Chapter 4

SUICIDE AND SELF-WORTH

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ABSTRACT

Puberty can be a vulnerable time for adolescents as their body, brain, and self-esteem undergo changes. Low self-esteem is an important risk factor for suicide, which is a major cause of mortality in teens. On the other hand, high self-esteem can protect against suicidality. Building self-esteem could be an approach that saves lives.

INTRODUCTION

Suicide is, and has been, one of the most serious issues impacting adolescents. Suicide ranks number 3 as a cause of death in United States teens, and many more teens experience an attempt yet survive (1). Rates of suicide attempts, and serious consideration of suicide, are greater in adolescent females than males. The Youth Risk Behavior Survey (YRBS) 2013 (2) noted that 17.0% of high school students seriously considered suicide, with nearly twice as many females (22.4%) reporting they seriously considered suicide contrasted to 11.6% of males. There was also a significant difference in suicide attempts by gender; 10.6% of high school females reported one or more attempts contrasted to 5.4% of high school males (2). Although the rate of suicide attempts is higher in females, completion in males is four times the rate in females (1), as males tend to use deadlier means (i.e., firearms in males vs. drug overdoses in females). This review will explore some of the reasons for this important difference between the two genders, examining biologic changes and relative timing of

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puberty, maturation of the brain and cognitive growth, and how these changes potentially impact self-esteem.

**HOW ADOLESCENTS CHANGE**

Adolescents mature in several areas, including cognitive, social, and biologic realms. Maturation in each of these areas impacts the others. For example, biologic maturation (puberty) has both direct and indirect effects on cognitive (thought) development and neurodevelopment (brain), as noted below.

Cognitive changes include development of formal operational thought. Formal operational thought, also known as abstract thought, includes the ability to understand complex relationships, such as algebra concepts and nuances in communication, as well as how current behaviors affect future outcomes. One becomes more reflective and develops a sense of egocentrism (for example, if adolescents are thinking about something, those around them may, and perhaps, should be thinking about the same thing). The clinician and parent should be aware that responses from the adolescent patient at this time may reflect partial answers, not necessarily from a sense of misdirection, but rather that the adolescent may assume that the clinician has already drawn the same conclusion from the response that the adolescent client has drawn. For example, an adolescent may present with headaches and abdominal pain and assume that the clinician is already aware that the adolescent is concerned that she is pregnant. It is important for the clinician to engage in reflective listening, summarize the issues with the adolescent, and then ask directly if (s)he is concerned about anything else. Of note, not all adolescents develop abstract thought, and they are less likely to do so if they have intellectual delays (that is, mental retardation).

During the mid- to late-teen years, there is typically transition from “hot” (high emotional content) to “cool” (less emotional, more rational content) cognition; this likely results from both the development of abstract thought processes described above as well as neuromaturation. As an example of the differences between hot and cool cognition, the reader should take a moment to recall a very emotional, stressful event in the past month and how that situation was resolved. Were you at the top of your game and trying to determine the best outcome for everybody involved? You likely were experiencing hot cognition at that time, with a significant amount of affective (emotional) input into conscious processing. This unusual state for an adult is not unlike the typical state of the adolescent brain.

Both hot cognition, as well as engaging in risk-taking or emotionally charged behaviors, may reflect neuromaturation of the adolescent brain. There is later maturation of prefrontal cortex and mismatch of incentive processing over cognitive control during teen years (see Figure 1) (3). Several have proposed that risky behavior during adolescence is a result of this imbalance, with a predominance of the emotional, sensation-seeking areas of the brain, such as the limbic and paralimbic structures, over the cognitive-control (executive functioning) areas of the brain, such as the prefrontal cortex (4). The “self-regulatory” (impulse-control) system may be overwhelmed by the “incentive-processing” (reward-seeking) system (4). Indeed, there are distinct changes in brain volume, structure, and connections that occur during puberty, and some of these changes are impacted differently in individuals undergoing relatively earlier or later pubertal maturation (5).
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Figure 1. Sensation-seeking and impulse control. The different developmental trajectories of self-reported sensation-seeking and impulse control based on an analysis of data from National Longitudinal Study of Youth (NLSY79) Children and Young Adults (CNLSY), a longitudinal, nationally representative survey of more than 7,000 American children and young adults ranging in age from 12 to 24 years (see National Longitudinal Surveys) (3).

Additionally, these maturation changes occur at an earlier age in females than males; that is, maturation of the prefrontal cortex occurs in the late teens in females contrasted to the early twenties in males.

Another result of neurodevelopment and biologic maturation is the gender-specific increase in depression. Prior to adolescence, males have a slightly higher rate of depression that do females, but by mid-adolescence and, more precisely, mid-puberty, the rate of depression among girls is twice as great as the rate in boys (6). Further, when depression is examined with respect to the hormones estradiol and testosterone, hormone levels are more important than pubertal status (7).

**PUBERTY AND THE RAPIDLY CHANGING BODY**

Puberty is represented by a series of changes throughout the body and includes the pubertal growth spurt, changes within the hypothalamic/pituitary/gonadal axis, development of secondary sexual characteristics, changes in body composition, and the achievement of fertility. Puberty begins with an increase in the pulsatile secretion of gonadotropin-releasing
hormone (GnRH), typically at night. This pulsatile secretion stimulates the release of follicle-stimulating hormone (FSH) and luteinizing hormone (LH) and the subsequent production of the sex steroids estradiol and testosterone from the gonads (in girls, ovaries and in boys, testicles). Estradiol stimulates the growth of breast tissue, and both estrogen and testosterone stimulate the growth plates in bones and lead to the pubertal growth spurt.

