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Bradley Talbot
Editor-in-Chief

Intuition: Our Purpose

The BYU Undergraduate Journal of Psychology is more than simply a means for BYU students to publish their work in a scholastic journal. It is a means of communication by allowing undergraduates to join the conversation in the world of psychology. As technology has advanced to allow for a more convenient, widespread network where information is exchanged, it has become more necessary and essential for individuals to discern which information is worth learning and which is not. Intuition provides insights and updates on current research and discoveries made in the world today; much closer to home than you may initially realize.

Our purpose as a journal is to inform our community of more than just the science behind psychology, but the efforts being made to make life more enjoyable, fulfilling, and worth living. Psychology affects us all, as it is the science behind our very thoughts, feelings, and behavior. Intuition brings to light the aspect of ourselves that might seem—dare I say—intuitive, but has not yet been fully acknowledged.

Acknowledgments and Contributions

The publication of this journal would not have been made possible without the efforts and contributions of several individuals and parties. The editorial staff along with faculty
reviewers have worked tirelessly on each issue over the years and the current issue is no exception. Our editors volunteer their time to collect content for this journal and help the authors produce manuscripts that are engaging, enlightening, contribute to the conversation in psychology, and share meaningful progressions in science with others. I am thankful to them for their efforts.

I am also thankful to the faculty members within the Departments of Psychology and Sociology and the School of Family Life that have given of their time to help students prepare their manuscripts for publication in this issue. Their willingness to guide and instruct students’ writing helps the students learn, grow, and produce their best work. I am also, of course, thankful to the authors that have been willing to submit their hard work to the journal, including the countless revisions, edits, and changes that have been asked of them to ensure the highest quality of manuscripts.

Finally, I am grateful for Hal Miller, Intuition’s faculty advisor, and the guidance, counsel, support, and help he has provided in making this journal run as seamlessly as possible.

Joining the Intuition Community

If you would like to become involved in the Intuition community by joining our editorial team, submitting manuscripts, or become involved in any other way, please contact us at byupsychjournal@gmail.com. Though the journal is centered around undergraduate submissions, we welcome graduate students, faculty, and members of the community to become involved with Intuition. To find ways in which you can become involved in Intuition, visit our website at intuition.byu.edu.
This Issue

We all know the saying “There’s light at the end of the tunnel.” Most use the phrase in an effort to provide comfort for those experiencing difficulties, reminding them that soon the pain will subside and “light” will shine through. But what about light within the tunnel? Mental illness appears to be becoming more prevalent and complex to both deal with and understand. And while a light to disperse all darkness may be approaching at the end of this long tunnel, a more plausible solution suggests implementing light into the very problem, even attempting to attach it to its very core.

This issue of Intuition discusses topics relating to mental health, including the effects of childhood bullying, ADHD, PTSD, parental tactics and adolescent depression, and anxiety, while also looking at topics such as racial disparities, personality and coping, the concept of flow, social media’s impact on beauty, and the fragile X syndrome. Each provides valuable insight and information that I feel can greatly benefit our community and society and I hope you will as well.
Forever in Debt: Effects of Debt-Funded Education on Racial Disparities

Talon J. Barlow
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Abstract

Federal loans originally were made available to students for the purpose of helping those who couldn’t afford to attend a college or university to do so and to graduate. As researchers examined the effects of federal-loan debt on matriculated students and graduates, they found that loans may be beneficial when used appropriately but otherwise may hinder the academic success of student borrowers. Black students rely more on federal student loans than White students do, a difference that is correlated with disparities in wealth accumulation post-graduation. I will describe alternative means of funding college education that are designed for all students and that have the intent of reducing the inequality in post-graduation wealth. A combination of these methods may be more effective than any of them by themselves.

Keywords: student debt, race, college, student loans, debt, wealth, university, students
Is a college degree worth it? In today’s world, many people would dismiss the question, given the status of higher education as a cultural goal. However, when college graduates tally their outstanding debt following graduation, they may question the financial worth of their degree. In one study, Dwyer, McCloud, and Hodson (2012) examined the effects of different levels of student debt on the probability of graduation and discovered that any debt beyond $10,000 decreased the chances of students completing their degree. Surprisingly, the average American student relies on debt more than double this amount, with the Project on Student Debt (2011) indicating a debt load of about $25,250 among college graduates. Student debt can be beneficial to those seeking an education without the means to pay for it, but it seems that society is simply not using it in the correct way, and this misuse may cause more damage to some than to others.

**Effects of Student Loans**

Debt accumulated in the pursuit of a higher education is higher for Black students than for White students (Jackson & Reynolds, 2013). Houle (2014) reported that Black students were 15% more likely to fund their education through debt than White students were and to graduate with an average debt level ($37,000) almost $15,000 greater than that of White students (see Figure 1; 22,000; Addo, Houle, & Simon, 2016). Moreover, there is a direct relation between the amount of student debt and the delay of marriage (Addo, 2014) and between the size of debt and the delay before having children (Nao, Dwyer, & Hodson, 2015) and the delay before making major purchases (Stone, Van Horn, & Zukin, 2012).

A partial solution to the problems that excessive college debt presents is part-time employment. Researchers have observed that 15 to 20 hours of employment per week improves academic performance on average relative to students without part-time work (Dundes & Marx, 2006; King, 2002). Furthermore, Dundes and Marx (2006) showed that working more than 20 hours per week did not reduce students’ academic performance as measured by their
GPA. Students reported being more comfortable paying for college expenses by working part-time, because it was a stable form of income (Ziskin, Fisher, Torres, Pellicciotti, & Player-Sanders, 2014).

The cost to students of a college education has increased faster than inflation for the last 30 years. This has contributed to the total student debt of more than one trillion dollars as reported by the Federal Reserve Board (Stone et al., 2012). The average student borrower now graduates from college with over $25,000 in educational loans (Project on Student Debt, 2011). Stone and colleagues (2012) also found that 75% of students surveyed up to five years following their graduation had not paid any of their student loans.

The debt crisis is accompanied by positive effects, such as the greater probability of degree completion and minority groups’ increased access to a college (Dwyer et al., 2012; Roksa, Grodsky, Arum, & Gamoran, 2007). Researchers have reported positive effects on self-esteem and self-concept among college students from lower and middle socioeconomic backgrounds (Dwyer, McCloud & Hodson, 2011). They also found that college students viewed their educational loans as an investment in their own human capital. However, this view reversed and impacted self-image negatively following graduation and as loans came due.

The reality is that paying for a college education primarily using student loans involves a financial trade-off. This trade-off is evident later in life when comparing the wealth accumulation of those who borrowed against those who did not borrow to pay for college. One group of researchers reported that students who graduated with student loans had a net worth approximately 75% ($13,000) less than their non-borrowing counterparts at age 30 (Zhan, Xiang, & Elliott, 2016). Egoian (2013) found that non-borrowers had approximately $115,000 more in their retirement accounts than those who had relied on student loans. Fry, Parker, and Rohal (2014) reported that, for individuals 40 or younger, borrowers’ individual net worth was 1/7th that of those who graduated without education-loan debt. Typically, higher incomes resulting from the completion of a college degree should translate into greater levels
of wealth later in life, but student-loan debt seems to counteract this effect. In fact, Pew Charitable Trusts reported that only about 36% of Generation X, or individuals roughly between 40 and 50 years of age, had greater wealth than their parents had, even though three out of four earned larger incomes than their parents had (cited in Elliott & Lewis, 2015).

**Differences in College-Debt Levels Between Black and White Students**

As noted earlier, Black college students rely on debt more heavily than do White students (Addo et al., 2016; Despard, Perantie, Taylor, Grinstein-Weiss, Friedline, & Raghavan, 2016; Grinstein-Weiss, Perantie, Taylor, Guo, S., & Raghavan, 2016; Jackson & Reynolds, 2013). According to Grinstein-Weiss and colleagues (2016), Black students were twice as likely to take out student loans as White students were and to accumulate higher levels of debt than their white counterparts did. Addo et al. (2016) found that Black students reported an average of almost 70% ($15,000) more debt than White students did. In another study, researchers controlled for the students’ socioeconomic background and confirmed the racial disparity in the level of student debt (Grinstein-Weiss et al., 2016).

The disparity also applies to graduates who transition into adult roles. For example, Houle and Berger (2014) demonstrated a negative correlation between home ownership and level of college debt in Black college graduates. It is important to note that Black students relied on private loans more than on federal-insured loans than their White counterparts did. Goldrick-Rab, Kelchen, and Houle (2014) pointed out that private loans offer much higher risks, including higher interest rates, less guaranteed protection, and greater charges for failure to pay. Williams, Nesiba, and McConnell (2005) explained that Black students may also experience lesser purchasing power following graduation than White students do because of discrimination in the loan and credit industries.
College-Education Debt and Future Wealth Accumulation

Income is the amount of money an individual receives on a recurring basis and is used for living expenses, such as rent, groceries, and transportation. Wealth refers to the ownership of financial assets and includes real estate, other investments, and savings. One reason a college education may serve as an economic equalizer among races is the assumption that, for comparable college degrees, graduates receive relatively equal incomes. However, Gaddis (2015) found that Black graduates receive smaller average incomes than Whites do, thereby impacting future wealth accumulations.

According to Addo et al. (2016), 13% of the difference in levels of college-student loan debt between Black and White students was attributable to the net worth of a student’s parents. Parents of White college students contributed more money to the cost of their children’s college education—about three times more than the parents of Black students contributed (Addo et al., 2016). Gittleman and Wolff (2004) have further speculated that wealth not only differs quantitatively between the parents of Black and White college students but also qualitatively. For instance, the wealth of the latter is more liquid and thus easier to transfer to their offspring. Greater access to parental wealth likely contributes to the White college students’ lower average level of student-loan debt and thus to their greater net incomes following graduation.

Other Factors

Part-time Employment

Debt plays a paradoxical role in socioeconomic disparities by increasing access to college for Black students but diminishing their potential rewards for completing such an education. A potentially mitigating factor is part-time and even full-time employment while in college (Broton, Goldrick-Rab, & Benson, 2016; Dwyer et al., 2012; Kalenkowski & Pabilonia, 2010; Scott-Clayton, 2012). According to Broton and colleagues (2016), students working part- or full-time represented roughly 75% of the college-student
population, and 30% of students working part-time reported work hours exceeding 20 hours a week. Working more than 20 hours per week while simultaneously attending college is directly related to lower graduation rates (Dwyer et al., 2012). Broton et al. (2016) pointed out that students employed in on-campus jobs may be buffered from some of the adverse effects of employment because of increased scheduling flexibility and employer empathy.

Dundes and Marx (2006) reported that the most common reason cited by a sample of working college students was greater disposable income in order to pay for rent and tuition. Cheng and Alcántara, Goldrick-Rab, Kelchen, and Houle (2014) and Perna cited additional reasons for part-time employment during college, including workforce experience and identity, exploring career options, and meeting cultural expectations.

**Racial Differences in Time Spent Working While in College**

Differences in levels of parental wealth and other socioeconomic factors, the college attended, and reliance on educational loans affect the time a student spends working while pursuing a college degree. Greene and Maggs (2015) measured differences in hours worked during college between Black and White students and reported that Black students spent almost three more hours per week than did the White students who were surveyed. Given that Black students are more likely to utilize private loans with higher interest rates and are less likely to receive parental contributions towards the cost of their education, it is likely that Black students work longer hours to compensate for the disparities (Addo et al., 2016; Greene & Maggs, 2015; Goldrick-Rab, Kelchen, & Houle, 2014).

**Conclusion**

Racial and socioeconomic disparities are on display in the financing of a college education in the US. Black college students receive less financial assistance from their parents and are more likely to attend for-profit colleges with higher tuitions (Addo et al., 2016; Elliot & Friedline, 2013; Houle & Warner, 2017). Black
students rely more heavily on student loans than White students do, and the loans are more likely to be private loans with higher interest rates and more costly consequences for defaulting (Addo et al., 2016; Grinstein-Weiss et al., 2016; Houle & Warner, 2017; Jackson & Reynolds 2013). In order to pay for the greater costs of their college education, Black students also tend to work longer hours than White students do, thus potentially affecting their academic performance adversely (Greene & Maggs, 2015). Heavier debt loads may cause Black graduates to accumulate wealth at slower rates than White graduates do, because more of their income goes toward paying off their loans (Elliott & Lewis, 2015; Gaddis, 2015; Grinstein-Weiss et al., 2016; Zhan et al., 2016). With less wealth accumulated than their White counterparts, Black college graduates are not able to contribute as much financially as White graduates contribute to their children’s higher education, and so the cycle of disparity continues.

References


Figure 1. Average difference in amount of student loan debt carried by White students as compared to Black students. Black students have been shown to use more debt than White students use in several studies and on average Black students use $14,960 more than White students. Adapted from “Young, Black and (Still) in the Red: Parental Wealth, Race, and Student Loan Debt,” by F. Addo, J. Houle, and D. Simon, 2016, *Race and Social Problems*, p. 70
Figure 2. A comparison of the usage of student loans across all races. Black students use debt more often than White students do, but other races seem to be much more similar in education debt levels to White students. Adapted from “‘You Pay Your Share, We’ll Pay Our Share’: The College Cost Burden and the Role of Race, Income, and College Assets,” by W. Elliott, and T. Friedline, 2013, *Economics of Education Review*, p. 140

Figure 3. Weekly work hours spent by students grouped by GPA. Adapted from “Balancing work and academics in college: Why do students working 10 to 19 hours per week excel?” by L. Dundes and J. Marx, 2006, *Journal of College Student Retention: Research, Theory and Practice*, p. 111
Mediation Between Parental Coercion and Adolescent Depression

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Abstract

In the present literature review, the relationships between parental coercion and adolescent depression are discussed in greater detail. Parental coercion and adolescent depression are suggested to be linked by the mediating factors of adolescent self-esteem, cognitive style, and vulnerable mood. In light of the Symbolic Interaction Model as well as the “Looking-Glass Self” Model, perceived parental coercion may result in lower adolescent self-esteem, which acts as a negative cognitive bias or style. It is hypothesized that low self-esteem, which may be caused by parental coercion, may play a prominent role in adolescent depression, because low-self-esteem creates a negative cognitive lens through which all human interaction is interpreted, leaving the individual vulnerable to depressive mood-states.
A child’s perceived relationship with his or her parent and this relationship’s effect on mental health has received substantial attention and focus in the academic world (McAdams, et al., 2017; Meadows, Brown, & Elder, 2006). Studies show that level of parental support and control as perceived by the child may have a lasting impact on a child’s mental health and wellbeing (Birkeland, Melkevik, Holsen, & Wold, 2012). Low support and high psychological control (coercion) has repeatedly been shown to be highly correlated with parent-child conflict and various symptoms associated with manifestations of depression (Barber, Stolz, & Olsen, 2005; Kaslow, Deering, & Racusin, 1994). Although the link between perceived strain in the parent-child relationship and adolescent depression has been firmly established (Ge, Best, Conger, & Simons 1996; Jenkins, Goodness, & Buhrmester, 2002), a child’s perception of that relationship and the possibility of resultant depression are actually separated by several mediating factors.

Low self-esteem in adolescence, which may be caused by parental coercion and lack of parental support and affection, plays a prominent role in the development of adolescent depression. Low self-esteem may lead to negative cognitive biases that act as an inherently negative, depressive lens through which all human experience is interpreted. Understanding this relationship may lead to a greater focus on family environment and parent-child relationships in future preventative action. A more detailed discussion of insights and relationships between the parent-child relationship and self-esteem, the effect of low self-esteem on the development of negative cognitive styles and biases, and the resultant vulnerability towards depressive symptomology will follow in the proceeding pages.

The Parent-Child Relationship and the Development of Self-Esteem

Although a child’s development of self-concept is influenced by many factors, parental influence has been shown to be an important element in the child’s development of self-esteem (Boudreault-
Boucard, et al., 2013; Conger, et al., 1997; McAdams, et al., 2017; Plunkett, et al., 2007). According to the attachment theory model (Holmes, 1993), beginning in infancy, children must develop an attachment to at least one primary caregiver in order for successful development to occur (p. 69). Children rely on this attachment for physical and emotional support. While attachment to a caregiver is universal, the nature of the resultant relationship is as diverse as the natures of the individual caregivers. Caregiver behavior and responsiveness plays a large role in the child’s development of thought, belief, and resultant behavior (Mercer, 2006). The SI model shows the necessity of this arch-relationship is in a child’s development of self-esteem.

**Symbolic Interactionism and Self-Esteem**

While a lack of parental support and affection and the use of parental psychological control influence many aspects of a child’s developing global perception and mental health, the effect of parental support and control on adolescent self-esteem has been thoroughly demonstrated (Boudreault-Boucard, et al., 2013; Conger, Conger, & Scaramella, 1997; McAdams, et al., 2017; Plunkett, Henry, Robinson, Behnke, & Falcon III, 2007). Self-esteem can be defined as the inherent beliefs one holds about his or her own value and competence (James, 1985; Rosenberg, 1965). The association of the parent-child relationship with self-esteem can be explained by the theory of symbolic interaction (SI), which states that human interaction and the development of shared symbols (or understanding) serve as the cause for all human action and belief (Mead, 1934; Mann, 2008). Charon (2004) notes that the focus of the SI model is not primarily on individuals or the social environment so much as on the interaction that takes place between them. According to this model, human beings bring their own perceptions into an interaction, making the cause of human behavior and belief a synergy between the social environment and the individual—not one or the other (Charon, 2004, p. 31).

Plunkett, et al. (2007) drew on this idea, as well as Cooley’s (1902) “looking-glass self” to explain that, similar to the same way we see
a physical reflection of ourselves in water, self-definition takes place as our identity (manifested through personality, behavior, etc.) is reflected off other individuals with whom we come in contact. In other words, identity, as well as perceived self-worth, are defined by the individual through the medium of perception in his or her interpersonal relationships. It follows that if interpersonal feedback is positive and constructive in nature—if individuals perceive themselves as being held in high-esteem by others—their own self-esteem will be higher as well. If, on the other hand, the individual perceives low esteem from others, a low sense of self-esteem may result. Such introjection may explain the correlation between parental lack of caring and affection, parental psychological control, and an adolescent’s low self-esteem (p. 176).

Confirming such a model, parent-child relationships have been shown to have substantial impact on a child’s self-concept, self-esteem (McAdams, et al., 2017), and mental health in adolescence (Plunkett, et al., 2007) and even beyond (Birkeland, et al., 2012). While self-esteem has been shown to be somewhat inheritable (McAdams, et al., 2017), studies indicate that parental approval, signs of affection, support, and expressiveness—in other words positive feedback from primary caregivers—are positively correlated to high self-esteem in adolescence, and negatively correlated to depressive symptoms (McAdams, et al., 2017). Other studies support this trend, showing that high levels of parental psychological control (Boudreault-Boucard, et al., 2013; Oliver & Paull, 1995), verbal abuse (Johnson, et al., 2001), a perceived lack of affection (Oliver & Paull, 1995), etc. (i.e. negative feedback from primary caregivers) positively correlates to low self-esteem, and/or pathogenic mentalities in adolescence as well as during the transition to adulthood (Oliver & Paull, 1995).

**Long-Term Effects of Self-Esteem Developed during Adolescence**

It is important to note here the long-range effects of the self-esteem developed at an early age. Gibb, et al. (2006) indicate in their study that negative attributional styles “crystallize” during adolescence, and other research (Birkeland, et al., 2012)
has shown that the self-esteem developed in adolescence is a significant indicator of perceived self-esteem after the transition into adulthood. As shown in Figure 1, individuals can be organized roughly into three categories: those who develop high self-esteem early in life are set on a trajectory of continual growth. Those who begin adolescence with slightly lower self-esteem experience a depressive downturn during the teenage years, but with time seem to regain what they have lost. Although people in this group tend to regain some level of self-esteem in early adulthood, they never reach the level of those who begin with a high level of self-esteem. The third category of those who begin adolescence with low self-esteem tend to remain chronically low, gradually losing even more. This group never gains a comparable level of self-esteem to that of the other two groups.


These and other such findings suggest that if self-esteem is correlated to depression, the parent-child relationship plays a critical role in subsequent depressive symptoms.
Self-Esteem and Depressive Mood

Low self-esteem leads to depressive symptoms through the medium of mood. Perceived loss of self-esteem or life experiences perceived as negative, self-defining moments may lead to negative cognitive styles such as an introjective mood (Kopala-Sibley, & Zuroff, 2010) defined by Blatt, D’Afflitti, and Quinlan (1976) as pervasive and “intense feelings of inferiority, guilt, and worthlessness and by a sense that one has failed to live up to expectations and standards” (p. 383), or even negative changes in personality style such as the development of self-criticism (Kopala-Sibley, et al., 2015).

Although opinions differ as to their relationship from an etiological standpoint (Sowislo, et al., 2014), the correlation between self-esteem and depression has been thoroughly demonstrated (Plunkett, et al., 2007; Rieger, et al., 2016; Sowislo & Orth, 2013; Sowislo, et al., 2014). Research indicates that vulnerable mood and negative cognitive styles mediate the relationship between self-esteem and depressive symptomology and that these negative cognitive styles may self-manifest due to self-esteem’s negative cognitive bias as explained in light of the SI model. The following section demonstrates these relationships.

Etiology of Low Self-Esteem and Depression: The Chicken or the Egg?

Two predominant theories attempt to answer the question regarding the relationship between self-esteem and depression. The “scar” (Coyne, Gallo, Klinkman, & Calarco, 1998) and “vulnerability” (Beck, 1967) models have produced valid explanations for this relationship, suggesting that the most accurate answer may be synergistic in nature.

The Scar Model of depression and self-esteem. The Scar Model (e.g. Coyne, et al., 1998) suggests that the individual who experiences depressive symptoms carries “scars” or long-term effects from those experiences, and that these “scars” manifest themselves in a lower global self-esteem. In this model, depression is the instigator, and low self-esteem the result. In other words,
people struggling with depression slowly begin to feel bad about themselves and their inability to effectively cope with personal negative affect (Sowislo & Orth, 2013).

**The Vulnerability Model of depression and self-esteem.** The Vulnerability Model (Beck, 1967) posits the opposite; namely, that low self-esteem leads to depressive symptoms. In greater detail, negative beliefs about one’s self may result in the development of negative cognitive styles and/or moods that leave a person particularly vulnerable to depressive symptoms (Sowislo & Orth, 2013). These negative cognitive styles and/or moods are not depression themselves (Abela, Webb, Wagner, Ho, & Adams, 2006; Kopala-Sibley & Zuroff, 2010), but serve as a catalyst to depressive symptomology if triggered by things such as negative life-events, stress (Auerbach, et al., 2014), or, as later discussed, relatively ambiguous social situations (Platt, Water, Schulte-Koerne, Engelmann, & Salemink, 2017; Vassilopoulos & Moberly, 2012).

Although the scar and vulnerability models of depression and self-esteem are both supported by research, a meta-analysis of the data (Sowislo & Orth, 2013) shows more substantial evidence for the vulnerability model. This suggests that together they may create a more holistic answer; namely, that a lowering of self-esteem gives rise to depressive symptoms which, in turn, may leave a lasting impact on the individual by increasing loss of affectual control, hopelessness, and an even further lowering of self-esteem, possibly creating a depressive, downward spiral.

**Cognitive Bias and Perception**

Beliefs may predispose individuals to certain behaviors, interpretations, or even moods. As stated earlier, self-esteem may be defined as the inherent beliefs one holds about his or her own value and competence (James, 1985; Rosenberg, 1965). If one’s belief about his or her own value is negative in nature, the result may be a negatively biased perception of reality. A recent analysis (Platt, et al., 2017) of studies in cognitive bias in youth discovered strong correlations between negative cognitive biases and youth depression. Recent studies suggest that the inherent, negative
beliefs an adolescent brings to any given situation may influence him or her through attention bias (Dalgleish, et al., 2003; Harrison and Gibb, 2014) as well as interpretation bias (Eley, et al., 2008).

**Cognitive bias.** Inherent beliefs influence our choice of the stimuli to which individuals give our attention. Using a common test known as a “Dot-probe” test (MacLeod, Mathews, & Tata, 1986), researchers are able to measure the reaction time of participants in the recognition of negative versus neutral stimuli. Studies done in this manner show a strong correlation between a cognitive bias towards negative stimuli, depressed youth (Hankin, Gibb, Abela, & Flory, 2010), and youth with vulnerability to depression (Joormann, Talbot, & Gotlib, 2007). Children who experienced depressive symptoms, as well as non-depressed children of depressed parents (“vulnerable children”) showed a much quicker reaction time in the recognition of negative stimuli. This bias towards negative stimuli plays a large role in the social stimuli to which both depressed and vulnerable youth give their attention.

**Interpretation bias.** Similar studies suggest that cognitive bias plays a role in how individuals interpret stimuli as well (Eley, et al., 2008; Reid, et al., 2006). The most common measurements of negative cognitive bias are the ambiguous stories task and the ambiguous words task (Mathews & Mackintosh, 2000), in which participants are given ambiguous words, sentences, or stories and are then asked to interpret them. Negative interpretations are correlated with a negative cognitive bias. Eley, et al. (2008) found significant positive correlation between negative interpretation scores and depressive symptomology. Another study (Dearing & Gotlib, 2009) suggests that negative interpretation bias may play a role in vulnerable, but not depressed youth. In other words, whether the words or stories were interpreted in a negative, neutral, or positive light depended to a large extent on the pre-existing beliefs of the individual that was asked to interpret them.

**Attentive and Interpretive bias in light of self-esteem.** Low self-esteem may act as a negative cognitive bias, creating an interpretive lens that may lead to pervasive, negative attitudes or moods. Although very little research has been done studying self-
esteem as a cognitive bias, at least one study (Dineen & Hadwin, 2004) shows that negative self-judgement (i.e. low self-esteem) is positively correlated to depressive symptomology. In light of the present, general research in regards to negative cognitive biases, a low sense of self-esteem could cause youth to give undue attention to negative stimuli, exhibit an overly extreme perception of negative stimuli and/or choose a negative interpretation of ambiguous or even benign situations. Low self-esteem could act as both a false interpreter of benign situations, and an intensifier of negative events, leading to even lower self-esteem. Such intense feelings of low self-worth have been described as introjection (intense feelings of inferiority, guilt, and worthlessness), as well as anaclitic (fears of being abandoned, and by wishes to be cared for, loved, and protected) mood states (Blatt, et al., 1967).

**Mood and Resultant Vulnerability Towards Depression**

While these negative moods and/or cognitive styles are not symptoms of clinical depression, they are, in some cases, its predecessors (Kopala-Sibley & Zuroff, 2010). Among those who have never experienced depression, levels of vulnerability across the population are not universally equal (Platt, et al., 2017). Within the category of non-depressed adolescents exists a sub-category of individuals who are more vulnerable to future depressive symptomology (Platt, et al., 2017). While adolescence is a particular time when depression usually begins to arise (Auerbach, et al., 2014), these negative cognitive biases can and do exist even earlier (Kopala-Sibley & Zuroff, 2010). The effects of negative cognitive style on interpersonal relationships, stress, and self-esteem, as well as the role of vulnerability as the mediator between negative cognitive style and depression will be discussed in the following sections.

**Depressogenic Vulnerability: Fertile Soil for Seeds of Stress**

While all individuals experience stress on a daily basis, the effect stressors have depends a great deal on the stressor’s perceived level of severity (Fernandez & Sheffield, 1996). As discussed earlier, one’s
perception is heavily influenced by the cognitive biases created over a lifetime through individual experience and learning. It follows that negative cognitive styles can manifest themselves by creating a pervasively negative perception. Individuals who manifest a negative cognitive style are considered more “vulnerable” or prone to later depression because they are more prone to pay closer attention to negative feedback and stimuli, as well as interpret situations in a negative light (Abela, et al., 2006; Kopala-Sibley & Zuroff, 2010).

**Negative Cognitive Styles and Effect on Interpersonal Relationships.**

Negative cognitive vulnerabilities have been shown to increase the amount of stress in interpersonal relationships (Abela, et al., 2006; Auerbach, et al., 2014). Referring back to the SI and looking-glass model, our thoughts, beliefs, perceptions, and, eventually, our behavior are all derived from interpersonal relationships. Negative perceptions of interpersonal relationships lead to greater levels of stress. Auerbach et al. (2014) aptly state in their study of adolescent self-criticism, hassles, and youth depression that “depressogenic cognitive vulnerabilities appear to continuously influence one’s perceptions, expectations, and responses to interpersonal relationships and thereby increase susceptibility to depression” (p. 922). Seen holistically, depressing, interpersonal experiences may lead to more depressing, interpersonal experiences, because with each new experience viewed from a negative cognitive bias, the perceptions, expectations, and responses of the person become more depressogenic in nature.

**Self-Criticism and Depression**

Self-criticism or self-blame has received particular attention as a negative cognitive style (Auerbach, et al., 2014). A strong characteristic of self-criticism is the attachment of worth to achievement, with lack of expected achievement (both reasonable and unreasonable) resulting in a perceived loss of self-worth (Aurbach, et al., 2014; James, 1985). With “well-being” dependent on often unrealistic expectations, adolescents who blame themselves
for lack of achievement or for a failed relationship with a parent or significant other are more vulnerable to future depression. Negative cognitive styles or moods, while not depression in and of themselves, serve as a depressive functional framework leaving one vulnerable to later, clinical levels of depression.

Conclusion

Depression is a multi-faceted, complex condition with many contributing factors and manifestations. While causation is plural in nature, depressogenic vulnerabilities in the form of negative mood, negative cognitive bias, and overall negative style serve as key components of later depressive symptoms. These vulnerable cognitive styles begin to form early on in adolescent life, crystallizing before adulthood. Although many factors in a child’s life can influence the formation of these cognitive styles, a low sense of self-worth or self-esteem has been shown to be a leading cause of their development. While self-esteem forms through social interaction in general, the parent-child relationship plays a critical role in its development during the adolescent years. Seeing that parental support and affection have a direct and positive relationship with the development of high self-esteem and are negatively correlated with depressive symptomology, preventative action should focus on strengthening the parent-child relationship to be one of mutual respect, affection, and support. In increasing mutual regard for each other, adolescent self-esteem may rise, and the probability of at least partially mitigating depressive symptomology may increase.

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Non-Pharmacological Behavioral Interventions for ADHD in the Elementary School Classroom

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Abstract

Attention deficit hyperactivity disorder (ADHD) is manifest in 5% of children and 2.5% of adults. Because diagnosis requires symptoms be present before age twelve, ADHD will be treated in the classroom. This review assesses the effectiveness of non-pharmacological treatments for ADHD in the elementary classroom in addressing students’ inattentive/distractible, hyperactive and impulsive behavior, and idiosyncratic interventions addressing all core symptoms. Research demonstrates that Computer Attention Training, Computer Assisted Instruction, self-monitoring, and decreasing distraction using white noise were significantly effective in reducing inattentive/distractible behavior. Additionally, stability balls, physical activity, activity schedules, and mindfulness training were effective in some studies. Idiosyncratic interventions – daily report cards and function-based interventions – improved classroom functioning overall. Limitations of the literature include inconsistent operationalization, isolation of variables, consideration of long-term effects, and dosage of treatment. Observer effect and small n-sizes were also common limitations. Future research is needed regarding the effects of weighted vests, praise, teaching techniques, and animal-assisted interventions. An examination of the literature shows that although some expensive, harder-to-implement interventions are successful, many inexpensive
and easy-to-implement interventions are just as effective. More research in the effectiveness and ease of implementation of these interventions would benefit all who work with students with ADHD.

**Keywords:** Attention Deficit Hyperactivity Disorder, non-pharmacological, behavioral intervention, elementary school, classroom

Attention deficit hyperactivity disorder (ADHD) is one of the most common disorders found in children. The Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition (DSM-5) defines ADHD as “a persistent pattern of inattention and/or hyperactivity-impulsivity that interferes with functioning or development, as characterized by [inattention symptoms] and/or [hyperactivity and impulsivity symptoms]” (Krull, 2017; American Psychiatric Association, 2013, p. 59). According to the DSM-5 (American Psychiatric Association, 2013), ADHD is prevalent in 5% of children and 2.5% of adults and is more common in males than females; however, other sources argue varying percentages (from 2-18% of children and 8-11% of school-aged children, with an increase in diagnosis recently) depending on year, population measured, and diagnostic criteria (Safer, 2018; Krull, 2017). Additionally, while the disorder is more common in males than females, the inattentive-type (as opposed to the hyperactive-type) is more common in females among those diagnosed (Krull, 2017). Regardless of type, however, ADHD affects one’s ability to function.

