

Students' Anxiety in School Settings: Theories in Research

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2019

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Introduction to Theory

There is no doubting to the vital role of theory in research and practice. A theory is a method by which an individual can see the world. It is a “way of looking at the world and deciding what is important” (LeCompte & Preissle, 1984, p. 116). Theory helps to explain the “frameworks, intentions or purposes” through which research questions are generated and research methods are determined (p. 116). In quantitative research, theory helps to explain how and why variables are interrelated (Creswell, 2018, p. 52). In qualitative research, theory is an “orienting lens” that shapes assumptions, the types of questions asked, issues of importance and how the researchers orient themselves. There are several modes of organizing theories.

Theories can be organized by scope. Theories also attain various levels. Theories can be micro-level, meso-level and macro-level (Creswell, 2018, p. 53). Micro-level theories explain small periods of time, space or numbers of people. Meso-level theories link micro and macro, and include theories of organizations or communities. Finally, macro-level theories explain the largest groupings, which include social institutions, cultural systems and whole societies.

This paper argues that the branch of knowledge that a researcher utilizes is in itself a theory and a lens. One issue can be seen through the lenses of biology, chemistry, physics, sociology, political science, economics, anthropology, psychology, business studies, criminology and so on. It is also possible for a researcher to take an approach that mixes various branches of knowledge. For example, one could be interested in research encompassing both criminology and education: how it is that students become shooters, or how to keep a school safe from one. Or perhaps one may be interested to study across branches of knowledge as interaction management and healthcare studies, or psychology in sports. Each branch of knowledge has its own theories, and sometimes theories are shared between branches.

Each branch of knowledge includes a variety of theories within its domain. For example, communication theories include domestication, contextual design, mental models and modernization theory (University of Twente, 2017). On the other hand, social science theories include functionalism, conflict theory, symbolic interactionism, critical theory, anthropological theory, exchange theory, psychodynamic theory and behaviorism. At times, branches of knowledge share similar theories (LeCompte & Preissle, 1984). For example, a variety of social science theories derive from the natural sciences (p. 127). Researchers must determine what branch of knowledge and what theories they wish to utilize. At the same time, they must acknowledge their own bias.

The background of a researcher determines not only the branch of knowledge that they pursue, but also the specific theories that drive their research. Researchers may be attracted to certain theories which match with the nature of reality that they learned due to their, age, gender, ethnicity, economic status, social role, occupation, sociological framework and philosophical background (LeCompte & Preissle, 1984, p. 122). A researcher's theory impacts the types of questions that they ask, the questions they choose *not* to ask and the interpretation of their results. Creswell calls on researchers to take the time to unearth their bias, which could possibly lead to distortion in their research. My own personal history has shaped my preference for specific fields of knowledge and theories.

Personal Theory

Throughout my life, I have been influenced by various fields of knowledge and the theories that came along the different fields. During my undergraduate years, I studied International Political Economy, and began to see issues through an economic lens. At times, I believed that rational choice theories could be used to help people consciously attempt to maximize their benefit and escape poverty. At other times, I questioned whether life was built on inequality and conflict, and that therefore, poverty was inescapable.

I also debated whether the solution to poverty could be found at the micro or the macro scale. After five years, I made my own conclusion that I could improve people's economic potential at the micro-level if I was to become a teacher. I believed in both rational choice theory (LeCompte & Preissle, 1984), that people equipped with knowledge and skills can consciously maximize their benefit and on liberal theory, that education can open the doors for individual development, social mobility and political power (Giroux, 1983, p. 257), I considered my role as a teacher as one that would help others reach a higher economic potential.

After teaching for the past years, I have decided to shift my research interest to include mental health in school settings. This is due to my personal experience with mental health struggles. The connection between the personal experiences and research has been documented by LeCompte & Preissele, who discusses how research questions may derive from curiosity about personal experiences (p. 122). I lived with anxiety and depression as a child, yet I received no mental health treatment at school or at home. As an adult, I have been afforded the treatment necessary to put these issues at bay.

Therefore, my research is very much done with the intention of not only better understanding the factors that contribute to childhood anxiety, but also the issues that contribute toward treatment and healing. At the same time, due to my college background, I am interested in understanding how economic factors play a role in mental health. To produce a productive research into mental health in school settings, one needs to delve into various sources. This paper is the beginning of such efforts. The paper will examine three different sources each looking into anxiety using different lenses.

