. The authors concluded in these studies that language may condition our perceptual faculties to attend to only certain stimuli (Ozgen and Davies, 2002; Roberson, 2005). This finding is in line with Halberstam’s theory that even though no one perfectly meets the paradigms of man and woman, the gender binary (a cognitive schema) imposes perceptual blinders that preclude the recognition of singular variation (1998).

Furthermore, research conducted on grammatical gender has found language to have bearing on other thought processes. Grammatical gender, common to most of the world’s languages (though not English), is a syntactic rule that requires nouns and modifiers within a language be classified as either masculine or feminine (and very rarely neuter) (Boutonnet, Athanasopoulos, & Thierry, 2012). Studies on this phenomenon show that participants rely upon gender stereotypes when learning and recalling vocabulary that operates within a language with grammatical gender (Konishi, 1993; Sera, Berge, & Pintado, 1994). Participants’ responses even demonstrate traces of grammatical gender influence when completing memory and nonlinguistic tasks in English (Boutonnet, 2012; Boroditsky, Schmit, and

Phillips, 2003). When speakers of languages with grammatical gender were asked to rate in English how similar pairs of unlabeled photographs were to each other, their ratings were found to be structured by the grammatical gender of the words for each image in their native language. For example, when two photographs displaying images that would be described with feminine nouns in Spanish were shown to Spanish speakers, these participants rated the two photos to be more similar in English. However, when the same photographs were shown to German speakers, whose language would describe one photo as masculine and the other as feminine, these participants rated the two photos as more dissimilar in English (Boroditsky, Schmit, and Philips, 2003). As a whole, these results suggest that language may influence cognitive processes unrelated to language (Boutonnet, 2012; Boroditsky, Schmit, and Philips, 2003; Cubelli, Paolieri, Lotto, & Job, 2011.).

One could see how this research might map onto the gender binary. The gender binary is itself a cognitive schema established throughout development via repetition and conditioning. It encourages, normalizes, and naturalizes the usage of the words woman/women/female and man/men/male. The habitual usage of these dualistic gender qualifiers may render the gender binary perceptually salient, influencing how gender is read and ascribed to the body. Butler provides some evidence for this claim, stating that while “bodies differ in many ways physiologically, but they are completely transformed by social practices to fit into the salient categories of a society, the most pervasive of which are ‘female’ and ‘male’ and ‘women’ and ‘men’” (2004, pg. 14). This categorical learning would preclude the accommodation of additional gender identities, for the binary would otherwise be disrupted. Over time then, this process could configure cognition and establish parameters around it.

Creativity

Creativity has been conceptualized many different ways, each definition reflecting the perspective from which the field examining it operates (Adarves-Yorno, Postmes, & Haslam, 2006). Operationalized,

however, creativity is best understood as an interplay between the dimensions of flexibility, fluency, and originality (Crisp and Turner, 2011). Flexibility is understood here to be the “suppression of stereotypical thoughts” (pg. 256), fluency as the frequency with which alternative ideas are generated, and originality as the degree of ideational novelty (Crisp and Turner, 2011).

A burgeoning body of research suggests that creativity may be greatly informed by social and cultural influences. Although the execution of creativity into some tangible form is an individual endeavor, researchers argue that the abilities possessed by the individual and knowledge they draw from while engaging in the creative process are actually developed through social interaction (Glaveanu, 2011). Evidence for the claim that creativity is social in nature draws upon six main observations: 1) novelty is delineated by what is common, 2) creativity depends upon social sanction, 3) social identity influences one’s perception of creativity, 4) social connectedness is associated with creative performance 5) individuals are motivated to create based on the needs of their social group, and 6) the course of creativity is determined by power differentials within society. The following paragraphs expand upon each of these ideas.

First, creating something novel relies upon familiarity with tradition (Fischer, Giaccardi, Eden, Sugimoto, Ye, 2005; Glaveanu, 2010). An object or idea is only determined to be creative if it is found to be in juxtaposition with what has previously been established. Without convention as a basis of comparison, one would not know if what they produced was actually innovative or novel. As Csikszentmihalyi’s puts it, “Without rules, there cannot be exceptions” (1999, pg. 315). Becoming acquainted with custom and social norms is a process of social learning that occurs over the course of development. Only through cultural immersion can one come to understand what ideas, practices, and technologies have already obtained the status of “normal.”

Second, while a product/idea derives its creativity from social convention, it is also informed by social sanction. Ultimately, members of a society decide what is novel, drawing the line between originality and creativity (Glavenau, 2011; Amabile, 1996; Csikszentmihalyi, 1999). In this regard,

creativity is “constructed through [the] interaction between producer and audience,” (Csikszentmihalyi, 1998) and is a product of social judgement passed on the individual (Amabile, 1982). This process is mediated by cultural intelligibility. Just as a text necessitates language competency on the part of its audience to be read, a product requires its audience to be acquainted with the ideas it draws upon to be understood. The artifact must resonate with its audience on some plane of familiarity (socially, culturally, technologically, etc.), otherwise it would be impossible to comprehend and its creative status unable to be determined.

Third, the ability to discern novelty and the perception of creativity itself are largely influenced by group norms (Adarves-Yorno, Postmes, & Haslam, 2006). Ideas tend to fair better in obtaining creative status if they are relevant to a social group in some way. As a consequence, those within an in-group will subsequently view an artifact produced by one of their own to be more novel because of the assumption that the product will be more attuned to the group’s needs (King, 2003). This supposition, in turn, sets up an implicit bias against the creative endeavors of an out-group.

Fourth, some research also suggests the motivation and ability to create can be traced back to the salience of one’s social identity. Studies conducted with bicultural individuals have demonstrated that those who are primed to think of their collective identities as blended perform significantly better on creativity tasks than those who are primed to think of those identities as mutually exclusive (Saad, Damian, Benet-Martínez, Moons, & Robins, 2013; Steffens, Gocłowska, Cruwys, & Galinsky, 2016). The authors suggest that ideational fluency (possessing assorted ideas from heterogeneous sources and cognitively moving effortlessly between them) may foster creative originality, for one has access to more ideas and various kinds of ideas. Based on the data, Steffens et al. (2016) conclude that “creative idea generation [is] positively associated with people’s psychological sense of connectedness to social groups” (pg. 200).

Fifth, according to Csikszentmihalyi (1999), people are spurred to create based on the needs of their social group. This makes sense when one considers the profusion of art produced by marginalized

peoples in the United States, particularly the countless music genres developed by Black Americans (gospel, jazz, blues, rap). On the flip side, however, is the realization that those living in positions of privilege may exhibit less creativity. With most of their needs in life met, privileged social groups have “fewer incentives to change the status quo” because they stand to benefit from it (Csikszentmihalyi, 1999, pg. 329). This, in turn, could dissuade them from exploring alternative ideas or practices in the world around them.