ADHD symptoms make many aspects of life more challenging for those with the disorder starting from early childhood, especially as many of their skill deficits affect their ability to perform academically (Liu, 2017). Children with ADHD may struggle with low self-esteem, academic failure, and rejection from peers (Harpin, 2005). This occurs specifically as the child enters elementary school and other children begin to learn socially acceptable classroom behavior and notice the non-conforming behavior of the child with ADHD (Harpin, 2005). The hyperactivity associated with ADHD
tends to diminish once the child reaches adolescence; however, adolescents that continue to experience hyperactivity associated with ADHD may also experience academic failure as well as high rates of dropping out, teen pregnancy, and driving accidents (Harpin, 2005). Finally, adults with ADHD experience higher rates of dismissal from work due to things such as tardiness, failure to complete tasks in a timely manner, and excessive errors, as well as an increase in various types of accidents, especially driving accidents (Harpin, 2005; Bukstein, 2018; American Psychiatric Association, 2013).

While ADHD symptoms have a large impact on a patient’s everyday life throughout the various stages of life, ADHD presents the largest problem, from a societal standpoint especially, in the classroom setting (Bukstein, 2018; Harpin, 2005). This may be due to the symptoms both interfering with the child’s ability to learn and disrupting teachers and peers (Harpin, 2005). Because the ADHD diagnosis requires diagnostic criteria to be present before the age of twelve, this disorder will have its most evident effects and highest opportunity for treatment in the classroom (American Psychiatric Association, 2013).

One of the primary treatments proposed for both school-aged children and others with ADHD is pharmacological therapy, often in conjunction with non-pharmacological therapies (Solanto, 2017; Krull, 2018a). Pharmacological treatment consists primarily of stimulant medication, which is the preferred medication due to how fast it takes effect along with its history of efficacy and safety; as such, stimulants have been found to be more effective than a placebo in treating the core symptoms of ADHD (Krull, 2018b). However, potential side effects of these drugs include “anorexia, insomnia, and tics,” in addition to priapism in rare cases, all of which can diminish with proper dose regulation (Krull, 2018b). Some of these symptoms tend to be minimal and somewhat avoidable with proper management (The MTA Cooperative Group, 1999). It is worth noting that combination treatments (behavioral/psychological and pharmacological) have been found to be just as effective in treating ADHD as medication alone and it is possible...
that combination treatment could result in lower medication dosages (Krull, 2018a; The MTA Cooperative Group, 1999). With the existing potential side effects, it is worth investigating how much of the benefit comes from non-pharmacological treatments alone and how much medication is truly necessary.

Non-pharmacological treatments or behavioral interventions have also been shown to be effective in treating symptoms of ADHD, though they have not been shown to reduce the core symptoms of ADHD on their own and their long-term effects have not yet been determined (Krull, 2018b). Behavioral interventions are often the first line of defense and while many studies show that non-pharmacological treatments are preferred by parents, more research is necessary to determine the efficacy of these treatments, as several studies show that medication is preferred (Krull, 2018a; Schatz et al., 2015; Charach, Skyba, Cook, & Antle, 2006). Overall, combination treatment has been shown to be more effective than behavioral/psychological treatments alone and no more effective than medication alone, though it appears the combination treatment may result in a reduction of medication dosage as well as problem behaviors unassociated with ADHD (Krull, 2018a). It has been suggested that in cases of combination treatment, beginning with behavioral treatment and adding pharmacological treatment second may be more effective for school functioning and other outcome measures (classroom rule violations, teacher/parent ratings, out-of-class disciplinary actions, etc.) for elementary students than beginning with pharmacological treatment and adding behavioral treatment second (Pelham et al., 2016). While there have been many studies conducted on pharmacological and combination treatments, there are fewer that have examined non-pharmacological treatments alone, which would be necessary to evaluate their effectiveness.

This review will examine past research to assess the effectiveness of non-pharmacological behavioral interventions for ADHD in the elementary classroom (K-6). Specifically, it will review interventions addressing inattention/distractibility, interventions addressing hyperactivity and impulsivity,
and interventions that target all core-symptoms at once. The implications of these interventions in the classroom setting, limitations of current research, and suggestions for future research will also be discussed.

Method

To find related literature, I searched the EBSCO’s PsychINFO database for (attention deficit hyperactivity disorder) AND (treatment OR intervention OR management) AND (classroom). Limiting the publishing year to 2008 and later, this search resulted in 324 academic journal articles, dissertations, books, and electronic resources. Once I limited the search to academic journals, books, and electronic resources, only 270 results remained. After sorting through the article titles, abstracts, introductions, and discussions to only include relevant research in the English language, I had a total of 108 results. I further narrowed the literature by removing outdated books (defined as being published 2015 or earlier) and only maintaining articles that focused on elementary school students’ behavior as altered by interventions that could be readily implemented in the classroom. This left 24 articles and book sections to be reviewed. I obtained the articles through the access provided by Brigham Young University.

Results

Inattention/Distractibility Behavioral Interventions

The main concern for students with inattention/distractibility in the classroom is their ability to stay on task during expected and appropriate times in order to complete their work. This symptom of ADHD is manifest in off-task behavior, the symptom most often addressed by teachers in the classroom.

One attempted approach in classroom interventions for ADHD’s inattentive symptoms has been the development of attentional skills. Rabiner, Murray, Skinner, and Malone (2010) conducted a study on the effectiveness of two computer-based interventions – Computer Attention Training (CAT) and Computer Assisted Instruction (CAI) – in training the attention of 77 inattentive
first-grade students. The CAT focuses on training the students to incrementally increase the amount of sustained attention they can give. CAI, on the other hand, focuses on providing frequent feedback to children with attentional difficulties aimed at improving their academic achievement. Between the baseline measurement and immediately after the intervention, students’ attention problems had fallen nearly a full standard deviation and continued improvement was evident by their follow-up testing the next fall. Other studies have also found CAI to be an effective way to more fully engage students with ADHD in the learning process and give them opportunities to be more successful through regular feedback; though, other cognitive training computer programs have had mixed effects and further research is needed to confirm and/or differentiate these results in the classroom setting (Schultz, Storer, Watabe, Sadler, & Evans, 2011; Dilawari & Tripathi, 2014; Evans, Owens, Wymbs, & Ray, 2018). With more research, these studies may support the idea that students with ADHD benefit from frequent feedback through computer-assisted learning programs and that these programs may help ADHD students train attention skills on their own.

Additionally, inattention has been addressed through self-monitoring, in which students are taught to observe their behavior and record it in order to improve the behavior (Alsalamah, 2017). Self-monitoring with videotapes has been studied for over four decades and has been found effective in a variety of subjects, variables, and externalizing disorders (Madaus & Ruberto, 2012). Further, it was found effective for students with ADHD in three separate studies conducted in the 1990s (Madaus & Ruberto, 2012). A more recent study by Rafferty, Arroyo, Ginnane, and Wilczynski (2011) addressed self-monitoring in the context of studying spelling words and found a dramatic improvement of on-task behavior for all three fifth-grade students diagnosed with ADHD. During the baseline phase of this study, the mean percentage of on-task behavior was 47% for Student One, 52% for Student Two, and 38% for Student Three; those levels increased to 85%, 88%, and 80% after the intervention, respectively (Rafferty, Arroyo, Ginnane, &
Wilczynski, 2011). Within this study, self-monitoring was done by prompted self-evaluation via a tone delivered at random increments through headphones, prompting the child to ask himself/herself “Am I on task?” They responded by marking a tally in one of two categories on a t-chart labeled “yes” and “no.” The most telling part of this study was that during self-monitoring conditions, two of the three children diagnosed with ADHD produced on-task scores comparable to their non-ADHD diagnosed comparison peers. These studies may indicate that when students with ADHD are aware of what they are doing, they could be likely to be more attentive; however, more studies with larger sample sizes would be needed in order to demonstrate this phenomenon more generally. Because of its demonstrated effectiveness in other arenas, however, this would be an extremely viable line of investigation.

Decreasing distraction for those with ADHD has been another technique employed in the literature on interventions for students with ADHD. One study examined the effect of this distraction reduction strategy by using white noise administered through noise-cancelling headphones to an ADHD-diagnosed student (Cook, Johnson, & Bradley-Johnson, 2015). The participant was a seven-year-old, African-American first-grader who had combined-type ADHD (that is, a combination of hyperactive and inattentive symptoms) (Cook et al., 2015; American Psychiatric Association, 2013). When the student listened to white noise through headphones, his off-task behavior decreased and his assignment production increased. The student began taking stimulant medication part-way through the study; however, there were three phases of the study conducted before he began taking the medication in which they could examine the effectiveness of the white noise independently. These phases were as follows: baseline, without headphones or white noise; headphones without white noise; and headphones with white noise. The percentage of reduced off-task behavior was at its highest when the student had headphones with white noise, followed by the baseline condition (no headphones or white noise), with the least amount of off-task behavior being reduced when the student had headphones
without white noise. This finding raises several possibilities, first, that ADHD students may benefit from low noise distraction environments and second, that the distraction-eliminating strategy may need to be absolute – that is, fully blocking out the distraction, not just masking it. Additionally, while the methods of this study are unique, these results show that there are multiple methods that should be further explored in decreasing inattention in students with ADHD. Further studies with larger, randomized samples would also be needed with these types of distraction decreasing strategies in order to more fully understand their impact on ADHD symptoms, as this study alone cannot be adequately generalized. That being said, this would appear to be a promising field of research as decreasing distractions around those who are easily distracted would logically decrease inattention and distractibility.

Other studies also demonstrated effective techniques to increase on-task behavior and decrease inattention and distractibility. One intervention found that the use of stability balls increased attention of 100% of the eight fourth and fifth-grade students involved (Fedewa & Erwin, 2011). Prior to the intervention, on average, the children were on task 10% of the time and in their seats 45% of the time. During the intervention in which the stability balls were used, however, the children were on task nearly 80% of the time and seated on their balls 94% of the time. With a sample size as small as this, further replication is needed, however, with the large increase seen in these eight children, stability balls’ effectiveness with ADHD children warrant further study. Additionally, in a review of the literature on the effects of physical activity on childhood developmental disorders, Pontifex, Fine, da Cruz, Parks, and Smith (2014) discussed that physical activity has been shown to increase attentiveness in the classroom in addition to contributing positively to other cognitive functioning. These effects are seen when either single bouts of physical activity or chronic physical activity are employed, though more research is needed to examine the degree of difference between these two “dosages.” A study conducted using activity schedules—a series of visual cues (words or pictures) that guide a child through a series of tasks or a task step-by-step—
found that, after two boys (ages 7 and 9) were trained in the use of the activity schedules, their on-task levels reached or came within six percentage points of 100% while completing their assignment (Cirelli, Sidener, Reeve, & Reeve, 2016). This was an increase of between 38% and 46% from baseline phases (Cirelli, Sidener, Reeve, & Reeve, 2016). Finally, mindfulness training, in which students are trained to pay particular attention to the present moment, has been somewhat effective in decreasing off-task behavior in the classroom, though results vary and more research is necessary (Carboni, Roach, & Fredrick, 2013). From these studies, it would seem that when children with ADHD are engaged in physical activity and more aware of their actions (specifically when they are distracted and misbehaving), those behaviors often decrease.

**Hyperactivity and Impulsivity Behavioral Interventions**

While they are separate core symptoms of ADHD, manifestations of hyperactivity and impulsivity are difficult to differentiate in a child’s classroom behaviors. Hyperactivity describes a child’s unusually elevated level of activity and is described in the DSM-5 as ADHD students being frequently “on the go” (American Psychiatric Association, 2013, p. 60). Students with ADHD will often exhibit symptoms of hyperactivity, not necessarily due to a lack of attentional ability but because they require a higher level of stimulation (Simon, 2016). Impulsivity, on the other hand, describes the level of disinhibition that involves acting without prior planning or thinking about possible consequences (American Psychiatric Association, 2013). Both of these symptoms are often manifest in disruptive or off-task behavior such as calling out, getting up out of one’s seat, inappropriate engagement with teachers or peers, etc.

Another solution for decreasing hyperactivity is to meet the need for stimulation through physical activity. In the stability ball study mentioned earlier conducted by Fedewa and Erwin (2011), using stability balls instead of chairs reduced scores on the Attention Deficit Hyperactivity Disorder Test (ADHDT) on average for all of the children but significantly so for the children with
ADHD. The ADHDT is a 36-item questionnaire that was completed by the students’ teachers two weeks before and two weeks after the intervention. The time the students with ADHD spent in their seats also increased significantly when using the stability balls. Additionally, Pontifex et al.’s (2014) review, which assesses the effects of physical activity on childhood brain health, mentions several studies that found a decreased level of hyperactivity after a single bout of, or breaks including, physical activity. They include a study with one four-year-old boy having regular access to the playground and another study with twenty-five boys engaging in thirty minutes of intensive aerobic exercise (Pontifex et al., 2014). This review also mentions the benefit that long-term physical activity has been found to have in treating ADHD symptoms overall, though more research is needed. These studies show that physical activity may be of some benefit to students with hyperactive-type ADHD; however, inconsistent results found in other studies also demonstrate the need for more research (Evans et al., 2018).

In addition to being helpful with inattention, self-management has also been shown to decrease levels of hyperactivity and impulsivity. Self-evaluation, another type of self-management intervention, is when the child is taught not only to monitor their own behavior but to assess it and match their assessment against either a teacher or peer assessment (Terenzi, Ervin, & Hoff, 2010). Terenzi et al. (2010) conducted a study on the effectiveness of class-wide self-management of rule-following on the disruptive/off-task behavior of sixth-grade students with ADHD. The experiment implemented a self-management intervention in conjunction with a schoolwide intervention that focused on these rules: Be safe, be responsible, and be respectful. Terenzi et al. (2010) assessed student engagement levels across four phases: baseline, typical classroom procedures with occasional gold-slips; gold-slips, teacher distributed high amounts of gold-slips for rule-following (this was the schoolwide token system); class-wide self-management, student evaluated both individual and collective class behavior in five minute intervals; and self-management fading, student
evaluated both individual and collective class behavior in seven-minute intervals. Engagement levels were the lowest for all three students during the baseline phase both when it was initially introduced and when conditions reverted back to that phase after other phases were implemented. Levels of engagement significantly improved during the gold slip phase and somewhat during the class-wide self-management phase, though scores were the highest and most stable during the self-management fading phase. The authors also found that when the conditions changed back from a gold-slip or class-wide management level phase to the baseline phase, levels of engagement were barely discernable from pre-intervention conditions. The success of the study, while necessarily taken cautiously as it is a case study, demonstrates the possible effectiveness of both reinforcement and self-management in addressing off-task behavior. Therefore, this research may support the idea that being more self-aware helps these students’ levels of disinhibition decrease, leading to a decrease in both hyperactive and impulsive behavior.

**Interventions Addressing All Core-Symptoms**

There are a few main types of interventions that address all core-symptoms of ADHD; however, they will vary in appearance and exact composition depending on the specific needs of the child (Reddy, Newman, & Verdesco, 2015). Many children may not respond as well to class-wide interventions as to individualized plans. These types of highly personalized interventions are defined as idiosyncratic interventions (Schultz et al., 2011). While some interventions can be implemented to address specific core symptoms, many of the proposed interventions are designed to address problem behaviors and deficits as a whole. These types of interventions, while based on some sort of evidence-based template, are highly idiosyncratic and customized to the specific student making generalizability difficult. In this literature review, these idiosyncratic interventions consisted of daily report cards and function-based interventions.
A daily report card (also known as a daily behavior report card, DRC, or DBRC) is a basic means by which teachers can evaluate the student’s behavior in the classroom and communicate the behavioral level at which the student is performing to the parent. There is no universal template for these report cards; it is simply a means of communication between the student’s teacher and guardian. It has been suggested that DRCs are among the most effective interventions for students with ADHD because they are less expensive (and therefore educational institutions are more likely to implement them), they tend to lessen conflict between teachers and parents (by increasing regular communication), and they provide regular feedback for the child (Moore, Whittaker, & Ford, 2016; Fabiano et al., 2010; Schultz et al., 2011; Owens et al., 2012). While DRCs include home communication, this literature review will cover strictly the classroom side of the intervention and does not include studies showing the effectiveness of parent involvement.

Daily report cards have been found to improve classroom functioning, personalized goal attainment, and academic productivity and decrease disruptive behavior when compared to the business as usual groups and controls (Fabiano et al., 2010). With that being the case, ADHD students did not reach the level of normal functioning as rated by their teachers which suggests more rigorous interventions may be necessary (Murray, Rabiner, Schulte, & Newitt, 2008). This positive effect is not unique to a specific gender, age, or race and is found to be most effective within the first month of implementation with a steady improvement in behavior over the course of four months, though success should be evaluated monthly and discontinued if deterioration is present in the second month (Owens et al., 2012). This data supports the effectiveness of DRCs with the general population and somewhat with the ADHD population; however, more research needs to be done to find ways to increase its effectiveness with ADHD students specifically.

Function-based interventions, interventions that are based on what the student aims to achieve with their behavior (attention, escape/avoidance), are another viable idiosyncratic intervention...
for students with ADHD. Cho and Blair (2017) assessed one multicomponent function-based intervention conducted with two sixth-grade students. Each student’s intervention included the following components: (a) a schedule board and activity sequence charts that provided better predictability for the students, (b) a five-minute warning before switching from a preferred activity to a non-preferred activity, (c) interspersing preferred and non-preferred activities, and (d) providing seating arrangements. This intervention effectively improved academic engagement over a four-week period for both students involved. Student One’s problem behavior decreased in frequency from 3.4 times during the baseline to .54 times during the intervention. Similarly, Student Two’s problem behavior decreased in frequency from 4.6 times during the baseline to .25 times during the intervention. The effects were fairly stable across the four-week intervention and across academic subject (writing, math, and reading). Cho and Blair (2017) also mentioned that the changes were both “immediate and profound” (p. 234). While the long-term effects of this intervention were not assessed, this provides evidence that the short-term effects of a function-based intervention can be seen just as quickly as the effects of pharmacological interventions, possibly without long-term side effects.

Another function-based intervention evaluated the effectiveness of a reinforcement schedule in the classroom that was based on the function to either escape or receive attention. This intervention not only showed a decrease in disruptive behavior for a first-grade student but a continued decrease even after Adderall was discontinued (Skinner, Veerkamp, Kamps, & Andra, 2009). This point regarding Adderall may provide some evidence as to the possibility that non-pharmacological interventions might be just as, if not more, viable than pharmacological treatments, however this must be further researched as this finding is not consistent across the board. The study also provides the possibility that teachers and peers have the ability to be involved in the intervention with little researcher training. A final case study conducted with a fourth-grade student found that self-monitoring in combination
with regular teacher attention was effective in improving behavior (Waller, Albertini, & Waller, 2011). These studies seem to demonstrate that children with ADHD may benefit from holistic and personalized classroom interventions, though more thorough research is needed with larger, randomized samples.

**Interventions with Potential**

While the specific field of classroom-based interventions for ADHD student behavior is quite limited, there has been a plethora of research done regarding ADHD interventions that warrant future research in their classroom application. One study was conducted in Taiwan on the effects of weighted vests on improving attention, on-task behavior, and impulse control in 110 children diagnosed with ADHD (Lin, Lee, Chang & Hong, 2014). While there was no significant improvement in impulse control, there was improvement in inattention, on-task behavior, and other areas; however, the study was conducted in a lab setting and would need to be conducted in a classroom setting to truly assess its effectiveness on classroom behavior. Another study found “tootling” – the classic “tattling” but instead of bad behavior, children report prosocial behavior – effective in decreasing disruptive behavior in the classroom overall when in conjunction with a classroom contingency program (Cihak, Kirk, & Boon, 2009). While the study included children with ADHD and found a decrease in poor behavior overall, only two students in the classroom had been diagnosed with ADHD and one of them was one of six students who were consistently responsible for a large portion of the disruptive behavior. Though praise, from both teachers and peers, is often employed with children with ADHD and found to be effective, more research is necessary in this area with a more intense focus on its effectiveness with students with ADHD in the classroom setting (Reddy et al., 2015; Schultz et al., 2011).

There have also been studies conducted about the nature of ADHD and how those with the disorder learn better. Imeraj et al. (2013) evaluated the effects of different teaching styles on students with and without ADHD found that students with
ADHD decreased in on-task behavior during whole-class group teaching and individual work but improved during activities that involved less demand for self-regulation, motivation, and information processing. Finally, animal-assisted interventions, specifically canine interventions in after-school programs, have been found effective in reducing stress, increasing cognitive arousal to optimum levels, and enhancing social skills for ADHD students; however, more research into its application, effectiveness, and feasibility in the classroom setting is necessary (Fine & Schuck, 2017). As their application to ADHD is limited and under researched, these interventions and strategies would benefit from further investigation.

**Discussion**

Students with ADHD not only benefit from frequent feedback, but findings also indicate that attention can be trained in these students as well. Additionally, when children with ADHD are more aware of when they are distracted and misbehaving, those behaviors often decrease, and the students tend to be more attentive. Being more self-aware also decreases these students’ levels of disinhibition, leading to a diminution of hyperactive and impulsive behavior. Furthermore, unique intervention implementation and methodology demonstrate that there are multiple methods that should be further explored in decreasing all symptoms and problem behaviors experienced by students with ADHD. The literature also suggests that physical activity may lower hyperactive behavior, though more research with consistent findings is necessary. Finally, idiosyncratic interventions are effective for ADHD students as they incorporate a holistic and personalized approach. For example, daily behavior report cards have a positive effect on problem behavior overall; however, more research needs to be done (in this and other areas) to find ways to increase its effectiveness with ADHD students specifically.

Current research on interventions for ADHD students provides a good foundation of both specific types of interventions that are effective for students with ADHD, as well as more broad
interventions for students overall; however, there are several gaps and limitations in current findings. First, comparison of studies’ effectiveness is difficult. Constructs, such as the ADHD diagnosis and “off-task” or “on-task,” are operationalized and coded differently across studies. In future research, it would be beneficial for researchers to abide by a standard operationalization of such terms; different definitions and practical applications can result in a large variation of results. Second, studies failed to isolate variables, which can negatively affect findings. In future research, it would be necessary to assure the experimental groups have discrete characteristics, such as including children diagnosed solely with ADHD, taking specific sub-type identification into account, and mandating a strict discontinuance of medication (as some studies do not take into account which students are on medication and which are not) (Carboni et al., 2013). This will allow the effects of individual variables to be better evaluated. Third, there is the constant concern of the observer effect and not knowing whether children improve their behavior when they know that they are being observed (Carboni et al., 2013).

Fourth, there is a lack of examination of the negative effects of non-pharmacological treatments. As addressed by Antshel and Barkley (2008), those conducting research on non-pharmacological treatments of ADHD often do not consider the negative effects that they might inflict just as experimental medications would. In accordance with the perspective of the medical model, intensity or “dosage” of various non-pharmacological treatments are rarely, if ever, investigated or addressed in the current literature, though its effects are seen upon study comparison (Pelham & Fabiano, 2008). Similarly, the fifth limitation is the current lack of follow-up in subsequent years following interventions (Evans et al., 2018). This does not allow for assessment of effectiveness; immediately effective interventions will benefit the current classroom and teacher. The goal, however, of interventions with ADHD students is to establish life-long coping skills that lead the children to success both now and in the future. Finally, while ADHD is common, due to its small prevalence in comparison to the general population, many of the
studies conducted in the literature are either case studies or have a small number of participants – many not exceeding 60. Future researchers would do well to conduct large-scale experiments to establish stronger reliability and validity.

In addition to the aforementioned limitations, other interventions that were previously mentioned warrant further investigation. These interventions have the potential to provide benefits for students with ADHD; however, as their effectiveness for students with ADHD was not directly or thoroughly evaluated, more research is necessary (Lin et al., 2014; Cihak, Kirk, & Boon, 2009; Reddy et al., 2015; Imeraj et al., 2013; Fine & Schuck, 2017).

ADHD affects both the children with the disorder and the teachers’ ability to teach effectively in the classroom. With more research into effective behavioral interventions, children with ADHD will have more opportunity to succeed in the classroom as their learning and arousal needs are met more adequately. In turn, the teachers will also benefit from the research; being trained in more effective interventions will help them feel more in control of the classroom. This research will benefit teachers as they see the advantages of simple interventions such as stability balls or self-monitoring and begin to implement them into their classroom routines. While students with ADHD are presently guaranteed access to disability benefits in school, both past and future research and developments should be applied to give ADHD students the unique help they need instead of grouping them together with all other children with disabilities. Using the research to form these types of programs will not only benefit the teachers and the children in their present classroom setting, but it will allow them to develop key coping skills that can lead them to success as they learn to adapt to life’s challenges.
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Nature’s Pill: A Spotlight on Lifestyle and Adolescent Anxiety

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Abstract

Anxiety disorders plague high numbers of adolescents throughout the world. This demographic seems particularly susceptible due to hormonal and social changes occurring in their lives (Kendall & Peterman, 2015). Through experimental and correlational studies, lifestyle changes (including exercise, diet, and sleep) have shown to be effective in reducing adolescent anxiety, while also acting as predictors of future anxiety susceptibility (Abdollahi & Talib, 2015; Asare & Danquah, 2015). While comparable in effectiveness to pharmaceutical approaches, changes in lifestyle cause no side effects. In considering long-term treatment of adolescent anxiety, it is suggested that lifestyle changes be the foundation of treatment plans to focus on causes and not simply symptoms. Lack of data regarding how often lifestyle changes are implemented in treatment plans presents a limitation in knowing how large of an issue this is. However, it is known that pharmaceuticals are commonly used with adolescents despite the lack of studies performed on that population regarding the lasting effects of medication (Voltas, Hernandez-Martinez, Arija, & Canals, 2017). When considering the side effects and uncertainty involved in the pharmaceutical treatment of adolescents for anxiety, lifestyle changes offer a safer, more long-term option that should be implemented before considering pharmaceutical interventions.
Sixteen-year-old Joseph was a typical adolescent boy. He enjoyed participating in sports, performing in musical groups, and having fun with his friends. One morning, Joseph arose from his bed feeling strange. He believed he was merely ill and stayed home from school. However, the symptoms continued. He felt nauseous and had little desire to eat due to stomach discomfort. Upon returning to class, he began to feel light-headed and noticed his palms were perspiring. At times, he would even need to vomit in the bathroom due to intense distress. He could not eat in the cafeteria and lost an unhealthy amount of weight. Through his own research, Joseph determined he was experiencing the symptoms of an anxiety disorder. He also realized that his symptoms dissipated while he was playing sports. This realization led him to seek out more ways to live healthily. In addition to maintaining his exercise routine, he improved his diet and managed his sleep habits. These measures further lessened his symptoms of anxiety. Now in college, Joseph has nearly complete control over his anxiety. Although he is aware of his fragility, he has great confidence in the fact that he is in control and capable of dealing with his anxiety when it surfaces.

Joseph is not the only adolescent who has or will suffer from an anxiety disorder. Epidemiological studies have concluded that roughly one in six adolescents will suffer from an anxiety disorder, placing it among the most prevalent psychiatric disorders during adolescence (Beesdo, Knappe, & Pine, 2009). Additionally, total anxiety symptoms are even higher, with a prevalence of 46.7% (see Table 1; Voltas, Hernandez-Martinez, Arija, & Canals, 2017). The series of psychological and biological changes that occur during puberty place adolescents at an increased risk for such disorders (Kendall & Peterman, 2015). The low self-esteem associated with this type of disorder can also present developmental impairments during this crucial stage (Maldonado et al., 2013). If left untreated, it can cause severe impairments in school and family life (Peters & Connolly, 2012). Additionally, those with unresolved anxiety disorders are 80% more likely to suffer from another comorbid disorder at some point in their lives, linking the anxiety with other psychopathological disorders such as depression or obsessive-
compulsive disorder (Brown, Campbell, Lehman, Grisham, & Mancill, 2001). As expected with such a prevalent disorder, anxiety has attracted attention among professionals and non-professionals alike, resulting in a plethora of studies and treatments.

When it comes to treatment, many parents, generally as counseled by a therapist or psychiatrist, will elect a type of pharmaceutical intervention to reduce their child’s symptoms of anxiety. Pharmaceutical treatments involving selective serotonin reuptake inhibitors (SSRIs), tricyclic antidepressants, benzodiazepines, and others have generally been shown to reduce the symptoms of anxiety in adolescents; however, they are also associated with varying degrees of side effects, which will be discussed later (Velosa & Riddle, 2000). Along with these forms of interventions, therapists are realizing that changes in lifestyle can also yield very positive results. The implementation of exercise programs and the improvement of diet, for example, have resulted in significant reductions in anxiety symptoms in adolescents (Forsyth, Deane, & Williams, 2015; Stein & Dubowitz, 2015). Clearly, many more methods of treatment exist that are being tested and implemented for the symptoms of anxiety, but for the purposes of this review, the focus will be on two paths of treatment: pharmaceutical and holistic. Due to the plethora of therapeutic approaches and the confusion this could cause for caregivers, education regarding these particular types of treatment with adolescents is essential.

Unfortunately, studies pertaining to the treatment of adolescent anxiety are relatively sparse. This presents a problem when determining which method of treatment will be both effective and safe in the long term. In fact, much of the current research comes from studies on adults, with little research having been done on adolescent populations (Voltas et al., 2017). This creates difficulty when prescribing medication, because the therapist does not entirely know how the medication will affect the adolescent long term. An adolescent’s biological and hormonal makeup differs from that of an adult. This makes it difficult to predict the effects that a particular medication will have (Short & Louca, 2015). Velosa and
Riddle (2000), along with other medical professionals, agreed that additional research is necessary to better determine the safe use of pharmaceuticals in the adolescent population. This uncertainty means a practitioner must take great care and caution in the prescribing of medication for an adolescent to avoid undesirable effects.

Despite current gaps in relevant empirical evidence, what is known and well supported is that an unhealthy lifestyle deficient in nutritious foods and exercise has a strong correlation with poor self-esteem and mental health problems in adolescents, especially when paired with obesity (Melnyk et al., 2013). Additionally, the correction of an unhealthy lifestyle will likely have the reverse effect, without the risk of side effects (Melnyk et al., 2013). Lifestyle changes offer an alternative method of treatment for the suffering adolescent. If the root of the issue can potentially be solved without the implementation of pharmaceuticals that correlate with known as well as unknown side effects, that would be the preferable path. Such an education may also instill in the adolescent a habit of life-long conscientiousness in this area, bringing about further benefits. Although a combination of pharmaceutical interventions and professionally prescribed changes to daily routines (involving exercise, diet, and sleep) typically reduces general anxiety in adolescents, a therapeutic focus on lifestyle changes should ideally constitute the foundation of any treatment plan (with or without pharmaceuticals), as this holistic approach is effective, supports long-term health and recovery, and can possibly resolve the underlying causes of anxiety before medication is needed.

A Holistic Approach

As stated previously, the preferable holistic treatment option for an adolescent suffering from anxiety would be both effective and safe. Lifestyle changes, such as exercise, diet, and sleep, can be effective while also freeing adolescents from the negative aspects of medication. These options should be both better understood and applied in treatment.
Exercise

When dealing with adolescent anxiety, physical exercise is a powerful treatment tool. Studies have shown that exercise can not only lower negative emotional states but also increase positive ones. In a study on adolescents in Ghana, physical exercise was found to be negatively correlated with both depression/anxiety and body dissatisfaction and positively correlated with self-esteem (Asare & Danquah, 2015). Physical exercise is a side-effect-free treatment option that could also be seen as a preventative measure towards the reduction of anxiety in adolescents. Another benefit is that exercise is not foreign to adolescents; it can be easily implemented into their lives or school curriculum without them even being aware that they are receiving psychological benefits. The same cannot be said of pharmaceutical interventions; they can seem foreign to students or lead them to feel different or isolated from their peers (Motta, McWilliams, Schwartz, & Cavena, 2012). Some may not see exercise as a viable option as compared to the effectiveness of pharmaceuticals. However, aerobic exercise has been shown to be equally as effective in reducing stress as antidepressants, which have about a 50% effectiveness rate in addition to a placebo effect (P. Steffen, personal communication, March 5, 2018). As demonstrated, physical exercise is a viable treatment option, beneficial to not only adolescents who suffer from anxiety but to others as well.