Introduction to the Papers

Three different texts have been selected due to the different theoretical lenses that they utilize to approach student anxiety. The analysis of each paper will discuss what each theoretical frame uncovers, what it overlooks, and its advantages and disadvantages. The first paper that will be analyzed is "Social Structure, Adversity, Toxic Stress, and Intergenerational Poverty: An Early Childhood Model," by Craig A. McEwen and Bruce S. McEwen (2017). This paper utilizes an eco-bio-developmental approach and views anxiety as a personal failure with long reaching impacts. The second paper is titled "When Separate May be Better: Exploring Single-Sex Learning as a Remedy for Social Anxieties in Female Middle School Students" by Laura C. Hart (2016). This paper utilizes learning theories and feminist theories. The final paper is "Addressing Math Anxiety in the Classroom," by Maureen Finlayson (2014). Her paper focuses on the role of learning theory on math anxiety. Though these three papers seem to discuss different types of anxiety, they help to illustrate how the concept of anxiety can be seen through different lenses.

Paper One: Toxic Stress and Academic Performance

Introduction to Paper One.

The first paper, titled “Social Structure, Adversity, Toxic Stress, and Intergenerational Poverty: An Early Childhood Model” was published in the Annual Review of Sociology in 2017. It was written by Craig A. McEwen, a social anthropologist, and Bruce S. McEwen, a neuroendocrinologist. The paper discusses anxiety as a neurobiological problem with social implications. They analyze how anxiety plays a role in explaining why children from impoverished families perform poorly in school and are likely to be poor as adults. The theoretical frameworks that the authors utilize include an eco-bio-developmental approach, poverty as a personal failure, and the culture of poverty.

Eco-Bio-Developmental Approach.

As compared to traditional approaches that concern themselves with the psychology of anxiety; McEwen and McEwen are equipped with biological, neurological and sociological lenses. This connection between social circumstances, biology and development is known as an eco-bio-developmental approach, or EBD (American Academy of Pediatrics, 2019). The EBD framework begins with ecology - the interaction of organisms with their environment. Ecology results in biological changes, which relate to how the brain is formed and how genes are expressed. Biological changes result in changes in development, which includes learning, behavior and health.

To apply the EBD framework to McEwen & McEwen's paper, we begin with ecology. The authors believe that children from low-socioeconomic, or SES, backgrounds are exposed to toxic stress (p. 449), which is a high level of adversity accompanied by little or no nurturing from adults (Center on the Developing Child, 2017). This ecology leads to biological changes, which include a distortion of the chemical balance of the brain, an alteration of the prefrontal cortex's neural circuitry and increased activity of the amygdala (McEwen & McEwen, 2017, pp. 451-453). As McEwen & McEwen state, “Neural architecture—particularly in the prefrontal cortex, hippocampus, and amygdala—is altered by acute and chronic stressors during early childhood” (p. 450).

Furthermore, toxic stress results in epigenetic changes, which relate to how genes are expressed. These changes in biology result in unchecked release of adrenaline and cortisol, which activate the body's fight or flight response. Finally, the biological changes result in developmental changes. These include reduced self-regulation, executive function, quick reaction to threat, reduced working memory and language abilities (McEwen & McEwen, 2017).

Poverty as a Personal Failure.

After understanding the impact of ecology on biology, and then biology's impact on development, McEwen and McEwen take the EBD framework one step further. They argue that reduced self-regulation has an impact on academic performance. As they state, “The capacities for self-regulation and cognitive performance constitute two key early-life outcomes identified in the toxic stress model that closely relate to school readiness and performance” (p. 452). They also state that this development “in turn, affects early-childhood brain and body development in

ways likely to be consequential for later educational and occupational attainment” (p. 446). Thus they use eco-bio-developmental theory to explain why it is that children from low-SES backgrounds are behind others in academic performance (p. 446).

When children from low-SES communities perform worse in school, McEwen & McEwen state that these children will not be able to obtain high-paying jobs and will remain poor throughout their lives. Thus the authors set up a connection between academic success, occupational success and economic wellbeing. For example, they state that “the relationship during early childhood between these stressors and the development of varied brain regions, cognitive function and self-regulation carries significant implications for sociological understandings of intergenerational poverty” (p. 451). By connecting development to academic failure and intergenerational poverty, the authors argue that, in some way, poverty is the fault of those who are poor.