Sixth, these groups at the apex of the social hierarchy can determine the course of creativity for society as a whole. For creativity to flow, a culture needs to not only have the material resources necessary to realize creative ideas but also an interest in the generation of those ideas (Csikszentmihalyi, 1999; Glaveanu, 2011). The social organization of a body of people can regulate whether new ideas are welcomed or shunned. Restrictions on access to knowledge by institutions of power can further impede the creativity of the masses. For example, in Nazi Germany only non-novel works of art using traditional German techniques were permissible. Creativity as novelty was greatly discouraged and associated with degradation (Adarves-Yorno, Postmes, & Haslam, 2006) This restriction on the generation of new ideas undoubtedly served as an implicit form of social control employed to ensure the security of the regime.

The Present Study

In the present study, I examine whether thinking within the gender binary can constrict creative thought. Bearing in mind the omnipresence of the gender binary, language’s role in perpetuating the binary and structuring cognition, and the social foundations of creativity, there is a distinct possibility that how human beings dualistically gender each other might influence their creative faculties.

With language considered to be one of the primary vehicles for the perpetuation of gender binary, this research focused on two different types of language transmission (as mentioned by Wolff and Holmes, 2011): categorical learning and perceptual salience. My first independent variable, gender

perspective, aimed to manipulate the categorical learning component of gender. Categorical learning is the process through which cognitive schemas are formed. The concept of gender as a binary (only male or female) or as a spectrum (more than male and female) would be considered a gender schema. In this study, I manipulated which schema participants relied upon by priming them to think of gender in terms of a binary or a spectrum.

My second independent variable, application of gendered schema, sought to manipulate the perceptual salience of gender. Perceptual salience is a lens through which we view the world, where particular aspects of our environment are highlighted to attract our attention while other aspects are minimized and ignored. In this sense, language acts as “spotlight”. Recurrent usage of binary gender qualifiers (man/men/male vs. woman/women/female) might render those identities more salient in our daily lives, precluding the recognition of variation within and outside binary gender. In this study, I manipulated the perceptual salience of gender by increasing the salience of either the gender dualism or the gender continuum.

While there are different types of creativity, this study distilled creativity into convergent and divergent thought. Hawthorne et al. (2016) describes convergent thinking as “the ability to provide the single correct solution to a given problem” (pg. 114). This kind of thinking requires one to shift their frame of reference in order to arrive at an established conclusion, capturing the flexibility dimension of creativity. Divergent thinking, on the other hand, is defined as “the ability to rapidly generate several ideas/solutions for a given problem” (Hawthorne et al., 2016). This kind of thinking involves thinking outside the normative parameters of a given situation and generating as many novel ideas as possible within a given time frame, capturing the flexibility, fluency, and originality components of creativity.

Hypotheses

I proposed three major hypotheses in this study.

Hypothesis 1. As discussed above, language influences thought and creates cognitive categories. Gender is a cognitive category. How we think about gender might then influence other mental processes,

such as creative thinking. Research also demonstrates that creativity is influenced by our social and cultural environment. Gender categories are produced through social interaction. Creativity might then be informed by our contact with gender. Therefore, *I predicted that a main effect of gender perspective would be observed, such that participants who were exposed to the spectrum gender perspective would score higher on both convergent and divergent creativity tasks than those exposed to the binary gender perspective.*

Hypothesis 2. The words “man” and “woman” become perceptually salient through their common usage. This means that a particular gendered lens is instilled in the mind, fencing off alternative readings of the body. These perceptual blinders could limit our cognitive resources, hindering the generation of alternative (creative) ideas. Removing the perceptual restriction that there are only two kinds of gender identities and gendered bodies might expand our cognitive resources, making it easier to think creatively. Therefore, *I predicted that there would be a main effect of application of gendered schema, such that those exposed to the continuum application of gendered schema would score higher on measures of convergent and divergent creativity than those exposed to the dualism application of gendered schema.*

Hypothesis 3. The schemas we form through category learning and the perceptual salience that governs our attentional resources are influenced by language. I see these effects as mutually reinforcing, whereby 1) schematic categories encourage the use of only certain words, 2) recurrent usage of these words renders the people/ideas/things they represent more perceptually salient in the environment, and 3) the tendency to perceive in the environment only the people/idea/things that affirm the schematic categories these words represent prevents the discernment of any difference that would compel the expansion/creation of new schema. In the context of gender, the gender binary is a schema that encourages the use of the labels “man” and “woman”. These words may make the identities of “man” and “woman” more salient in everyday society. The tendency to not to see other gender identities outside of “man” and “woman” reaffirms the gender binary and gives the observer no reason to modify their gender schema. Thus, because language structures how we think and creativity is a thought process as well,

creativity might be influenced by how we classify and perceive gender. Therefore, *I predicted that there would be an interaction between gender perspective and application of gendered schema.*

As shown in Figure 1, I anticipated that the effect of application of gendered schema would depend on which gender perspective participants were exposed to. Participants in the binary perspective/continuum application group were expected not to differ from the binary perspective/dualism application group. I proposed that someone primed to think in a binary manner would still gravitate to the poles of familiarity (man and woman) when completing the continuum application exercise (for the binary schematic priming would trigger the parameters of dualist perceptual salience). This, in turn, would nullify the effect of the continuum application manipulation and evince similar levels of creativity to the binary perspective/dualism application group.

Participants exposed to the spectrum gender perspective but forced to apply a dualist gendered schema were also expected to exhibit lower levels of convergent and divergent creativity than the spectrum perspective/continuum application group. It was suspected, however, that they would demonstrate greater levels of convergent and divergent creativity compared to the binary perspective/dualism application group. I proposed that this group would already be thinking more broadly because of the gender perspective manipulation but also have the gender binary reinforced for them in the application manipulation. This incongruity might then remove some cognitive constraints on creativity but also retain others.

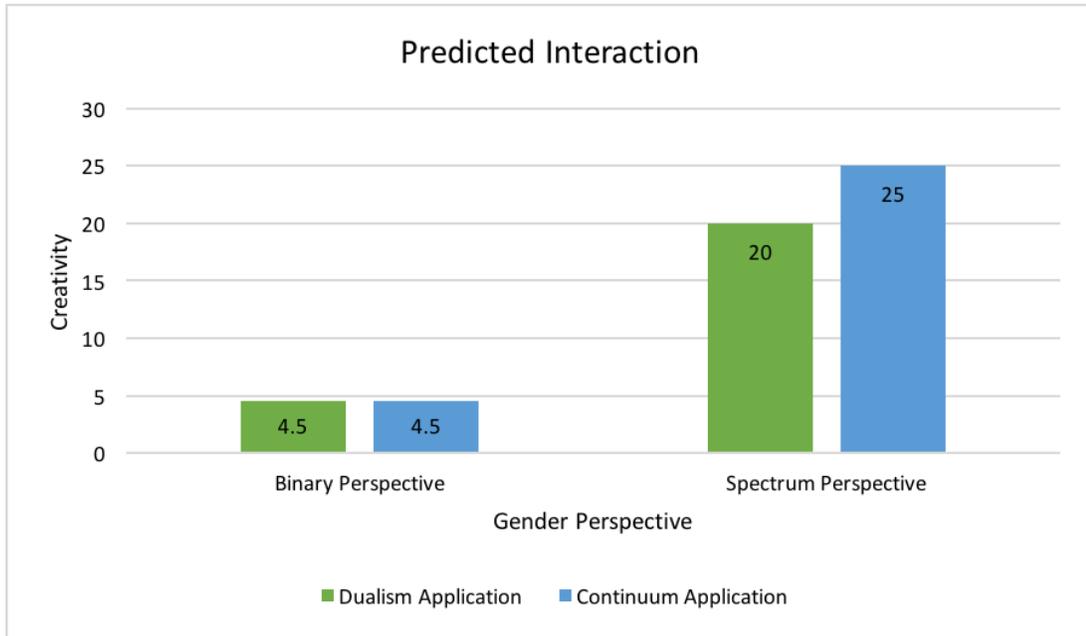


Figure 1. Predicted Interaction between Gender Perspective and Application of Gendered Schema

Chapter 2

Methods

The study took the form of a 2 (Gender Perspective: Binary vs. Spectrum) x 2 (Application of Gendered Schema: Dualism vs. Continuum) factorial design. Participants were randomly assigned to one of four of the experimental conditions.