Diet

The food that is introduced into the body will affect how it functions. Food is the raw material from which the body and mind is built and maintained. In construction, if the materials purchased to complete a project are of poor quality, the finished product will be equally poor. The same applies with the human body. The brain consumes 20% of the energy in the body, while only accounting for 2% of the body’s weight (Pant & Nayal, 2014). The brain’s only option is to take that energy from the nutrition present in the body. In a study performed by Pant and Nayal (2014) to examine to effects of different diets on adolescent anxiety, participants who
ate a natural diet were compared to those who consumed more processed foods. The results were significant: Traditional, natural diets were shown to protect against the symptoms of anxiety in adolescents while benefiting their health in other ways as well (Pant & Nayal, 2014). Hughes and Bryan (2003) found that foods high in carbohydrates and low in proteins can increase symptoms of anxiety. Thus, if adolescents are eating poorly, which they may be prone to do because of inexperience in choosing their own foods, anxiety symptoms will typically worsen. When diet is improved, the opposite will likely occur. If diet can be improved to reduce the symptoms of anxiety in adolescents, then it’s something that should be considered by their healthcare professionals.

Sleep

Along with exercise and diet, sleep habits need to be addressed by those who work with adolescents with anxiety disorders. For example, about half of the adolescents in the United States will sleep less than eight hours a night, especially on school nights (Baum et al., 2014). Short and Louca (2015) conducted an experiment testing the effects that sleep deprivation has on the mood of otherwise healthy adolescents. The subjects were observed under normal sleeping conditions and then under conditions where they were intentionally sleep-deprived. The results indicated that mood states worsen significantly when adolescents are deprived of sleep; adolescents experienced greater anxiety, depression, anger, and other negative emotions. Also, considering that the prefrontal cortex is still in development during adolescence, these mood deficits are even greater (Short & Louca, 2015). This means that adolescents who do not sleep enough will likely suffer more than a sleep-deprived adult. The combination of adolescents’ lack of sleep and the anxiety-inducing effects of sleep deprivation presents an issue for society. Schools can help reduce anxiety by implementing programs that teach healthy sleep patterns. Exercise, diet, and sleep can form an effective treatment, especially when they are addressed simultaneously. A healthy, holistic approach may have the power to help.
Long-Term Perspective

The goal of treatment should be to help the adolescent manage anxiety in the present as well as in the future. The side effects and addictions associated with pharmaceuticals make a pharmaceutical approach more of a short-term solution; a holistic approach, however, can be applied long term. It is important to instill in adolescents the skills to help manage their anxiety; in doing so, their confidence will likely increase as well as their sense of control over their symptoms. Furthermore, the same methods that reduce their anxiety may also reduce adolescents’ risk of other diseases and disorders throughout their life.

Side Effects

With regards to the use of medication in treatment, associated side effects should be considered before making a decision. For example, antidepressants utilized in the treatment of anxiety can lead to deleterious consequences. In children and adolescents, many antidepressants present a risk of increased suicidal tendencies (Wohlfarth et al., 2006). Other side effects of pharmaceuticals generally used for anxiety may include drowsiness, insomnia, emotional numbing, headaches, nausea, weight gain/loss, irritability, fatigue, constipation, blurred vision, etc. (Velosa & Riddle, 2000). Additionally, few (if any) longitudinal studies have been performed on the adolescent population to examine long-term effects of pharmaceuticals; thus, more side effects may still be revealed (Voltas et al., 2017). Parents and practitioners must consider these things when deciding on using medication with an adolescent; they must decide whether the pros outweigh the cons. Furthermore, anxiolytics are highly addictive (P. Steffen, personal communication, March 5, 2018). Adolescents are already at a higher risk of an anxiety disorder due to the biological changes occurring in them as well as the pressures of transitioning into adulthood (Kendall & Peterman, 2015). This could imply that their anxiety is possibly more of a phase than a lifelong disorder and that it could dissipate as their bodies adjust to biological changes. Thus, by prescribing an addictive substance, adolescents may...
continue to need it even after they would have otherwise been free of their symptoms. This may lengthen their treatment rather than shortening it as well as harm them. This would not be a long-term solution. Although the usage of medication is certainly warranted in cases where the adolescent is inconsolable or in a dangerous situation, any informed therapist should also carefully consider adolescents’ habits regarding physical exercise and diet. Perhaps a suggestion to implement a healthier lifestyle could be all that the adolescent needs to regain control, and they could be saved from the potentially harmful side effects associated with medication.

Confidence and Control

The ability to manage one’s own anxious symptoms without the need for a pill can create a sense of confidence and control in the life of a suffering adolescent. This was the case with Joseph, who was referenced previously. As he learned what he could personally do to reduce his anxiety, his own happiness and confidence in his methods increased. This is very important because of the placebo effect, indicating that the more confidence a patient has in his/her treatment, the more effective it will be. In other words, belief in a method can have a physiological effect (P. Steffen, personal communication, March 5, 2018). The lifestyle changes presented involve skills and habits that the adolescents can learn to do on their own. The need for adolescents to take medication can cause them to feel different from their peers (Motta et al., 2012). And lower self-esteem is correlated with increased risk of anxiety, specifically social anxiety in adolescents (Abdollahi & Talib, 2015). Thus, the very act of taking medication could be worsening their symptoms. Learning how to improve one’s lifestyle may not only bring about a reduction in anxiety but may also reduce the risk of other psychological and physical ailments throughout the adolescent’s life (P. Steffen, personal communication, March 5, 2018). This approach can be applied across the lifespan, while medications typically cannot. With a pharmaceutical approach, the adolescent takes a pill and hopes it works. They are dependent on
that pill. With a lifestyle-centered approach, the ability to control anxiety comes more from within, without the risk of negative effects, and that knowledge persists for the rest of their lives.

**Focusing on Causes, Not Symptoms**

Certain unhealthy lifestyle habits contribute to anxiety in adolescents who may have been healthy otherwise. Administering medication while ignoring the anxiety-conducive lifestyle is merely covering up symptoms temporarily. The focus should be on the causes and not just the symptoms. A lifestyle-centered approach involves examining possible underlying causes and attempting to fix those first, potentially without the need of further medication.

**Habits Conducive to Anxiety**

If the underlying causes of adolescent anxiety can be tied to his/her lifestyle, the adolescent’s lifestyle should be addressed. For example, adolescent obesity has generally increased over the years (Ogden et al., 2016). With the increase in obesity, it is no wonder that anxiety is so rampant; adolescents who are sedentary or obese are more likely to develop anxiety (Abdollahi & Talib, 2015). Sedentary behavior may imply a lack of exercise, and obesity can be tied to lack of exercise, poor diet, and sleep. Many adolescents will go to school without breakfast and later consume high-fat diets such as fast food. Research has shown that both the omission of breakfast and a high-fat diet are conducive to anxiety in adolescents (Del Rio, Morales, Ruiz-Gayo, & Del Olmo, 2016; Richards & Smith, 2016). Rather than only prescribing medication, education regarding diet and exercise should be implemented, which would also reduce the adolescent’s risk of obesity and thus reduce their risk of anxiety.

Along with diet and exercise, sleep is also associated with adolescent mental health. Using a longitudinal study of adolescents’ sleep habits, it was determined that going to bed later and sleeping less is a determinant of anxiety, depression, and risk of self-harm in adolescents, stressing the value of sleep education in that population (Matamura et al., 2014). Exercise, diet, and sleep patterns are all lifestyle habits that, when done incorrectly, can
bring about anxious symptoms in an adolescent. By focusing on aspects of the adolescent’s lifestyle that may be contributing to anxiety, the problem could possibly be solved without further need of pharmaceuticals. The aim should be creating a strong foundation of treatment in the adolescent and working up from there. Similar to Maslow’s hierarchy of needs, once the foundational needs are met, further measures may be implemented which could involve pharmaceuticals.

Conclusion

Joseph’s story is one of success and victory over anxiety through holistic means. His situation may not be the same as every anxious adolescent; however, the means by which he gained control can still be explored and considered in the treatment of others. Anxiety is one of the most common psychological disorders to occur in adolescence, making it a serious issue (Beesdo et al., 2009). Both pharmaceuticals and lifestyle changes have shown to be effective in the reduction of anxiety; however, it appears the implementation of an exercise routine, healthy diet, and good sleep habits offers benefits without the risk of harmful side effects. In some cases, these side effects can even prove deadly in the case of suicidal thoughts and behaviors (Wohlfarth et al., 2006). A holistic solution involving lifestyle changes can be appealing to both parents and therapists who are seeking a long-term solution to an adolescent’s anxiety. Although changing one’s habits does require more effort, especially on the part of the adolescent, it may teach valuable skills that can be applied throughout the lifespan as they gain confidence and control over their symptoms.

Due to the fact that many poor lifestyle habits can contribute to anxiety in adolescents, addressing lifestyle first, as the foundation of treatment, can improve symptoms before medication is needed (Abdollahi & Talib, 2015; Del Rio et al., 2016; Matamura et al., 2014; Richards & Smith, 2016). This is a cause-focused rather than a symptom-focused approach. The aim is full, long-term recovery.
Covering up symptoms on the surface may only partially treat the anxiety, contributing to recurrence later. Treating the cause should treat the symptom, but treating the symptom does not always treat the cause.

Lifestyle changes in therapy do not eliminate the need for pharmaceuticals. Pharmaceutical approaches do help adolescents who suffer from anxiety (Velosa & Riddle, 2000). What is being argued here is that the effectiveness and usefulness of lifestyle changes in treatment should not be ignored. Therapists should examine the lifestyle of the suffering adolescent to identify possible areas of concern which could be contributing to their anxiety. After the patient is educated and those areas are properly addressed, pharmaceutical additions can prove useful if lifestyle changes alone are insufficient to reduce their symptoms. Nature has provided humankind with ways to be both healthy and happy. Perhaps the true solution lies simply in knowing where things have gone wrong and restoring the balance.

References


Short, M. A., & Louca, M. (2015). Sleep deprivation leads to mood deficits in healthy adolescents. *Sleep Medicine, 16*(8), 987-993. doi:10.1016/j.sleep.2015.03.007


Appendix

Table 1

Prevalence, Persistence, and Recurrence Rates of Adolescent Anxiety Symptoms by Gender

<table>
<thead>
<tr>
<th></th>
<th>Generalized anxiety disorder</th>
<th>Separation anxiety disorder</th>
<th>Social phobia</th>
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</thead>
<tbody>
<tr>
<td><strong>Prevalence rate</strong></td>
<td>44.4%</td>
<td>35.1%</td>
<td>55.6%</td>
</tr>
<tr>
<td><strong>Boys</strong></td>
<td>41.3%</td>
<td>30.7%</td>
<td>48.0%</td>
</tr>
<tr>
<td><strong>Girls</strong></td>
<td>47.2%</td>
<td>39.0%</td>
<td>62.3%</td>
</tr>
<tr>
<td><strong>Persistence rate</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>one year</strong></td>
<td>62.9%</td>
<td>45.0%</td>
<td>68.9%</td>
</tr>
<tr>
<td><strong>Boys</strong></td>
<td>54.4%</td>
<td>42.9%</td>
<td>61.9%</td>
</tr>
<tr>
<td><strong>Girls</strong></td>
<td>68.9%</td>
<td>46.5%</td>
<td>73.2%</td>
</tr>
<tr>
<td><strong>Recurrence rate</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>three years</strong></td>
<td>13.8%</td>
<td>6.1%</td>
<td>7.8%</td>
</tr>
<tr>
<td><strong>Boys</strong></td>
<td>12.5%</td>
<td>2.1%</td>
<td>12.8%</td>
</tr>
<tr>
<td><strong>Girls</strong></td>
<td>14.6%</td>
<td>8.3%</td>
<td>5.6%</td>
</tr>
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Thinking Outside the Checkbox: Examining the Benefits of Depression in the Workplace

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Abstract

It is illegal for equal opportunity employers to ask potential hires about the history and status of their mental health. To allow employers to provide reasonable accommodation for mental and emotional health concerns, voluntary self-disclosure is permitted by the Americans With Disabilities Act of 1990, as long as it does not affect the hiring decision. However, because it is in the employer’s best interest to hire strong candidates, the supposed relation between emotional suffering and mental weakness has contributed to the stigma against those who present depressive symptoms. They are commonly assumed to misidentify and misunderstand personal emotions, but alexithymia is not a subcomponent of Major Depressive Disorder (MDD) (Hoffmann et al., 2016). Depression has ties with low empathy, but empathy in remittent depression remains virtually unexamined by the scientific community. Individuals with depression may often be considered weak, yet no study has supported the notion that MDD debilitates resilience; in fact, depression may enhance it (Wingo et al., 2017). The dynamic nature of MDD and the unstudied benefits of remittent depression are much more complicated than a binary self-disclosure statement. Future research should focus on the relation of remittent depression with creativity, sociality, and psychological resilience.
Taylor is the manager of the local branch of a large company and is preparing to hire a new team member. Her branch has been struggling amid the recent economic downturn. Despite the team member’s attempts to adapt to these difficult times, they are running out of ideas and tension is rising. Taylor needs someone who can help her restore lost life and vitality. The company relies on an extensive online questionnaire to gather basic information about job applicants. After reviewing dozens of candidates, Taylor has identified the two strongest contenders: Sam and Alex. At first glance, the candidates’ applications are nearly identical: Each comes from a strong academic background and has similar job experience. In fact, Sam and Alex share many things in common, including their age, race, gender, ethnicity, and financial status.

Taylor continues to review their responses, searching for something that will differentiate one candidate from the other. Finally, she arrives at the government-mandated portion of the questionnaire in which applicants are invited to disclose any disabilities that they have, and Taylor sees that Sam has checked the box for depression. Taylor pauses and considers the implications that surround Sam’s checkbox. Why bring more pessimism, rumination, and instability into an already fragile work environment? She dismisses Sam’s application in favor of Alex’s. After all, if the only discernable difference between two job applicants is their mental health history, who would ever choose depression over emotional stability?

The Americans With Disabilities Act of 1990 (ADA) was adopted with the intention of preventing workplace discrimination towards people with physical or mental impairment and is enforced by the Equal Employment Opportunity Commission (EEOC). Shortly after its ratification, the EEOC defined mental impairment as “any mental or psychological disorder” as identified in the American Psychiatric Association’s Diagnostic and Statistical Manual of Mental Disorders, 5th Edition that “limits one or more major life activities of the individual” (American Psychiatric Association [APA], 2013, p. 7). Major Depressive Disorder (MDD) was specifically listed as one of the six common examples of mental illness that may qualify
for disability classification. Depression is the world’s second leading cause of disability and has been estimated to cost the global economy nearly $80 billion a year in both lost productivity and healthcare costs (Evans-Lacko et al., 2016). The enormity of the financial cost of depression led to Evans-Lacko et al.’s (2016) determination that investing in the prevention of clinical depression in the workplace is a worthwhile, cost-effective alternative to treating it.

Two options for preventing depression in the workplace include the implementation of new human resource and healthcare programs or a more rigorous hiring process that involves scanning for (and filtering out) applicants with depression. The latter is illegal, as the ADA prohibits employers from asking disability-related questions before making an offer of employment. The ADA does, however, allow for applicants to voluntarily request reasonable accommodation for their disability, which has been interpreted and reduced into an optional self-disclosure statement regarding mental health (Olsen, 2015). Thus, by providing an opt-in feature of the question via an I do not wish to provide this information answer option, a loophole has been created that allows companies to collect mental health information before an applicant is offered a position. The data collected from self-disclosure statements can then be used by the employer to satisfy ADA mandates and serve as a basis for providing mental healthcare for employees (Olsen, 2015). Once obtained, nothing (besides the already sidestepped law) prevents an employer from taking the self-reported mental health status of job applicants into consideration during the hiring process. This can be problematic, as the statistics and stigmas surrounding MDD may make its reported diagnosis an erroneously conspicuous element in the job application.

While much has been said about the costs and vices of depressive symptoms, research regarding its virtues is relatively scarce. Verhaeghen, Joorman, and Khan (2005) observed that self-reflective rumination, a characteristic commonly associated with depression, is likely linked to novel thinking. According to Parameshwar (2006), times of psychological distress have been
fundamental in the formation of many transformational leaders, and Waugh and Koster (2015) observed that those who suffer from chronic illnesses, including anxiety and depression, reported higher levels of positivity than a control group. These studies, although few in number, seem to contradict what is commonly known and accepted about depression.

MDD is a complex, dynamic disorder that requires more than a binary checkbox in order to understand its implications for the workplace. According to Leonard (2014), most job applicants already refuse to reveal their diagnosis to potential employers for fear of discrimination (see Figure 1); unfortunately, for the few candidates that do, the stigmas, misconceptions, and lack of research regarding current and remittent depression may be detrimental to the hiring process. Although MDD is commonly associated with an impairment of occupational efficacy and may consequently be viewed by hiring organizations as an avoidable expense when considering candidates, equal opportunity employers should not be privy to the diagnosis of depression in potential hires, because applicants who may have experienced depressive symptoms (and subsequently received treatment) have often successfully developed high levels of creativity, enhanced social skills, and a deepened sense of psychological resilience, all of which contribute to achievement and satisfaction in the workplace.

Depression and Creativity

The value of a business comes from its ability to solve problems. Businesses, then, hire employees with the highest potential to resolve concerns and address setbacks (Ryan, 2016). Creativity has been linked to many workplace benefits, including staff morale, motivation, engagement, and productivity (Plano, 2018). Transformational leadership has been a topic of recent interest in organizational behavior and has been strongly correlated with individual creativity and innovation (Çekmecelioğlu & Özbağ, 2016). A committed employer seeking a new associate will naturally want the best candidate and will look for signs of ingenuity and inspiration in the applicant’s resume and other personal
information. A checked box indicating the past diagnosis of MDD would likely signal to the employer that the candidate will not creatively contribute to the team.

Depressive symptoms, as defined by the APA, include the “diminished ability to think or concentrate” and a “markedly diminished interest or pleasure in . . . almost all activities” (APA, 2013, p. 125). Self-reflective rumination is a state of mind in which the individual compulsively focuses on the origins and implications of his or her distressing symptoms while failing to contemplate potential solutions (Nolan, Roberts, & Gotlib, 1998). Thus, self-reflective rumination both contributes to and results from MDD; depression is not a problem that can be solved through fruitless cognition. In fact, the incapacity to imagine solutions typically compels the depressed individual to experience intense hopelessness, which is detrimental to personal and occupational efficacy.

Although cyclic cognitive processes appear to inhibit the creative mind, recent findings suggest that they may actually cultivate it. Burwell and Shirk (2007) concluded that what had previously been identified as self-reflective rumination actually has two components: brooding and reflection. Brooding is to focus on symptoms, whereas reflection is to seek insight from adversity. Thus, MDD can be defined as an imbalance between brooding and reflection, and relief from depression may be considered as a return to balance. It should be noted, however, that both depression and its remission are characterized by both variables (Koster et al., 2015). In other words, if an individual has been diagnosed with MDD, but the gloomy, negative symptoms have subsided, he or she is considered to have remittent depression: The cyclic, cognitive tendencies remain, but they are not tainted by negativity (Burwell & Shirk, 2007). The reflection that may be observed in an individual who no longer engages in compulsive brooding may result in creative problem solving and novel thinking, which supports the observation made by Boytos, Smith, and Kim (2017) that exposure to prolonged, unstable struggles augments one’s resourcefulness in identifying solutions.
While research regarding the link between depression and novel thinking is limited, anecdotal evidence often depicts the world’s creative minds attributing their success to initial psychological distress; in other words, depressive symptoms have often been the essential difference between talent and genius (Hershman & Lieb, 1998). Well-known examples of this include Michelangelo, Isaac Newton, Martin Luther King, Jr., and J.K. Rowling (Ghaemi, 2015; Rowling, 2008; Yip, 2012). Reflection, then, becomes a defining characteristic of the mind of an individual with remittent depression. The resultant ability and desire to focus on both learning and solutions can be employed in solving problems in both the workplace and other social settings.

**Depression and Sociality**

With the global reach of social media, the demand for jobs that require social skills has risen by approximately 20 percent in the last 20 years, while the need for routine-task workers has decreased considerably (Picker, 2015). Phoraris (2017) reported that the most frequently cited reason for job termination is poor cooperation and that the top two traits hiring managers look for are the ability to work in a team and effective interpersonal skills. Thus, it comes as no surprise that much of the application process is an attempt to understand the personality of the candidate. Eighty-nine of the Fortune 100 companies actively incorporate personality tests to evaluate applicants, and although its results are statistically insignificant, the Myers-Briggs Type Indicator (personality test) generates over $20 million a year in revenue (Taube, 2016). With so much attention given to indicators of potential social weakness, applicants who voluntarily disclose their past diagnosis of MDD on a job application may essentially seal their fate as undesirable candidates.

Adding insult to injury, a diagnosis of MDD is commonly associated with impaired emotional judgement regarding one’s own mental state. For example, a person diagnosed with depression would be anticipated to be quiet and withdrawn—unwilling or unable to articulate the deep sadness that characterizes MDD.
This loss of words and inability to express one’s emotional state is called alexithymia and has been the subject of recent investigation. Autism research suggests that the onset of alexithymia is independent of MDD, which should impact the way depression is viewed by society, because those who experience depression are not necessarily doomed to the confused silence of alexithymia, and those who have difficulty in recognizing emotions are not necessarily depressed (Hoffmann et al., 2016). Future researchers may further disentangle alexithymia from MDD and thereby reduce the assumption of their comorbidity. As the true nature of MDD comes to light, the stigmas and assumptions surrounding it should dissipate, which will allow society to focus on its definite symptoms.

In addition to impaired emotional self-appraisal, depression is also commonly associated with reduced empathy. Empathy is the ability to understand and share the feelings of another person and has been identified as a necessity in the modern workplace (Holt & Marques, 2012). Empathy can be seen as an archetype of sociality: It encompasses the purpose of most communication and has a strong correlation with both social status and quantity of close friends (Silman & Dogan, 2013). Overwhelming evidence suggests that those in the midst of a depressive episode may experience extreme difficulty in empathizing with others due to the obsession that is characteristic of the disorder (Schneider et al., 2012; Schreiter, Pijnenborg, & aan het Rot, 2013). However, research regarding empathy in remittent depression is practically nonexistent, which is problematic as there is a distinct difference between current and remittent depression. If remittent depression is the absence of negative depressive symptoms, there may be some unstudied empathetic benefit found in remission.

Klinton Hobbs is a clinical faculty member and outreach coordinator in Brigham Young University’s Counseling and Psychological Services Center and has observed that the best therapists are often those who have been diagnosed with MDD: “I think it gives them a better ability to connect with and join the client who is in the midst of that. . . . [so] there are maybe
benefits to depression that has been remitted” (K. Hobbs, personal communication, March 8, 2018). Therapists are not alone in their ability to transform pain into compassion. For example, Waugh and Koster (2015) identified a correlation between suffering and optimism in the chronically ill. While the link between history of psychological distress and empathy may lack substantial scientific inquiry, the relationship between empathy and social success has been validated: High-empathy counselors have the highest success rate, regardless of theoretical orientation (Moyers & Miller, 2013). Although the literature supporting the connection between remittent depression and empathy is scarce and anecdotal at present, the possibility of strengthened empathy as a result of psychological distress remains and should be the subject of future research.

**Depression and Resilience**

*Resilience* is a term used to describe how a substance responds to a force such as heat, stress, or a jarring blow, that is, whether it “bounces back” or returns to its previous state. In recent years, psychological resilience has been defined as an individual’s ability to positively adapt to adversity, trauma, or distress. A common example is how many Americans responded with patriotism and hope to the terrorist attacks of September 11, 2001 (APA, n.d.). Rebuilding and becoming stronger as a direct result of distress epitomizes psychological resilience. The study of resilience came from other fields, such as performance and military psychology; only recently have organizational behaviorists begun to study it (King, Newman, & Luthans, 2016). As resilience becomes a more familiar concept, it may become a first-priority characteristic sought after in job applicants as companies face a slew of concerns and setbacks, both large and small.

Historically, MDD has been associated with a dearth of will that invites negativity to flood the mind and essentially takes over the life of an individual. In the eyes of an uninformed prospective employer, an applicant with depression might be considered ill-suited for the obstacles and setbacks that accompany the job.
However, the popular framework of explaining depression as a lack of resilience has been shown by the scientific community to be not only overly simplistic but also entirely misguided.

In recent years, psychological resilience has been reconceptualized so as to no longer be a state but a dynamic, malleable process that can be strengthened over time (Waugh & Koster, 2015). This is supported by a study that found many of the world’s transformational leaders experienced significant psychological distress, including the diagnosis of MDD, before their breakthrough (Parameshwar, 2006). Thus, instead of classifying individuals as resilient or non-resilient, it is more effective to examine an individual’s history of distress and how his or her responses to it have changed over time.

In addition to the recently identified variability of individual resilience, research also implies its independence from depression. Wingo et al. (2017) confirmed that psychological resilience is positively correlated with strong social functioning and emotional support; they found no significant relationship between resilience and the diagnosis of MDD or other mood-affecting disorders. As mentioned previously, studies of the chronically ill revealed a significant correlation between physical and psychological burden and positive emotions (Waugh & Koster, 2015; Westbrook & Viney, 1982). Although a direct connection between enhanced resiliency and the experience of depressive symptoms has not yet been made, the notion that depression inhibits resilience has been refuted. The malleable nature of resilience, combined with its independence of depression and implied correlation with optimism, suggests that those who remit from MDD may experience higher levels of resilience and positivity as a direct result of their distress.

Conclusion

The principal presenting characteristic of MDD is negativity. Its common metaphors speak of darkness, weight, and emptiness, and the public perception of MDD is just as bleak. The many studies examining depression have made ample allegations against the potential of the diagnosed individual, yet very little has been
said about the possibility (or promise) for growth after times of distress. It is commonly said that a broken bone, once healed, is stronger than it was before the break. Although the diagnosis of a serious mood-affecting disorder may not be entirely comparable to a skeletal injury, the optimism surrounding recovery from physical trauma greatly outweighs that of its emotional counterpart. Mental illness can neither be seen nor understood as easily as a broken bone; perhaps it is for that reason that so much stigma surrounds it.

Recent studies have both negated popular understanding and highlighted the unknown. Alexithymia and psychological resilience are not directly related to the diagnosis of MDD (Hoffmann et al., 2016; Wingo et al., 2017). Depression is readily associated with compulsive brooding, but its association with deepened reflection is often overlooked (Burwell & Shirk, 2007; Koster et al., 2015). These refuted claims signal a need to readjust the depression paradigm, and the lack of research regarding remittent depression suggests there may be more silver lining in the gloomy clouds of MDD than previously anticipated. Self-reflective rumination may be a means for creatively approaching problems (Burwell & Shirk, 2007; Koster et al., 2015). Positivity, empathy, and novel thinking may be enhanced by overcoming psychological trauma and times of distress (K. Hobbs, personal communication, March 8, 2018; Parameshwar, 2006; Waugh & Koster, 2015; Westbrook & Viney, 1982). Future researchers should focus on remittent depression and the interaction with other variables such as creativity, sociality, and psychological resilience. Additionally, the effectiveness of employees with remittent depression compared to their undiagnosed counterparts should be examined.

The diagnosis of MDD is not a life sentence. According to Whiteford et al. (2013), spontaneous remission from depression is high, with 53 percent of people reporting the dissipation of depressive symptoms within a year. But for many, such symptoms ebb and flow with time and MDD may be experienced for several years. Depression is complex— it can be seasonal, episodic, or continuous, and it can remit and return (Whiteford et al., 2013). Every individual with MDD has a unique relationship with it and
experiences both positive and negative consequences associated with its diagnosis. Given that MDD is a vague clinical term used to describe past or present symptoms and may incorrectly imply occupational deficiency, employers should consider the downside of including voluntary self-disclosure of one’s mental-health history as part of the hiring process, namely, that it will likely harm the candidate’s chances of being seriously considered for the job. The issue lies not with the candidate’s decision to check the box or to leave it empty but in the fact that the box exists in the first place. The EEOC requires that each employer give potential applicants a fair chance of getting a job, but voluntary self-disclosure statements may be self-defeating for both applicant and employer.

The ADA allows for the reasonable accommodation of mental or physical impairment. If the applicant suffers from MDD to the extent that accommodation should be provided, that information should be disclosed in a more personal setting (such as a job interview or one that takes place after the applicant is hired). Otherwise, checking a box may elicit the employer’s stigmas, misconceptions, and self-interest in a manner that will get in the way of providing an equal opportunity to all applicants and employees, including those who suffer (or have suffered) from depressive symptoms. After all, it may be that such candidates provide benefit to the workplace by transforming their disorder into personal and corporate success.

“Rock bottom became the solid foundation on which I rebuilt my life.”

-J.K. Rowling
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Appendix

Figure 1. Graphical representation of self-disclosure of a diagnosis of MDD by adult job applicants. Fifty-eight percent of U.S. respondents did not disclose the diagnosis in their application. The graph on the right indicates the reasons given by those who did not report the diagnosis. Adapted from “Survey: 23 Percent of Workers Diagnosed with Depression,” by B. Leonard, 2014.
The Impact of Mindfulness Training on Competitive Athletic Performance

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Abstract

The impact of mindfulness training on athletic performance is an area of growing interest for researchers, sport psychologists, and athletes. The aims of the current literature review are to compare the performance benefits of mindfulness training to those of the more traditional psychological skills training (PST) and to examine the relationship between mindfulness and the construct of flow. The reviewed literature shows that mindfulness training may help athletes to improve both subjective and objective measurements of performance, their ability to practice mindfulness techniques, and their performance in game situations. Comparatively, athletes practicing PST showed improvements in practicing PST techniques, in subjectively measured performance, and in practice situations, but research is limited in showing improvements of objective performance and in-game performance situations. Further, several studies have shown a relationship between mindfulness techniques and the ability to achieve flow in athletic competition. Such evidence suggests that mindfulness training may be more effective than other training techniques in improving athletic performance.

Keywords: flow, mindfulness training, PST
The potential impact of the mind on athletic performance has become a subject of great interest among researchers (Cook & Fletcher, 2017; Kornspan, 2012; Tod, Hutter, & Eubank, 2017). Because of this fairly recent increase in interest, sport psychology, or the study of the impact of the mind on sport performance, is still a relatively young field of study (Cook & Fletcher, 2017; Gardner & Moore, 2007; Goodman, Kashdan, Mallard, & Schumann, 2014). Even so, researchers and psychologists are developing promising psychological techniques to enable athletes to perform at their maximum potential. One of these promising techniques is known as mindfulness training (Birrer, Röthlin, & Morgan, 2012; Gardner & Moore, 2007).

Mindfulness is a construct that has grown out of Eastern meditation techniques and is just now beginning to be embraced by the Western medical world for its perceived positive impact on well-being (Bernier et al., 2009; Gardner & Moore, 2012). As mindfulness grows in popularity in medical circles, more and more sport psychologists have started applying its tenets to the realms of competition. Mindfulness, as a construct, can be summarized as the ability to turn one’s full focus to the current moment (Bernier et al., 2009; Gardner & Moore, 2012). In the process of mindfulness, attention is given to physical stimuli as well as to visual and acoustic cues (Bernier, Thienot, Codron, & Fournier, 2009; Gardner & Moore, 2012; Goodman et al., 2014; Röthlin, Birrer, Horvath, & grosse Holtforth, 2016). Thoughts are allowed to flow in and out of the mind without being judged as “good thoughts” or “bad thoughts,” which limits the ability of a thought to produce an emotional reaction in the thinker (Bernier et al., 2009; Röthlin et al., 2016).