Specifically, it is the low-SES parents who are to blame. They are to blame because they were the ones who exposed their children to toxic stress in the first place. As McEwen and McEwen stated “Parents experiencing chronic poverty are especially vulnerable to high levels of stress” (p. 458). This stress comes from the conditions that parents have to go through, including long work hours, long commutes, multiple jobs and single parenting, (p. 459). This stress leads to parental negativity, which includes hostility, criticism, annoyance, anger and physical punishment. Furthermore, an increase in parental stress reduces the likelihood of warm non-punitive maternal child care (p. 458), which then leads to a rise in “children’s negative emotions and behavioral problems” (p. 458)

Furthermore, the authors state that not only do low-SES parents stress their children, they are also to blame for their parenting styles. As McEwen & McEwen stated “the nature of parenting and parenting context ... matters both in aspects of brain development and later academic performance” (pg. 458). They state that lower-SES children are behind their peers in vocabulary and language processing speed and accuracy (pg. 458), and they connect it to the fact lower-income parents have much lower vocabularies than professional families.

In addition, low-income parents can be blamed for neglecting their children. First, McEwen & McEwen discuss the importance of interacting with babies, through what they term serve-and-return interactions (p. 457) and imply that low-SES babies do not receive such interactions. Second, they state that while middle-class families are known for utilizing careful planning to raise their children and teach them, low-income parents utilize a “natural growth” style for their children (p. 459). This style emphasizes unstructured activities, lack of language development and lack of active intervention in school.

Toward the end of their paper, the authors discuss the importance of intervention. They state that children can benefit from outside interventions because of the enhanced neuroplasticity of the child brain. The paper therefore posits that outside resources are required to intervene. “Because the brain is plastic, school – or preschool-based interventions can help make up differences between young children experiencing substantial adversity and those who are not” (pg. 458). In addition to interventions targeting children, McEwen & McEwen also discuss family-based intervention to train low-SES parents to improve their verbal interaction with their children and utilize positive communication (p. 460). By calling for outside intervention for low-SES children and their parents, McEwen & McEwen make it seem that unless low-SES parents learn how to parent in the correct way, then their children may not succeed in school. In the long term, this results in a lack of occupational success, and therefore a lack of economic

wellbeing. Though they may not see it in this way, the authors blame low-income people for their own poverty.

Culture of Poverty & Deficit Thinking.

McEwen & McEwen suggest that parents of low income children are similar in many ways. These parents do not spend time with their children, they neglect them, they have low vocabularies, they are stressed and they do not parent in warmly. That is, they share a certain *culture of poverty* (Gorski, 2008). Furthermore, by focusing on the negatives of low-income parents, it is clear that the authors utilize *deficit thinking theory*. Deficit thinking is “the practice of making decisions based on negative assumptions about particular socioeconomic, racial and ethnic groups” (Perry, 2015). McEwen & McEwen utilize a variety of negative assumptions about low-SES parents. For example, they focus on the “extended work hours, multiple jobs, changing work schedules, long commuting time, single parenting, social isolation, and overcrowded and chaotic homes” (pg. 459) and use these attributes to characterize life in a low-SES family.

By connecting poverty to the culture of the poor, and by utilizing deficit thinking, McEwen & McEwen’s model places the blame on the poor. Their paper, thus, utilizes micro-theory as it focuses on the actions of individuals. An alternate lens, critical theory; would utilize a macro-lens to observe how governmental institutions, and society at large, play a role in intergenerational poverty. As stated by Gloria Ladson-Billings, a popular race critical theorist, “I find the culture of poverty discourse so disturbing because it distorts the concept of culture and absolves social structures—governmental and institutional—of responsibility for the vulnerabilities that poor children regularly face” (2017, p. 82).

If McEwen & McEwen utilized a macro-lens, such as critical theory, they would have explained academic failure of low-income children not as a result of their biology, but instead as a result of low quality schools in low-income neighborhoods. Or, for example, instead of blaming low-income parents on being stressed, they would have questioned why the government does not provide free childcare so that all children can experience safe and warm environments, even if their parents are working. Alternately, instead of connecting children’s low academic performance to their parenting styles, they could have discussed the power of old money. As stated by columnist and former dean Andre M. Perry, “privileged parents hold onto the false notion that children’s progress comes from thrift, dedication and hard work – not from the money their parents made” (2017).