Participants

A total of 200 participants were recruited via the University Park Psychology Subject Pool and awarded course credit for their time. 155 women, 43 men, and 1 non-binary individual took part in the study. 10 people were excluded from the analysis for failing to demonstrate that they had read their assigned article in an attention check about the article. This gave me a final sample of 190 people.

3.2% of participants identified as Black/African American, 74.7% as white/Caucasian, 6.3% as East Asian, 4.2% as South Asian, 5.8% as Latinx/Hispanic, .5% as Middle Eastern or Arab, and .5% as Native Hawaiian or Pacific Islander. 3.7% of participants identified with multiple racial groups. 184 participants identified as heterosexual or straight, 4 as bisexual, and 2 as questioning. Their ages ranged from 18 to 40 ($M = 19.37$; $SD = 2.37$).

Materials

To manipulate gender perspective, participants were asked to read a short news article either espousing or refuting the gender binary (see Appendix A). Survey randomization determined which article they were presented with. Each article was less than 150 words and identically phrased, differing

only in their stances on the topic of gender differentiation. The first paragraph of each article informed participants that the work discussed was completed by two distinguished faculty members of a renowned university. The second and third paragraphs of each article were formatted in such a way to suggest they were synopses of recently published scientific research. The aim of this manipulation was to prime participants to either think in terms of the gender binary or the gender spectrum.

Application of gendered schema, the second independent variable, was manipulated by having participants complete a task in which they were asked to gender a stranger. Presented with a series of gender neutral descriptions about five individuals with gender neutral names, participants were asked to indicate what they believed the gender of each individual was. Those in the dualism application condition were given the option of selecting either “man” or “woman”. Participants in the continuum application condition were presented with a continuous scale that, while notated with “man” and “woman” at either extreme, also allowed the possibility of indicating a gender identity between those two extremes (in other words, a third gender). See Appendix B.

Measures

A twofold approach was taken in measuring participant creativity by breaking creativity down into convergent and divergent thinking.

Convergent Creative Thinking. To assess convergent creative thinking (the ability to shift one’s perspective to arrive at a specific answer), a shortened subset of Mednick and Mednick’s Remote Association Task (RAT; 1967) was employed. The task consisted of eight questions. For each question, participants were presented with three words and asked to find a fourth word that related the three. For example, the word “Falling”, “Actor”, and “Dust” have in common would be “Star”. Participants received one point for each question they correctly solved. See Appendix C.

Divergent Creative Thinking. Wallach and Kogan's Alternate Uses Instrument (1966) was utilized to measure divergent creative thinking (the ability to generate novel ideas). The task consisted of eight items. For each question, participants were presented with an inanimate object and asked to list all the different ways they believed the object could be used. (For the full assessment, see Appendix D) Responses were analyzed for original ideas outside the object's common use(s). Participants received one point for every novel use listed and zero for each common use listed. A novel use was considered to be any idea mentioned less than 5% of the time by the sample (Runco, Okuda, and Thurston, 1987). With the sample size totaling 190, an idea supplied by less than 9.5 of the participants was coded as novel while anything mentioned by more than 9.5 of the participants was coded as common.

Procedure

The entire study was administered online as a Penn State Qualtrics survey. Participants signed up to take the study through the Penn State SONA system and were given a separate web address. Upon clicking on the link, they were redirected to a separate browser window. A welcome page immediately greeted them asking that they maximize the window and complete the study in a quiet location. They were then presented with the consent form (See Appendix E). The consent form indicated that the purpose of the study was to investigate accessibility and flexibility and provided a vague description of the tasks participants would complete. It was made clear to participants that progressing to the next survey screen served as a form of implied consent to take part in the study.

Participants first read a fake news article that either espoused or refuted the gender binary (the gender perspective independent variable). An attention check in the form of three write-in questions subsequently followed. These questions inquired about the content of the article participants had just read and their reactions to it.

Participants were next presented with the application of gendered schema task. Survey programming randomized whether subjects saw the dualism or the continuum task.

Mednick and Mednick's (1967) Remote Association Task (RAT) followed. Participants were given eight minutes and twenty seconds to complete the eight-question measure. Answers were automatically submitted after that amount of time had elapsed, regardless of whether the participant had finished responding. The timer was employed to ensure that subjects did not spend too much time on the page, as pilot testing of this measure had previously revealed that participants spent 45 minutes to an hour on the questions when allowed to complete the task at their leisure.

After seeing a page praising them for their good work on the previous task, participants were presented with Wallach and Kogan's (1966) Alternate Uses Instrument. Participants had similarly spent too much time on this measure during pilot testing, so this section of the survey was also timed for a period of eight minutes and fifteen seconds.

To conclude the study, questions measuring the demographic composition of the sample (see Appendix F and their experiences with the study were asked (see Appendix G). Participants were then debriefed on the true nature of the study before submitting their responses (see Appendix H).

Chapter 3

Results

Before testing my hypotheses, I examined the correlation between the measured variables of divergent thinking and convergent thinking. The correlation coefficient was found to be .126 and marginally significant ($p = .083$). This is considered to be a small correlation, which suggests that the two types of creative thought were not closely related.

Next, I evaluated my hypotheses using a series of 2 (Gender perspective) x 2 (Application of gendered schema) between-subjects ANOVAs. The means and standard deviations for divergent and convergent thinking within each condition are reported in Table 1. I outline the results below.

Table 1. Means and Standard Deviations for Convergent and Divergent Thinking Across Condition

<u>Measured Variable</u>	<u>Gender Perspective</u>			
	<i>Spectrum</i>		<i>Binary</i>	
	<u>M</u>	<u>SD</u>	<u>M</u>	<u>SD</u>
<i>Divergent Thinking</i>	4.417	3.846	3.479	3.015
<i>Convergent Thinking</i>	2.302	2.143	2.075	2.215

Hypothesis 1: *A main effect of gender perspective will be observed, such that participants who were exposed to the spectrum gender perspective would score higher on both convergent and divergent creativity tasks than those exposed to the binary gender perspective.*

Convergent creativity. The main effect of gender perspective on convergent creativity was found to be non-significant, $F(1, 186) = .363$; $p = .548$.