The most common methods and ideologies of sport psychology are centered on principles of psychological skills training (PST). Psychological skills training involves a consistent and systematic effort to control one’s thoughts and emotions (Weinberg & Gould, 2015). Röthlin et al. (2016) suggest that PST consists of four main tenets. The first tenet is the use of visualization or imagery, which involves the recollection or deliberate imagining of an athletic
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event by an athlete in an effort to prepare necessary mental and physical responses. The second tenet is positive self-talk, which is used to combat negative thinking. The third is goal setting, which generally means making a plan in order to accomplish a certain end. The fourth is arousal regulation, which uses techniques such as relaxation to enable athletes to calm themselves down when too aroused. Gaining control over one’s thoughts and emotions seems to be the main goal of PST in sport psychology. Mindfulness training (MT), on the other hand, takes a different approach. A mindful approach to competition places comparatively less focus on things such as imagery and self-talk (Bernier et al., 2009; Gardner & Moore, 2012; Goodman et al., 2014, Röthlin et al., 2016). The goal of mindfulness is not to take control of one’s thoughts and emotions. Rather, athletes center their efforts on engaging in the moment and allowing their thoughts and emotions to flow through their mind without judgment (Gardner & Moore, 2017). They shift their focus from internal processes, such as thoughts and emotions, to external processes, like catching a pass or playing defense. To understand the differences between PST and mindfulness training, it may be helpful to imagine the cognitive processes of a fielder in baseball when a ball is hit towards him or her. In preparing to field the ball, a fielder trained in PST may begin to think to him or herself, “I can do this. I am ready for this. I will pick up the ball cleanly and make a good throw to first to get the runner out.” The player will seek to block negative thoughts and control emotions. By contrast, an athlete trained in mindfulness will be more focused on visual and acoustic cues and will strive to keep a clear mind. The mindful athlete may watch the pitch and listen for the crack of the bat, notice his or her own body movements as he or she approaches and fields the ball, then notice his or her grip on the ball before throwing it to first base. The athlete does all of this while maintaining a calm and clear mind. Recent studies have suggested a broader range of positive results in the performance of those who take a mindful approach into competition as compared to those using the traditional PST model (Bernier et al., 2009; Gardner & Moore, 2017). Some studies
have suggested that athletes who are trained in mindfulness are better able to achieve a state of flow in their competitive events (Aherne, Moran, & Lonsdale, 2011; Cathcart, McGregor, & Groundwater, 2014). Flow is a construct that has been loosely defined as the state of being completely absorbed in the current task (Csikszentmihalyi, 1997) and is almost always reported with improved performance (Aherne, Moran, & Lonsdale, 2011). Athletes often experience flow in their best performances and refer to it as “being in the zone.” This is another appropriate characterization of flow. The understanding of which methods and practices lead to a greater frequency of flow experiences is the goal and desire of all serious athletes and sport psychologists (Kimiecik & Stein, 1992).

Although common psychological training techniques like PST can contribute to the successful performance of athletes, mindfulness training is a technique that could provide a comparatively greater benefit to athletes because of its ability to help athletes better achieve a state of flow and thus improve their overall performance. The present literature review will (a) examine the constructs of PST and mindfulness training and compare the differences between the two and (b) examine the relationship between mindfulness training and the construct of flow.

**Psychological Skills Training and Mindfulness**

The comparison of psychological skills training and mindfulness training is an area of growing interest in sport psychological research (Birrer, Röthlin, & Morgan, 2012; Goodman et al., 2014; Röthlin et al., 2016). PST is more firmly established and more widely accepted than mindfulness training, mainly because it has been studied for a longer period of time (Birrer, Röthlin, & Morgan, 2012; Kabat-Zinn, 2003). Much about mindfulness training has yet to be learned, but mindfulness training techniques have already shown promise in their ability to help athletes improve performance (Birrer, Röthlin, & Morgan, 2012; Gardner & Moore, 2007). The following sections will describe and compare the current literature regarding the implementation, effectiveness, and limits of the two constructs.
Implementation, Effectiveness, and Limits of Psychological Skills Training

PST has been defined as the use of cognitive and behavioral strategies to improve psychological functioning and overall performance (McCrory, Cobley, & Marchant, 2013), and has proven effective in a variety of areas as a way to develop and strengthen skills necessary to overcome both common human challenges and unique individual struggles (McCrory, Cobley, & Marchant, 2013; O’Donohue, Ferguson, & Pasquale, 2003).

The core principles of PST are goal setting, imagery, self-talk, and arousal regulation (Röthlin et al., 2016). Different researchers and sport psychologists occasionally add to this list or emit one or more of these strategies in administering training, but generally, these four strategies are consistent across the discipline (Horn, Gilbert, Gilbert, & Lewis, 2011; McCrory, Cobley, & Marchant, 2013; Patrick & Hrycaiko, 1998; Thelwell & Maynard, 2003). Goal setting is typically implemented by inviting the client to determine his or her desired outcomes in competition and in training. The client and the practitioner can then categorize goals by date of expected completion (long-term or short-term) and by whether the goal is outcome oriented or task oriented (Patrick & Hrycaiko, 1998; Thelwell & Maynard, 2003). Imagery is presented as the creation of vivid mental scenarios that show the client succeeding in his or her athletic event. Sport psychologists commonly teach that the ability to create these scenes will improve with time and practice (McCrory, Cobley, & Marchant, 2013; Patrick & Hrycaiko, 1998). Self-talk is taught as the stopping and rejecting of negative thoughts and the deliberate proliferation of positive and encouraging ones (McCrory, Cobley, & Marchant, 2013; Patrick & Hrycaiko, 1998). A common way that arousal regulation can be achieved is through relaxation techniques, which vary in their implementation more than the previous three strategies. However, common relaxation themes include controlled breathing and the use of Progressive Muscle Relaxation (PMR), a process in which large muscle groups are individually targeted and deliberately relaxed (Patrick & Hrycaiko, 1998; Thelwell & Greenlees, 2001).
The impact of PST on athletic performance has been and continues to be studied in depth by a wide range of researchers. The most common improvement in performance found in the reviewed literature was lowered average times reported in timed events, such as distance running or triathlon (Patrick & Hrycaiko, 1998; Thelwell & Greenlees, 2001). Other typical improvements found were increased ability and consistency of athletes to implement PST strategies in their performance (Horn et al., 2011; Patrick & Hrycaiko, 1998, Thelwell & Greenlees, 2001; Thelwell & Maynard, 2003). While PST has shown some positive benefits in performance, its efficacy in all sports and performance conditions has come under question (Gardner & Moore, 2007).

Another hole in current literature is the lack of data taken from situations where athletes are competing in in-game situations, as opposed to data taken from practice situations. One would assume that athletes desire for practicing PST would be to improve their performance in both practice and in-game situations. Studies have reported improvements in objective measures of performance with PST but mainly in practice situations (Patrick & Hrycaiko, 1998; Thelwell & Greenlees, 2001). Studies that incorporated data taken from higher-pressure game situations showed improvement only in subjective measures like comfort or self-efficacy, while objective measures, like batting average or completion percentage, showed no significant change (Horn et al., 2011; Thelwell & Maynard, 2003). For PST to be considered more effective, it should yield consistent objective results in competitive situations (Birrer & Morgan, 2010).

**Implementation, Effectiveness, and Limits of Mindfulness Training**

Mindfulness is the practice of focusing one’s attention on current physical sensations, thoughts, feelings, and audible and visual stimuli in an accepting manner without judging, reacting to, or elaborating on said sensations, thoughts, or feelings (Bernier et al., 2009; Gardner & Moore, 2012; Goodman et al., 2014, Röthlin et al., 2016). Mindfulness in athletic competition is a developing field of study. The earliest reviewed article came
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from Wolanin (2005) and discussed the efficacy of a mindfulness-based intervention in enhancing the performance of various collegiate athletes, while the majority of related articles have come from the past decade. Because of this, the characteristics of mindfulness are not yet as well defined as those of PST, but one can still identify common threads running through mindfulness-based treatments (Gardner & Moore, 2012; Kabat-Zinn, 2003). The first, and one of the most prevalent characteristics of mindfulness-based approaches is the idea of acceptance. In contrast to PST, mindfulness training places a strong emphasis on nonjudgmental awareness and acceptance, meaning that athletes do not view their individual internal states as good, bad, right, or wrong, but rather accept these states as they are (Bernier et al., 2009; Gardner & Moore, 2012; Goodman et al., 2014; Röthlin et al., 2016). Internal processes, such as thoughts or emotions, are considered passing events rather than concrete realities (Bernier, Thienot, Codron, & Fournier, 2009; Gardner & Moore, 2012; Röthlin et al., 2016). The second common emphasis in mindfulness training is a focus on task-relevant cues or stimuli. This second emphasis relies somewhat upon the first. It stems from the idea that if attention is centered less upon internal processes, it can be centered more upon relevant external cues (Gardner & Moore, 2012; Röthlin et al., 2016). The third common emphasis in mindfulness training is the maintaining of a personal, values-driven commitment to one’s athletic endeavor. This means that athletes find fulfilment in their individual events that goes beyond simply winning a match or scoring the most baskets (Gardner & Moore, 2012).

As is to be expected from such a young field, the body of literature treating the relationship between mindfulness and improved athletic performance is relatively small; nevertheless, the existing studies give reason to believe that mindfulness training in sport psychology is a promising field of study (Gooding & Gardner, 2009; Gross et al., 2018; Perry et al., 2017; Pineau et al., 2014; Wolanin, 2005). As was the case with many PST studies improving PST capacity (Horn et al., 2011; Patrick & Hrycaiko, 1998, Thelwell & Greenlees, 2001; Thelwell & Maynard, 2003), those engaged in
mindfulness training studies improved their abilities to achieve a state of mindfulness. This led to improved self-esteem, more positive responses to negative emotion, and greater tolerance of undesirable internal experiences (Goodman et al., 2014; Pineau et al., 2014). Two studies showed significant improvement in subjectively measured athletic performance (Goodman et al., 2014; Wolanin, 2005), while two more showed significant improvement in objectively measured performance (Gooding & Gardner, 2009; Perry et al., 2017), with a third showing objective improvement that failed to reach statistical significance (Gross et al., 2018). These last three studies that showed objectively measured improvement in performance highlight the scarcity of these types of studies in PST literature.

Current holes in mindfulness training literature are similar to those in PST literature. Although some studies have shown significant objective improvement in competitive settings (Gooding & Gardner, 2009; Perry et al., 2017), much still remains to be studied in this area. A greater focus on objective data may call greater attention to this field of study from those in the discipline. The sports that are studied also vary widely from study to study (Gooding & Gardner, 2009; Pineau et al., 2014; Perry et al., 2017; Wolanin, 2005). Because different sports pose different challenges and require unique adjustments, researchers may want to focus research on one or two sports at a time. Mindfulness training techniques have been studied in a wide variety of participants (Thelwell & Maynard, 2003; Aherne, Moran, & Lonsdale, 2011; Bernier et al., 2009; Cathcart, McGregor, & Groundwater, 2014; Wolanin, 2005). Different skill levels may benefit more or less from mindfulness training. Future researchers could investigate whether or not the impact of mindfulness training varies with the skill level of the athletes receiving the training.

**Psychological Skills Training Compared to Mindfulness Training**

Clearly, many similarities exist between the results of PST and mindfulness training studies. Both types of training improved the ability of the subjects to better practice the techniques they
were trained in (Goodman et al., 2014; Horn et al., 2011; Patrick & Hrycaiko, 1998; Pineau et al., 2014; Thelwell & Greenlees, 2001; Thelwell & Maynard, 2003) and both led to significant improvement in subjectively measured areas of performance (Goodman et al., 2014; Horn et al., 2011; Thelwell & Maynard, 2003; Wolanin, 2005). However, two compelling areas of difference are improvement in objectively measured performance and improvement in competition settings. Few PST studies showed significant findings in these two areas, while considering the short time mindfulness studies have been performed, they have shown comparatively more significant results in these areas (Gooring & Gardner, 2009; Perry et al., 2017). Röthlin and colleagues (2016) are the first researcher to have proposed a randomized controlled trial study to compare the effects of PST and mindfulness training on functional athletic performance in competition in the same study. More studies, such as the one proposed by Röthlin et al. (2016), that directly compare these two constructs in specific situations may further our knowledge of their comparative benefits in areas of objective performance, subjective performance, and competitive performance.

**Mindfulness and Flow**

One more promising area of study is the connection of mindfulness training to the construct of flow. Flow is a mental state characterized by one’s complete mental absorption into a present task (Aherne, Moran, & Lonsdale, 2011; Bakker, Oerlemans, Demerouti, Slot, & Ali, 2011; Bernier et al., 2009; Cathcart, McGregor, & Groundwater, 2014; Csikszentmihalyi, 2000; Jackson & Marsh, 1996; Kee & Wang, 2008; Perry et al., 2017; Pineau et al., 2014). Csikszentmihalyi (2000) describes nine essential areas that contribute to a state of flow: (a) challenge-skill balance, which means that one’s perceived skills are adequate to overcome perceived challenges; (b) action-awareness merging, which is described as losing awareness of one’s self as being separate from the actions that one is performing; (c) clear goals; (d) unambiguous feedback; (e) concentration on the task at hand; (f) sense of control; (g) loss of self-consciousness; (h) transformation of
time; and (i) autotelic, or intrinsically rewarding, experience. Flow is a state that is highly coveted by virtually all athletes because of its capacity to increase overall enjoyment of competition and to positively impact athletic performance (Bakker et al., 2011; Jackson & Marsh, 1996). While flow is not experienced solely in athletic endeavors (Jackson & Marsh, 1996; Perry et al., 2017), its relationship with athletic performance and mindfulness is relevant to the current literature review.

Recent studies have started to show a positive correlation between flow and mindfulness (Aherne, Moran, & Lonsdale, 2011; Bernier et al., 2009; Cathcart, McGregor, & Groundwater, 2014; Csikszentmihalyi, 2000; Kee & Wang, 2008; Perry et al., 2017; Pineau et al., 2014). With flow being considered the ideal competitive state (Jackson & Marsh, 1996), increasing the frequency and quality of flow experiences could help improve competitive athletic performance. Studies performed by Kee (2008), Cathcart (2014), and Pineau et al. (2014) have each shown a link between mindfulness and flow; however, mindfulness training was not an integral part of these studies. Rather, mindfulness was viewed as a trait instead of a skill that can be taught and learned. Approaching mindfulness as a trait allows less room for the potential improvement of one’s capacity to use mindfulness techniques. Aherne (2011) and Bernier et al. (2009) on the other hand, incorporated mindfulness training into their studies. Their data showed that those who received mindfulness training were able to experience greater flow in their respective events. This suggests that mindfulness can indeed be taught, learned, and help improve flow. Further research needs to be done, but such findings can greatly impact the future of sport psychology by allowing athletes more frequent opportunities to experience the ideal mental state for competition.

Conclusion

While further study is necessary, the current research suggests that mindfulness training offers comparatively greater benefits to athletes than does PST by helping athletes to achieve a state
of flow and improve performance in objective measures and in competitive settings. Mindfulness training is a potentially powerful new technique in the world of sport psychology that has proven effective in helping athletes to improve their competitive athletic performance. It is a practice in its infancy that differs in both application and outcome from traditional sport psychology practices such as PST, and much has yet to be learned regarding its implementation. Nevertheless, current research shows that mindfulness training could make vital contributions to help athletes improve subjectively measured and in-game performance, both of which are areas that appear to have limited support from more traditional PST studies (Aherne, Moran, & Lonsdale, 2011; Bernier et al., 2009; Cathcart, McGregor, & Groundwater, 2014; Csikszentmihalyi, 2000; Gooding & Gardner, 2009; Kee & Wang, 2008; Perry et al., 2017; Pineau et al., 2014). Continued studies involving competition settings and objective measurements will further validate the use of mindfulness as common practice among practitioners and athletes. Practitioners and athletes may want to begin considering how they might incorporate mindfulness training into their services and training routines as a way to improve competitive athletic performance.

References


Personality and Coping

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Abstract

Everyone experiences stress. The way in which people handle stress is classified as coping. Using the five-factor model of personality, coping strategies can be predicted based on a person’s personality type. Research shows that those with higher N levels do not cope effectively, often choosing to avoid conflict and stress. The other four personality types tend to use approach-focused coping strategies, although there are exceptions within each category. Those with higher E, O, and A levels use social coping strategies that often lead to positive and successful outcomes. Higher O levels have been correlated with the ability to adapt from situation to situation. Research also indicates that those with higher C levels approach stressors through logic rather than support seeking in social settings. The ability to predict and understand coping strategies based on personality could be foundational in positive changes within the field of clinical therapy and ultimately help people improve their lives by teaching them alternative ways to cope based on their personality type.
Stress is an inevitable part of people’s lives (Jensen-Campbell, Gleason, Adams, & Malcolm, 2003). Whether that stress comes from external pressures, internal frustrations, daily nuances, or any other of the many possible sources, it’s something that heavily influences people worldwide. Stambor (2006) found that over half the working class, and 47% of all Americans, were concerned with the amount of stress they experienced on a day-to-day basis. Similarly, Beiter et al. (2015) reported that “seven out of ten United States adults claim to experience stress or anxiety at least at a moderate level on a daily basis” (p. 1). According to Beiter et al. (2015), these percentages are likely to rise in coming years.

The way people manage stress is referred to as coping (Folkman, 2013). Although coping has been defined differently throughout the years, Markovic, Rose-Krasnor, and Coplan (2013) explained that coping is any response to internal or external stressors. There are many strategies that can be used to respond to such a stressor; however, most can be broken down into two categories: “Approach-focused, which reflects efforts to deal with stressors directly (e.g., seeking social support, problem-solving); and avoidance-focused, or efforts to avoid stressors or control their emotional impact (e.g., self-blame)” (Roberts & Mroczek, 2013, p.4; Graziano & Eisenberg, 1997).

Just as coping has been defined differently throughout the years, personality has been equally debated by philosophers and psychologists alike (Uher, 2017). Connor-Smith (2007) defined personality as “patterns of thoughts, feelings, and behaviors over time and across situations” (p. 2). Carver (2010) defined it as “the dynamic organization […] that underlie [a] person’s patterns of actions, thoughts, and feelings” (p. 3). Roberts (2008) defined it as “the relatively enduring patterns of thoughts, feelings, and behaviors that distinguish individuals from one another” (p. 1). Although the definitions may vary slightly, each is comprised of the necessary elements of thought, feeling, and behavior. In 1932, McDougall proposed a theory indicating that personality was comprised of five essential factors (Digman, 1990). Over time his theory developed into what is now called the five-factor model of
personality, colloquially known as the Big Five. This five-factor model separates elements of a person’s thoughts, feelings, and behaviors into 5 categories: Neuroticism (N), Extraversion (E), Openness (O), Agreeableness (A), and Conscientiousness (C). Various studies have been completed testing the validity of the Big Five, and the model has continuously showed positive results (Brokenau & Ostendorf, 1990; Davaraj, Easley, & Crant, 2008). Because of the reliability of the five-factor model, it will be used in this article as the basis of personality.

Analyzing and comprehending personality is fundamental in understanding and predicting coping strategies. Personality has been shown to be a foundational factor in determining whether a person will use coping strategies that lead to empathy, problem-solving, and cognitive reframing, or to self-blame, avoidance, and withdrawal (DeLongis & Holtzman, 2005). Understanding and predicting such reactions could aid in creating an accurate awareness of a person’s coping strategies, which could then assist them in developing healthier and more effective coping strategies in the future. This is made possible by first analyzing the existing literature in order to determine how coping strategies vary based on higher levels achieved on the five-factor model of personality.

**Neuroticism (N)**

Those who score higher in N are more likely to experience negative emotions (Lee-Baggely, Preece & DeLongis, 2005). They are often more anxious, self-conscious, moody, and prone to depression, having higher levels of anger and paranoia in comparison to those with lower N levels (Roberts & Mroczek, 2008; Lee-Baggley, Preece & DeLongis, 2005). Higher N levels are also tied to lower job performance and satisfaction, as well as negative career expectancy, which has been shown to have lasting negative emotional effects on workers who score higher in N (Roberts & Mroczek, 2008; Neal, Yeo, Koy & Xiao, 2012). Those with higher N levels also experience more stressful events and tend to feel more negatively affected and distressed while experiencing stressful events (Vollrath & Torgersen, 2000).
Lee-Baggley et al. (2005) studied 71 married couples from a stepfamily context, meaning that each couple that participated had either been married previously or had had children with a previous partner. Stepfamilies were used because “on average, those in stepfamilies face both higher levels of stress and a greater variety of stress than do those in first-marriage families” (Lee-Baggley, et al., 2005, p. 9). Couples were used because individuals within a couple often have different personalities and subsequently cope differently than one another, even when experiencing the same stressor. As part of the study, each person was interviewed individually and then asked to fill out daily journal entries for two years, relating the stressors their family experienced and how both they and their partner responded to the stressors they experienced. Each couple was interviewed prior to beginning their journal entries to determine the participants’ personality using the NEO-FFI Personality Inventory.

The results from the study completed by Lee-Baggley et al. (2005) were consistent with the finding from similar studies. Due to the overall negative emotions they experienced, those with higher N levels coped in predominantly ineffective ways. One of the principle reasons behind the use of ineffective coping strategies lies in the tendency of those with higher N levels to use avoidance techniques when facing stressors (Lee-Baggley et al., 2005). Ayers, Sandier, Sest, and Roosa (1996) stated the following:

Avoidant responses are indirect methods [that] reflect cognitive or behavioral attempts to avoid thinking about a stressor or its implications, to accept or resign oneself to an existing situation, to seek alternative rewards, or to try to manage tension by expressing it openly. (p. 2)

The characteristics of avoidance, resignation, blame (of self or others), over-emotionality, confrontation, and withdrawal are all made evident when testing those with higher N levels. This leads to lower levels of problem-solving and ineffective coping abilities due to the avoidant techniques subsequently developed (Lee-Baggley
et al., 2005; DeLongis & Holtzman, 2005). It’s important to note that those with higher N levels don’t lack the ability to cope; they simply tend to do so in ineffective ways.

**Extraversion (E)**

Those with higher E levels are predominantly social and outgoing people. Subsequently, the characteristic of E is most dominant in social settings such as group work (Neal et al., 2012). Those with higher E levels value close relationships and tend to enjoy maintaining a relatively active lifestyle (Devaraj, Easley, & Crant, 2008). They also tend to experience both more stressful events and more pleasurable ones, indicating that they are often emotionally invested people (Vollrath & Torgersen, 2000). Those with higher E levels have been found to be more assertive, warm, cheerful, and energetic when compared to other personality types and usually demonstrate a greater ability to adapt from situation to situation (Lee-Baggley et al., 2005; Neal et al., 2012). Carver and Connor-Smith (2010) explained that “sometimes [E] is based in assertiveness, sometimes in spontaneity and energy. Sometimes [E] is based in dominance, confidence, and agency, sometimes in a tendency toward happiness” (p. 18). In spite of possible differences in definition, E is fundamentally rooted in the same social elements of personality.

DeLongis and Holtzman (2005) completed a study in which 88 couples from a stepfamily context were interviewed and then sent weekly questionnaires for a period of two years. One person from each couple was suffering from severe rheumatoid arthritis. DeLongis and Holtzman (2005) used couples and stepfamilies for the same reason as Lee-Baggley et al. in their 2005 study. However, DeLongis and Holtzman (2005) used couples in which one participant suffered from an incurable, painful, and life-threatening disease in an attempt to have a more extreme and therefore clear result in determining exactly how coping related to personality.

What they discovered is that those with higher E levels engage in active and effective approach-focused coping strategies (DeLongis & Holtzman, 2005). One such approach-focused strategy
is demonstrated in their tendency to seek out social support in their coping efforts while simultaneously taking personal responsibility for their actions (Vollrath & Torgersen, 2000; DeLongis & Holtzman, 2005; Lee-Baggley et al., 2005). Those with higher E levels can adapt to their surroundings through efficient problem-solving strategies and cognitive reframing, including the ability to think positively (even when facing challenging stressors such as divorce), reinterpret meaning, substitute negative emotional responses for more positive ones, or by demonstrating restraint (Lee-Baggley et al., 2005). Especially when tested in a familial setting, higher E levels led to both an increase in personal responsibility and in the ability to compromise (DeLongis & Holtzman, 2005).

**Openness (O)**

Those with higher O levels are most commonly motivated by new or exciting experiences. They often seek out change, diversity, unconventional ideas, and variety in order to facilitate an atmosphere where new experiences are made possible (Devaraj et al., 2008). Those with higher O levels have been found to respond empathetically to those they feel close to, implying that they are just as open with others as they are with themselves (Lee-Baggley et al., 2005). Additionally, those with higher O levels are known for their curiosity, openness of mind, imagination, innovation, adaptability, and flexibility of thought. Researchers have yet to determine whether these characteristics result from a desire to experience new things or are the motivators that inspire those with higher O levels to seek out new experiences. (Neal et al., 2012).

The desire to seek out new experiences plays a crucial role in the coping strategies of those with higher O levels. Whether that role is positive or negative depends on the situation, person, stressor, etc. Carver and Connor-Smith (2010) explained that those with higher O levels often use positive coping strategies such as considering new perspectives, avoiding withdrawal, and engaging in cognitive restructuring, positive reappraisal, and problem solving. They also respond by using strategies such as humor and preemptive
planning should a stressor arise (Lee-Baggley et al., 2005). Those with higher O levels, however, also utilize negative coping strategies such as wishful thinking (Carver & Connor-Smith, 2010).

Unfortunately, research is limited as to what coping strategies are most often used by those with higher O levels. However, it has been found that they adapt and cope in creative ways. It is in part due to this creativity and diversity of coping strategies that has made it difficult to find definitive results thus far (Lee-Baggley et al., 2005).

Agreeableness (A)

Those with higher A levels are similar to those with higher E due to their mutual tendency to seek out social interaction. Those with higher A levels are focused on the needs of the people around them, showing characteristics such as kindness, courteousness, and tolerance (Carver & Connor-Smith, 2010; Devaraj et al., 2008). They also tend to be more trusting, cooperative, helpful, and likable (Neal et al., 2012). A unique trait found in most people with higher A levels is their tendency to adopt altruistic perspectives, which in turn not only affects the way they view the world but also the coping strategies they use (Lee-Baggley et al., 2005).

The strong social networks built by those with higher A levels influence whether they use approach-focused or avoidant-focused coping strategies. (Lee-Baggley, Preece, & DeLongis, 2005). Those with higher A levels seek the support and involvement of others when confronting personal stressors, indicating approach-focused coping strategies (DeLongis & Holtzman, 2005). Additionally, those with higher A levels tend to cope using positive reappraisal and effective problem solving, often preemptively planning which coping strategies to use. However, those with higher A levels typically desire to avoid confrontation in social settings, indicating avoidant-focused coping strategy. Researchers have theorized that the desire to avoid confrontation could be a rare example of when avoidant-focused coping strategies lead to potentially positive outcomes (Lee-Baggley et al., 2005).
Conscientiousness (C)

Those with higher C levels are predominantly categorized by their awareness of their surroundings. Higher C levels have been shown to demonstrate high motivation, determination, self-discipline, reliability, and organization (Lee-Baggley et al., 2005). Devaraj et al. (2008) explained that those who have higher C levels are intrinsically motivated, which often leads to a higher level of achievement, persistence, proficiency, and self-control. Because of this intrinsic motivation, and the goal-oriented nature of those with higher C levels, they are often sought after in workplace settings (Devaraj et al., 2008). Additionally, those with higher C levels demonstrate the ability to plan effectively, show higher levels of responsibility, and control impulses (Carver & Connor-Smith, 2010).

Just as those with higher C levels tend to be more disciplined and proficient by nature, they cope using similarly organizational and problem-focused techniques. Those with higher C levels tend to participate in active, approach-focused coping strategies (Vollrath & Torgersen, 2000). Unlike many of the other personality types that use social factors in order to effectively approach stressors, those with higher C levels approach stress through logic, problem-solving, disengagement of negative thoughts, planning, positive reappraisal, and task-related efforts (Carver & Connor-Smith, 2010; Lee-Baggley et al., 2005). Those with higher C levels also have a tendency, however, to use the coping strategy of self-blame, especially in dealing with interpersonal stress (DeLongis & Holtman, 2005).

Discussion

Coping strategies vary based on the levels achieved on the five-factor model of personality. Research shows that those with higher N levels do not cope effectively, often choosing to avoid conflict and stress. The other four personality types tend to use approach-focused coping strategies, although there are exceptions within each category. Those with higher E, O, and A levels use social coping strategies that often lead to successful and positive outcomes. Higher O levels have been correlated with the ability to adapt from...
situation to situation. Research also indicates that those with higher C levels approach stressors through logic rather than support seeking in social settings.

Understanding the ways coping strategies differ based on personality type can expand the field of clinical psychology and provide a way for psychologists to predict and improve their clients’ cognitive, behavioral, and emotional responses to stress. Although some personality types, such as N, tend to utilize negative coping strategies overall, there are active and healthy strategies within each of the five personality types that can be developed. If clients were taught to utilize these positive coping strategies (within their perspective personality types) it could lead to more effective outcomes within therapy. More research should be done to test if significant improvement can be made to the psychological stability of clients when attempts are made to manipulate the coping strategies they utilize.

The majority of the research thus far has focused on those who score significantly higher in one of the five outlined personality types. Most people, however, are a mix of several personality types (Vollrath & Torgersen, 2000). Indicating that although the research completed thus far has the potential to help those who score higher in one personality type, more research would need to be done in order to help the majority of people who score higher in two or more of the five personality types within the five-factor model. This is most likely to be accomplished by testing coping strategies of every possible combination of personality types, similar to the work started by Vollrath and Torgersen (2000). Until then, only a small percentage of the population can benefit from the findings outlined previously.

Additionally, the majority of research thus far has been conducted in regard to the personality types of N and E. This is primarily due to the belief that they’re easier to recognize, in that O and A are often detectable only when in groups, and C is difficult to detect unless in solitude. However, if more research could be done explicitly testing the coping strategies of the personality types of O, A and C, the results would likely have as equally
impactful implications as the research regarding N and E has thus far demonstrated. This research would allow us to more fully comprehend the ways in which people cope based on personality, and subsequently prepare us to assist others in dealing with the vast stressors of life.

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Dimensions of Symptom Presentation and Scholarly Representation of Young Females with Fragile X Syndrome

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Abstract

Females with Fragile X Syndrome (FXS), an X-linked neurodevelopmental disorder, receive little representation in scientific literature. This has resulted in inadequate developmental norms. The primary aims of this systematic review are (a) to identify the primary dimensions of symptom presentation for females with FXS and (b) to provide quantitative evidence for their underrepresentation. Twenty-four articles were reviewed for information on symptom presentation, and the sample sizes for males in females in each study were recorded. The main dimensions of symptom presentation were Intellectual Ability (IA), Autistic Features (AF), and Anxiety and Other Comorbidities (AOC). Females with FXS have symptoms of varying severity within these dimensions. The observed representation of males and females was assessed using a chi-square test of independence, with expected values based on widely accepted prevalence estimates. The results revealed significant differences between the observed and the expected values, providing evidence for the underrepresentation of females with FXS. Future studies can test the reliability of the tri-dimensional model of FXS symptomology and use larger samples of females to create accurate developmental norms for this population.

Keywords: Females, Fragile X Syndrome, childhood, symptoms, development
Fragile X Syndrome (FXS) is an X-linked neurodevelopmental disorder with a known single-gene permutation. The Fragile X Mental Retardation 1 (FMR1) gene contains a series of repeated cytosine-guanine-guanine trinucleotides (Hersh & Saul, 2011; Lee, Martin, Berry-Kravis, & Losh, 2016; Raspa, Wheeler, & Riley, 2017). A typical FMR1 gene has between 6 and 44 of these repeats, but the mutated gene has over 200. This repeat expansion causes methylation, which results in the reduction or absence of the Fragile X Mental Retardation Protein (FMRP), which is necessary for normal brain development (Grigsby, 2016; Hersh & Saul, 2011; Hessl et al., 2009; Lee et al., 2016; Raspa et al., 2017). FXS can severely disrupt functioning during childhood and cause significant distress for parents and caregivers.

Both males and females with FXS can have additional physical and psychiatric symptoms, but these tend to be more discreet in females (Hersh & Saul, 2011). Physical features can include a prominent jawbone, protruding ears, and a long, narrow face (Abrams et al., 2012; Hersh & Saul, 2011). Cognitive functioning is often suboptimal. Males tend to have mild to severe intellectual disability (ID), and females—although better than males—tend to function in the normal-to-borderline region (Hersh & Saul, 2011). Common comorbidities include Autism Spectrum Disorder (ASD), anxiety disorders, Attention-Deficit/Hyperactivity Disorder (ADHD), depression, and communication disorders (Gabis, Baruch, Jokel, & Raz, 2011; Hersh & Saul, 2011; Newman, Leader, Chen, & Mannion, 2015; Raspa et al., 2017). These impairing symptoms often benefit from behavioral therapy and medication; treatment can improve functioning, but, as with other neurodevelopmental disorders, symptoms are unlikely to fully remit.