Summary of Paper One.

In conclusion, McEwen and McEwen’s paper seems revolutionary in that it utilizes an eco-bio-developmental framework. It is indeed compelling to learn about the power that toxic stress can have on children’s ability to learn. The findings in this paper have long-reaching implications on the efforts of parents and those in the education field to ensure the creation of warm and safe environments for young children. At the same time, however, the model makes an unfortunate case that poverty is a failure of the poor, and that parents should be blamed for intergenerational poverty. This paper could have been better balanced by discussing the role of macro-policies on the poor, which critical theorists believe it is the basis for a variety of problems.

Paper Two: Social Anxiety and Academic Performance

Introduction to Paper Two.

In the previous article, anxiety was seen as synonymous to stress. This stress was caused by low-income parents and had biological, academic and career repercussions. The second article is titled "When Separate May be Better: Exploring Single-Sex Learning as a Remedy for Social Anxieties in Female Middle School Students". It was written by Laura C. Hart in 2016. In Hart's article, the focus is on social anxiety in adolescence girls.

To Hart, middle school girls face unique challenges during adolescence. These include social anxiety, self-esteem, depression, eating disorders and dissatisfaction with body appearance. Further, not only adolescent girls face unique problems, they also have their own sex-based learning needs. For example, she discusses how girl brains learn through discussion and art activities. Given her belief in the theory of *sex-based learning*, Hart argues for implementing single-sex classrooms in middle schools so as to "fulfill the unique needs" of females (Hart, 2016, p. 33). Single-sex classrooms will better educate young women, while also keeping them away from the troubles created by adolescent boys. To Hart, single-sex classrooms "provide a non-threatening environment, one where girls in particular experience a calmer, more cohesive learning environment that allows deeper peer relationships to grow" (p. 33). These classrooms will be more comfortable, supportive and inclusive (p. 39). Difficulties with the male gender is inherent to Hart's paper, making her paper one that is based an intersection of feminism (Carlson & Ray, 2018) with learning style (Cassidy, 2004) and space (Low, 2006).

Feminism and Learning Style Theory

Feminist theory explores inequality in gender relations and the make-up of gender (Carlson & Ray, 2018). Hart (2016) seems to concern herself with feminist theory for several reasons. First, she believes that not only are men and women different physically and developmentally, they also learn differently and have different brains. Second, she believes that young men are a big source of problems for young women and utilizes several negative words to describe young men. Third, she suggests that young men are a contributing factor to social anxieties in young women. All of these feminist claims go into supporting her case for single-sex learning.

First, the Hart explores differences between women and men, thus putting her in the camp of feminist theorists. There are a variety of different feminist theories, one of which is equality feminism. Equality feminism is based on the idea that other than their physical frame, women and men are equal in all ways (Godwyn, 2003). In the realm of education, equality feminism would argue that women and men are not only equally intelligent, but that they learn in the same way. Given that the author believes in differences between women and men, equality feminism cannot be used to describe her theoretical point of view. In fact, she argues that women and men are innately different in the way that they learn.

By describing innate learning differences in men and women, the author prescribes to the idea of *sex-based learning needs* (Hart, 2016, p. 34). For example, she states that based on their gender, girls tend to enjoy learning through modes such as conversation and chatting. Thus Hart

utilizes learning style theory (Cassidy, 2004) to support her case for one-gender classrooms. Learning style theories suggest that different people learn in different ways. There are a variety of learning style theories, which include genetic, cognitive, and personality theories (Coffield, Moseley, Hall, & Ecclestone, 2004). One popular, yet possibly not well-supported, theory is that based on the idea of auditory, visual or kinesthetic learning (Husmann & O'Loughlin, 2019); Other popular learning theories include left-brain and right-brain preferences and Myers-Briggs Type Indicator (Husmann & O'Loughlin, 2019).