Divergent creativity. A marginally significant main effect of gender perspective on divergent thinking was found, $F(1,186) = 3.08$; $p = .081$. Compared to those exposed to the binary gender perspective, participants exposed to the spectrum gender perspective scored marginally higher on the divergent thinking task. This result suggests that the framing of gender within the gender perspective manipulation (binary gender perspective v. spectrum gender perspective) may have led participants to think either more narrowly (binary) or more expansively (spectrum). The means and standard deviations for divergent and convergent thinking within each condition are reported in Table 1.

***Hypothesis 2:** There will be a main effect of application of gendered schema, such that those exposed to the continuum application of gendered schema would score higher on measures of convergent and divergent creativity than those exposed to the dualism application of gendered schema.*

Convergent creativity. The main effect of application of gendered schema on convergent thinking was found to be non-significant, $F(1, 186) = .293$; $p = .589$.

Divergent creativity. The main effect of application of gendered schema on divergent thinking was also non-significant, $F(1, 186) = .398$; $p = .529$.

***Hypothesis 3:** There will be an interaction between gender perspective and application of gendered schema.*

Convergent creativity. The analysis revealed that the interaction between gender perspective and application of gendered schema on convergent creativity was not significant, $F(1,186) = 1.92$; $p = .168$.

Divergent creativity. An analysis of the interaction between gender perspective and application of gendered schema on divergent creativity was also non-significant, $F(1,186) = .52$; $p = .472$.

Chapter 4

Discussion

Marginal Main Effect of Gender Perspective

I predicted in my first hypothesis that a main effect of gender perspective would be observed, such that participants who were exposed to the spectrum gender perspective would score higher on both convergent and divergent creativity tasks than those exposed to the binary gender perspective. Data analysis revealed that the gender perspective participants were exposed to had no bearing on convergent thinking, for their performance on that task was roughly the same across conditions. A more noticeable difference was observed in their performance on the divergent thinking task, however. Participants in the spectrum gender perspective condition scored on average almost a whole point higher than those in the binary gender perspective condition. Nevertheless, the p-value for the difference between groups was calculated to be .081, which does not enable me to conclude that gender perspective directly influences divergent thinking.

That a marginally significant main effect was found for gender perspective is telling. Prior research has demonstrated that language categories influence the way we think, but I have found no published work that examines the relationship between the schema of the gender binary and creativity. The effect found in my study provides some evidence that the type of gender schema participants hold may indeed impact their creative thought processes, however. When it comes to resolving my primary research question of whether thinking within the gender binary constricts creativity, this evidence suggests that the question bears further exploration.

It is also worth noting the outcomes of each creativity assessment. Convergent thinking tasks attempt to capture the flexibility dimension of creativity (the ability to shift one's mindset from a prototypical perspective), while divergent thinking tasks measure flexibility as well as the other two

creative dimensions of fluency (the ability to generate many alternative ideas) and originality (the ability to produce novel ideas). The results found for divergent thinking in the gender perspective condition indicate that those exposed to the spectrum gender perspective condition exhibited (marginally) more cognitive flexibility, fluency, and originality than those in the binary gender perspective condition. This suggests that the manipulation intended to make participants think more broadly about gender (spectrum perspective) also compelled them to think more expansively.

The fact that gender perspective had no bearing on convergent thinking might be due to the fact that the kind of thinking the RAT task required was incompatible with the thinking primed by the manipulation. The Remote Association Test (RAT; Mednick & Mednick, 1967) used to gauge convergent thinking in this study required participants to think flexibly only to the point of obtaining a predetermined answer. Flexible thought beyond this was not encouraged in the task as it would have yielded an incorrect answer. This might suggest that cognitive restraint was still imposed on the participants, preventing them from thinking more broadly. Each divergent thinking question in the Alternate Uses Instrument, on the other hand, was not designed with a particular response in mind. While wrong answers were delineated by the frequency with which they were mentioned, all responses beyond those most commonly supplied were acceptable. Flexible thinking in this task was conceptually unbounded and perhaps only slightly constrained by the time limit on the survey page.

No Main Effect for Application of Gendered Schema

Besides several weaknesses in the application manipulation (see below in Limitations and Future Directions), there might be another reason for the nonsignificant main effect between application of gendered schema (meant to manipulate perceptual salience) and creativity. It is possible that schemas formed through category learning are more stable while perceptual salience is more flexible. One could theoretically hold a binary schema for gender and use binary language, but still recognize gender variability. Many manifestations of “man” and “woman” exist just within the gender binary itself, and no one emulates these gender identities the same. This diversity in gender display could suggest then that the

parameters of perpetual salience are not as narrow as previously suggested and that it is weak phenomenon governed by individual differences. This, in turn, could explain why the relationship between the application of gendered schema task meant to manipulate perceptual salience and creativity was non-significant.

No Interaction Between Gender Perspective and Application of Gendered Schema

My third hypothesis predicted that there would be an interaction between gender perspective and application of gendered schema. The results of this study did not support this hypothesis, however, for the effect of the application of gendered schema was not found to be dependent on the condition of gender perspective.

Limitations and Future Directions

This study could possibly have benefited from a few design changes.

First, creativity was only measured at the end of the survey. The possibility that participants may have been highly creative to begin with was not taken into account. A pretest/posttest measure might have better ascertained that the manipulations directly impacted the creativity.

Second, the application of gendered schema may have been weakly manipulated. In the study, application of gendered schema was manipulated through a task in which participant were given five descriptions of ostensibly gender-neutral people and asked to gender them. Those in the dualism application of gendered schema condition were only given two buttons, “man” and “woman,” as potential responses, while those in the continuum application of gendered schema condition answered with a moveable slider on a scale that ranged from “man” to “woman”. Because of Qualtrics programming (the online survey platform used to conduct this study), the default position of the slider was set to the middle of scale. This may have hinted to participants that they should read the described stranger as non-binary. Additionally, a problem arose in that blank responses were recorded for a number of participants in this

condition, indicating that the sliders were left in their central default position. There is no way of knowing if participants indeed thought that the stranger described in each paragraph was non-binary and left the slider where it was because it already indicated their answer or if participants simply did not attempt to answer the questions and just progressed to the next page.

Third, it is possible that the Remote Association Test (RAT) was too condensed to be a valid measure of convergent thinking. The questions were drawn from College Adult Form 1 of the Remote Associates Test, which consists of 30 questions in its entirety. To keep the overall duration of the study around 30 minutes, only eight of these RAT questions were used. Future studies on this topic might consider either using the RAT instrument in its entirety or the Alternate Uses Instrument by itself.

Fourth, there are countless ways of measuring creativity and indeed just as many – if not more – types of creativity. The gender binary may influence a different form of creativity that the measures employed in this study were not able to capture.

Finally, it is worth mentioning that gender is currently a highly controversial topic in American society. The subject has become particularly more salient and polarized since the introduction, legalization, and ostensible “repeal” of House Bill 2, otherwise the North Carolina “Bathroom Bill” (this bill mandated that transgender individuals use the bathroom that corresponded with their assigned gender at birth, not their internal gender identity) (Berman, 2017). A number of participants in this study responded with rather heated comments after reading the news article that aimed to manipulate gender perspective (one article asserted that scientific proof had been found that there were only two genders in the human species while the other claimed that scientific proof had found gender to be a spectrum). Reactance was exhibited by both those exposed to the binary article and those exposed to the spectrum article. It is possible that reactance could have had an impact on creativity, such that feelings of disgust could have impeded creative thinking while feelings of indignation could have augmented it in some way (or vice versa).