Although FXS is a relatively rare condition, it profoundly affects FXS carriers by influencing family planning and other life decisions. Recent prevalence estimates suggest that the full FXS mutation is relatively rare, affecting about .014–.027% of males and .009–.014% of females (Grigsby, 2016; Hersh & Saul, 2011).
However, the premutation form of the FMR1 gene—characterized by 50–200 trinucleotide repeats—exists in about .3% of males and about .6% of females (Maenner et al., 2013). The premutation is a concern only because of the strong likelihood that it will expand into a full mutation in subsequent generations, especially when the affected FMR1 gene passes from mother to son (Hersh & Saul, 2011). Although rare, an FXS diagnosis holds serious implications for individuals and families because, in some cases, a single diagnosis could mean that an entire family (including grandparents, aunts, uncles, and cousins) should consider genetic testing and genetic counseling when planning to have children.

Although FXS has received moderate attention in the scholarly literature, the possible sex differences in symptom presentation remain somewhat unclear. The consensus is that females typically function better than males. However, females are often underrepresented in FXS research studies (Hatton et al., 2009). According to the prevalence rates provided by Grigsby (2016) of .014% for males and .009% for females, females should constitute approximately 38.89% of FXS research participants. However, it is possible that a combination of selection bias (e.g., selecting participants from male-dominated groups) and under-detection may result in female underrepresentation in these studies. This is problematic because a small sample of females can reduce statistical power and increase Type II error rates, which can obscure sex differences in symptom presentation; this is also problematic because it could result in a conceptualization of FXS based primarily on the male phenotype, which could cause some females with FXS to remain undiagnosed. The primary aims of this literature review were (a) to identify potential dimensions of symptom presentation (i.e., ID, ASD, and Anxiety) for females with FXS based on the existing literature and (b) to demonstrate the underrepresentation of females with FXS in research studies as a critical methodological flaw that challenges the validity of the existing research.
Method

Articles were selected and reviewed using a systematic methodology described by Postăvaru and Cramer (2016) in the Sage Research Methods database. This method was used to reduce researcher bias. In accordance with this methodology, the aims, objectives, search terms, and inclusion criteria were established before the article search and remained unaltered during the search process. The primary database used in this study was the American Psychological Association database PsychINFO, which deals primarily with psychological and brain sciences. Only one database was used so that the project would be more manageable for a single researcher working toward a strict deadline. The main search terms were Fragile X, development, female OR girl, and childhood. Articles that dealt exclusively with populations other than female children (ages 0 – 12) with FXS were excluded. This age group was selected to differentiate between symptoms presentations in childhood and adolescence. Differences in male and female representation were measured using the number of males and females in each sample as an estimate. I expected that females with FXS would constitute 38.89% of research participants. After these articles were reviewed, all the information relevant to the populations in question, including the samples sizes employed in each study, were included in a formal write-up.

The initial search results yielded 76 articles. After limiting the results to peer reviewed sources that dealt with childhood (ages 0 – 12), as defined by the database, 61 articles remained. After a systematic review of these articles, an additional 38 articles were excluded either because they were inaccessible during the imposed timeframe for data collection (n = 3; including one untranslated article) or because they examined populations other than female children with FXS (n = 35), including articles that examined only males or adults. Twenty-three articles were included in the final write-up.
Results

As a previous review has demonstrated (i.e., Hersh & Saul, 2011), females with FXS exhibited a more diverse symptom presentation than males and had varying levels of impairment. In general, their symptoms could be categorized based on the disorders in which they most often occur: ID, ASD, and Anxiety. These dimensions formed the basis of a tri-dimensional model of symptom presentation in females with FXS. Symptoms of these disorders frequently co-occur, so significant overlap may exist among these dimensions. However, the degree of overlap is unclear. The environmental and biological factors that frequently attend individuals with FXS may combine to create these three dimensions, or the symptoms themselves may combine to produce other symptoms. As Cervantes and Matson (2015) demonstrated, individuals with comorbid ID and ASD possess an increased risk for developing anxiety. Although some females with FXS show little or no impairment in these areas (e.g., Hessl et al., 2009), those who do show impairment tend to have symptoms that fit within these dimensions. Additional research is needed to determine how these dimensions interact in individuals with FXS. A visual representation of this model can be found in Figure A1. It is worth noting, however, that many of these researcher articles had small samples of females with FXS.

Intellectual Disability Dimension

ID is a neurodevelopmental disorder characterized by deficits in intellectual and adaptive functioning, as measured by standardized testing and clinical judgement (American Psychiatric Association [APA], 2013; Ditterline, Oakland, & McGoldrick, 2016). ID affects about 1–1.5% of individuals in the United States and is more common in males (Friedman, Gibson Parrish, & Fox, 2018). Hessl et al. (2009) demonstrated that about 27.2% of females with FXS qualify for mild (16.3%), moderate (8.7%), or severe (2.2%) ID when tested using gold standard measures of intellectual and adaptive functioning. An additional 21.7% fall in the borderline region. In that same study, which had a sample of 83 females with FXS, not
one female qualified for a diagnosis of profound ID, while about 2.2% of males met those criteria (Hessl et al., 2009). Differences in FMRP levels likely explain the differences in ID prevalence between males and females with FXS. Some studies have demonstrated that decreased FMRP levels are associated with deficits in intellectual functioning, and decreased intellectual functioning is associated with deficits in adaptive functioning (Ditterline et al., 2016; Hahn, Brady, Warren, & Fleming, 2015; Hall, Burns, Lightbody, & Reiss, 2008; Hessl et al., 2009). In other words, decreased FMRP leads to deficits in intellectual and adaptive functioning.

**Reduced FMRP and Intellectual Functioning.** The methylation and subsequent silencing of the FMR1 gene can result in the reduction of FMRP in females with FXS, which can lead to abnormal brain development (Hall et al., 2008; Lee et al., 2016). Unlike males with the full FXS mutation, whose silenced FMR1 gene can cause the complete absence of FMRP, females with at least one viable copy of the FMR1 gene can have FMRP levels that approach normalcy (Hall et al., 2008; Kover, Pierpont, Kim, Brown, & Abbeduto, 2013). In individuals without the FXS mutation, about 90–100% of their cells produce FMRP, which can be measured using a blood test, but in females with FXS, these estimates are reduced to about 48–53%, which approximates the expected frequency of 50% (Hall et al., 2008; Kover et al., 2013). Biological sex serves as a protective factor for females with FXS because having a second X chromosome increases the probability of having a viable FMR1 gene that can partially compensate for the mutation, allowing them to have higher FMRP levels than males with FXS, who have only one copy of the FMR1 gene.

Reduced FMRP levels seem to result in cognitive deficits in males and females with FXS. Although the exact function of FMRP remains a mystery, research suggests that aside from playing a role in normal brain development, FMRP may help regulate a metabotropic glutamate receptor commonly found in the dendrites of certain neurons (Halls et al., 2008; Hersh & Saul, 2011; Lee et al., 2016). A moderate positive correlation seems to exist between FMRP levels and intellectual functioning (Hall et al, 2008; Hessl et al.,
Additionally, Kover et al. (2013) found a positive association between FMRP levels and verbal ability, working memory, fluid reasoning, and overall intelligence in children and adolescents with FXS. Both male and female children with FXS tend to score lower on standardized IQ tests compared to the normally developing children with which the tests were normed (Hall et al., 2008; Hessl et al., 2008). However, it is worth noting that in one study that compared females with FXS to a group of females with other developmental disorders, females with FXS scored significantly higher on standardized IQ tests (Ballinger, Cordeiro, Chavez, Hagerman, & Hessl, 2014); this suggests that although reduced FMRP causes females with FXS to score lower than normally developing individuals, their cognitive functioning is still better than that of females with other developmental disabilities.

**Intellectual Functioning and Adaptive Functioning.** FMRP levels may influence adaptive functioning directly, but deficits in intellectual functioning may mediate this relationship. Adaptive functioning refers to the range of abilities that are required for daily living, specifically within the domains of conceptual, social, and practical skills (Ditterline et al., 2016). One of the gold standard measures for adaptive behavior is the Vineland Adaptive Behavior scale, which has a standardized Adaptive Behavior Composite mean of 100 (SD = 15) and four subscales: communication, daily living skills, socialization, and motor skills (Ditterline et al., 2016; Roberts, Weisenfeld, Hatton, Heath, & Kaufmann, 2007). On average, females with FXS score an average of 76 on this measure, demonstrating that many experience deficits in adaptive functioning (Roberts et al., 2007). FMRP levels may indirectly influence adaptive functioning by affecting intellectual ability, which subsequently influences adaptive ability (Hessl et al., 2009). This is understandable, considering that females with FXS tend to show better adaptive functioning than their male counterparts who have reduced FMRP levels (Roberts et al., 2007). Other factors that influence adaptive functioning include the several domains of developmental age: gross and fine motor ability, expressive and receptive language, and...
visual reception (Rogers, Hepburn, & Wehner, 2003). These findings demonstrate that FMRP levels account, both directly and indirectly, for deficits in adaptive functioning in females with FXS.

Both males and females with FXS can experience declines in adaptive functioning between childhood and adolescence, which Hahn et al. (2015) describe as a slower growth rate than same-age peers. For females with FXS, communication—one of the Vineland subscales—was a notable area of decline (Klaiman et al., 2014). However, these declines are not inevitable. Hahn et al. (2015) has demonstrated three possible developmental trajectories for adaptive functioning in children with FXS: (a) steady declines, (b) steady increases followed by declines or plateaus, or (c) steady increases. Together, deficits in intellectual and adaptive functioning can cause enough impairment to warrant an ID diagnosis.

**Autism Spectrum Dimension**

Unlike the ID dimension of FXS symptomology, the ASD dimension is somewhat more difficult to conceptualize, partially because the criteria for ASD are especially diverse. ASD is a neurodevelopmental disorder characterized by fixed interests, repetitive behaviors, and differences in social functioning (Xiao et al., 2014). In children with ASD, a few associated characteristics include avoidance of eye contact, atypical use of gestures, difficulties making friends, hypersensitivity to stimuli, or insistence on routines (APA, 2013). Prevalence estimates for ASD are around 1.47% for the general population, but that rate is significantly increased in children with FXS (Niu et al., 2017). Only about 22.6% of females with FXS meet full diagnostic criteria for ASD, but almost all exhibit at least one autistic behavior (Clifford et al., 2007; Lee et al., 2016; Niu et al., 2017). The literature demonstrated that females with FXS often exhibit deficits in social abilities—specifically with joint engagement, communication, and various challenging behaviors that are associated with ASD.
Social Deficits. Supported and coordinated joint engagement between child and caregiver are necessary social interactions that aid in the development of language, and they are particularly important in females with FXS, who tend to show language deficits from a very young age (Finestack, Sterling, & Abbeduto, 2013; Hahn et al., 2016; Hahn, Zimmer, Brady, Romine, & Fleming, 2014). Supported joint engagement refers to preliminary social interactions in which both the child and the caregiver interact with an object (e.g., a xylophone or music box), but the child does not acknowledge the caregiver’s participation or input (Hahn et al., 2016). Over time, supported joint engagement evolves into coordinated joint engagement, in which the child acknowledges the caregiver’s participation and input; the child might look at the caregiver and gesture for him or her to interact with the object (Hahn et al., 2016). By the time they are six months old, typical infants can engage in regular periods of supported joint engagement with brief intervals of coordinated joint engagement (Hahn et al., 2016). By about 13 months, coordinated joint engagement becomes the norm (Hahn et al., 2016). Children with FXS, including females, have difficulty establishing regular patterns of coordinated joint attention and continue to exhibit predominately supported joint engagement in the toddler period (Hahn et al., 2016). Similar deficits appear in toddlers with ASD, in whom low levels of overall joint engagement are associated with deficits in social communication (Adamson, Bakeman, Suma, & Robins, 2017; Gillespie-Lynch et al., 2012). Similarly, decreased levels of coordinated joint attention are associated with language delays in female toddlers with FXS Hahn et al. 2016; Hahn, Brady, Fleming, & Warren, 2016). Beginning in this stage, females with FXS follow a trajectory that differs from the norm.

In general, language delays and social problems are positively associated with ASD symptomology, especially within the domain of social communication (Roberts et al., 2007). One study that compared females with FXS to their sisters without the mutation revealed that females with FXS had higher levels of social problems
and were more withdrawn (Mazzocco, Baumgardner, Freund, & Reiss, 1998). Aside from joint engagement abnormalities, children with FXS demonstrate irregularities with eye contact. Compared to typically developing children, children with FXS spend less time looking others in the eye, which is one of the hallmark features of ASD (APA, 2013; Farzin, Scaggs, Hervey, Berry-Kravis, & Hessl, 2011; Roberts et al., 2007; Senju & Johnson, 2009). Abnormal eye contact patterns in FXS are associated with increased autistic behaviors (Roberts et al., 2007). Females with FXS can display a wide variety of social problems related to ASD symptomology. As is the case with ID, the symptom severity within the ASD dimension exists on a spectrum.

Repetitive Behaviors and Other Concerns. Although children with FXS can exhibit a variety of repetitive movements, the present literature review did not reveal many examples of such. Aside from deficits in adaptive functioning and social skills, ASD symptoms are associated with an increased prevalence of self-injurious behaviors, repetitive movements, and ADHD (Hatton et al., 2009; Newman et al., 2015; Roberts et al., 2007; Langthorne & McGill, 2012). Baranek et al. (2005) found that about 80% of children with FXS engage in leg stereotypies (i.e., repetitive leg movements), which is another characteristic of ASD. Langthorne and McGill (2012) found that when children with FXS engage in self-injurious behaviors, about 40% do so as a means of social escape (i.e., to avoid undesirable social situations). They may also present with motor or vocal tics (Gabis et al., 2011). Repetitive behaviors may help perpetuate social problems in children with FXS because abnormal actions or interests may lead to ostracism, but additional research is needed to test this possibility. Females with FXS can exhibit many symptoms that are similar to those found in ASD that may cause similar impairment.

Anxiety and Other Comorbidities Dimension

In addition to ID and ASD, females with FXS often receive a diagnosis of other disorders, such as ADHD, depression, enuresis, encopresis, or anxiety (Gabis et al., 2011). Compared to
males, females with FXS are at greater risk of having both ADHD and depression (Newman et al., 2015). Anxiety disorders are characterized by excessive worry about future events that causes significant impairment (APA, 2013). Anxiety disorders do not have uniform etiologies and prevalence estimates; some are more heritable than others (APA, 2013). About 50% of children with FXS have a specific phobia, and about 31% have social anxiety (Gabis et al., 2011). In the general population, these disorders both have prevalence estimates of about 7% (APA, 2013). Social anxiety is associated with neurobiological factors, such as an increased behavioral inhibition response, while specific phobias are more associated with environmental factors (APA, 2013). This dimension of symptom presentation is a little more difficult to define. Anxiety occurs frequently in females with FXS. Although not as debilitating as the ID and ASD symptoms, the Anxiety and Other Comorbidities symptoms cause significant impairment to females with FXS.

It is likely that the Anxiety and Other Comorbidities dimension, like the ID or ASD dimensions, results from a combination of biological and environmental factors. Some research has demonstrated that individuals with FXS or other developmental disabilities exhibit a reduced amygdala response toward fearful faces compared to typically developing individuals (Ballinger et al., 2014). This reduction may be associated with the increased risk for anxiety (Ballinger et al., 2014). Although this seems counterintuitive, Ballinger et al. (2014) argued that similar findings in twin studies demonstrated that decreased amygdala activity is associated with an increased risk for an anxiety disorder of genetic origin while increased amygdala activity is associated with an increased risk for an anxiety disorder of environmental origin. These findings may suggest that a relationship exists between FMRP levels and amygdala functioning, but additional research is necessary.

**Overall Representation of Females**

As Hatton et al. (2009) has noted, females with FXS are generally underrepresented in studies that examine children with FXS, and this literature review confirms that statement. Two articles
contained only female participants \( (n = 8; \ n = 15) \), and two articles contained duplicate samples. After these were excluded, 19 articles remained, and their samples were included in the final analysis. Using the population estimates for FXS described by Grigsby (2016) of .014% for males and .009% for females, it was estimated that of the 1401 participants included in these journal articles, 856.15 (61.11%) would be male and 544.85 (38.89%) would be female. The actual values were 906 (68.33%) and 420 (31.67%), respectively. The representation of females was 20.16% lower than expected.

A chi-square analysis was calculated to test the fit between the expected and the observed values. The results revealed significant differences in the representation of males and females compared to the population estimates, \( \chi^2(1) = 36.24, p < .001 \). The differences are unlikely due to chance. Despite this significance, the phi coefficient demonstrated a relatively small effect, \( \phi = .16 \). The median number of males and females in each study were 35 and 11, respectively, which also demonstrated that females with FXS tend to be underrepresented in research studies.

The underrepresentation of females in these studies, although relatively small, is potentially problematic because of the methodological flaws that accompany small sample sizes. Over half of the articles used in this study had fewer than 12 females (see Table A1). Aside from yielding poor external validity, small sample sizes can decrease statistical power and increase Type II error rates (Bradley & Brand, 2013). This is especially problematic when studying the differences between two populations because small sample sizes can make true differences difficult to detect. This may have been the case with Farzin et al. (2011), who found no significant differences between males \( (n = 12) \) and females \( (n = 3) \) in the amount of time spent looking others in the eyes. Although the literature suggests that males and females with FXS are different, the extent of those differences is somewhat unclear, which could lead to ineffective intervention strategies.
Discussion

The primary aims of this study were to identify the most common symptom presentations that cause developmental delays in young females with FXS and to demonstrate the underrepresentation of females with FXS in the scientific literature. In a sense, these two aims were mutually exclusive because demonstrating that females are indeed underrepresented would inevitably limit the generalizability of any findings on symptom presentations. The existing literature demonstrates that females have symptoms, and these findings demonstrate a need to clarify the extent of those symptoms.

The present review provides evidence for a tri-dimensional model of symptom presentation, with affected individuals exhibiting different levels of severity (i.e., from severely impaired to normal) within each dimension. As shown in Figure 1, the three dimensions for symptom presentation are Intellectual Ability, Autistic Features, and Anxiety and Other Comorbidities. These names were selected because some of the most impairing symptoms in FXS are related to these three types of disorders. Considering that these symptom sets frequently co-occur in other psychiatric disorders (see APA 2013), significant overlap may exist among these dimensions, but additional research is needed to determine the extent of this overlap.

Within the Intellectual Ability dimension, females with FXS can range from severe ID to normal intellectual functioning, with average standardized IQ and adaptive behavior scores in the borderline region (Roberts et al., 2007). A significant proportion meet criteria for mild to severe ID (Hessl et al., 2009). Within the Autistic Features dimension, females with FXS can exhibit varying degrees of social problems, repetitive movement, and fixed interests (Baranek et al., 2005; Clifford et al., 2007; Klaiman et al., 2014). However, only about one in five receive an ASD diagnosis (Clifford et al., 2007). Within the Anxiety and Other Comorbidities dimension, females can display a range of anxious symptoms or other comorbidities such as depression and ADHD (Gabis et al., 2011; Newman et al., 2015). Further research is needed to establish...
the exact parameters and norms for these domains. This model could be useful because it emphasizes the symptoms that cause the most impairment in children with FXS, which are often what concern caregivers the most (Cross et al., 2016). In other words, this model honors the lived experiences of the individuals who bear the financial and psychological burden of caring for children with FXS.

Aside from summarizing the common symptom presentations in females with FXS, the present review provided evidence of the underrepresentation of females with FXS in the scientific literature. The chi-square goodness of fit test demonstrated that fewer females with FXS than expected were included in these empirical studies—a difference that cannot likely be attributed to chance. Half of the articles in this study had fewer than 12 females, and these small samples may have resulted in decreased statistical power and increased Type II error rates, potentially masking the differences between males and females, but additional research on these sample sizes is necessary. Those studies that used larger sample sizes, and even some of those that used smaller sample sizes, revealed that significant differences existed between males and females, but further investigation into the extent of those differences is recommended. It is possible that current interventions for females with FXS are based on the symptom presentation that is most common in males.

Future empirical studies and metanalyses could use larger samples of both males and females to establish representative norms for both sexes. This would allow for more accurate comorbidity estimates and for tailored interventions that best address the problems faced by males and females with FXS. The tri-dimensional model of symptom presentation in females with FXS could be expanded to include both sexes, and standardized measure could be developed to quantify symptom severity in each. Because the present review examined only the early developmental period, it is possible that females are only underrepresented in this age group. Additional reviews and metanalyses that examine the representation of females with FXS in the scientific literature could use a larger sample of articles with multiple search terms to achieve a more representative sample.
References


**Appendix**

Table A1

*Articles included in this study with their respective sample sizes.*

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<td>Kover, S. T., Pierpont, E. I., Kim, J., Brown, W. T., &amp; Abbeduto, L.</td>
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Figure A1. Dimensions of symptoms most frequently in females with Fragile X Syndrome (FXS). About 27% have Intellectual Disability (ID; Hessl et al., 2009), 22% have Autism Spectrum Disorder (ASD; Clifford et al., 2007), and about 50% have a specific phobia (Gabis et al., 2011).
MDMA-Assisted Psychotherapy for PTSD: A Review of the Literature

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Abstract

Many people suffer chronic, treatment-resistant posttraumatic stress disorder (PTSD). Some treatments, including exposure therapy, may not be effective for some people, and treatment dropout and suicidality are high among people for whom therapy is minimally effective. Thus, researchers are investigating 3,4-methylenedioxymethamphetamine (MDMA)-assisted psychotherapy as a possible treatment for PTSD. MDMA has recently been studied in therapeutic contexts to find out whether its psychedelic effects can significantly benefit people with chronic, treatment-resistant PTSD. Several studies have indicated positive results—both short-term and long-term—following MDMA-assisted psychotherapy for people with PTSD. This review examines some of the published literature about MDMA-assisted psychotherapy, including a meta-analytic comparison of exposure therapy and MDMA-assisted psychotherapy as well as two clinical trials. Evidence present in this literature suggests that MDMA-assisted psychotherapy may reduce symptoms by improving patients' mood, promoting a strong therapeutic alliance, and catalyzing fear memory extinction. Although much more research is necessary to establish its efficacy and safety among a variety of populations, MDMA-assisted psychotherapy appears to be a viable treatment for some people with PTSD.
Effectiveness of psychotherapy, or non-pharmacological treatment for psychological distress and disorders, is contributed to by clients’ openness with therapists, willingness to confront and examine discomfort, and competence in processing emotion (Cloitre, Stovall-McClough, Miranda, & Chemtob, 2004; Doukas, D’Andrea, Doran, & Pole, 2014). For some individuals, psychotherapy involves psychological arousal, such as nervousness in front of a therapist or intense emotion during a discussion about sensitive issues (Doukas et al., 2014; Eftekhar et al., 2013). For a subgroup of clients, however, arousal may rise to an uncomfortable level (Doukas et al., 2014). This kind of arousal—or anxiety—is a symptom of posttraumatic stress disorder (PTSD) and often leads clients to avoid the triggering thought or emotion, because sympathetic nervous system arousal may feel like panic (Amoroso & Workman, 2016). However, despite efforts to suppress triggering memories and feelings of anxiety, they may still often surface. Unpredictable bouts of anxiety can interrupt one’s work performance, personal relationships, and ability to relax or feel safe. PTSD can be very disturbing, but treatment may help to relieve persistent and bothersome symptoms.

One of the most popular treatments for PTSD is exposure therapy, in which a client recalls a trauma in a therapeutic setting (Amoroso & Workman, 2016; Oehen at al., 2013; Eftekhar et al., 2013). While recalling a traumatic experience in great detail, a client may consciously associate the safety and calm of the therapy setting with the memory. Over time, the traumatic memory loses some of its negative emotional energy (Dębiec, Bush, & LeDoux, 2011) and adopts the non-triggering feeling of a client’s surroundings during recall (van den Hout, Eidhof, Verboom, Littel, & Engelhard, 2014). This phenomenon is called fear memory extinction (Dębiec et al., 2011; Young et al., 2017). Exposure therapy is effective for many people with PTSD but for not all; sometimes, recalling the trauma triggers such a high level of arousal that the arousal itself distracts from any intervention (Amoroso & Workman, 2016; Mithoefer et al., 2011).
Between the lower threshold, at which a client experiences manageable arousal, and the upper threshold, at which a client experiences heightened anxiety and distraction, is a level of emotional engagement that is favorable for processing emotion. This zone is called the window of tolerance or optimal arousal (Mithoefer, Wagner, Mithoefer, Jerome, & Doblin, 2011; Oehen, Traber, Widner, & Schnyder, 2013). People who suffer from trauma-related disorders such as PTSD often struggle to remain within this window of tolerance (Amoroso & Workman, 2016; Buoso, Doblin, Farré, Alcázar, Gómez-Jarabo, 2008; Mithoefer et al., 2011). Some clients may attempt to remain somewhat calm while processing triggering content, but if discomfort eventually overwhelms them, the experience may be more painful than helpful and lead to avoidance of the triggering content altogether (Amoroso & Workman, 2016; Eftekhari et al., 2013). This hyperarousal complicates the therapy process, because clients worry about accessing emotionally fraught memories and catapulting themselves into a state of high arousal in which they feel only fear (Amoroso & Workman, 2016; Buoso et al., 2008; Mithoefer et al., 2011). Although exposure therapy is intended to trigger some arousal, hyperarousal can interrupt the therapy process and trap clients in a cycle of avoidance.

The cycle of accessing emotionally charged content, experiencing arousal, and promptly practicing avoidance may render psychotherapy impossible, thus frustrating clients (Amoroso & Workman, 2016). This discomfort may lead some clients to quit treatment to avoid the experiences involved in treatment (Amoroso & Workman, 2016; Oehen et al., 2013; Cloitre et al., 2004; Eftekhari et al., 2013). In other cases, even clients who keep seeking treatment avoid disclosing personal memories, thoughts, and feelings (Amoroso, 2015; Amoroso & Workman, 2016; Oehen et al., 2013; Corey, Pisano, & Halpern, 2016). These factors contribute to the prevalence of chronic, treatment-resistant PTSD (Buoso et al., 2008; Oehen et al., 2013).
One possible augmentation to assist with the difficulties that can accompany exposure therapy for people with PTSD is 3,4-methylenedioxymethamphetamine (MDMA). MDMA is a Schedule I psychedelic that can produce feelings of empathy, intimacy, affection, and trust (Hysek et al., 2014; Wardle & de Wit, 2014). The unique effects of MDMA can lift a user’s mood by boosting the positive impact of positive facial expressions and memories while simultaneously softening the negative impact of negative facial expressions and memories (Carhart-Harris et al., 2014; Wardle & de Wit, 2014). Recalling emotional memories while under the comforting influence of MDMA weakens the memory’s power to induce fear (Buoso et al., 2008; Carhart-Harris et al., 2014; Mithoefer et al., 2011; Oehen et al., 2013). In addition, MDMA can strengthen interpersonal relationships, including the alliance between therapist and client (Corey et al., 2016; Hysek et al., 2014; Wardle & de Wit, 2014). Feeling less afraid and close to one’s therapist primes a client for reprocessing traumatic memories (Bouso et al., 2008; Mithoefer et al., 2011). Thus, MDMA-assisted psychotherapy may promote especially effective and durable fear memory extinction in exposure therapy, and the potential risks have thus far not outweighed the associated benefits (Carhart-Harris et al., 2014; Mithoefer et al., 2011; Mithoefer et al., 2013). The effects of MDMA distinguish it as a potentially efficacious drug adjunct for psychotherapy, especially in the treatment of PTSD.

MDMA has recently been studied in therapeutic contexts to find out whether its effects can significantly benefit people with chronic, treatment-resistant PTSD. Several studies have indicated positive results—both short-term and long-term—following MDMA-assisted psychotherapy for people with PTSD (Buoso et al., 2008; Carhart-Harris et al., 2014; Corey et al., 2016; Mithoefer et al., 2011; Mithoefer et al., 2013). The relatively high prevalence of PTSD, especially among soldiers (Amoroso & Workman, 2016; Mithoefer et al., 2011), can be associated with difficulties in maintaining employment, resisting substance abuse, and managing one or more debilitating psychological or medical disorders. More efficient and effective treatment will serve many people, both those who suffer
from the disorder and the people surrounding them. However, partly due to abuse of MDMA among recreational users, concerns about post-treatment substance abuse exist. Some researchers have warned against exposing clients to MDMA, citing effects of long-term drug abuse such as aggressive behavior and depression (Parrott, 2014; Reid, Elifson, & Sterk, 2007). Indeed, MDMA brings powerful positive feelings but may also bring some potential negative effects, including acute physiological reactions (nausea, numbness, dizziness, headache, fatigue, sweating, decreased appetite) and some neurocognitive effects (disturbed sleep, higher-order cognition, memory, confusion, depressive thoughts) (Thal & Lommen, 2018). The difference between harmful and helpful effects of the drug appears to lie in controlled dosage and pairing of drug use with psychotherapy (Bouso et al., 2008; Mithoefer et al., 2011). Although recreational abuse of MDMA can have adverse effects, limited and carefully administered doses of MDMA in conjunction with psychotherapy may benefit people with chronic and treatment-resistant PTSD because it improves mood, strengthens the therapeutic alliance, and facilitates fear memory extinction. This review on MDMA-assisted psychotherapy will provide an overview of some challenges in psychotherapy for PTSD, including the debilitating mood symptoms of PTSD, challenges in forming an effective therapeutic alliance, and interruptions in fear memory extinction caused by hyperarousal. Finally, this review will consider points against MDMA-assisted psychotherapy’s suitability as a solution to the aforementioned difficulties.

Mood Symptoms of PTSD

One pervasive and painful aspect of PTSD is a cycle of fear and anxiety, in which people with PTSD experience flashbacks and nightmares punctuated by extreme anxiety at the prospect of another episode (Amoroso & Workman, 2016; Mithoefer et al., 2011; Oehen et al., 2013; Wicking et al., 2016). In the absence of fear and anxiety, many people with PTSD experience emotional numbing (Amoroso, 2015; Mithoefer et al., 2011; Oehen at al., 2013; Wicking et al., 2016). This pattern can seem inescapable and can
lead to persistent depression (Eftekhari et al., 2013). In fact, many clients with PTSD wait to seek treatment until it is clear that their symptoms are persistent and disruptive (Giannadra, Lennox, Dali, Costa, & Gabbe, 2018). PTSD symptomatology is associated with high rates of functional impairment and disability, such as paralyzing fear, distracting paranoia, pervasive suicide ideation, and varied comorbid medical complications (Eftekhari et al., 2013; Mithoefer et al., 2011; Oehen et al., 2013). Furthermore, the most effective and commonly practiced psychotherapies—such as prolonged exposure therapy, Eye Movement Desensitization and Reprocessing (EMDR), cognitive or cognitive-behavioral therapy, relaxation training, and stress inoculation—can be emotionally exhausting (Amoroso, 2015; Mithoefer et al., 2011; Oehen et al., 2013). Associating the therapy process with a negative feeling—like the anxiety, fear, and helplessness involved in many traumatic memories or embarrassment or shame for seeking help—may lead some clients to discontinue treatment and suffer chronic PTSD (Amoroso & Workman, 2016; Cloitre et al., 2004; Oehen et al., 2013; Eftekhari et al., 2013; Lancaster, Teeters, Gros, & Back, 2016). Even when clients do attend therapy, they may feel distressed by the very exposure that should help them, and they often struggle to engage effectively (Eftekhari et al., 2013; Mithoefer et al., 2011). Thus, the persistent poor mood associated with PTSD not only disables victims in their everyday lives but stands as an obstacle to effective psychotherapy.