The learning theory that Hart ascribes to is gender-based and stems from her idea that there are innate differences between male and female brains. These brains are different, so as a result, men and women learn in ways that are specific to their sex. The author's ideas about differences in male and female has several limitations. As stated by the author herself, several detractors have found that the research supporting sex-based brain differences is "faulty or interpreted incorrectly" (Hart, 2016). To elaborate, studies have found differences between male and female brains, however these differences are also found within-female brains and within-male brains (Joel, Berman, Tavor, Wexler, & Gaber, 2015). Additionally, believing in the idea of sex-based brain differences can lead to a variety of sexist ideas that female brains are less adequate than male brains, or vice-versa. It is certainly possible to advocate for female-only classrooms without resorting to controversial claims about "girl brains".

Because of her prescription to clear differences between girls and boys, it could be thought that the author is a difference feminist. Difference feminists believe in differences between women and men, however they also believe that neither one is superior to the other (Lucas, 2015). Upon further reflection, Hart would not seem to be a difference feminist because she ascribes negative attitudes to maleness. For example, she describes all-girl classrooms as non-threatening, (Hart, 2016, p. 33) thus making it clear that she sees ones with boys as threatening. Alternatively, Hart attaches positive attitudes to femaleness. For example, in a girls-only classroom, the author argues that girls will enjoy safety and comfort (p. 35). This men-are-dangerous idea supports the authors belief in same-sex classrooms.

By attaching positivity to femaleness and negativity to maleness, and then suggesting the solution is for girls and boys to be separated, Hart delves into ideas that men are naturally dangerous. This idea states that men are violent and more prone to utilize their power to inflict harm upon others, whether it is through mental abuse, physical abuse, rape, going to war via physically fighting. This connection between men and violence is difficult to grapple with. Are men naturally more violent (Barash, 2014)? Or is their violence a result of a patriarchal society that gives them excessive power and ascribes few limits to men (Ananthaswamy & Douglas, 2018)? Furthermore, in the middle school level, are boys unfairly and disproportionately bullying girls (Rodkin & Berger, 2008)? The conversation about men and their innate violence is a difficult one to have, but it is one that the author has implicitly given into.

Space and Feminism.

By calling for the creation of female-only classrooms, Hart calls forth questions regarding physical space and gender. One way to see space and gender is through *social constructionism*. Social constructionism explores how norms that we take for granted are usually socially and culturally constructed (Mercadel, 2017). Among feminist social constructionists, the idea that space can be gendered is a social construction (Low, 2006). Social construction feminists would state for example, that the ideas of beauty salons as feminine spaces and car

shops as masculine spaces are socially constructed. Furthermore, they might argue that Hart's idea of a classroom that is specific to girls' needs is socially constructed one, created by false ideas surrounding what it is that makes a female, and what it is that makes a male.

Another way to view space and gender is through critical theory. *Critical theory* is focused on responses to social, political and economic oppression (LeCompte & Preissle, 1984, p. 128). Critical feminists would argue that public space was historically designed and owned by men. In today's world, there is an ongoing fight to open up these spaces to women, with men using violence to resist the change. One name given to this use of power is the *gender-politics model*, which states that men utilize violence to maintain greater authority and privilege (Stark & Flitcraft, 1991). As stated by sociologist Sarah Sobieraj, "Resistance to women's public voice and visibility via street harassment and workplace sexual harassment have long constrained women's use of and comfort in physical public spaces" (2018). As such, sexual harassment on public transportation, men sending "dick-picks" on social media, and even boys harassing girls in schools, can all be seen as tools to maintain the status quo.

There are a variety of ways to address violence in public space. One way is through mandated separation. For example, in countries such as Egypt, Japan, Malaysia and India, public transportation has become gender-separated to reduce sexual harassment (Kalms & Korsmeyer, 2017). Critical feminist theorists would argue against this gender-segregation. They might argue that creating female-specific areas simply gives women a small area in an otherwise male-dominated space. Another argument by critical feminists might be that it is better to mandate inclusion, provide for the safety of women, and penalizing harassment or violence.

Returning to the field of education, where do public schools lie in the discussion of gender, space and struggles for power? Is school a domain of men being taken over by women, or is it one that has become equally shared by both genders? Furthermore, is the solution to create female-only spaces as to replicate the long-standing tradition of boys' schools, or is the solution to better integrate young adolescent boys and girls? The debate is extensive and it might seem that Laura C. Hart has ignored it. By choosing gender segregation as a solution, Hart ignores important conversations about girl's rights to proper education and safe education in the public space that is the school.

Social Anxiety: More than Gender.