Implications

This study found that the way one thought about gender (as a spectrum or as a binary) had a marginally significant effect on how creative they were. Temporarily assuming the schema that gender is a spectrum was shown to slightly increase one's creative thinking. Knowing this, the question emerges as to what kind of impact the permanent adoption of a non-binary conception of gender might have on long-term creativity. One can only imagine that human race might be more creative as whole if we thought of gender as a spectrum all the time.

Furthermore, the results of this study demonstrate that our cognitive schemas for gender are mutable and have the capacity to change. The brain appears to almost immediately perceive this adjustment and respond differently in turn when engaging in creative tasks.

Whether this is a consequence of age remains to be seen. Younger adults may be able to shift their cognitive schemas for gender more easily simply due to brain plasticity. It is worth investigating if the temporary adoption of a non-binary gender schema might evince greater creative thought in other generations, as well. Older Americans are often thought of as insularly minded and contributors to the marginalization of non-binary and transgender folks. Nevertheless, reframing how they approach gender might not just cognitively benefit them in the long run but also produce a more equitable world for all (a)gendered peoples.

Chapter 5

Conclusion

The intention of this study was to determine if thinking of gender as a binary constricts creative thought. While a plethora of research has been conducted on the shortcomings of gender binary, the role of language in shaping perception and cognition, and the social determinants of creativity, no work to date has examined the impact of language on creative thought nor the intersections of the gender binary with creativity. This study sought to remedy this omission in the literature. While marginal in nature, the findings of this investigation suggest that holding a dualistic gender schema impedes creative thought, for participants who thought of gender as spectrum demonstrated greater flexibility, fluency, and originality in their ideas. Since the gender binary is a social construct widely held by many, these results might indicate that human kind's creative capacities are being hindered at its own expense.

Appendix A

Manipulation of Gender Perspective

Richard Loomis

1/25/17

Man or Woman: There is No “In-Between”

After months of rigorous study, researchers at Carnegie Mellon University have concluded that only two genders exist within the human species. Dr. Edmund Rolen and Dr. Karen Giles, two distinguished faculty at the university, oversaw the research team.

Pointing to biology, the scientists contend that there are only two types of sex chromosome pairs- XY (male) and XX (female)- and therefore only two genders. If one possesses a vagina and ovaries, she is a woman. If one possesses a penis and testicles, he is a man. “The evidence is indisputable,” says Dr. Rolen, “A human being is either male or female; there is no ‘in-between’”.

Rolen and Giles’ team further concluded that the social has a minimal influence upon gender. “While social factors do play a slight role in the formation of one’s gender identity, genetics is really the key contributor”, states Dr. Giles.

Richard Loomis

1/25/17

Man or Woman: There is More to the Story

After months of rigorous study, researchers at Carnegie Mellon University have concluded that a multitude of different genders exist within the human species. Dr. Edmund Rolen and Dr. Karen Giles, two distinguished faculty at the university, oversaw the research team.

Pointing to human variation, the scientists contend that gender falls on a spectrum and therefore an infinite number of genders exist. While genitalia is often said to be the marker of gender, how an individual feels about their gender identity cannot be as neatly quantified as male or female. “The evidence is indisputable,” says Dr. Rolen, “A human being can be a man, a woman, genderqueer, genderfluid, transgender, agender, or anything in between”.

Rolen and Giles’ team further concluded that the social has a significant influence upon gender. “While genetics do play a slight role in the formation of one’s gender identity, society is really the key contributor”, states Dr. Giles.

Appendix B

Application of Gendered Schema Task

Dualism Version:

The following are descriptions of five people. Based on the limited information provided, please indicate what you believe the gender of each described individual is.

1. Alex enjoys attending Penn State football games. Alex is a fervent football fan and enjoys socializing with friends. In the summertime, Alex stays with family and plays with their three Labradors. One of Alex's dogs is named Kayla.

How would you describe Alex?

-Man

-Woman

2. Sam paints and sculpts. Friends consider Sam to be particularly artistic. Because Sam's parents are originally from France and Spain, Sam is also fluent in three different languages. Because of this, Sam's music tastes are quite varied.

How would you describe Sam?

-Man

-Woman

3. Jordan is fond of ice cream. Chocolate is Jordan's favorite flavor. A world-traveler, Jordan visits a new country every summer. Wherever Jordan goes, a special stop is made to sample the local ice cream.

How would you describe Jordan?

-Man

-Woman

4. Chris is an active member in a THON organization. Chris thinks the event is a good cause. Chris dedicates so much time to THON, in fact, that little time is left for sleeping. Because of this, coffee has become a necessary part of Chris's life. Chris may or may not be addicted to caffeine.

How would you describe Chris?

-Man

-Woman

5. Devin is a business owner. Every morning at seven o'clock, Devin's bakery opens. Devin makes and sells donuts and other pastries. After work, Devin goes home and enjoys playing video games for several hours.

How would you describe Devin?

-Man

-Woman

Continuum Version:

The following are descriptions of five people. Based on the limited information provided, please indicate what you believe the gender of each described individual is.

1. Alex enjoys attending Penn State football games. Alex is a fervent football fan and enjoys socializing with friends. In the summertime, Alex stays with family and plays with their three Labradors. One of Alex's dogs is named Kayla.

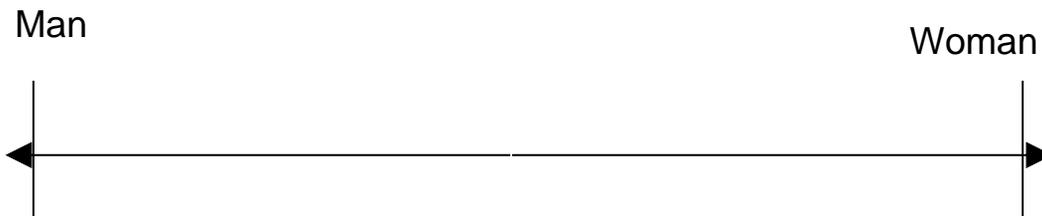
How would you describe Alex?



(Participant moves slider along the continuum to indicate where the individual described falls)

2. Sam paints and sculpts. Friends consider Sam to be particularly artistic. Because Sam's parents are originally from France and Spain, Sam is also fluent in three different languages. Because of this, Sam's music tastes are quite varied.

How would you describe Sam?



(Participant moves slider along the continuum to indicate where the individual described falls)

3. Jordan is fond of ice cream. Chocolate is Pat's favorite flavor. A world-traveler, Pat visits a new country every summer. Wherever Pat goes, a special stop is made to sample the local ice cream.

How would you describe Jordan?



(Participant moves slider along the continuum to indicate where the individual described falls)

4. Chris is an active member in a THON organization. Chris thinks the event is a good cause. Chris dedicates so much time to THON in fact, that little time is left for sleeping. Because of this, coffee has become a necessary part of Chris's life. Chris may or may not be addicted to caffeine.

How would you describe Chris?