MDMA offers hope in dealing with two issues: resistance and hyperarousal during the therapy process as well as poor mood and therapy-related anxiety outside of therapy sessions (Amoroso & Workman, 2016; Hysek et al., 2014; Mithoefer et al., 2011; Oehen et al., 2013; Wardle & de Wit, 2014). Adding the drug to psychotherapy blunts arousal and allows clients to explore their traumatic memories in greater breadth and depth (Carhart-Harris et al., 2014; Wardle & de Wit, 2014). The amphetamine-like effects of MDMA also allow a client to continue the therapy process for longer than he or she could normally tolerate it (Amoroso, 2015). After taking MDMA, study participants can react more quickly to positive
stimuli and less quickly to negative stimuli, suggesting a higher tolerance for processing difficult content in therapy (Wardle & de Wit, 2014). Clients experience a calm, relaxed mood under MDMA, and this mood may enhance the process of exposure therapy by producing and maintaining positive emotions in moments when a client usually experiences anxiety (Hysek et al., 2014; Reid et al., 2007; Wardle & de Wit, 2014). Clinical trials have tested the effects of MDMA in the therapeutic setting (Mithoefer et al., 2011; Oehen et al., 2013) and have found that the drug seems to encourage openness and self-disclosure, operationalized as patterns of speech that consider one’s self-concept, emotions, and experiences (Carhart-Harris et al., 2014; Corey et al., 2016; Hysek et al., 2014; Wardle & de Wit, 2014). These results suggest that MDMA dampens hyperarousal and resistance in psychotherapy clients, especially those with otherwise treatment-resistant symptoms. These effects allow for progress in treatment. A positive treatment experience may offer hope to clients whose lives were previously dominated by despair and may encourage them to return for future treatment (Amoroso & Workman, 2016). Therefore, MDMA facilitates healing, which may increase treatment effectiveness as well as clients’ willingness and ability to engage with treatment.

Challenges in Forming the Therapeutic Alliance

The therapeutic alliance, or the cooperative relationship between therapist and client, is important to the quality and success of treatment. Intuitively, a good interpersonal relationship eases the flow of trust and information. Studies have consistently found a small relationship between therapeutic alliance and treatment outcome (Doukas et al., 2014). For people with PTSD, the strength of the therapeutic alliance is one predictor of successful treatment (Cloitre et al., 2004). However, a strong therapeutic alliance is not just a precursor for good treatment but is actually an important part of treatment (Amoroso & Workman, 2016). Since reliving trauma, avoiding triggers, and experiencing hyperarousal may interfere with the personal and professional relationships of people with PTSD, treatment for PTSD may include developing a reliable
network of social support; the therapeutic alliance can be a model for supportive, open, and accepting interpersonal relationships (Amoroso, 2015; Charuvastra & Cloitre, 2008; Eftekhari et al., 2013; Mithoefer et al., 2011). MDMA’s strong prosocial and feel-good effects may contribute to an especially strong interpersonal bond and trust between client and therapist (Corey et al., 2016; Hysek et al., 2014; Wardle & de Wit, 2014). This interpersonal trust between client and therapist may lead to clients’ openness, and those two qualities contribute to a strong therapeutic alliance and effective psychotherapy (Charuvastra & Cloitre, 2008; Corey et al., 2016; Oehen et al., 2013; Wardle & de Wit, 2014). A drug such as MDMA that helps clients connect with therapists may make therapy more effective.

**Trust**

Many people who suffer from PTSD struggle to form trust in interpersonal relationships (Amoroso & Workman, 2016; Charuvastra & Cloitre, 2008; Doukas et al., 2014). Often, this difficulty has roots in the type of trauma experienced. Charuvastra and Cloitre (2008) note that PTSD may be more likely to develop or become severe in a person who has suffered trauma at the hands of another person rather than an accidental event. Data from the National Comorbidity Survey show that both men and women most often report a human-initiated action—such as sexual assault, childhood neglect, abuse, or threat of injury with a weapon—as their most distressing trauma (Charuvastra & Cloitre, 2008). Thus, the nature of a client’s trauma may diminish the trust he or she places in other people, including his or her therapist, who may be a figure of authority or power in the client’s perspective (Charuvastra & Cloitre, 2008; Doukas et al., 2014). In addition, someone who suffers from PTSD may try several types of therapy and medications without experiencing significant relief (Oehen et al., 2013). Repeated failure of treatment may lead a client to feel discouraged and hopeless, as evidenced by high treatment dropout and suicidality.
rates among people with chronic and treatment-resistant PTSD (Amoroso, 2015; Amoroso & Workman, 2016; Mithoefer et al., 2011; Oehen et al., 2013). Thus, some people with PTSD may not believe that the therapy process or therapist can help them.

MDMA may help clients feel trust not only for their therapists but also for the therapy process. Wardle and de Wit (2014) observed that people who take MDMA before social interaction feel more comfortable with and understood by their partners. In their study, after a brief semi-structured social interaction, participants rated the regard, empathy, and congruence that they experienced. MDMA users reported a perception that their conversation partners had higher regard and empathy for them. Oehen, Traber, Widner, and Schnyder (2013) reported a decrease in defensiveness and isolation with an increase in empathy, openness, trust, and connection during MDMA-assisted psychotherapy. These temporary but pronounced changes in affect demonstrate interpersonal trust as a result of MDMA (Hysek et al., 2014; Mithoefer et al., 2013; Oehen et al., 2013; Wardle & de Wit, 2014). Feeling relaxed, heard, and connected encourages clients to engage with their therapists, which in turn leads clients to feel relaxed, heard, and connected. Meaningful interaction between clients and therapists build strong therapeutic alliances, which sharply increases the likelihood of a positive therapy outcome.

Trust between client and therapist in MDMA-assisted psychotherapy may make it more effective and increase treatment adherence (Doukas et al., 2014). Although this is true for any type of therapy, MDMA’s unique combination of increased serotonin and oxytocin (Mithoefer et al., 2013; Wardle & de Wit, 2014) recommend MDMA as an effective and immediate way to bolster trust in the therapy process and the therapist (Corey et al., 2016; Oehen et al., 2013). MDMA in conjunction with psychotherapy may provide hope for future positive relationships and relief from discouragement in pursuing therapy (Charuvastra & Cloitre, 2008). One of MDMA’s most important effects in the therapeutic setting is increased trust in the therapist and in the therapy process itself. Trust allows clients to open up, find acceptance, and experience healing.
Openness

Just as MDMA may increase trust between client and therapist, it may also increase clients’ openness—or willingness to access and discuss vulnerable memories and feelings—in therapy sessions. Some of the studies reviewed here have noted a change in clients’ speech patterns after administration of MDMA (Corey et al., 2016; Wardle & de Wit, 2014). Clients who take MDMA before a therapy session use positive words more often (Wardle & de Wit, 2014) and speak more about their sense of self, others’ emotions, and physical touch during the session (Corey et al., 2016). Changes in what a client says in therapy signal increased openness, which can lead to more effective treatment by allowing clients and therapists to identify, discuss, and resolve significant problems that might otherwise remain hidden (Corey et al., 2016; Mithoefer et al., 2011; Oehen et al., 2013). Indeed, Corey, Pisano, and Halpern (2016) reported a correlation between the frequency of such positive, prosocial, and self-reflective speech and improvement of symptoms. Patterns of speech reveal that clients experience less resistance and more tolerance for vulnerability during MDMA-assisted sessions.

In addition, some researchers have recognized a relationship between low Openness (O) and high Neuroticism (N), as defined by the NEO Personality Inventory, and PTSD symptoms and/or PTSD diagnosis (Wagner et al., 2017), suggesting that innate personality traits may either contribute to or be affected by the development of PTSD. High N may manifest as a tendency toward above-average anxiety, guilt, anger, envy, and dysphoria. Low O may manifest as traditional, pragmatic, or rigid patterns of thought or behavior, whereas high O often correlates with sensitivity to the inner feelings of oneself and others, as well as a disposition to self-examination (Wagner et al., 2017). Obviously, a constellation of low N and high O seems most helpful for the treatment of any psychological disorder, not just PTSD. Therefore, MDMA’s ability to achieve such a constellation can be a valuable contribution in drug-assisted therapy, especially in the treatment of PTSD. Wagner et al. (2017)
found that MDMA-assisted psychotherapy correlated with greater reductions in PTSD symptoms and potential long-term reversal of low O score and high N score than in the placebo. This finding suggests that MDMA-assisted psychotherapy not only encourages cooperation during the therapy process but may also contribute to enduring positive changes in personality.

**Interruptions in Fear Memory Extinction**

Fear memory extinction is the main function of exposure therapy for PTSD. The goal is to override a high arousal response to a traumatic or fearful memory by pairing that memory with a low arousal state. As previously discussed, MDMA’s prosocial influence encourages clients to speak openly about their traumas (Buoso et al., 2008; Carhart-Harris et al., 2014; Corey et al., 2016; Hysek et al., 2014; Wardle & de Wit, 2014). After MDMA administration, clients may exhibit less avoidance of traumatic memories (Corey et al., 2016; Oehen et al., 2013). MDMA also tends to dampen arousal, so clients may experience exposure therapy with a wider window of tolerance (Mithoefer et al., 2011; Oehen et al., 2013). Oehen et al. (2013) noted that clients who took MDMA before psychotherapy were more willing to explore and dwell on traumatic memory. This same study also detailed increased client engagement with the experience and meaning of traumatic memory. In addition, clients show greater ability to recognize, feel, and accept feelings (Corey et al., 2016; Oehen et al., 2013). Thus, MDMA enhances fear memory extinction by increasing access to emotional memories and allowing undisturbed memory recall while keeping the client in a low arousal state (Buoso et al., 2008; Carhart-Harris et al., 2014; Corey et al., 2016; Mithoefer et al., 2013; Oehen et al., 2013; Wardle & de Wit, 2014). MDMA-assisted psychotherapy exhibits superiority to unassisted exposure therapy in increased self-disclosure and heightened tolerance (Mithoefer et al., 2011; Oehen et al., 2013). MDMA beautifully combines arousal management with introspection to enable clients to process and learn from their traumatic memories.
A theoretical benefit of MDMA is enhanced recall for clients (Carhart-Harris et al., 2014; Corey et al., 2016; Mithoefer et al., 2011; Oehen et al., 2013). Memory recall during exposure therapy may feel tedious and repetitive, if not overwhelming, but practicing fear memory extinction with a memory that feels as real as possible may be helpful for lessening the effects of certain PTSD symptoms, like flashbacks. MDMA helps clients immerse themselves deeply in traumatic memories (Amoroso, 2015; Amoroso & Workman, 2016; Carhart-Harris et al., 2014; Mithoefer et al., 2011; Oehen et al., 2016). Carhart-Harris et al. (2014) reported that MDMA affects the vividness, intensity, and emotional valence of autobiographical memories. Specifically, MDMA decreased the emotional impact of negative memories but maintained the intensity and vividness—that is, emotional potency was affected, but cognitive engagement was not (Carhart-Harris et al., 2014; Hysek et al., 2014). Wardle and de Wit (2014) found similar effects in another study of healthy participants. In contrast with other potential drug adjuncts to psychotherapy—including other stimulants and selective serotonin reuptake inhibitors (SSRIs)—MDMA increases the impact and frequency of positive emotion while having the opposite effect on negative emotion (Wardle & de Wit, 2014). This combination of effects matches the needs of clients with PTSD who undergo exposure therapy, allowing them to maintain focus on memory recall and explore traumatic memories without emotional or physiological hyperarousal.
Figure 1 MDMA’s psychological effects improve mood, strengthen the therapeutic alliance, and enhance fear memory extinction, leading to a positive experience for the client and to therapy that is more effective.

From a neurobiological perspective, MDMA has effects that are antithetical to the activations associated with PTSD symptoms (Amoroso, 2015; Carhart-Harris et al., 2014; Milad et al., 2009; Mithoefer et al., 2011; Oehen et al., 2013; Wicking et al., 2016). In PTSD, physiological changes in the brain support the retention rather than extinction of a traumatic memory (Milad et al., 2009; Wicking et al., 2016). Brain imaging reveals patterns of activation and deactivation in certain brain regions when people with PTSD experience anxiety and fear associated with their traumatic memories: heightened activation in the amygdala, deactivation of the anterior cingulate cortex, and deactivation of the ventromedial prefrontal cortex (Amoroso, 2015; Carhart-Harris et al., 2014; Milad et al., 2009; Mithoefer et al., 2011; Oehen et al., 2013; Wicking et al., 2016). The hippocampus also seems to be implicated in emotion and memory (Amoroso, 2015; Carhart-Harris et al., 2014; Milad et al., 2009; Mithoefer et al., 2011; Oehen et al., 2013; Wicking et al., 2016).
Some studies of PTSD symptoms describe decreased hippocampal volume and activity in clients with PTSD (Carhart-Harris et al., 2014; Mithoefer et al., 2011; Wicking et al., 2016). The brain activation patterns in people with PTSD make forgetting a traumatic memory and suppressing fear responses especially difficult.

Brain-imaging studies show that the opposite activations occur when people take MDMA (Amoroso, 2015; Carhart-Harris et al., 2014; Mithoefer et al., 2011; Wicking et al., 2016; Wardle & de Wit, 2014). Several studies found decreased activity in the amygdala and increased activity in the frontal cortex (Carhart-Harris et al., 2014; Hysek et al., 2014; Mithoefer et al., 2011). The same studies that found decreased hippocampal volume and activity in clients with PTSD also found increased hippocampal activity under MDMA (Carhart-Harris et al., 2014; Mithoefer et al., 2011; Wicking et al., 2016). In addition to these patterns of brain activation/deactivation, typical neurochemical reactions to MDMA may promote clients' comfort and openness. Research suggests that neurotransmitters and hormones like serotonin, oxytocin, norepinephrine, and dopamine are likely implicated in the calming and prosocial effects of MDMA (Carhart-Harris et al., 2014; Hysek et al., 2014; Oehen et al., 2013; Young et al., 2017). Although other drugs may stimulate or deactivate certain regions of the brain implicated in PTSD, the constellation of activation/deactivation and neurochemical effects unique to MDMA distinguishes it as an especially fitting adjunct to exposure therapy for PTSD.

Objections

Some concerns about MDMA-assisted psychotherapy include the risk of acute physiological effects, subsequent abuse, aggressive behavior, misattribution of therapy gains to the drug, or relapse after experimental sessions (Parrott, 2014; Reid et al., 2007; Thal & Lommen, 2018). The physiological effects of MDMA are wide ranging. Because MDMA is a potent stimulant and acts on the central nervous system, users will experience an altered state no matter the context in which they take the drug. Indeed, some participants reported physiological effects associated with the drug,
such as nausea, fatigue, decreased appetite, and others (Mithoefer et al., 2011). However, the placebo group reported many of the same symptoms. Thus, more research will need to examine the negative side effects of MDMA itself, independent of normal fluctuations in mood and energy levels and/or placebo effects. Furthermore, MDMA’s physiological effects can be managed by creating a treatment paradigm that allows for extended pre- and post-treatment observation by medical staff.

One of the psychological symptoms reported by participants who received MDMA-assisted psychotherapy for PTSD was anxiety. This raises an interesting question about the potential dangers of MDMA. Stimulants like MDMA seem to come with both a high and a subsequent low. That low can be controlled by limiting the dosage and controlling the setting, but a client may still report a lower mood or more anxiety after treatment, even if those symptoms are only experienced in comparison with the drug state. However, this question requires much more research, because psychological distress is inherent in studies of MDMA for PTSD. On the severe end of psychological distress, MDMA has not been associated with suicidality, unlike one drug (paroxetine) currently used in the treatment of PTSD (Thal & Lommen, 2018). These considerations show that there is potential for negative side effects from administering MDMA to clients, but more research into the origin, control, treatment, and avoidance of the side effects might assuage concerns about dangers to physical and mental health.

Many people with PTSD already take medication for anxiety, depression, or disturbed sleep, but MDMA offers a different route in that it may enhance therapy, not just complement it as a symptom troubleshooter (Lancaster et al., 2016). Some studies reviewed here assessed risk for future substance abuse, but none found significant risk (Buoso et al., 2008; Mithoefer et al., 2011; Wardle & de Wit, 2014). One team conducted a long-term follow up and found that none of the participants of their study two years earlier had gone on to use MDMA recreationally, although one participant unsuccessfullly attempted to recreate MDMA-assisted psychotherapy with a friend before discontinuing illicit use of the
drug (Mithoefer et al., 2013). This study is both encouraging and concerning. Although none of the participants became recreational users, the fact that one accessed and used MDMA after treatment illustrates that there is still potential for unauthorized experimentation and/or abuse. As with most pharmacological interventions, careful administration, monitoring, and follow-up are essential.

Another concern about administering MDMA is behavioral effects. MDMA use can alter a user’s behavior, and some clinicians and researchers have indicated the possibility of disinhibited and/or aggressive behavior. One study reviewed here offers a response, suggesting that aggressive behavior associated with long-term abuse of MDMA is correlated with high dosage, polydrug use, and the context in which MDMA is taken (Reid et al., 2007). Context plays an important role in drug effects, and the street drug Ecstasy will naturally be associated with less careful usage than in the therapeutic setting. Ideally, the small, pure doses of MDMA involved in drug-assisted psychotherapy limit risk for such adverse behavioral effects. Clinical trials of MDMA-assisted psychotherapy carefully monitor participants in controlled contexts (Mithoefer et al., 2011; Oehen et al., 2013). If MDMA-assisted psychotherapy were to become available for clients, it must be conducted in clinical settings as carefully controlled as the settings of drug trials. As always, more research is needed to eliminate confounds and understand whether aggressive behavior is associated with MDMA administration in the therapeutic context rather than recreational use or abuse.

A common concern surrounding new treatments is long-term effectiveness. Relapse is common among people with PTSD, especially following pharmacological intervention only (Lancaster et al., 2016). Symptoms usually decrease somewhat following cognitive interventions, because clients learn to manage some of the symptoms rather than avoid them or suffer them. Because MDMA is an adjunct to psychotherapy used to enhance session effectiveness rather than mask symptoms, it should not show the same drop-off in symptom improvement over time. Indeed, some evidence
suggests that reductions in symptoms associated with MDMA-assisted psychotherapy may prove to be long-lasting (Carhart-Harris et al., 2014; Mithoefer et al., 2013; Oehen et al., 2013). More extensive trials and rigorous follow-up will help determine if MDMA-assisted psychotherapy is more effective in the long term than the frontline treatments currently in use.

MDMA-assisted psychotherapy is limited, just like the standard therapies, in reaching the people who might benefit. It might actually be harder to connect future locations of MDMA-assisted psychotherapy with the people who need it because of MDMA’s Schedule I drug status (Giummarra et al., 2018). An additional concern is that clients might attribute improvement to the drug and disregard tools they learn for managing symptoms; however, large studies that include follow-up suggest that this is not the case (Mithoefer et al., 2013; Oehen et al., 2013; Thal & Lommen, 2018). Although drug-assisted therapy may involve some risk by nature, research reviewed here suggests that MDMA-assisted psychotherapy has produced varied benefits and few risks.

**Conclusion**

MDMA-assisted psychotherapy warrants much more attention and research. Future research must (1) examine the physiological, psychological, and behavioral side effects of MDMA use, (2) compare recreational use with use in the therapeutic setting, and (3) consider the most effective treatment paradigm in terms of cost, risk-to-benefit ratio, access to clients who need it, and safe and controlled drug exposure. Other directions for future research include the effects of MDMA-assisted psychotherapy within and between specific gender, race, and age groups; people with subtypes or unusual causes of PTSD; and people with varied psychological disorders. For now, prevalence of PTSD is notably high in military populations, and society may become increasingly responsible for the proper care of veterans in the wake of recent international conflict (Amoroso & Workman, 2016; Eftekhari et al., 2013; Mithoefer et al., 2011). PTSD can be chronic and devastating (Eftekhari et al., 2013; Mithoefer et al., 2011; Oehen et al., 2013), and
treatment is often expensive, time-consuming, and tiring (Amoroso, 2015; Mithoefer et al., 2011; Oehen et al., 2013). The community responsible for treating people with PTSD would benefit from improving treatments or trying new treatments (Giummarra et al., 2018). Cognitive therapies offer hope, but even the frontline treatments are not always effective; it seems prudent to continue to strive for even better outcomes. PTSD can be very challenging for both clients and therapists, and lack of progress may lead to burnout on both sides. In addition, insurance companies increasingly call for fast, effective treatment (K. Malm, personal communication, May 4, 2018). If MDMA-assisted psychotherapy proves reliable and low-risk for clients, it may become an efficient and effective therapy for PTSD.

The feel-good effects of MDMA set the stage for effective therapy. Studies of MDMA-assisted psychotherapy show increased trust and openness in the therapeutic context as well as reductions in PTSD symptoms (Amoroso & Workman, 2016; Corey et al., 2016; Mithoefer et al., 2011; Mithoefer et al., 2013; Oehen et al., 2013; Wardle & de Wit, 2014). During MDMA-assisted psychotherapy sessions, clients feel relaxed and safe, and they freely and calmly explore their traumatic memories (Mithoefer et al., 2011; Oehen et al., 2013). MDMA’s combined physiological and psychological effects facilitate reprocessing of traumatic memories and extinction of fear responses (Amoroso, 2015; Hysek et al., 2014; Oehen et al., 2013; Wardle & de Wit, 2014). Furthermore, long-term follow-up research indicates limited risk for negative side effects when MDMA is administered in controlled therapeutic settings. Because of MDMA’s potency and status as a Schedule I drug, care must be taken in planning, conducting, presenting, and interpreting research surrounding the controversial topic. Researchers and clinicians must account for many confounds before making any firm recommendations about MDMA-assisted psychotherapy, but preliminary research seems hopeful. MDMA’s unique pharmacological and psychological effects might make it
an excellent potential adjunct to psychotherapy and especially well-suited for treatment of PTSD (Amoroso, 2015; Buoso et al., 2008; Young et al., 2017; Wardle & de Wit, 2014). MDMA-assisted psychotherapy could become a solution to one of the most devastating and debilitating chronic psychological disorders of our day.

References


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In the Zone and Off the Screen: Optimizing Free Time Through Flow Experiences

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Abstract

In recent years, people have become more dependent on using a screen, whether it be on a computer, a cell phone, or a television set. Studies have shown that exaggerated amounts of technology and internet usage can lead to problems in personal functioning. Studies also show that flow experiences, or experiences in which one achieves a balance between skill and challenge while experiencing a temporary loss of self-consciousness (Csikszentmihalyi, 1975), are positively correlated with mental well-being. This study aims to investigate the influence that screen related hobbies can have on one’s well-being by comparing them to non-screen related hobbies. Flow experiences and their influence on well-being are also investigated. It was found that having a non-screen related hobby is beneficial for emotional and social well-being. There was a positive correlation found between flow experiences and emotion and social well-being. Engaging in a non-screen related hobby seems to be beneficial for overall well-being.
With the modern influx of technology, social media, and screen-based pastimes such as video games and television, people all over the world are changing the way they spend their free time. A recent study showed that this increased use of technology, particularly the internet, has a negative relationship with the well-being of college students with 41.3% on the borderline of pathological use (31 to 40 hours of use a week) and 13% reported deficiencies in personal functioning as a result of their internet use (Maurya, Patel, & Sharma, 2018). In contrast, another study reported that Australian adults with greater engagement in visual arts, performing arts, and literature had significantly better mental well-being than those who did not (Davies, Knuiman, & Rosenberg, 2016).

It is clear that the way individuals spend their time has a significant effect on their general well-being. While studies done to this date have put the problem of free time usage into a greater perspective, two things should still be taken into consideration: (1) how particular types of hobbies influence well-being and (2) how flow experiences influence well-being. Flow is the “holistic sensation that people have when they act with total involvement” (Csikszentmihalyi, 1975). It occurs when one achieves a balance between skill and challenge while experiencing a temporary loss of self-consciousness (Csikszentmihalyi, 1975). In other words, flow is when a person is “in the zone.” In a study examining knitting frequency and enjoyment among knitters around the world, researchers found that the knitters experienced increased happiness, calmness, and cognitive activity when they achieved a flow experience (Riley, Corkhill, & Morris, 2013). Positive leisure motivation has also been shown to be correlated with a decrease in delinquency in high school students (Agnew & Peterson, 1989) and recovery from mental illnesses in adults (Lloyd, King, McCarthy, & Scanlan, 2007). This suggests that flow experiences can have positive effects on one’s well-being, yet further examination is required.
The purpose of this study is to investigate if different types of hobbies (leisure activities and pastimes) affect physical, emotional, and social well-being in adults. The role that flow experiences play in well-being will also be examined. It is hypothesized that non-screen related hobbies will produce more flow experiences and will have a greater positive effect on all-around well-being. It is also hypothesized that greater flow experiences will be correlated with better all-around well-being. The goal of the study is to provide a greater understanding of the influence particular hobbies can have on adults’ lives. This understanding will provide greater direction as to how one can most wisely spend their time. This will in turn improve the well-being of adults and, ideally, their posterities.

**Method**

**Participants**

Participants were 97 (20 male and 77 female) English-speaking adults in the United States. Participant’s median age was 28. They identified themselves as White (94.8%), American Indian or Alaskan Native (1%), Native Hawaiian or Pacific Islander (1%), Hispanic or Latino (1%), and Other (2.1%). Participation in this study took place on a voluntary basis. No compensation was offered. Participants were recruited through Facebook.

**Materials**

The following instruments were used: first, Schwartz and Waterman’s (2006) Flow Experiences Scale (α=.70), which includes a 7-point Likert scale ranging from “not at all characteristic of me” to “very characteristic of me”; second, Jiang’s (2017) Emotional Well-Being Scale (α=.76), a 5-point Likert scale ranging from “all the time” to “none of the time,” in which higher scores indicate better emotional well-being; third, Robins, Hendin, and Trzesniewski’s (2001) Physical Well-being Measures, a two-item measure which asks about current health and frequency of doctor visits; lastly, the Social Success Measure (α=.87), authored by Pea et al. (2012), which includes a 6-point Likert scale ranging from “strongly disagree” to “strongly agree.”
Procedure

Participants were asked to specify if they had a hobby, to what extent they were involved in that hobby, and what type of hobby it would categorize as. They then completed a survey comprised of the previously described instruments.

Results

Flow scores ranged from 8 to 36, with a lower score indicating a better flow experience. The mean flow score of 18.14 suggests that participants as a whole demonstrated greater propensity to have a flow experience. Emotional well-being scores ranged from 4 to 16 with a mean of 8.62. Lower emotional well-being scores indicate better emotional well-being. Social well-being scores ranged from 8 to 42 with a mean of 20.85. Lower social well-being scores indicate better social well-being. Physical well-being scores ranged from 2 to 10 with a mean of 5.27. Lower physical well-being scores indicate better physical well-being.

It was hypothesized that greater flow scores would be positively correlated with emotional, social, and physical well-being. To investigate this hypothesis, several correlations were conducted. Results indicated that there is a slight positive correlation between flow and emotional well-being ($r = .245$) and flow and social well-being ($r = .262$). There was no correlation between flow and physical well-being.

It was also hypothesized that non-screen related hobbies would have a positive effect on physical, social, and emotional well-being. Four separate ANOVAs were conducted (see Figure 1). The first, which compared the means of types of hobbies with the mean of emotional health, was not significant, $F(2, 94) = 7.269$, $p < .05$, $\omega = .06$. There was no significant difference in the emotional health between those with screen related hobbies, those with non-screen related hobbies, and those with no hobby. However, an independent t-test was done comparing only the means of screen related hobbies and non-screen related hobbies, which proved to be significant, $t(96) = -2.032$, $p < .05$, $d = .81$, $CI_{95} = [-3.27, -.04]$. Those who
participate in non-screen related hobbies (M = 8.49, s = 1.96) have significantly better emotional well-being than those who participate in screen related hobbies (M = 10.14, s = 3.24).

The second ANOVA compared the means of types of hobbies and social well-being. The results were significant, F(2, 94) = 4.153, p < .05, ω = .06. Through a Tukey HSD post hoc test, it was found that there were significant differences between non-screen related hobbies (M = 20.26, s = 6.91) and no hobbies (M = 30.00, s = 4.14). It can be concluded that having a non-screen related hobby is more beneficial for one’s social well-being than not having a hobby, but having a screen related hobby (M = 22.86, s = 5.64) is not statistically more beneficial than not having hobby at all.

The third ANOVA compared the means of types of hobbies and physical well-being. The results were not significant, F(2, 94) = .192, p < .05, ω = .01. There were no differences between the physical well-being of those who participated in non-screen related hobbies (M = 5.23, s = 2.03), those who participated in screen related hobbies (M = 5.71, s = 1.70), and those who do not have a hobby (M = 5.25, s = .50).

The fourth ANOVA compared the means of types of hobbies and flow scores. The results were significant, F(2, 94) = 7.296, p < .05, ω = .11. A Tukey HSD post hoc test revealed that there were significant differences between the means of screen related hobbies (M = 19.00, s = 5.16) and no hobby (M = 28.00, s = 6.98) and between non-screen related hobbies (M = 17.62, s = 5.29) and no hobby. There was no significant difference between non-screen hobbies and screen hobbies.

**Discussion**

The goal of this study was to determine if non-screen related hobbies are better for emotional, social, and physical well-being. It was hypothesized, based on past studies, that screen related hobbies would have a negative effect on well-being. Another purpose of the study was to observe the effect that flow experiences have on well-being. It was hypothesized that flow would have positive effects on emotional, social, and physical well-being.
The findings of this study indicated that non-screen related hobbies are better for emotional and social well-being than both screen related hobbies and not having a hobby at all. In the case of emotional well-being, a t-test revealed that non-screen related hobbies are more beneficial than screen related hobbies. This could be because non-screen related activities generally involve focusing on yourself instead of watching the lives of others through a screen. In the case of social well-being, non-screen related hobbies are more beneficial than screen related hobbies. It was also found that screen related hobbies are not significantly better for social well-being than not having a hobby at all. Non-screen related hobbies generally indicate face-to-face interaction with other people, which calls for greater social well-being. In regards to physical well-being, no significant differences were found between non-screen related hobbies, screen related hobbies, and no hobby. The study also shows that there is a correlation between flow experiences and both social and emotional well-being. This suggests that as people participate in an activity that they are deeply involved in, they are able to be more confident with themselves and their abilities. They are less shy around others and are happier with themselves because they know that there is something they feel they are good at. In contrast, there is no correlation between flow and physical well-being. Healthy and unhealthy people all had nearly equal levels of flow.

The findings of this study confirm the findings of Davies, Knuiman, and Rosenberg (2016) in that those involved in social, culturally enriching hobbies have better mental well-being. These findings assist in our understanding of the positive influence non-screen related hobbies can have on not only our mental health but also our all-around well-being. These findings also add a new perspective to the studies of hobbies: flow. Some of the well-being in those with non-screen hobbies could be attributed to flow, as the results of this study indicate.

These results suggest that more flow experiences are beneficial for our emotional and social health. They also indicate that flow is more likely to occur if an individual participates in a hobby that does not involve a screen. The improved well-being could be
attributed to more flow experiences and also to more exposure to others. These findings add to the theory of flow—the idea that having more flow experiences can yield improved well-being in several areas of life, including social and emotional. This is of interest because, due to the massive amounts of technology that are being used in recent years, well-being could be at risk. If more emphasis is put on the importance of non-screen hobbies, the result would be a happier, healthier human population.

Limitations of this study include having a small sample size. Having a greater number of responses to the survey could have made the study more valid. Another limitation of the study is the fact that many people that reported to have a non-screen related hobby may still participate in other screen related activities daily. Each person chose only one hobby, which was then categorized into a screen or non-screen group. The participants may have several hobbies, screen or non-screen, and the results may have been different had they chosen a different hobby. Also, a large portion of participants were female, which may have had an impact on the outcome, as men and women tend to participate in different hobbies.

Future studies should have more focus on differentiating between screen related hobbies and non-screen related hobbies. A comparison between hours participants spend each day looking at a screen or participating in a non-screen related hobby would yield more useful information that could add to the findings of this study.