Hart (2016) sets up social anxiety as a gender-specific problem. In this way, she applies feminist theory to mental health. However, there are other ways to approach social anxiety. Cognitive theory states that social anxiety is an issue related to how people overemphasize the negative aspects of social interaction and minimize the positive aspects. Treatment for social anxiety is usually in the form of cognitive therapy which encourages the development of new ways of thinking (Huppert, Roth, & Foa, 2003). Furthermore, therapists utilizing a cognitive approach would encourage their patients to engage in the social interactions that would otherwise scare them. Specific to adolescent girls with social anxiety, cognitive theory would suggest that they find new ways to approach the issues that they face in school, and that they should engage with the social situations that scare them, instead of retreating to a girls-only zone.

Another way to approach adolescent girls' social anxieties is to see it not as a mental health problem, but as one related to social influence, peer-pressure and conformity. As Laura C. Hart states, "middle school adolescents are strongly influenced by their peer groups; these same peer groups help determine the nature of the middle school environment". Social influence states

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that individuals are, whether they know it or not, influenced by others (Estrada, Woodcock, Hernandez, & Schultz, 2011). If social influence theory is utilized, then the issues that adolescent girls face – lack of confidence, eating disorders, dislike for their bodies – are not due to social anxiety, but instead signs of how girls are being influenced by others as they grow from childhood to young adulthood. If Hart's had prescribed to social influence theory, then she would have questioned *how* the process of social influence takes place and what role social influence plays in advocating for gender-segregated classrooms.

Summary of Paper Two.

Hart adds to the argument for female-only classrooms with her own take on why girls deserve their own classrooms. Her argument depends on the intersection of feminist theory with learning styles and ideas about space and who owns it. While there may be evidence to support female-only classrooms, there are many weaknesses in Hart's paper. First, it is unwise to base her entire claim on brain-based sex differences that may or may not stand the test of time. Second, the creation of female-only spaces may not be a long-term solution to the ways that young boys treat girls. Third, social anxiety cannot be treated through a single solution, such as changing a child's classroom. Given these weaknesses, Hart's argument that sex-based learning will remedy social anxieties was tested against a variety of other theories, including social construction theory, critical theory and cognitive theory. While Hart's desire to support single-sex learning is warranted, her use of theory is minimal and thus provides a weak foundation for the rest of her research.

Paper Three:

Introduction to Paper Three.

The third paper is titled "Addressing Math Anxiety in the Classroom" by Maureen Finlayson (2014). The paper is concerned with better understanding of math anxiety in students. It utilizes a psychology-based approach and attempts to understand the causes of math anxiety and strategies that can be used to help students to overcome math anxiety.

Finlayson defines math anxiety as a "feeling of tension and anxiety" related to mathematics (pg. 100). This feeling can range from a mild tension to a strong fear. She then states that students who suffer from math anxiety will avoid situations where they have to perform math calculations, which in turn results in delayed acquisition of mathematics and reduced performance (p. 100). As such, Finlayson's words can be interpreted to mean that mathematical anxiety is one reason why students underperform in math. This indicates that she assumes that mathematical ability is not necessarily biology/nature-based. Any child can potentially be good at math, so long as they do not suffer from obstacles in learning, such as math anxiety. So where does this math anxiety come from exactly? Finlayson argues that it can be explained through theories of teaching and learning, which create a specific learning environment.

Theories of Teaching and Learning.

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Finlayson connects math anxiety to styles of teaching and learning. The first can be described as *traditional teaching*. But what is traditional teaching? Finlayson describes a style that focuses on achieving the correct product, as opposed to enjoying the process of math. This is similar to the theory of seeing teaching and learning as a *performance*. Performative teaching is focused on achieving specific products or targets (Englund, Frostenson, & Beime, 2018), and is characteristic of the high-stakes, standards-based public school systems found in the United States today. Finlayson hinted that this style of teaching has “one right way to solve a problem” and “little time for questions or an understanding of the process” (p. 101). Thus the problem with traditional mathematical education, it may seem, is that it is too rigid and leaves little room for experimentation. In this way, she likens traditional, or performative, teaching to a military drill. Teachers give orders to students, who then internalize the orders and create the intended outcome, whether it is a march, or in the case of learning, finding the right answer in a specific way.