(Participant moves slider along the continuum to indicate where the individual described falls)

5. Devin is a business owner. Every morning at seven o'clock, Devin's bakery opens. Devin makes and sells donuts and other pastries. After work, Devin goes home and enjoys playing video games for several hours.

How would you describe Devin?



(Participant moves slider along the continuum to indicate where the individual described falls)

Appendix C

Mednick and Mednick's (1962) Remote Association Test (RAT)

For the next set of questions, you will be presented with three words and asked to find a fourth word that relates all three of the words provided. Please write the fourth word in the space below each question.

For Example...
What relates these three words?
cookies
sixteen
heart

The answer is "sweet".

1) What relates these three words?

Chocolate
Fortune
Tin

2) What relates these three words?

Envy
Golf
Beans

3) What relates these three words?

Sore
Shoulder
Sweat

4) What relates these three words?

Board
Magic
Death

5) What relates these three words?

Stick
Light
Birthday

6) What relates these three words?

Cherry
Time
Smell

7) What relates these three word?

Shopping

Washer

Picture

8) What relates these three words?

Inch

Deal

Peg

Appendix D

Wallach and Kohan's (1966) Alternate Uses Instrument

For each question, an object is mentioned. Think of all the different ways that object could be used and type your responses in the textbox below each question.

1. Tell me all the different ways you could use a newspaper
2. Tell me all the different ways you could use a knife
3. Tell me all the different ways you could use an automobile tire
4. Tell me all the different ways you could use a cork
5. Tell me all the different ways you could use a shoe
6. Tell me all the different ways you could use a button – the kind that is used on clothing
7. Tell me all the different ways you could use a key
8. Tell me all the different ways you could use a chair

Appendix E

Consent Form

CONSENT FOR RESEARCH The Pennsylvania State University

Title of Project: *Accessibility and Flexibility*

Principal Investigator: *Chelsea McGhee*

Address: *513 Moore Building, University Park, PA 16802*

Telephone Number: *(814) 482 - 1163*

Advisor: *Stephanie Shields*

Advisor Telephone Number: *(814) 863-1729*

We are asking you to be in a research study. This form gives you information about the research.

Whether or not you take part is up to you. You can choose not to take part. You can agree to take part and later change your mind. Your decision will not be held against you.

Please ask questions about anything that is unclear to you and take your time to make your choice.

1. Why is this research study being done?

We are asking you to be in this research because you are age 18 or over and have indicated that you are willing to participate in psychological research.

This research is being done to find out more about creative thinking. Approximately 300 people will take part in this research study at Penn State University Park.

2. What will happen in this research study?

In this study, you will first be asked to read a brief article and asked a few questions about it. In the next part of the study, you will read a several statements about complete strangers and indicate what gender you believe them to be. After completing this task, you will be complete a few puzzles. Finally, you will respond to

a series of questions about your social beliefs, your demographic background, and your thoughts on the study.

3. What are the risks and possible discomforts from being in this research study?

There is a risk of loss of confidentiality if your information or your identity is obtained by someone other than the investigators, but precautions will be taken to prevent this from happening. The confidentiality of your electronic data created by you or by the researchers will be maintained to the degree permitted by the technology used. Absolute confidentiality cannot be guaranteed.

4. What are the possible benefits to others?

Potential benefits to others from this study include helping to better society's understanding of different memory processes.

5. What other options are available instead of being in this research study?

You may decide not to participate in this research.

Since the University Park Psychology Subject Pool will be used to recruit participants, you will receive course credit for participating as specified in the syllabus provided by your instructor.

6. How long will you take part in this research study?

If you agree to take part, it will take you no longer than 30 minutes to complete this research study.

7. How will your privacy and confidentiality be protected if you decide to take part in this research study?

Efforts will be made to limit the use and sharing of your personal research information to people who have a need to review this information.

- Your research records will be labeled with a code number and stored on a secure Box.com PSU account.

In the event of any publication or presentation resulting from the research, no personally identifiable information will be shared.

We will do our best to keep your participation in this research study confidential to the extent permitted by law. However, it is possible that other people may find out about your participation in this research study. For example, the following people/groups may check and copy records about this research:

- The Office for Human Research Protections in the U. S. Department of Health and Human Services
- The Institutional Review Board (a committee that reviews and approves research studies) and
- The Office for Research Protections.

Some of these records could contain information that personally identifies you. Reasonable efforts will be made to keep the personal information in your research record private. However, absolute confidentiality cannot be guaranteed.

1. Will you be paid or receive credit to take part in this research study?

You will receive course credit for participating in this research as specified in the syllabus provided by your instructor. Alternative means for earning this course credit are available as specified in your course syllabus.

9. What are your rights if you take part in this research study?

Taking part in this research study is voluntary.

- You do not have to be in this research.
- If you choose to be in this research, you have the right to stop at any time.
- If you decide not to be in this research or if you decide to stop at a later date, there will be no penalty or loss of benefits to which you are entitled.

10. If you have questions or concerns about this research study, whom should you call?

Please call the head of the research study (principal investigator), Chelsea McGhee at (814) 482-1163 if you:

- Have questions, complaints or concerns about the research.
- Believe you may have been harmed by being in the research study.

You may also contact the Office for Research Protections at (814) 865-1775, ORProtections@psu.edu if you:

- Have questions regarding your rights as a person in a research study.
- Have concerns or general questions about the research.
- You may also call this number if you cannot reach the research team or wish to talk to someone else about any concerns related to the research.

IMPLIED CONSENT TO TAKE PART IN RESEARCH

Completion of the study implies that you have read the information in this form and consent to take part in the research. Please print a copy of this consent form to keep for your records.

Appendix F

Demographic Questions

1. What is your age?
(type in)
2. Is English your native language?
 - a. Yes
 - b. No
3. What is your gender?
 - a. male
 - b. female
 - c. genderqueer
 - d. genderfluid
 - e. two-spirit
 - f. transgender
 - g. transsexual
 - h. trans man
 - i. trans woman
 - j. agender
 - k. other (type in)
4. What is your race or ethnicity?
 - a. Black or African American
 - b. White or Caucasian (non-Hispanic)
 - c. East Asian
 - d. South Asian
 - e. Latinx or Hispanic

- f. Middle Eastern or Arab
 - g. Native American or Alaska Native
 - h. Native Hawaiian or Pacific Islander
 - i. I identify with multiple racial groups
 - j. Other (fill in)
5. What is your sexuality?
- a. Homosexual or gay
 - b. Heterosexual or straight
 - c. Bisexual
 - d. Asexual
 - e. Pansexual
 - f. Queer
 - g. Questioning
 - h. (fill in)
6. Do you have any LGBTQA+ friends or family members?
- a. Yes
 - b. No
7. If yes, how many?
(type in)
8. What is your major or intended major at Penn State?
(type in)

Appendix G

Study Feedback Questionnaire

1. Do you have any comments regarding this study?
2. What do you think the hypothesis of the study is?
3. Did you hear anything about this study before you participated (from friends, others who participated before you)? If so, what did you hear?