Overall, the findings of this study significantly show that spending free time without screen usage may improve emotional and social health. Participating in a book club, taking up a craft, or playing a sport regularly will help to increase flow experiences and improve all-around health. This study, along with previous studies, has shown that finding a hobby can help to make one happier and more consistently calm. This is one step that can be taken to improve the well-being in adults in the United States and, ultimately, the world.
Appendix

Figure 1:

*Lower scores indicate better well-being/flow. Non-screen related hobbies are more beneficial for emotional well-being than screen related hobbies. In regards to social health, non-screen related hobbies are more beneficial than having no hobby at all, but having a screen related hobby is not more beneficial than not having a hobby.
References


Treatment Methods for Major Depressive Disorder: Psychotherapy vs. Pharmacotherapy

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Abstract

Major Depressive Disorder (MDD) is one of the most prevalent mental disorders in society. Treatment methods for this disorder have been the topic of debate among researchers to determine the most effective method to prevent relapse for individuals with MDD. Psychotherapy and pharmacotherapy are the most commonly used treatment methods. Each method, when used on its own, has advantages and disadvantages in treating the specific symptoms of MDD. A psychotherapeutic treatment course of Cognitive Behavioral Therapy (CBT) will focus on treating the behavioral factors that contribute to MDD (e.g., lack of exercise, inappropriate coping mechanisms, and inadequate social ties), but a focus on these factors may leave the biological factors of MDD (e.g., defects in neurotransmitters, genetics, and brain structure) untreated, which is the focus of treatment in a pharmacotherapeutic method using SSRI medications. With a combined treatment course of both psychotherapy and pharmacotherapy, the behavioral and biological symptoms associated with MDD may be treated in a focused, effective manner.
Major Depressive Disorder (MDD) is one of the most prevalent and burdensome mental disorders in today’s society (Blais et al., 2013). Approximately 1 in 5 adults will experience a major depressive episode at some point in their lifetime (Fakhoury, 2015). Along with a high prevalence rate, MDD has also proven to be highly recurrent in nature. In a study done by Solomon et al. (2000), researchers studied a group of individuals with MDD after completing treatment to determine the likelihood of relapse. The findings of this study, as shown in Figure 1, demonstrated that after recovering from MDD, the probability of a first relapse is 25% after one year, 42% after two years, and 60% after five years. Following a first relapse, the probability of experiencing a second relapse is 41% after one year after the relapse, 59% after two years, and 74% after five years. The findings of this study show that there is a high probability for relapse for those who successfully completed treatment, either by way of psychotherapy or pharmacotherapy. This high probability has led to much research aimed toward determining whether psychotherapy or pharmacotherapy is more effective in ensuring a lasting recovery for those suffering from MDD.

Psychotherapy is a treatment method in which an individual and a therapist meet in a counseling setting to resolve the issues that are causing a particular mental illness. Cognitive Behavioral Therapy (CBT) is one of the most common and effective forms of psychotherapy used in the treatment of MDD (Wiles et al., 2016). According to Wiles et al. (2016), “CBT teaches patients skills to help them better manage their mood, and so has the potential to result in benefit that is sustained beyond the end of therapy” (p. 137). Because of the relapsing nature of depression, the skills learned through CBT can help individuals recognize and manage recurrent symptoms to prevent further relapse (Petersen, Sprich, & Wilhelm, 2016). Although psychotherapy is effective in treating MDD, it is mostly aimed at treating the behavioral factors of MDD, such as coping with stressful life events, lack of exercise, poor coping
strategies, and sociocultural factors (Neitzke, 2016; Woodend, Schölmich, & Denktaş, 2015). With this aim, it does not focus on treating the biological factors associated with MDD as effectively as a pharmacotherapeutic method would.

Pharmacotherapy can be defined as the treatment of a mental disorder using medications and other substances to manage the symptoms of a particular disorder. Many biological factors can contribute to MDD. This review will focus on three factors: neurotransmitters, genetics, and brain structure (Fakhoury, 2015; Nutt, 2008). According to Nutt (2008), many different types of antidepressants have been used since their discovery in the 1950s, but the most effective antidepressant medication appears to be selective serotonin reuptake inhibitors (SSRIs), which are currently the most commonly used medications for treating MDD. There are advantages and disadvantages of treating with pharmacotherapy alone. Pharmacotherapy may yield faster relief from the symptoms associated with MDD and is more convenient than taking the time to meet personally with a psychotherapist; however, because of this, pharmacotherapy may not treat the underlying causes (T. Salisbury, personal communication, March 6, 2017). With a focus on treating the biological factors of MDD, pharmacotherapy can be effective in short-term treatment; but, without treating the underlying causes of MDD, a treatment course of pharmacotherapy alone may lead to a higher probability of relapse.

The fact that neither psychotherapy nor pharmacotherapy can fully treat all the symptoms of MDD has been the main cause for debate and research among psychologists to determine which method is a more effective treatment. Much of the research has suggested that when choosing one treatment method over the other, psychotherapy is more effective in preventing relapse of symptoms (Blackburn, Eunson, & Bishop, 1986; Blais et al., 2013; Huhn et al., 2014). Although psychotherapy is an effective method on its own for treating MDD, a combined approach incorporating both psychotherapy and pharmacotherapy may offer a better treatment course because a combination of these methods treats both the biological and behavioral factors associated with MDD.
An in-depth examination of both methods, first of psychotherapy and the behavioral factors, followed by pharmacotherapy and the biological factors, with their advantages and disadvantages, will show the need for a combined treatment method for MDD.

**Psychotherapy**

In order to understand the advantages and disadvantages of psychotherapy as a treatment course for MDD, the behavioral factors of MDD must first be addressed. Furthermore, an understanding of these factors might suggest that CBT may be the best method to address these behavioral factors. This section discusses both the behavioral factors of MDD and the CBT treatment method used to treat those factors.

**Behavioral Factors of MDD**

Behavioral factors have been shown to contribute to the onset and development of MDD. Woodend et al. (2015) have identified three specific behavioral factors: lack of exercise, inappropriate coping mechanisms, and inadequate social ties. This section will examine these three behavioral factors and discuss the psychotherapeutic methods through which these factors are treated.

**Lack of exercise.** According to Woodend et al. (2015), a lack of physical exercise greatly increases the probability of being diagnosed with MDD (p. 2319). In a study done by Strawbridge, Deleger, Roberts, and Kaplan (2002), 1,947 subjects were examined to determine the effects of physical exercise on reducing the occurrence of MDD. To define the parameters of physical exercise, the researchers administered a survey to measure how often each subject went on long walks, engaged in strenuous exercise, participated in sports, and went swimming. Subjects answered on a scale of 1 to 8, with one signifying that they never engaged in the activity and eight signifying that they participated very often in the activity. Researchers divided the results into three separate
levels of activity: low (scores from 0-2), medium (scores from 3-5), and high (scores from 6-8). Depression was measured by the criteria found in the DSM-IV. The prevalence of depression was 11% for subjects who reported low physical activity, 6.1% for subjects who reported medium physical activity, and only 3% for subjects who reported high physical activity (Strawbridge et al., 2002). These results suggest that those who do not engage regularly in physical activity are nearly four times more likely to experience depression than those who exercise on a regular basis.

**Maladaptive coping mechanisms.** A coping mechanism is the source individuals turn to in a stressful or otherwise negative life situation (Woodend et al., 2015). Two different ways to cope exist when facing a stressful life situation: adaptive and maladaptive coping (Mahmoud, Staten, Hall, & Lennie, 2012). According to Mahmoud et al. (2012), an adaptive coping strategy involves identifying a stressful situation, seeking out and finding help, and acting in a way to resolve the situation. By following the appropriate steps, an adaptive strategy will not only result in a resolution of the situation but will also result in psychological and emotional adjustment. A maladaptive coping strategy involves the individual withdrawing themselves from those around them and avoiding the stressful situation altogether; paradoxically, avoiding the stressful situation usually contributes to added measures of stress, which can lead to both anxiety and depression, potentially increasing the likelihood of a major depressive episode (Mahmoud et al., 2012). Based on this understanding, as individuals incorporate more adaptive coping skills, there may be a decreased amount of stress that could potentially trigger a major depressive episode. Mahmoud et al. (2012) conducted a study on college students to measure the correlation between coping strategies and depression and anxiety levels. In this study, 1,700 students were selected at random and administered the Depression-Anxiety Stress Scale-21 (DASS-21) and the Brief COPE Inventory (BCI) to assess this relationship. The survey found that a positive correlation between maladaptive coping strategies and depression existed in these
students. Those who reported maladaptive strategies also scored significantly higher in their levels of depression (Mahmoud et al., 2012). These results suggest that inappropriate coping mechanisms may play a significant role in the development of depression.

**Inadequate social ties.** Relationships with family, friends, and other members of the community can play a role in the onset and development of MDD (Woodend et al., 2015). According to Lin, Ye, and Ensel (1999), social ties can affect the mental health of an individual in many different ways. Lin et al. (1999) divided the necessary social needs into three different categories: perceived and actual support, emotional and instrumental support, and routine and crisis support (p. 346). Without any one of these support categories, the risk of MDD increases. Perceived and actual support is the support that a person both perceives to receive and actually receives. It is possible to have one without the other, but to have the full effect of the support, both elements need to be present. Emotional support is having a social source to express feelings, vent frustrations, seek understanding, and build self-esteem while instrumental support is a social source through which tangible assistance can be achieved (e.g., help with chores, money, and school). Routine support is having a source of support for regular, day-to-day activities such as child care, grocery shopping, and transportation; in contrast, crisis support is having a source of support in high stress situations such as divorce, car accidents, and medical emergencies (Lin et al., 1999). It is important to have support of each of these kinds to be able to manage stressful situations that could trigger a depressive episode. With each category covered, the likelihood of depression decreases significantly.

A study conducted by Lin et al. (1999) in which 1,261 subjects were surveyed regarding their support structures and depression levels illustrates how inadequate social ties increases the likelihood of MDD. Out of all the categories that subjects were surveyed on, the categories that decreased depression levels most effectively were number of weekly contacts, the presence of an intimate relationship, and the presence of a strong social network (p. 352). With these
types of social support, depression decreases, and as individuals begin to isolate themselves from others, the probability of having a major depressive episode increases significantly (Woodend et al., 2015). The results of this study show that as individuals develop these types of social ties, the likelihood of a major depressive episode decreases significantly.

While many other behavioral factors play a role in the development of MDD, lack of exercise, maladaptive coping skills, and inadequate social ties provide a foundation for understanding why a psychotherapeutic method of treatment is effective in the treatment course of MDD. CBT may be an effective method for addressing these behavioral factors of MDD.

Cognitive Behavioral Therapy

The goal of CBT is to help individuals develop skills to recognize and prevent symptoms outside of therapy. According to Wiles et al. (2016), “CBT teaches patients skills to help them better manage their mood, and so has the potential to result in benefit that is sustained beyond the end of therapy” (p. 137). This section will overview the methods used in a therapeutic setting in treating and preventing symptoms associated with MDD.

The main focus of CBT is known as case conceptualization. Case conceptualization is a therapist’s method of helping the individual analyze potential triggers, recognize symptoms, and successfully overcome symptoms (Petersen et al., 2016). According to Petersen et al. (2016), in case conceptualization the therapist follows the Antecedent, Behavior, Consequence (ABC) Model (p. 8). This model allows the client to analyze what happened before, during, and after the onset of symptoms, enabling them to manage the behavioral factors manifest.

The first focus of the ABC Model is the antecedent, which focuses on analyzing the events that occur just before the onset of a symptom. The second focus, behavior, helps the individual determine the behaviors engaged as a result in the onset of symptoms. The final focus, consequence, helps the individual determine the positive or negative results of the behavior which
helps to determine the likelihood that a behavior will be repeated (Peterson et al., 2016). With the help of a therapist, the three focuses of the ABC model can help individuals successfully think through the onset of symptomology to reduce the severity of those symptoms over time.

This method of treatment has been shown to be effective in addressing treatment-resistant depression. In a study done by Wiles et al. (2016), 469 subjects were studied to determine the effectiveness of CBT. Half were chosen at random to participate in a CBT program while the other half continued to be treated with medications and other therapeutic methods. A treatment course was followed with an average length of 12 therapy sessions. After 46 months, the researchers followed up with each patient. On average, those in the group receiving CBT treatment scored significantly lower on the depression scale than those who received the usual treatment course (Wiles et al., 2016, pp. 140-141). This study suggests that the skills learned in CBT as a result of the ABC Model can help reduce the probability of relapse of MDD symptoms.

While it may seem that a psychotherapeutic method with a focus on CBT can effectively treat MDD on its own, this approach also has disadvantages. According to Dr. T. Salisbury (personal communication, March 6, 2017), a practicing clinical psychologist, it is difficult for many individuals experiencing MDD to find the motivation to take the time to meet with a therapist as often as it takes to treat MDD. Additionally, Wiles et al. (2016) explains how psychotherapy is a long-term treatment and progress within psychotherapy can be slow and cause individuals to be discouraged and not follow through with the treatment course. However, the main disadvantage to a psychotherapeutic approach is that the biological factors of MDD are not focused on and may be left untreated.
Pharmacotherapy

Knowing that a treatment course of psychotherapy alone does not focus on the biological factors of MDD, a need arises for pharmacotherapy. This section will address that need and will suggest a pharmacotherapeutic treatment course using SSRIs to treat the biological factors associated with MDD.

Biological Factors of MDD

While it is true that the behavioral factors studied in the previous section play a significant role in the development of MDD, if the biological factors are left untreated, the whole scope of this disorder may not be fully treated. Fakhoury (2015) suggests three biological factors that influence the development and recurrence of MDD: neurotransmitters, genetics, and brain structure.

Neurotransmitters. Neurotransmitters deliver messages between neurons in the brain and play a significant role in depression levels (Nutt, 2008). The three main neurotransmitters that play a role in depression are dopamine, norepinephrine, and serotonin (reference). Each of these neurotransmitters contributes to different depressive symptoms. Dopamine regulates motivation, attention, and overall pleasure; norepinephrine regulates alertness, energy, and overall interest in life; and serotonin regulates anxiety, obsessions, and compulsions (Nutt, 2008, p. 6). In treating abnormalities in these neurotransmitters, a practitioner may attempt to raise the levels of all three simultaneously, which would increase mood overall; however, focusing on the specific symptoms being presented by each neurotransmitter could be more effective in the overall treatment course.

Defects in various neurotransmitters can lead to differing symptoms and types of depression. Nutt (2008) describes two types of depression as “an increase of negative affect and a loss of positive affect” (p. 6). An increase of negative affect refers to seeing the world as hostile and negative, and this type of depression generally leads to the development of anxiety disorders; a loss of positive affect refers to a person losing interest in normal activities and
leads to a loss of motivation (Nutt, 2008). If a practitioner focuses on whether an individual is experiencing an increase of negative affect or a decrease in positive affect, then a specific pharmacotherapeutic treatment course can be formed and the pertinent neurotransmitter levels can be corrected to decrease the symptoms of depression.

Research suggests that pharmacotherapeutic methods are not always needed to raise neurotransmitter levels. For example, a study done by Sutoo and Akiyama (1996) showed that exercising between 15 and 60 minutes each day can significantly raise dopamine levels. However, a focus on only the behavioral factors of MDD may not give enough attention to the correction of neurotransmitter levels in the brain needed to provide the most effective treatment course.

**Genetics.** There seems to be a link between family history of MDD and the likelihood of an individual developing this disorder (Fakhoury, 2015). According to Fakhoury (2015), several genes contribute to the development of MDD in an individual (see Table 1). As seen in Table 1, genes contribute to the processes involved in MDD. For example, the serotonin transporter protein is responsible for transporting serotonin from the synapses of one neuron to the presynaptic space of another; the tryptophan hydroxylase 2 gene is involved in the synthesis of serotonin; and the insulin-like growth factor 1 gene regulates many processes involved in the development of MDD. These genetic factors play a role in depression, and if people are born with variant in these genes, they already have a natural susceptibility to developing MDD in their lifetime. Because of this, when these people experience normal stressors, they are more likely to exhibit symptoms of depression, which may eventually lead to a diagnosis of MDD.

**Brain structure.** Through the advancement of imaging technology, discoveries in brain function have shown that depression levels can be linked to the hippocampus, amygdala, and prefrontal cortex region of the brain (Fakhoury, 2015). Each of these parts of the brain plays a separate role in mood and the expression of emotion, and defects in these parts of the brain contribute separate symptoms of depression. The hippocampus
is the portion of the brain that processes information and stores and analyzes memories (Marchand, Dilda, Jensen, & Wahlen, 2005). Fakhoury (2015) asserts that a defect in this portion of the brain contributes to impaired memory function and an overall depressed mood state. In contrast, Marchand et al. (2005) suggests the amygdala is responsible for emotional learning and emotional response to stimuli. In those with MDD, the amygdala has been found to be undersized, causing slower responses to emotional situations. Furthermore, the prefrontal cortex is believed to be the most involved part of the brain in MDD as it is involved with mood regulation, executive reasoning, the expression of personality, and social behaviors (Marchand et al., 2015). In the case of defect in each of these parts of the brain, the functioning of neurotransmitters is impaired (Fakhoury, 2015). This makes individuals with abnormalities of the hippocampus, amygdala, and prefrontal cortex more likely to develop MDD in their lifetime.

**Selective Serotonin Reuptake Inhibitors (SSRIs)**

Research seems to suggest that defects in levels of neurotransmitters, genetic predispositions, and differences in brain structures can impair the ability of the brain to normally send signals between neurons by way of neurotransmitters. Many antidepressant medications have been developed and tested over the past decades, but the most effective and commonly used medications appear to be SSRIs (Nutt, 2008, p. 4-5). The goal of SSRIs is to raise activity levels of neurotransmitters in the brain, and a practitioner will normally prescribe daily doses which will indirectly raise serotonin levels by blocking reuptake (Vaswani, Linda, & Ramesh, 2003). With the SSRI drug regulating the production of serotonin and other neurotransmitters, brain functioning improves, allowing the individual to find relief from the symptoms they are experiencing.

The development of SSRIs to treat those struggling with MDD has significantly improved the short-term treatment of this disorder. It has allowed individuals to experience faster progress than progress experienced through a psychotherapeutic treatment course.
(T. Salisbury, personal communication, March 6, 2017). However, just as psychotherapy may not treat the biological factors of MDD, a treatment course of pharmacotherapy alone may not completely treat the potential behavioral factors, and when those factors are left untreated, the possibility of relapse may increase significantly (Guidi, Tomba, & Fava, 2015). In a comprehensive meta-analysis done by Guidi et al. (2015), a long-term treatment course of pharmacotherapy alone tended to lead to higher relapse rates, because the medications brought negative side effects; there were potential negative reactions with medical conditions to the drugs; and individuals tended to have negative withdrawal symptoms upon discontinuing drug therapy. With these factors in mind, a pharmacotherapeutic method of treatment alone may not offer the best treatment course for those struggling with MDD.

**Combined Treatment**

Much research has been done on the efficacy of pharmacotherapy and psychotherapy in treating MDD. When studying both methods on their own, much of the research suggests that psychotherapy could offer a better treatment course than pharmacotherapy (Blais et al., 2013; Huhn et al., 2014). However, studies by both Blackburn et al. (1986) and Wiles et al. (2016) showed that a combination of psychotherapy and pharmacotherapy can be most effective. Wiles et al. (2016) studied 469 individuals receiving treatment for MDD. Subjects were divided randomly into a combined treatment group and a group receiving treatment with antidepressants only and were re-assessed 46 months after ending treatment. Those who took part in the combined treatment group scored significantly lower in depression levels than the control group. In the study performed by Blackburn et al. (1986), subjects were randomly divided into three treatment groups: psychotherapy, pharmacotherapy, and a combined treatment group. Two years after treatment, researchers followed up to determine relapse rates among the groups. The findings of this follow-up showed that 30% of those who received pharmacotherapy experienced at least one
relapse of depressive symptoms, 6% of those who participated in psychotherapy experienced relapse, while no subjects who received a combined treatment method experienced a relapse. While more research needs to be done to determine the clinical significance of these studies, more effective treatment seems to come from a combination of psychotherapeutic and pharmacotherapeutic treatment methods.

**Conclusion**

Many factors need to be considered when suggesting a treatment course for MDD. As shown in this review, both psychotherapy and pharmacotherapy have many advantages for patients in treatment for this disorder. Those suffering from MDD often exhibit many behavioral factors that may be best addressed in a therapeutic setting. With the help of a therapist through CBT, individuals can receive help in time management to make adequate time for exercise which will help increase dopamine levels in the brain (Woodend et al., 2015). Further, a therapist can assist in developing positive coping mechanisms to respond to stressful situations in healthy ways which can also assist in developing healthy social ties to help through the healing process (Mahmoud et al., 2012; Petersen et al., 2016; Woodend et al., 2015). The goal of the therapeutic process is to prevent relapse by teaching skills to put into practice as symptoms begin to emerge (Wiles et al., 2016).

Individuals with MDD also exhibit many biological factors, such as deficits in neurotransmitters, abnormal brain structure, and genetics. While these factors could be improved through psychotherapy, a treatment plan focused on pharmacotherapy could provide more effective treatment. SSRIs can be used to treat deficiencies in neurotransmitter levels, genetics, and brain structures (Fakhoury, 2015; Nutt, 2008). While pharmacotherapy may be effective in treating the symptoms in the short term, the goal of this method does not include a long-term treatment plan to prevent relapse, which is why psychotherapy on its own may be the preferred treatment course.
Although psychotherapy has shown benefits over pharmacotherapy, a patient suffering from MDD should not be forced to choose one method over the other. A combined treatment of both methods may offer a better course. By receiving a combination of psychotherapy and pharmacotherapy, the patient will benefit from the long-term advantages of psychotherapy and CBT while also benefiting from the short-term effects of pharmacotherapy and SSRIs. In following this treatment course, both treatment methods complement each other, as psychotherapy treats the behavioral factors that pharmacotherapy does not focus on treating, and inversely, pharmacotherapy focuses on treating the biological factors that psychotherapy does not focus on treating.

While existing research has shown that a combined treatment method has an advantage over treating with either psychotherapy or pharmacotherapy alone, more research is needed to determine the clinical significance of existing findings. Therapists and other mental health professions need to implement a combined approach to treat both the behavioral and biological factors of MDD. As more individuals receive a combined treatment course, symptoms of MDD can stay in remission and the probability of relapse can decrease.

References


Appendix


Table 1

<table>
<thead>
<tr>
<th>Gene Name</th>
<th>Location</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hydroxytryptamine receptor 2A</td>
<td>Chromosome 13</td>
<td>Coupled with a protein to promote serotonin transduction in the cell.</td>
</tr>
<tr>
<td>Serotonin transporter protein</td>
<td>Chromosome 17</td>
<td>Transports serotonin from synapse neuron to the presynaptic neurons.</td>
</tr>
<tr>
<td>Brain-derived neurotrophic factor</td>
<td>Chromosome 11</td>
<td>Promotes survival of neurons by preventing apoptosis.</td>
</tr>
<tr>
<td>Fibroblast growth factor</td>
<td>Chromosome 4</td>
<td>Growth factor that promotes hippocampal growth.</td>
</tr>
<tr>
<td>Insulin-like growth factor 1</td>
<td>Chromosome 12</td>
<td>Regulates processes involved in MDD.</td>
</tr>
<tr>
<td>Tryptophan hydroxylase 2</td>
<td>Chromosome 12</td>
<td>Involved in the synthesis of serotonin.</td>
</tr>
</tbody>
</table>

*Note.* This table outlines a number of genes that are involved in the development of Major Depressive Disorder. Adapted from “New Insights into the Neurobiological Mechanisms of Major Depressive Disorders,” by M. Fakhoury, 2015, *General Hospital Psychiatry, 37*(2), pp. 172-177.
Beauty Imbalance: Social Media’s Dictation of Worth

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Abstract

The recent implementation of social-networking sites into Western societies has resulted in cognitive changes for those who participate. Online presence has been linked to social comparison, primarily female upward peer-comparison: comparing oneself to others who are perceived as better according to physical appearance or personality traits. The nature of social media and its underlying comparative promotions may lead many female users to develop body dissatisfaction, self-objectification, disordered eating, and other negative mental habits. Media in the Western world has been found to promote unrealistic beauty ideals as well as poor means of determining self-worth for women. These social ideals and views are being perpetuated and intensified as social media becomes more prevalent. As exposure leads to undesirable cognitive effects, girls and women are experiencing lower levels of overall self-esteem and self-acceptance. The way an individual uses social-networking sites, taking into account things like perspective and time involved, may also affect the degree of negative cognitive alteration. Conversely, appropriate online usage has been found to benefit users by providing social connectivity and support. For women and girls, poor self-perception can be prevented through the implementation of healthy social media use, belief in a higher power, and exposure to feminist beliefs focusing on female empowerment.
In 2016, the Dove Corporation set out to understand women and girls in a way that no one had before. After extensive research involving over 10,500 women between the ages of ten and sixty, the *Dove Global Beauty and Confidence Report* (2016) was published. This study proved to be groundbreaking, becoming the largest brand-commissioned study regarding beauty. The extreme conclusions drew global attention: an estimated 96% of women did not consider themselves beautiful (Magrath, 2015). Unfortunately, lack of satisfaction with oneself now seems to be the norm; only a minority of females feel that they can declare themselves to be beautiful. Dove (2016) observed that the inability to accurately evaluate one’s appearance affected women and girls everywhere, regardless of demographics. Dove researchers further examined the causes for the growing dissatisfaction and pressure. A majority of women reported media as a primary contributor to this consuming problem. While lack of self-love appears to be a global issue, the lowest levels of self-esteem were found in Western societies (Brown, 2016). Researchers noticed that African, Asian, and Latin countries all ranked higher in regard to rates of body confidence than other countries. This Dove study and others like it (Andreassen, Pallesen, & Griffiths, 2017; Primack & Escobar-Viera, 2017) highlight the growing low self-esteem pandemic affecting women everywhere.

The results of the *Dove Global Beauty and Confidence Report* (2016) led many to more crucially consider the impact of media in the lives of women. For some time, researchers have recognized media exposure and distortion as leading contributors to female body dissatisfaction (Fardouly & Holland, 2018). The influence of television, billboards, and magazines all negatively impact female well-being (Fardouly, Pinkus, & Vartanian, 2017), but a new form of media has emerged in connection with these rising rates of low self-confidence. Social media has become an integral part of life in Western civilization, and its effects are now being noticed by researchers and users alike. With usage rates jumping from 5% to 69% between 2005 and 2018, it is now the norm to
own accounts on multiple social networking platforms (Lenhart, 2015). Sites like Facebook, Twitter, Instagram, and Snapchat feed the general population information and images daily. Social media has profound effects on the human mind relating to addiction, narcissism, and personality development (Andreassen et al., 2017). These effects are only recently being acknowledged and examined.

Fardouly et al., (2017) discovered that girls are no longer comparing themselves to models or celebrities, but rather to those around them. This peer comparison seems to have the greatest effect on personal perception. Rather than obsessing over unrealistic ideals of photo-shopped women, girls spend their time looking at friends and acquaintances. When exposed to positive peer qualities, such as ideal body shapes or desired personality traits, girls tend to harshly criticize themselves (Tatangelo & Ricciardelli, 2017). This phenomenon is unique to females, with similar exposure having minimal or even positive effects on males (Tatangelo & Ricciardelli, 2017). Innate gender differences are complex and can be difficult to isolate but are likely the reason self-comparison disparities exist between men and women (Fardouly et al., 2017). Social media often portrays augmented images and distorted truths, such that social platforms have become flooded with “ideal” qualities. No matter the platform, whether a social networking site like Instagram or a micro-blogging site like Twitter, people yearn to present their best self to the public (Feltman & Szymanski, 2017). Some users present a hyper-idealistc version of themselves, which others often compare themselves to. This upward-reaching form of comparison exists as users compare their self to the best qualities and traits inaccurately presented online (Andreassen et al., 2017). This behavior seems inescapable on social-networking sites today, yet often goes undetected by the one comparing.

Consequences of social media influence stretch beyond negative feelings towards oneself. Destructive behaviors can easily stem from media’s unrealistic standards: it is common for women to opt out of activities, stop themselves from eating, and lack assertiveness—all because of the way they perceive themselves (Dove, 2016).
Nevertheless, through their worldwide studies and interviews, Dove researchers found many women voicing their desire for a new definition of beauty. By further studying and addressing the issues that result from social media’s influence in the lives of women, beauty can begin to be reexamined and thereby redefined.

Although the perspectives and behavior of women are now being examined, the issues that threaten female well-being seem to be worsening. The diminishment of female self-love has become a critical issue, and social scientists are studying how to lessen the negative effects of media. While widespread social media exposure in Western society connects, impacts, and informs most people, this powerful influence likely damages female self-esteem. Increased social-networking site usage is linked to increased rates of body dissatisfaction (including distorted eating and self-objectification) as well as decreased rates of self-love and satisfaction (Rodgers, Damiano, Wertheim, & Paxton, 2017; Slater & Tiggemann, 2015; Stice, Ng, & Shaw, 2010).

Social Media’s Influence on Body Dissatisfaction

Because social media is new and rapidly evolving, its effects are only beginning to be studied and understood. The majority of online users are teenagers, with 92% of young people using the internet daily (Lenhart, 2015). However, though most of those using social media sites are in critical developmental stages, online presence is increasingly becoming common among a wide range of ages. Online use remains unproblematic for some, but for others it becomes excessive and compulsive (Andreassen et al., 2017). Moreover, increased time using social media impacts individuals at every age. Individuals are affected both by what they see online and what they post, through direct and indirect comparison (Fardouly et al., 2017). Social media involvement primarily consists of the sharing of personal pictures and information. For women and girls specifically, social media use has been linked to a number of undesired cognitive tendencies (Tatangelo & Ricciardelli, 2017). Whether through the promotion of body dissatisfaction,
self-objectification, or mental disturbance, social media may have a greater effect on feminine well-being than is being considered by those involved (Primack & Escobar-Viera, 2017; Slater & Tiggemann, 2015).

**Comparison**

In Western society today, media is a central part of everyday life and has been observed to have an impact on girls as young as age three (Rodgers et al., 2017). This far-reaching aspect of society has, for years, been directly connected to unhealthy comparison for girls and women (Fardouly & Holland, 2018). With the rise of social media, girls are no longer being primarily affected by models and celebrities found in magazines and on billboards (Fardouly et al., 2017). Recent studies suggest that harmful upward comparison is predominantly the result of peer relations (Fardouly et al., 2017; Tatangelo & Ricciardelli, 2017). Now girls tend to compare themselves to friends and acquaintances, rather than to celebrities, and the effects are still damaging. Tatangelo and Ricciardelli (2017) examined this social comparison and found that when exposed to positive peer qualities, girls harshly criticized themselves. This self-deprecating behavior may be more common as online connectivity has increased (Fardouly et al., 2017). The power of media’s influence and the strong impact of peer comparison is now combined with social media. This new form of connection and constant exposure has intensified the personal comparison of girls to those around them.

The image-based comparison that results from mass media consumption is being continued through social media. Tatangelo and Ricciardelli (2017) found that for girls, social comparison was primarily appearance-based. As participants repeatedly examined the positive qualities of their peers, their automatic response was to criticize themselves harshly. This phenomenon was defined as *peer appearance culture* (Tatangelo & Ricciardelli, 2017). This new cultural element highlights how young girls compare their body to those around them and feel worse about themselves as a result. This phenomenon was described as unique to females, as social
comparison is not as prevalent among boys. For males who were affected by media or peer comparison, the interaction was actually described as being positive or motivational. Researchers asserted that the difference between responses can be traced back to inherent mental differences between the genders (Tatangelo & Ricciardelli, 2017). Thus, it appears that the harmful and negative influence of social media primarily affects women due to innate sex differences in cognitive processing.

Social networking appears to infiltrate female thought processes due to its accessibility and social relevance. Although a variety of body types are represented on social media, as opposed to traditional media like magazines or billboards, women still consistently upwardly compare (Fardouly et al., 2017; see Table 1). Burnette, Kwitowski, and Mazzeo (2017) found that most groups of girls they questioned acknowledged the negative consequences of social comparison. The damaging effects of social media seem to be noticed by users, yet participation continues. Social comparison thus seems to be unavoidable and is intensifying as online connection grows.

While social media’s promotion of comparison may be significant, individual interpretation may determine either harmful or helpful results. Fardouly et al., (2017) suggested that most appearance-based comparisons are made in person, yet social media adds an additional level of peer exposure to the lives of women. Social media use was found to have the greatest impact on comparison when compared to all other media outlets, because usage leads to perpetual and extensive peer comparison (Fardouly et al., 2017). The power and scope of social media, as well as the way females participate online, call for the consideration of adverse cognitive effects.

**Body Dissatisfaction**

As media and social media share similar image-based promotions and elicit a range of both positive and negative viewer reactions, the definition of appropriate or ideal body image has become central. Online exposure to others may lead girls to alter
their self-concept and to adopt social stereotypes regarding body size (Rodgers et al., 2017). The internalization of weight-associated values has been observed in girls as young as ages three to five, due to various forms of media influence (Rodgers et al., 2017). Unhealthy ideals and, almost always, unobtainable body-mass indices and heights were found reflected in girls’ behavior and thoughts (Rodgers et al., 2017). Social comparison affects females at a critical, young age. What girls learn and internalize when they are young tends to be amplified as they grow and develop (Rodgers et al., 2017). Strong negativity regarding one’s body is promoted as females are more often exposed to unhealthy ideals.

