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Choke **Analysis**

Essay Topic #1: The eternal nature-nurture debate is one that can extend to any aspect of psychology, and life in general. Typically, psychologists can agree that the outcomes of a human being's life are a result of a mix between biology and their predispositions and their experiences and environment. Even though they can be attributed to a mixture of causes, certain aspects of life can be considered *more* affected by either nature or nurture. This is the case with math ability and perceptions between the genders in the United States and other Westernized countries. Men have typically excelled in the math and sciences while women have repeatedly performed at a much lower level. These differences have been traditionally explained with genetics; males are biologically more capable to solve math problems (Beilock, p. 91). However, using the evidence provided by the book *Choke*, the textbook *Social Development*, and lectures from Dr. Pamela Davis-Kean, it can be argued that these differences in math ability are actually a result that is mainly affected by the environment in which one develops.

The perhaps largest and most compelling piece of evidence that points to "nurture" being the main factor in math achievement between the sexes is the fact that these sex differences are not universal (Beilock, p. 110). It would hold to reason that if women were genetically programmed to be bad at math, this difference would apply to every nation in the world. However, it has been found that sex differences in math achievement are the largest in countries that do not have high levels of women's equality or opportunities for women to learn (Beilock, p. 110). This finding provides support for the idea that the environment in which a woman is raised is the main factor in their achievement. If women do not have the same rights or learning opportunities as men, it makes sense that their performance would suffer. The conceptions about women's lack of math ability may be stronger in those countries with more traditional gender roles, which could cause further barriers for women (Beilock, p. 105). This could cause stereotype threat, which hinders performance because of the knowledge of a stereotype (Davis-

Kean, 10/1/2012). Simply marking her gender at the beginning of a test could cause a woman to not perform to her full potential (Beilock, p. 97).

A problem that could be feeding into this gender dichotomy is the idea of self-concept. This term is defined as "one's perceptions of one's unique attributes or traits" (Davis-Kean, 10/1/2012). A self-concept is developed over time and is hugely influenced by the environment (Davis-Kean, 10/1/2012). Perhaps when a female is raised in a location that encourages women to solely take care of children and the household, this becomes part of their self-concept and their math abilities suffer. In the United States, women have been fighting for equal rights for many generations, which has caused cultural changes. In the early 1980's, the ratio of boys:girls that scored highly on the math portion of the SAT was 13:1 (Beilock, p. 95). In 2005, this ratio was 2.8:1, which is a drastic difference (Beilock, p. 95). There is no way that these differences could have been caused by biology; brain structures do not evolve that quickly (Beilock, p. 95). The social norms and level of women's equality are the only plausible explanation for these results.

In order to develop a self-concept and identity, children begin the process of gender typing. Children learn the behaviors that are considered appropriate for their gender (Davis-Kean, 10/8/2012). When children learn that girls are not supposed to be good at math, this may become a gender-based belief. This would help the child to differentiate between males and females (Davis-Kean, 10/8/2012).

Another persuasive fact that displays environment's role in these gender differences is the fact that on a national test of math intelligence, the American Mathematics Competition, girls that score well come from an extremely small cluster of schools while the successful boys seem to be more dispersed around the country (Beilock, p. 96). This information shows that girls do not seem to be reaching their full potential. The girls at the small elite schools may have different ideas about what girls in math should achieve or they may have more positive examples

of women succeeding in math-related fields; their environment may be giving them a different perspective. Whatever the reason, the majority of girls in the United States are not given the chance to excel in math.

A final argument that displays that environment is the main cause of differences between boys and girls in math is the fact that studies have shown that not all boys out-perform girls in a mathematical setting. A study found that boys and girls from low socio-economic statuses performed equally badly on math tests and it was only wealthy boys that excelled (Beilock, p. 107). If the differences in mathematical ability were strictly genetic, one would expect that no matter their SES, boys would be more successful at math. This example shows that this is simply untrue.

This essay was not written to say that the environment causes *all* differences in math ability; it has been acknowledged that genetics do play some role. Male and female rhesus macaques are predisposed to play with more traditional gendered toys; males are interested in wheeled and mechanical toys while females play with both wheeled toys and doll-like toys (Beilock, p. 109). These differences could be attributed to the males' prenatal exposure to androgen hormones that are masculinizing (Beilock, p. 109). The effects that these monkeys display could also apply to human children, due to a similar exposure to masculinizing hormones before birth (Beilock, p. 109).