Appendix H

Debriefing

Debriefing Form for “Accessibility and Flexibility”

The purpose of this study was to examine how thinking about gender more traditionally (e.g., male or female) or as a broader spectrum (e.g., male, female, trans, genderqueer, agender, etc.) impacts people’s creative thinking. Specifically, our research question was: Does thinking about gender as a binary negatively impact creative thinking? To examine this question, we experimentally manipulated the article used in the study across two conditions. You were exposed to one of these two conditions. In other words, the type of article was the *independent variable* in this study. We expected the independent variable to influence people’s cognitive flexibility and ability to generate novel ideas, which we measured with the word tasks (otherwise known as the *dependent variables*). Furthermore, the study was not about accessibility and flexibility as indicated previously. The article you read was not actually written by a real researcher, and did not necessarily contain accurate information.

If you have questions or concerns regarding this study, you are encouraged to contact the primary investigators, listed below, if you have any further questions or needs, or would like a summary of the experimental findings at the completion of the study. For questions about your rights as a research subject, please contact the Office for Research Protections at (814) 865-1775. Finally, thank you for your time and participation in our study. Your participation makes this research possible.

Principal Investigator:

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BIBLIOGRAPHY

- Adarves-Yorno, I., Postmes, T., & Haslam, S. A. (2006). Social identity and the recognition of creativity in groups. *British Journal of Social Psychology*, 45(3), 479-497.
doi:10.1348/014466605X50184
- Amabile, T. M. (1982). Social psychology of creativity: A consensual assessment technique. *Journal of Personality and Social Psychology*, 43(5), 997-1013. doi:10.1037//0022-3514.43.5.997
- Amabile, T. M. (1996). *Creativity in context*. Boulder, Colo: Westview Press.
- Bem, S. L. (1993). *The lenses of gender: Transforming the debate on sexual inequality*. New Haven: Yale University Press.
- Bem, S. L. (1995). Dismantling gender polarization and compulsory heterosexuality: Should we turn the volume down or up? *The Journal of Sex Research*, 32(4), 329-334.
doi:10.1080/00224499509551806
- Berman, M. (2017, April 01). Ex-North Carolina governor who signed bathroom bill, LGBT advocates agree: The state didn't really repeal the law. Retrieved from <https://www.washingtonpost.com/news/post-nation/wp/2017/04/01/ex-north-carolina-governor-who-signed-bathroom-bill-lgbt-advocates-agree-the-state-didnt-really-repeal-it/>
- Boroditsky, L., Schmit, L., & Phillips, W. (2003). Sex, syntax, and semantics. In D. Genter & S. Goldin-Meadow (Eds.), *Language in mind: Advances in the study of language and thought* (pp. 61-79). Cambridge, MA: Massachusetts Institute of Technology.

- Boutonnet, B., Athanasopoulos, P., & Thierry, G. (2012). Unconscious effects of grammatical gender during object categorisation. *Brain Research*, 1479(Oct 15), 72-79.
doi:10.1016/j.brainres.2012.08.044
- Butler, J. (1990). *Gender trouble: Feminism and the subversion of identity*. New York: Routledge.
- Butler, J. (2004). Believing is seeing: Biology as Ideology. In M. S. Kimmel & A. Aronson (Eds.), *The Gendered Society Reader* (2nd ed., pp. 14-23). New York, NY: Oxford University Press. (Original work published 1993)
- Carrera, M. V., DePalma, R., & Lameiras, M. (2012). Sex/gender identity: Moving beyond fixed and 'natural' categories. *Sexualities*, 15(8), 995-1016. doi:10.1177/1363460712459158
- Colman, A. (2015). schema. In *A Dictionary of Psychology*. : Oxford University Press.
Retrieved 5 Apr. 2017, from
<http://www.oxfordreference.com/view/10.1093/acref/9780199657681.001.0001/acref-9780199657681-e-7351>.
- Crisp, R., & Turner, R. (2011). Cognitive adaptation to the experience of social and cultural diversity. *Psychological Bulletin*, 137(2), 242-266. doi:10.1037/a0021840
- Csikszentmihalyi, M. (1999). Implications of a systems perspective for the study of creativity. In *Handbook of creativity* (pp. 313-335). New York, NY: Cambridge University Press.
- Cubelli, R., Paolieri, D., Lotto, L., & Job, R. (2011). The effect of grammatical gender on object categorization. *Journal of Experimental Psychology: Learning, Memory, and Cognition*, 37(2), 449-460.
- De Lauretis, T. (1987). *Technologies of gender: Essays on theory, film, and fiction*.
Bloomington: Indiana University Press.

- Enke, A. (2016). Stick figures and little bits: Toward a nonbinary pedagogy. In Miguel Y. & Tobias S. (Eds.), *Trans studies: The challenge to hetero/Homo normativities* (pp. 215-229). Rutgers University Press.
- Fischer, G., Giaccardi, E., Eden, H., Sugimoto, M., & Ye, Y. (2005). Beyond binary choices: Integrating individual and social creativity. *International Journal of Human - Computer Studies*, 63(4), 482-512. doi:10.1016/j.ijhcs.2005.04.014
- Glăveanu, V. (2010). Principles for a cultural psychology of creativity. *Culture & Psychology*, 16(2), 147-163. doi:10.1177/1354067X10361394
- Glăveanu, V. P. (2011). Creativity as cultural participation. *Journal for the Theory of Social Behaviour*, 41(1), 48-67. doi:10.1111/j.1468-5914.2010.00445.x
- Halberstam, J. (1998). *Female masculinity*. Durham: Duke University Press.
- Hawthorne, G., Saggat, M., Quintin, E., Bott, N., Keinitz, E., Liu, N., . . . Reiss, A. (2016). Designing a creativity assessment tool for the twenty-first century: Preliminary results and insights from developing a design-thinking based assessment of creative capacity. In H. Plattner, C. Meinel, & L. Leifer (Eds.), *Design thinking research: Making design thinking foundational* (pp. 111-123). Springer.
- Inness, S. A. (1998). Flunking basic gender training: Butches and butch style today. In D. Atkins (Ed.), *Looking queer: Body image and identity in lesbian, bisexual, gay, and transgender communities* (pp. 233-237). New York, NY: Harrington Park Press.
- Kaldera, R. (1998). Agdistis' children: Living bi-gendered in a single-gendered world. In D. Atkins (Ed.), *Looking queer: Body image and identity in lesbian, bisexual, gay, and transgender communities* (pp. 227-232). New York, NY: Harrington Park Press.
- King, N. (2003). Involvement in innovation: The role of Identity. In L. V. Shavinina (Ed.),