As social media sites function somewhat differently from each other, and as some are used more than others, the nature of sites that are currently popular should be considered. Feltman and Szymanski (2017) observed the link between the most commonly used social-networking site, Instagram, and body surveillance among American women. The more time participants spent visiting the site, the more they were aware of their size, weight, and image. Although both upward and downward social comparison occurred, as well as both positive and negative appearance-related commentary, the same physical awareness resulted (Feltman & Szymanski, 2017). Regardless of the type of online feedback or input, women left Instagram more aware of their flaws and were therefore more dissatisfied with themselves in general. When social media usage becomes a daily habit, so does this negative form of body surveillance.

Self-Objectification

The tendency for females to view themselves as objects to be used, rather than as valued individuals, appears to increase when an online presence exists (Slater & Tiggemann, 2015). When examining the development of self-objectifying behavior in girls, social networking sites seem to contribute to the behavior more extensively than traditional media outlets (Slater & Tiggemann, 2015). Slater and Tiggemann (2015) noticed that appearance-related comments contributed to personal objectification; many
of these comments originated online, and most were connected to peer comparison. Further study found that positive, appearance-related comments were just as likely to lead to self-objectification as negative ones (Slater & Tiggemann, 2015). Peer influence, which is widely offered through social media, no matter the type of commentary, may lead to the objectification of oneself.

Western societies often promote beauty ideals that can be recognized in the general media and now translate into social media interactions (Vandenbosch & Eggermont, 2016). Media has long promoted appearance-based ideals and standards. Internalization of these beauty ideals has led to the focus on and fixation of attractive peers on social networking sites (Vandenbosch & Eggermont, 2016). The mixture of ingrained beauty ideals and monitoring attractive peers typically leads to self-objectification in girls (Vandenbosch & Eggermont, 2016). The desire to be perceived as beautiful is commonplace both on- and offline. This drive for social acceptance may be augmented when self-objectification is the product. All too often, girls treat themselves as having less worth than they otherwise have, when attempting to uphold a presence online.

**Mental Illness**

Many factors contribute to the development of cognitive disorders; Unhealthy habits in all facets of life can increase susceptibility to mental illness, including habits surrounding social media usage. Unfortunately, primary users of social media are young adults who are typically in transitional and crucial developmental periods (Primack & Escobar-Viera, 2017). When considering social media’s general impact on mental health, emotional contagion seems to impact and determine mental regulation (Primack & Escobar-Viera, 2017). This phenomenon—in which emotions and behaviors can be determined by the emotions and behaviors of those with which one interacts—alludes to the idea that social media likely interferes with psychosocial development. In general, many unhealthy thought processes and habits that lead to mental illness are also products of social media presence (Primack & Escobar-Viera, 2017).
Depression and anxiety. Epidemiological studies, which focus on the analysis of determinants to health, contribute support for the idea that social media use may be associated with mental-illness conditions such as anxiety and depression. Gibbons, Horowitz, and Dunlap (2017) examined the fading affect bias among individuals involved on social media. This form of bias refers to the fact that unpleasant affect fades quicker than pleasant affect. While this natural effect normally leads to healthy outcomes, when examined in the context of online social networking, negative correlations were observed. In this study, as online involvement increased, one’s cognitive ability to lose negative affect quickly decreased (Gibbons et al., 2017). The inability to let go of negative affect increased individuals’ stress levels and therefore their mental disturbance (Gibbons et al., 2017). Furthermore, a high degree of mental disturbance was directly correlated with the presence of depression and anxiety (Gibbons et al., 2017). The inability to adequately regulate emotions, a behavior acquired through consistent online interactions, can thus be inheritably harmful (Primack & Escobar-Viera, 2017). Fortunately, social media exposure can be limited or altered to avoid adverse mental health effects such as depression or anxiety.

Eating disorders. While social media is connected to comparison, social pressure, ideal internalization and dissatisfaction, studies have linked these same factors to the onset of eating pathology (Stice et al., 2010). Many of the correlations being made between social media use and poor mental health are being further connected to dietary restraint (Cohen, Newton-John, & Slater, 2017). Body dissatisfaction is most often present when stages of eating disorders have developed. Society tends to promote thinness as the female ideal, which further promotes unhealthy food-intake habits. However, Stice et al. (2010) have shown that intervention programs have proved beneficial when it comes to decreasing eating-disorder symptoms and ideals. The effectiveness of these programs primarily depends on the group being targeted, with the goal being to identify high-risk individuals (Stice et
al., 2010). Intervention programs impact identified individuals by reducing pressure for thinness and redirecting pursuits that would otherwise lead to unhealthy eating habits (Stice et al., 2010). To address and prevent eating pathology, reaching vulnerable demographics (those more susceptible to eating disorder development) should include considering those greatly involved on social platforms.

Social Media’s Impact on Self-love and Satisfaction

Self Esteem

Addictive behaviors promoted by social media strongly correlate with low levels of self-esteem. Andreassen et al. (2017) considered these social-networking effects in relation to the Rosenberg Self-Esteem Scale. Findings supported the notion that excessive use leads to low self-evaluation in an attempt to inhibit negative feelings. These findings were unique to women, as being female was a main determinate of low self-worth, when it came to involvement on social media (Andreassen et al., 2017). Furthermore, while women tend to form more addictive social-networking habits, they also may be more prone to possess low levels of self-esteem (Andreassen et al., 2017). A combination of these two female tendencies typically leads to the perpetuation of low self-confidence when interacting on social-networking sites.

By closely observing online interactions, self-esteem can be accurately predicted by researchers. Yang, Holden, and Carter (2017) found that authentic self-presentation and healthy social media usage, based on mindfulness, related to higher rates of self-esteem for college-aged women. Conversely, the presentation of personal and intimate information online was correlated with lower levels of identity clarity or clear self-perception (Yang et al., 2017). By considering how one presents themselves on social media, self-esteem can be gauged. Research has further shown that the presentation of oneself online is directly associated with the development of identity as one enters adulthood (Primack &
Escobar-Viera, 2017). Social media revolves around the sharing and viewing of personal information, which augments individual self-perception. Thus, a lack of clear sense of identity is being adopted in young girls and then continued into their adulthood.

**Beauty**

For many social networking sites, photo-sharing activities have become the focus of involvement. Girls are much more likely to use visual-based sites online, as opposed to text-based sites, as they prefer to share and observe photos (Lenhart, 2015). A common form of photography, known as the “selfie,” which is a picture one takes of him- or herself, has become increasingly popular on social sites. In a qualitative study of girl’s feelings towards selfie-taking, it was observed that a high percentage of young girls refrain from posting these pictures of themselves due to a belief that their appearance is not adequate (Burnette et al., 2017). In the same study, girls who did post pictures of themselves often claimed the reason was related to their desire to increase self-confidence. Further examination led the same researchers to the realization that confidence only existed due to the validation received from others, but it was often temporary and insufficient. Appearance dissatisfaction was also found in most girls, as words like “ugly,” “bad,” and “horrible” were used when self-describing (Burnette et al., 2017). Social media seems to highlight preexisting insecurities and perpetuates outside means of obtaining confidence in attempt to measure up to peers. For girls, something as simple as taking and posting a picture can lead to physical dissatisfaction, as a result of the feedback given (or not given) by others.

The measure of beauty on social-networking sites is often distorted and superficial, due to editing and general image augmentation. The distortion began in mainstream media and has since translated into peer and everyday comparisons (Fardouly et al., 2016). Exposure to the number of “likes” and appearance-praising comments of others may lead to decreased appearance satisfaction for the viewer (Fardouly et al., 2016). This perpetuated culture of social comparison often leads to appearance
dissatisfaction for female comparers, as there is always someone receiving more attention online. As individuals who heavily use social media compare and interact with others online, their worth begins to be defined by the online external validation received regarding their appearance. Appearance dissatisfaction ensues as the result of an augmented and abnormal sense of self-worth.

Possible Solutions Through Empowerment

Social media has an immense impact on the population today and therefore holds great potential for either harm or good. While many studies in this literature review have highlighted the negative effects social-networking sites have on women, much good has come from this new way to connect. Many social media users experience higher levels of life satisfaction and social support when compared to those uninvolved (Primack & Escobar-Viera, 2017). The ability to connect with others easily does more than simply influence girls to harmfully compare to those around them. When used appropriately, ability to identify and interact with others online has proven to be a great benefit when considering overall mental health (Barry, Sidoti, Briggs, Reiter, & Lindsey, 2017). Individuals can now connect easily with people they otherwise would never reach. New ideas, stories, and thoughts now circulate due to fast, interpersonal association (L.Westman, personal communication, March 6, 2018). This authentic sharing of information, even pictures alone, can help people learn, cope, grow, and see the world differently (L.Westman, personal communication, March 6, 2018). A new way to mitigate effects is now being studied, which centers on feminist beliefs (Feltman & Szymnski, 2017). Moderate to high feminist ideals that focus on female empowerment, significance, and equality, appear to act as a buffer against poor self-image and body dissatisfaction (Feltman & Szymnski, 2017). This progressive way of thinking can help protect girls and women everywhere from the harmful effects of social media. General promotion of healthy and positive self-perception can also help condition females to love and accept themselves.
Using Social Media in a Healthy Way

Studies have shown that there are healthy and unhealthy ways to interact online. Technology usage affects emotional, social, and cognitive development, not only for teens and adolescents, but for adults, as well (Gold, 2015). Since more time online is being used for social purposes, appropriate use, which involves authentic self-presentation and mindful usage, is important for one’s optimal mental development (Yang et al., 2017). Social media offers a wide range of benefits to users, such as connection, healthy self-expression, community support and interaction, as well as access to health-promoting resources (Elmquist & McLaughlin, 2017). By implementing healthy online practices, low self-esteem, increased self-objectification, and the internalization of body dissatisfaction may be mitigated.

How and why one uses social media plays a role in determining whether it harms or benefits the user (Yang et al., 2017). The amount of time spent on social sites is a main contributor to distorted social comparison (Gold, 2015). As people increase their time spent online, social media accounts can become an integral part of people’s lives, and social media usage may even shift into obsession or addiction (Gold, 2015). Limiting use not only decreases exposure to peers’ posts and pictures, which may lead to harmful comparison, but it also allows for alternate activities and avenues to fill one’s life (Gold, 2015). This translates into the reason social networking should be used in the first place: Social media is meant to inform, connect, and share. Conversely, when the reason for going online is boredom, impulse, or the desire for validation, negative results may ensue. Research supports the notion that home and school environments have the power to determine girls’ attitudes regarding social media, whether positive or negative (Burnette et al., 2017). Parents and teachers have the power impact girls in this way. Decreasing time online and implementing healthy social outlooks can turn the adverse effects of social media into beneficial ones.
While social media use may contribute to negative mental habits, there is also a great potential for it to correct those unhealthy conditions. Elmquist and McLaughlin (2017) argued that understanding social media usage is imperative due to its great potential for good. Social media provides access to mental health resources in a way that has never been seen before—through countless services online (Elmquist & McLaughlin, 2017). These online services can have a great impact on women in need by providing social support and professional assistance. Elmquist and McLaughlin (2017) called on future researchers to focus on integrating social media use into identifying and finding those individuals who need mental health services. Potentially unsurpassable benefits may result by using this new form of connectivity to find and help those struggling in society.

**Religion**

When personal value is measured according to appearance or outside approval, susceptibility to low self-esteem appears to increase significantly. While women may try to refrain from this poor gauge of worth, complete avoidance is often unrealistic. The female placement of self-worth on appearance and peer approval is positively correlated with body comparison and scrutiny (Inman, Snyder, & Peprah, 2016). Given that these psychological disturbances originate in society, it is valuable to find factors that alleviate negative social media effects. In one study, feelings of being loved and loving oneself increased after reading religious material that emphasized a loving God who accepts everyone unconditionally (Inman et al., 2016; see Figure 1). This correlation further translated into decreased levels of body-dissatisfaction for women who otherwise based worth on physical or outside sources (Inman et al., 2016). Thus, when patients participate in religious activities, the demeaning aspects of media’s influence are lessened.

The influence and significance of religiosity often rests in the validity of the sect according to the participant. Whether what a religion preaches is true or not, there are psychological benefits to worship (Inman et al., 2016). While the reality of a God and all that
that entails would undoubtedly alleviate much self-dissatisfaction and disdain, simply the belief in a greater power and purpose may prove beneficial (Inman et al., 2016). While religious involvement is based on personal choice, health benefits may reach far beyond those commonly acknowledged.

Conclusion

While religion and healthy online usage appear to help mitigate many of the negative effects social media has on girls, more can be done to help promote self-love. The overarching result of Western-societal promotion is the fact that many females measure their worth according to outside sources (Burnette et al., 2017; Fardouly et al., 2016). Extraneous influences, such as peer validation and approval, may lead to a faulty and fragile self-perception. While the Dove Global Beauty and Confidence Report (2016) was focused on the women who did not consider themselves beautiful, a small portion of women did consider themselves beautiful. There must be something significant that separates that 4% from the other 96% and that difference likely resides in how each group of women defined self-worth.

The comparative aspects of social media typically harm positive self-perception for females of all ages. The negative impact social media use has on well-being seems to be primarily a female concern, and therefore, the implications of increased incorporation of social networking sites into Western society remain profound. Media’s emphasis on appearance shapes females’ perception of worth, and comparison seems to be particularly harmful to the mental and psychological health of girls (Fardouly et al., 2017). Given the widespread use of social-networking sites, healthy practices should be adopted, as this aspect of Western life will likely not fade. Considering that young girls are exposed to social media during critical developmental periods, healthy practices involving mindful online use should also be promoted in schools and homes.

While social media appears to shadow many positive qualities in girls and highlight other negative ones, the potential for online resources to good is significant. Great benefits have been
seen in the widespread connectivity and interaction made possible by social media, as some personal forms of comparison help individuals (Elmquist & McLaughlin, 2017). For girls, an internal sense of value seems to be necessary for true self-acceptance and confidence. Internal self-love often comes from following personal goals, interests, and passions (L. Westman, personal communication, March 6, 2018). By recognizing social media’s harmful promotions and redirecting their focus, Western women and girls can learn to better love and appreciate themselves.

References


Appendix

Table 1
Percentage of Female Comparison Made Within Different Contexts

<table>
<thead>
<tr>
<th></th>
<th>Upward</th>
<th>Lateral</th>
<th>Downward</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Social media</td>
<td>71 (67.0%)</td>
<td>22 (20.8%)</td>
<td>13 (12.2%)</td>
<td>106</td>
</tr>
<tr>
<td>Traditional Media</td>
<td>71 (80.7%)</td>
<td>5 (5.7%)</td>
<td>12 (13.6%)</td>
<td>88</td>
</tr>
<tr>
<td>In person</td>
<td>289 (45.1%)</td>
<td>152 (23.7%)</td>
<td>200 (31.2%)</td>
<td>641</td>
</tr>
<tr>
<td>Total</td>
<td>431</td>
<td>179</td>
<td>225</td>
<td></td>
</tr>
</tbody>
</table>


Figure 1. Mediated model predicting changes in appearance esteem for women with strong approval concerns. Reading theistic body-affirming statements was related to increased self-esteem for women with high-approval concerns. Adapted from “Religious-Body Affirmations Protect Body Esteem for Women Who Base Self-Worth on Appearance or Others’ Approval” by M. Inman, A. Snyder, and K. Peprah, 2015, *Mental Health, Religion & Culture*, 19, p. 107.
Pain that Lasts: The Long-Term Mental Health Implications of Childhood Bullying

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Abstract

The immediate effects of childhood bullying have been extensively researched and are relatively well-understood among the scientific community and within the public sphere. However, the long-term mental health effects of bullying are less understood and have only recently begun to be researched. Such implications require more attention from the scientific field to better recognize the effects of childhood bullying throughout a person’s lifespan. Recent research has shown that childhood bullying can lead to depression (Farrington, Loeber, Stallings, & Ttofi, 2011), anxiety (Heretick, 2012), symptoms of post-traumatic stress disorder (PTSD) (Dewey, 2015), and social isolation (Schafer et al., 2004) in adulthood. Furthermore, being at a higher risk of developing these mental illnesses in adulthood may seriously hinder one’s ability to function in society, specifically in environments such as work, family, and other social settings (Zlomke, Jeter, & Cook, 2016). Understanding the long-term mental health implications of childhood bullying can help parents, teachers, and professionals take greater action to create programs and initiatives that better confront the issue of bullying in schools.

Keywords: bullying, long-term, depression, anxiety, PTSD, social isolation
At the center of controversy regarding cyber-bullying among youth are several smart-phone apps, which are being accused by parents and teachers of creating channels for inappropriate behavior. One such app, called “Sayat.me,” was blamed for causing the suicide of a 15-year-old school boy in Yorkshire, England. This app allows its users to anonymously send comments and messages to their friends. Such anonymity allows youth to bully their peers with ease over a mobile network. The boy was allegedly bullied and abused on the app, thus implying that the app was the alleged cause of his suicide (Turner, 2017). This story does not stand alone: 17% of American students are bullied two to three times a month during the school year (Strauss, 2010). These statistics are so troubling that experts are calling bullying a “serious public health problem” (Kerr, 2016, para. 1).

With such stories becoming commonplace around the world, considerable research has been done on bullying, teasing, and harassing, and how these behaviors affect children’s overall functioning. One study found that bullying negatively affected children’s mental health, physical health, academic performance, and inclusion in social interactions (Steele, 2017). Conclusions have been clear in stating that bullying has adverse effects on both the bully and the victim and thus is a serious issue that requires innovative interventions in schools and communities around the world. Another recent study found that not only does bullying affect children in their youth, but it also has negative repercussions into the adult years (Sigurdson, Undheim, Wallander, Lyndersen, & Sund, 2015). Such implications, though still not fully understood, are continually being researched in the scientific field because of the seriousness of the issues and their effects on society as a whole.

Because the long-term effects of childhood bullying have only recently begun to be researched, great strides still need to be made in recognizing the importance and severity of the claims stating that bullying has adverse, long-term effects. In contrast to research indicating that effects of bullying are persistent, Singham et al. (2017) found that the effects of bullying dissipated over time and that victims could expect to eventually overcome
traumatic childhood experiences. Their claims emphasized the trait of resilience (the ability to recover quickly from adversity) but disregarded the fact that many victims experience serial bullying and do not exhibit resilience (Singham et al., 2017). A larger body of research has found that a clinically significant proportion of childhood bullying victims suffer from mental illness throughout their lifespans (Sigurdson, Undheim, Wallander, Lyndersen, & Sund, 2015). Furthermore, Singham’s findings are incomplete in providing evidence that bullying does not having lasting effects on the victim, because many of these victims show declines in resilience over time. This is due to the fact that self-esteem, as well as feelings of self-efficacy and confidence, is damaged and lead to further feelings of defeat.

Furthermore, with bullying often comes feelings of low self-esteem and social isolation. Social isolation is the fear and avoidance of social interactions and can exist at various levels towards different people (Radwan, 2017). For example, someone might decide not to go to a party due to an irrational fear that they would be ridiculed in front of their peers. Negative experiences at childhood parties can make this situation a reality for adult partygoers, because they recall being made fun of at social events earlier in their lifetimes. Other reasons for social isolation stem from feelings of insecurity or not feeling wanted and valued (Radwan, 2017). Ultimately these feelings lead to loneliness and avoidance of social interactions.

With bullying appearing to be an ever-increasing issue throughout the world, it is necessary to recognize all of the resultant implications and take appropriate action to better eradicate this problem. Programs and initiatives continue to arise each year within different school systems across the country, but is it enough? When the focus is narrowed on bullying being a short-term problem, the importance is also minimized, and thus efforts are less rigorous. It is therefore important to recognize the long-term effects of bullying as well. Although the acute effects of childhood bullying are relatively well-understood, increased
loneliness and lowered self-esteem may persist across one’s lifespan, because those who were bullied as children are at greater risk of developing depression and anxiety, symptoms of post-traumatic stress disorder (PTSD), and social isolation in their adult years.

**Bullying Leading to Depression in Adulthood**

Being bullied as a child makes one more susceptible to developing depression in adulthood. Lund et al. (2008) not only confirmed this claim but further expanded it by reporting that those in their study who reported being bullied as children were at significantly greater risk of being diagnosed with depression between the ages of 31 and 51. Although the researchers admit there may be confounding variables in these findings, such as parental mental health and recollection of bullying, they maintained that those whose bullying experiences were of high duration and intensity were at a much greater risk of developing depression despite such possible confounding variables (Lund et al., 2008). Similarly, Farrington, Loeber, Stallings, and Ttofi (2011) found that bully victimization was a key determinant for depression later in life, even controlling for other risk factors. These findings show that although other circumstances may be involved in determining the risk of developing depression in adulthood, bully victimization is still found to be a critical factor that cannot be ignored. Thus, the link between childhood bullying experiences and depression in adulthood becomes a crucial element in understanding the social implications in relationships, work environment, and other aspects of life.

**Interpersonal Theory of Depression**

Furthermore, the link between childhood bullying and depression in adulthood supports the interpersonal theory of depression (the theory that depression develops from dysfunctional interpersonal relationships), which allows researchers to conclude that the negative relational incidents that happen in childhood can lead to the manifestation of clinical depression later in life.
(Sourander et al., 2016). With bullying being defined as “the [verbal or physical] abuse and mistreatment of someone vulnerable by someone stronger” (“Bullying,” 2017, para. 1), it is clear that bullying can be considered a negative relational incident and can thus increase the risk of developing depression in adulthood. Recognizing this link between bullying and later depression is an important step to considering more seriously the social implications of childhood bullying in adulthood.

**Bullying Leading to Anxiety in Adulthood**

Similarly, research has shown that childhood bullying can also lead to an increased risk of developing social anxiety in adulthood. Social anxiety is the fear of social interactions with other people and includes avoiding such situations for fear of being negatively judged and examined (Richards, 2017). Researchers have found that a specific type of bullying called relational aggression, which is the verbal abuse directed at someone to bring down their reputation or social status (Gonzalez, 2017), is strongly associated with developing social phobia and social anxiety later in life (Heretick, 2012). Implications such as this illustrate the need to recognize how different types of bullying affect victims in different ways, such as physical versus relational aggression.

Researchers confirmed the need to understand the development of social anxiety in adulthood from those who were bullied as children (see Table 1; Sigurdson et al., 2015). This importance is illustrated in the fact that bullying can be defined as a peer-relationship issue (Sigurdson et al., 2015). Hence, being involved in unhealthy social relationships with peers can lead to lack of social functioning immediately as well as later in life. These negative experiences can have serious repercussions on victims in their adult years, because adjustment to social interactions later in life is greatly hindered (Sigurdson et al., 2015). Because the nature of interpersonal interactions changes as one gets older, social anxiety can impede one’s ability to adjust to these changes (Sigurdson et al., 2015). For example, a child who was verbally bullied because of their appearance may experience high levels of social anxiety...
in adult settings, such as a work environment, because of the continuous fear of receiving negative evaluation from coworkers or customers (Zlomke, Jeter, & Cook, 2016). Social anxiety such as this can manifest itself in a variety of settings, thus greatly impeding one’s ability to interact and communicate effectively with those around them.

**Bullying Leading to Symptoms of PTSD in Adulthood**

Being bullied as a child can lead to a greater risk of developing symptoms similar to those of PTSD in adulthood. Bullying has been found as a far greater predictor of development of PTSD symptoms than other childhood victimization experiences (Mebane, 2010). PTSD symptoms stem from the victim either experiencing or witnessing a traumatic event and can lead to feelings of despair, anxiety, and terror (MacDonald & Jensen-Campbell, 2011). Many people who are the victims of childhood bullying can experience similar symptoms, such as nightmares, invasive thoughts, emotional suffering from reliving traumatic events. They are also at an increased risk of engaging in risky behavior (Campbell, 2016). When unresolved, these symptoms can persist throughout the lifespan and thus seriously interfere with normal day-to-day functioning and ability. For instance, in order to avoid the emotional suffering that can come from reliving childhood bullying experiences, victims will often revert back to childish ways of handling difficulties because it feels safer (Campbell, 2016). This can cause impairments in social interactions, work environments, and family relationships due to the lack of understanding of more appropriate ways to handle stress.

**PTSD Symptoms Developing from Type and Severity of Bullying in Childhood**

Research has found that those who were physically bullied (which includes hitting, kicking, biting, punching, etc.) as opposed to verbally bullied (which includes name-calling, exploiting, and putting down through spreading of rumors) were those who were at greatest risk of developing symptoms of PTSD in adulthood.
(Dewey, 2015). This may be because physical bullying is a more outward manifestation of victimization and can thus be a greater determinant of the victim’s reliving of traumatic experiences. This is not to say that verbal bullying cannot lead to symptoms of PTSD; however, physical bullying has been found to lead to a greater risk than verbal (Dewey, 2015). Similarly, research has found that those who underwent more extreme methods of bullying, such as physical bullying, were at far greater risk of demonstrating symptoms of PTSD later in life (MacDonald & Jensen-Campbell, 2011). Understanding that typically more violent bullying is associated with later development of PTSD symptoms can help parents, school systems, and clinicians to better focus on the issue and resolve conflicts. Understanding specific populations can also help in this area.

**Special Populations and PTSD Symptom Development**

Recognizing the specific populations of childhood bullying victims who are at greatest risk of developing symptoms of PTSD is key to further understanding childhood bullying and its long-term effects. Those who reported being openly gay, lesbian, or bisexual while in elementary, middle, or high school were found to be at significantly higher risk of developing symptoms of PTSD in adulthood (Rivers, 2004). Researchers found that 26% of participants (who were part of this aforementioned population) showed symptoms of PTSD by recalling experiences of being bullied in school because of their open sexual orientation (Rivers, 2004). Such victimization (against those who declare themselves as openly gay, lesbian, or bisexual) may also be referred to as *homophobic bullying*. Accordingly, most participants experienced psychological distress when they encountered situations that reminded them of being victimized while in school; although less so, others experienced nightmares and flashbacks of being bullied in school (Rivers, 2004). All of these symptoms can clearly be recognized as symptoms of PTSD, thus showing the reality of such implications for this population. Furthermore, those who identified themselves as gay, lesbian, or bisexual and were bullied as children
were found to be at a far greater risk of continued victimization throughout their lifespans (Greene, Britton, & Fitts, 2014). While the LGBTQ population has been known to suffer from victimization in many different arenas, understanding the long-term effects of victimization, in school particularly, is especially important, because it points to an opportunity for early intervention.

Gender differences also exist in the development of PTSD symptoms from childhood bullying. According to Dewey (2015), females are more likely than males to suffer from PTSD symptoms later in life as a result of childhood bullying. The researcher attributes this to the evidence that females typically experience higher levels of psychological trauma as a result of bullying than males do (Dewey, 2015). This could also be due to the type of bullying experienced as well as the symptoms typically tied to that particular type. Similar to the previous claims, understanding the gender differences allows society to better take preventative measures to avert the long-term effects of childhood bullying.

**Bullying Leading to Social Isolation in Adulthood**

Childhood bullying can lead to social isolation and exclusion in adulthood. The implications of such a claim are important to note, because social isolation is often a gateway to many other more serious psychological and relational issues. An example would be social evasion, which is the event when one becomes less interested in social interactions and more concerned about self-preservation (Olien, 2013). This assertion can be tied back to the previously mentioned mental illnesses, as social isolation can often be the result of depression, anxiety, or PTSD (Radwan, 2017). However, it is essential to consider the issue of social isolation on its own because of the many resulting interpersonal and relational problems that can occur throughout the lifespan.

**Social Isolation and Severe Loneliness**

Being bullied as a child can affect the adult’s perception of self and ability to relate to others in social interactions, thus increasing the risk of loneliness and isolation due to avoidance of interpersonal
relationships (Schafer et al., 2004). Takizawa, Maughan, and Arsenaeault (2014) found that those who were bullied as children were at greater risk of living alone (without a spouse or partner) at the age of 50, were not as likely to have met up with friends in the recent past, and were less likely to have easy access to social support if they were unwell or sick. Furthermore, childhood bullying victims may, without noticing, limit interpersonal relationships that could help change their distorted perceptions of self, strengthen relational skills, and improve self-esteem (Zlomke et al., 2016). Thus, it appears that when those who are suffering from social isolation exclude others from their life, they also close off all sources of help to get them through their struggles. Such findings are significant as they demonstrate the implications of childhood bullying in real life scenarios and are found in direct connection with the essential human need of social relationships and connectedness.

Interpersonal Rejection and Fear of Negative Evaluation

Difficulties in maintaining essential human relationships can greatly hinder the social well-being of child bullying victims when they reach adulthood. Zlomke et al. (2016) found that those who were bullied as children were at a higher risk of intensifying interpersonal rejection sensitivity (the fear of being rejected in social interactions) as well as fear of negative evaluation, thus limiting social interactions with friends and family. Childhood bullying victims may also suffer from low self-confidence when it comes to romantic relationships (Mebane, 2010). These implications can, in turn, lead to a continuous cycle of loneliness and social isolation because of the lack of interpersonal interactions with others, including close family and friends, and the limited potential for romantic partnership. Social isolation has also been shown to increase the risk of developing other health risks, including arthritis, type II diabetes, and heart disease (Olien, 2013). It can also lead to suicide ideation and realization (Endo et al., 2017). Thus, the seriousness of such an issue must be recognized and
addressed in order for greater change to occur. As seen from such claims, more research must be done on the reality of childhood bullying leading to social isolation in adulthood because of the severity of its implications.

Conclusion

For years, bullying has infiltrated interpersonal relationships, schools, and social networks across the world. Recently, bullying was called a “public health issue” (Kerr, 2016) by a well-known news station to emphasize the extent to which it has spread among today’s youth. Victims of bullying often fall behind academically and suffer from low levels of self-esteem, depression, anxiety, and interpersonal relationship difficulties (Steele, 2017). While extensive research on the immediate effects of childhood bullying is relatively well-understood within society, recognizing that there are also long-term effects can be just as important in creating effective interventions to eradicate bullying victimization. As such, childhood bullying has been found to increase a person’s risk of acquiring mental illnesses later in life, thus showing that bullying may have larger implications than previously thought.

With such serious implications, interventions and programs must be implemented to better address the problem of bullying in school across the nation. Interventions should focus on accessibility to mental health services as well as peer support groups. As childhood bullying has been found to lead to social isolation in adulthood (Schafer et al., 2004), peer support groups would be especially important as it would allow youth to experience the emotional benefits that come from having valuable and empowering interpersonal relationships. Peer support groups would also help as they can act as a counter to the negative relational issues that are commonly associated with bullying (Sourander et al., 2016).

Research has found that childhood bullying can lead to serious mental health implications in adulthood, including depression (Farrington et al., 2011), anxiety (Heretick, 2012), PTSD symptoms (Dewey, 2015), and social isolation (Schafer et al., 2004). As seen from such claims, childhood bullying can lead to many harmful
effects that may last throughout the lifespan. Some effects are so serious, in fact, that having a clearer understanding of these claims may save lives. Therefore, a greater recognition and understanding of the long-term mental health implications of childhood bullying can help parents, teachers, professionals, and community members to create better, more effective interventions that can help eradicate the issue of bullying within schools across the nation. Not only will these efforts likely create a safer environment for children within the school system, but it may also prevent victims from acquiring various mental illnesses throughout the lifespan.

References


## Appendix

### Effects of Bullying on Overall Functioning

**Table 1**

*Comparing Bullied and Non-Bullied Adolescent Groups with the Outcome of Psychosocial Functioning in Young Adulthood*

<table>
<thead>
<tr>
<th>Non-involved vs.</th>
<th>Being Bullied (n = 158)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>OR*</td>
</tr>
<tr>
<td>Reduced functioning</td>
<td>1.69</td>
</tr>
<tr>
<td>Reduced leisure activities</td>
<td>1.76</td>
</tr>
<tr>
<td>Absence from school/work</td>
<td>1.31</td>
</tr>
<tr>
<td>Affected interpersonal relations</td>
<td>1.27</td>
</tr>
</tbody>
</table>


*Odds Ratio (OR) scores indicate the likelihood of suffering from reduced functioning, reduced leisure activities, absence from school/work, and affected interpersonal relations when compared to those who were not involved with bullying.*
Long-Term Effects of Bullying