While genetics may play some role in the gender differences in math ability, the evidence provided displays that the environment in which one is raised is the main contributor. A quote from Sian Beilock seems to sum up this idea superbly, "From research with infants all the way through high school students, it seems that boys and girls share capacities that allow both sexes to develop talent for math and science. Genetics can explain some of the differences in cognitive functioning across people, but there is little evidence to suggest that these innate differences are

strongly rooted in their sex" (p.110). If environment truly is the main factor that causes the divide between the sexes, it provides hope that math differences do not have to be this way and it is not a hopeless cause for women to excel in math.

Essay Topic #2: Imagine that you are an African-American female teenager who is sitting down to take the SAT for the first time. You are well prepared and know that you are capable of doing well on this test. However, you also know that it is essential to be successful on the SAT to get into your dream school, Princeton. You take a deep breath and begin the test. Before you answer any academic questions, there are demographic questions that you are required to complete. As you fill in your race, you are reminded that African-Americans are considered to be inferior academically to whites and when you bubble your gender, you are subliminally primed to the stereotype that women are typically worse than men at math. Because of this subliminal reminder of stereotypes, you perform at a level that is much lower than your abilities. What you have just experienced is stereotype threat.

Stereotype threat can be detrimental to a student's academic pursuits (Beilock, p. 97). Because a stereotype is purely a cultural belief, the causes of stereotype threat are purely environmental. Many aspects of a child's environment, including identity and self-esteem, can create the awareness of stereotypes within an individual.

Before any real analysis of stereotype threat can begin, the thorough understanding of terms is necessary. A stereotype is considered "a general label applied to individuals based solely on their membership in a… group, without appreciation that individuals within the group vary" (Parke, p. 477). This term is commonly confused with prejudice, "a set of attitudes by which an individual defines all members of a group negatively" (Davis-Kean, 10/1/2012). The main difference between stereotype and prejudice is that a stereotype is more broad and could potentially be positive; African-Americans are better at basketball is a positive stereotype for

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African-Americans. Stereotype threat is defined as "performance that is hindered by the priming of a stereotype" (Davis-Kean, 10/1/2012). The narrative at the beginning of this essay displays how the stereotypes of poor academic performance for African-Americans and females can be a detriment if the stereotype is "primed." Primed means that it has been activated in her mind.

In order for someone to be affected by stereotype threat, the stereotype must be about a group that the individual includes in their identity. Identity can be thought of as "a mature self-definition; a sense of who one is, where one is going in life and how one fits into society" (Davis-Kean, 10/1/2012). An ethnic identity is "recognition of being a member of a particular race or ethnic group" (Davis-Kean, 10/1/2012). This is a type of identity that is has positive outcomes for the individual as long as he/she has a positive view of this group (Davis-Kean, 10/1/2012). All of these terms play an important role in understanding the effects of stereotype threat.

In the story above, because of the fictional girl's high ambition to attend Princeton, she was more likely to succumb to stereotype threat (Beilock, p. 103). The brainpower that she should have been using to focus solely on the problems that the SAT provided was being distracted by the fear that the stereotypes could be true for her (Beilock, p.105). Her performance suffered because of the lack of attention and resources put toward the test.

The stereotype that African-Americans are have inferior academic abilities compared to whites is an example of a stereotype targeted at an ethnic group. Having a strong ethnic identity is considered to be a buffer from the harsh effects of stereotype threat (Davis-Kean, 10/1/2012). Both parents and peers can contribute to a child's development of a positive ethnic identity. It has been found that parents can contribute to their child's ethnic identity by passing on cultural knowledge, giving their children a sense of pride for their heritage, and by explicitly preparing children for future discrimination that they might experience because of their identity (Davis-

Kean, 10/1/2012). However, this finding may depend on the level of attachment that the parent has with the child. If the child is securely attached to the parent, they may be more inclined to listen and be influenced by the parent. It has also been found that if the child spends time with members of their own racial group, they are more likely to have a complete and mature ethnic identity (Davis-Kean, 10/1/2012).

Another way to combat against stereotype threat for ethnic groups is to show successful people who share the same ethnic identity. For example, a study was conducted with black and white students' GRE scores before and after President Obama was elected (Beilock, p. 168). Before he was elected, whites did substantially better than blacks on this academic test (Beilock, p. 168). However, after President Obama's induction, the GRE scores of African-American students increased so dramatically that there was not a significant difference between blacks' and whites' scores (Beilock, p. 169). This is a striking piece of evidence that shows that ethnic groups are affected by the stereotypes, and them people that break them, that pertain to their ethnic group.

It is important to note that stereotypes and prejudice are cultural constructions and therefore are not universal. This means that humans have the ability to change these discriminatory thoughts. Children are not born with identities and should not have to feel inferior because of their association later in life.