- International handbook on innovation (pp. 619–630). New York: Elsevier Science.
- Konishi, T. (1993). The semantics of grammatical gender - a cross-cultural-study. *Journal of Psycholinguistic Research*, 22(5), 519-534. doi:10.1007/BF01068252
- Lorber, J. (2011). The social construction of gender. In D. B. Grusky (Ed.), *The inequality reader: Contemporary and foundational readings in race, class, and gender* (pp. 276-283). Boulder (Colo.): Westview Press. (Original work published 1994)
- Lupyan, G., Rakison, D. H., & McClelland, J. L. (2007). Language is not just for talking: Redundant labels facilitate learning of novel categories. *Psychological Science*, 18(12), 1077-1083. doi:10.1111/j.1467-9280.2007.02028.x
- Mednick, S. A., & Mednick, M. T. (1967). Remote associates test, college, adult, form 1 and examiner's manual, remote associates test, college and adult forms 1 and 2 Houghton Mifflin Company.
- Ozgen, E., & Davies, I. (2002). Acquisition of categorical color perception: A perceptual learning approach to the linguistic relativity hypothesis. *Journal of Experimental Psychology-General*, 131(4), 477-493. doi:10.1037//0096-3445.131.4.477
- Roberson, D., Davies, I., & Davidoff, J. (2000). Color categories are not universal: Replications and new evidence from a stone-age culture. *Journal of Experimental Psychology-General*, 129(3), 369-398. doi:10.1037//0096-3445.129.3.369
- Runco, M. A., Okuda, S. M., & Thurston, B. J. (1987). The psychometric properties of four systems for scoring divergent thinking tests. *Journal of Psychoeducational Assessment*, 5(2), 149-156. doi:10.1177/073428298700500206

- Saad, C. S., Damian, R. I., Benet-Martínez, V., Moons, W. G., & Robins, R. W. (2013). Multiculturalism and creativity: Effects of cultural context, bicultural identity, and ideational fluency. *Social Psychological and Personality Science*, 4(3), 369-375. doi:10.1177/1948550612456560
- Sera, M. D., Berge, C. A. H., & Pintado, J. d. C. (1994). Grammatical and conceptual forces in the attribution of gender by English and Spanish speakers. *Cognitive Development*, 9(3), 261-292. doi:10.1016/0885-2014(94)90007-8
- Steffens, N. K., Gocłowska, M. A., Cruwys, T., & Galinsky, A. D. (2016). How multiple social identities are related to creativity. *Personality and Social Psychology Bulletin*, 42(2), 188-203. doi:10.1177/0146167215619875
- Thierry, G., Athanasopoulos, P., Wiggett, A., Dering, B., Kuipers, J., & Ungerleider, L. G. (2009). Unconscious effects of language-specific terminology on preattentive color perception. *Proceedings of the National Academy of Sciences of the United States of America*, 106(11), 4567-4570. doi:10.1073/pnas.0811155106
- Wallach, M. A., & Kogan, N. (1966). *Modes of thinking in young children: A study of the creativity-intelligence distinction*. New York: Holt, Rinehart and Winston.
- Waters, J. (1998). The razor's edge: Walking the fine line of the self. In D. Atkins (Ed.), *Looking queer: Body image and identity in lesbian, bisexual, gay, and transgender communities* (pp. 181-187). New York, NY: Harrington Park Press.
- Waxman, S. R., & Markow, D. B. (1995). Words as invitations to form categories: Evidence from 12- to 13-month-old infants. *Cognitive Psychology*, 29(3), 257-302. doi:10.1006/cogp.1995.1016

West, C., & Zimmerman, D. H. (1987). Doing gender. *Gender and Society*, 1(2), 125-151.

doi:10.1177/0891243287001002002

Whorf, B. L. (1956). *Language, thought, and reality: Selected writings*. Cambridge: M.I.T. Press, Massachusetts Institute of Technology.

Wolff, P., & Holmes, K. J. (2011). Linguistic relativity. *Wiley Interdisciplinary Reviews:*

Cognitive Science, 2(3), 253-265. doi:10.1002/wcs.104

ACADEMIC VITA

Chelsea M. McGhee
cmm6408@gmail.com

Education

The Pennsylvania State University, University Park, PA

May 2017

Bachelor of Arts in Psychology and Bachelor of Arts in Women's, Gender, and Sexuality Studies
Theatre Minor
Schreyer Honors College Scholar and Paterno Fellow

Research Experience

Shields' Interdisciplinary Social Psychology Group/ Gender and Emotion Lab

August 2014 - Present

Research Assistant

- Administered and oversaw research studies with human participants
- Inputted and coded data
- Researched relevant literature in the field
- Reviewed and critiqued graduate projects and papers

Schreyer Honors College Senior Research Thesis

August 2015 - Present

“Does putting each other in a box box in our own thinking? Examining whether the narrow parameters of the gender binary constrict creative thought”

- Conducted a review of relevant literature on binaries and creativity
- Crafted a psychological experiment tested on a student sample
- Analyzed study data with statistical software
- Wrote an empirical thesis

Thesis Supervisor: Stephanie Shields

Leadership Experience

Triota, National Women's Studies Honor Society

August 2014 - Present

Vice President (2015-2016)

- Launched and supervised awareness events about Domestic Violence Awareness
- Planned an out-of-state trip to the Northeast LGBT Conference
- Directed and produced a theatrical performance on the experiences of women
- Led and participated in campaigns to encourage safe sex

Planned Parenthood Generation Action

Fall 2016 - Present

Secretary (2016-2017)

- Maintained communications between members, executive officers, and advisors
- Oversaw executive staff meetings
- Coordinated a campus and community rally
- Documented the ideas and objectives of the group

Conferences Attended

National Young Feminist Leadership Conference, Washington, D.C.

March 2015

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| Penn State 2015 Psi Chi Psychology Conference, University Park, PA | April 2015 |
| <ul style="list-style-type: none"> Presented a conceptual research poster titled “Modifying Prejudicial Attitudes: The Manipulation of Subject Matter and Autonomy in an Educational Setting” | |
| Northeast LGBT Conference, New York, NY | April 2016 |
| Planned Parenthood’s Power of Pink Conference, Pittsburgh, PA | May 2016 |
| Penn State 2017 Psi Chi Psychology Conference, University Park, PA | April 2017 |
| <ul style="list-style-type: none"> Presented an empirical research poster titled “Does putting each other in a box box in our own thinking? Examining whether the narrow parameters of the gender binary restrict creative thought” | |

Community Service Involvement

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| Volunteer Lighting Designer for the Bellefonte Area High School Theatre Department | 2013-2015 |
| Volunteer Lighting Designer for State College Community Theatre (SCCT) | May 2015 – July 2015 |
| Volunteer Lighting Designer for Blackbox Theatre | 2013-2016 |

International Education

- | | |
|----------------------------|--------------------------------------|
| Schreyer London Study Tour | December 27, 2015 – January 11, 2016 |
| Schreyer India Program | July 5, 2016 – August 5, 2016 |

Language Proficiency:

Intermediate Proficiency in Spanish

Honors:

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|--|---------------|
| Bruce E. Moyer Memorial Trustee Scholarship | 2013-2014 |
| The President’s Freshman Award | March 2014 |
| D. Motzer Brown FD-Paterno Award | March 2014 |
| Hintz Honors Scholarship in Liberal Arts | December 2015 |
| Bruce E. Moyer Memorial Trustee Scholarship | 2015-2016 |
| College of Liberal Arts Enrichment Award | March 2016 |
| The Wietlisbach Family Award in Women’s Studies | April 2016 |
| Andrew M. Moore Scholarship | April 2016 |
| Chaiken Scholarship Recipient | 2016-2017 |
| Class of 1922 Memorial Scholarship | 2016-2017 |
| Mimi Barash Coppersmith Endowed Scholarship in Women’s Studies | April 2017 |