Finlayson discusses an alternative form of learning, which is based on *constructivist theory*. Constructivist theory is the approach of learning as a *practice* (Lave, 1996). Constructivist theory focuses on learners creating knowledge from their own experiences, or processes (The University of Sydney School of Education and Social Work, 2018). The focus is on the words *process* and *learner*. That is, the learning *process* takes place not through top-down feeding of information, but it is something that the learner goes through by engaging and interacting with the learning material and with others around them. In this way, a child learning math is similar to someone playing an open-world video game. In the game, the player has to solve different challenges by collaborating with others and using multiple approaches to solve problems. Unlike the military analogy of traditional learning, constructivist learning provides increased freedom to the learner.

Environmental Factors.

After setting up and explaining constructivist theory, Finlayson then begins to discuss the role of environment. She states that “overcoming math anxiety means that we need to examine the classroom environment, and how we teach mathematics in the classroom” (p. 102). And, as she says on page 107, “the causes of math anxiety are numerous and varied. In many cases, they are connected to the classroom environment.” Thus while there are many causes of anxiety, including genetics, medical factors and brain chemistry, Finlayson focuses on the role of environmental factors. Finlayson uses words such as “inviting”, “interactive”, “creative” and “nurturing” (p. 111, 114) to describe teacher-created environments that are free of math anxiety. Such a description misses some points.

First, Finlayson does not define exactly what a learning environment is. Traditionally, learning-focused environmental theory concentrates on not only teaching philosophy, but also curriculum design, social and the physical space itself (Guney & Al, 2012). Second, she does not explain how a learning environment is created. One possible idea comes from Lev Vygotsky, a popular theorist and proponent of constructivist theory, who stated that teachers can create a learning environment focused on collaboration when they allow and encourage their students to interact with one another and with other experts (Hua Liu & Matthews, 2005). Finally, Finlayson does not explain how environment impacts a person's mental state. After all, anxiety is a psychological condition. Finlayson's paper would have benefitted from increased theory to explain the link between (learning) environment and (math) anxiety. For example, cognitive

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theory would state that students see the products required in a performative classroom as specific threats to their well-being. They exaggerate the negativity of their math class, and would therefore benefit from changes in thinking patterns.

Summary of Paper Three.

To summarize Finlayson's paper, she approaches math anxiety through theories of learning and teaching. She discusses traditional learning styles, which can also be explained through performative theory, as well as learning styles that are based on constructivist theory. Finlayson's frame reveals that class practices based on constructivist theory can result in reduced math anxiety. She also briefly discusses the role of environment. Her paper would have benefitted from increased attention to theories related to psychology. Psychology-focused theory would help to explain how classroom environments impact student brains, therefore causing math anxiety.

Final Summary

This paper uncovered how different authors use theories to frame and approach anxiety in school settings. Each paper has revealed different findings, while also overlooking some. Overall, each paper has its own advantages and disadvantages. The first paper utilized an eco-bio-developmental framework to view the repercussions of anxiety (McEwen & McEwen, 2017). In this paper, anxiety is created during early childhood a result of neglectful parenting, and it impacts children's learning and their future earnings. The paper reveals the importance of early childhood in impacting later life. A major disadvantage of this paper is that it ignores critical theory, and thus implies that parents should be blamed for intergenerational poverty.

The second paper argues that social anxiety in adolescent girls can be addressed through female-only classrooms (Hart, 2016). This paper depends mainly the interaction of feminist theory with styles of learning and theories related to space. A major disadvantage of Hart's approach is that her feminist theory is not clear. On one hand, she sets up females as the superior gender, on the other hand, she advocates for sex-based brain differences and the segregation of genders.

The third paper utilizes learning theory and environmental theory (Finlayson, 2014). Specifically, Finlayson argues that utilizing constructivist theory in classrooms can result in classroom environments that reduce math anxiety. The paper reveals the impact of learning styles on students' mental wellbeing. The paper also reveals the concept of math anxiety as one produced in classrooms. However, the paper theory related required to connect classroom environments to the psychology of anxiety.

All in all, all of the papers analyzed how social factors – neglectful parents, adolescent boys, or math teachers – contribute to anxiety within young people. This focus on social causes of anxiety may be because all papers were written by social scientists. If one is interested in discovering other causes of anxiety, or better understanding anxiety treatment, papers written by psychologists, psychiatrists or neurologists would be a better bet.

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