![Figure 2. Sequence of puberty in girls (8).](image)

The sequence of events is demonstrated in Figure 2 (8). With pubertal maturation, there are associated changes in body composition. Both girls and boys have an increase in lean body mass, but girls experience a rapid increase in the total, as well as relative, body fat during pubertal maturation (9). These changes in body composition occur during a vulnerable period of the development of self-esteem, as noted in the following section.

**Changes in global self-worth in adolescent girls**

Adolescence is a time when youth become more independent and think of themselves as a separate “self” (10). Self-esteem may become more salient with this increased awareness of self. Adolescent boys typically have greater self-esteem than girls (11-12). As girls go through the teen years, measures of self-esteem, or self-worth, increase slightly or remain stable in African-American girls, whereas measures of self-esteem decrease in white girls, which appears to be driven by a decrease in body satisfaction (9) (Figure 3).

There is a significant interaction of body mass index (BMI), race, and age on self-esteem. Self-esteem is greater among African-American girls with a typical BMI (between the 20th and 80th percentile, corresponding to the average BMI plus or minus one standard deviation), whereas self-esteem is greatest in white girls in the lowest BMI group (below the 20th percentile) (9). Self-esteem in white girls increases in mid- to late adolescence, and research has suggested that this increase in self-worth is associated with a decrease in the importance that white adolescent girls place on body satisfaction.
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Longitudinal analysis of 1213 black and 1166 white girls, aged 9 and 10 years at intake. Black diamonds = black participants; gray squares = white participants.

Figure 3. Global self-worth, by race and age (9).

A decrease in self-worth during puberty can impact resiliency (the ability to cope with negative experiences) and, subsequently, increase the likelihood of substance abuse, risky sexual behaviors, depression, and suicidal thoughts (13-14). Of these factors, depression is considered as the most significant risk for suicidal behavior (15). Negative body attitudes and feelings are predictive of suicidal ideation beyond the effects of depression, perhaps because those with negative image are less invested in protecting their bodies from harm (16). Of note, the standardized mortality ratio (SMR, risk of death compared to the general population of similar age and gender) for psychiatric diagnoses is greatest for eating disorders rather than depression; the SMR for anorexia nervosa was 32.4, whereas the SMR for depression was 21.2 times the expected rate of suicide in the general population (17).

On the other hand, increasing the level of self-esteem improves resiliency and protects against suicidality (18). Self-esteem influences adolescent suicide risk behaviors for youth with low as well as high family support. However, teens with low family support may have to rely on themselves more often, so self-esteem may be of heightened importance in these adolescents (18). Depression and low self-esteem in the family context (e.g., perceiving minimal family support or feeling unloved) are each independently associated with suicidal ideation and attempts; screening for depression and low self-esteem in the family context may help identify adolescents at risk for suicide attempts (15).

BUILDING SELF-ESTEEM IN ADOLESCENTS

Self-worth is stable for some individuals, but for others, as discussed earlier, self-esteem can change over time as factors, such as body composition, change (9). If self-esteem is not always a static personality trait, how can it be enhanced and thus hopefully decrease the risk of suicide?
Low levels of peer/parental/family support and low self-esteem predict suicidality and, conversely, high levels of each could serve as protective factors (10,18). However, more awards and praise are not necessarily the answer. Contemporary teens are part of what is sometimes referred as the “Trophy Generation,” with a surplus of superficial accolades; despite this, the rates of suicide and depression in adolescents have not changed (19).

Some school-based programs have been developed that effectively build self-esteem in a meaningful way. Such programs could be used to intervene in a variety of mental health, social, and behavioral issues that are linked to levels of self-esteem. Through this approach, multiple issues could be tackled by a single program (20). Additionally, school could be the ideal setting for this work, potentially reaching a large number of children in an efficient manner (20). One program that proved its effectiveness was a mentoring program that focused on relationships, self-esteem, goal setting, and academics. The youths’ self-esteem increased; they felt more connected to school, peers, and family; and they also were less likely to be depressed (21). It has been previously shown that connectedness, especially in school, protects against depression and suicidality as well as other negative outcomes (22). Another example was a school-based self-esteem education program that addressed body image, along with eating attitudes and behaviors, and resulted in positive effects that persisted one year after completion (23). Although these programs show promise, more research needs to be done on long-term data regarding these interventions in order to determine lasting impact.

In addition to the programs that can be implemented within local schools, there are approaches geared toward parents and other interested caretakers. See the tips below from the American Academy of Pediatrics website HealthChildren.org, along with the Mayo Clinic and Substance Abuse and Mental Health Services Administration (SAHMSA) websites (24-25). The following are recommendations for the parents of teenagers from HealthyChildren.org (24):

- Provide sincere praise for accomplishments as well as effort.
- When teens make mistakes, offer constructive criticism.
- In matters in which your teen can have a choice, ask for your teen’s opinion.
- Encourage teens to explore their interests and build on their talents

The following are recommendations to adolescents from The Mayo Clinic based on concepts of cognitive behavioral therapy (25):

- Reflect on situations that lower your self-esteem.
- Pay attention to your negative thoughts.
- Test the truthfulness of your negative thoughts.
- Replace the negative thoughts with truthful, positive thoughts.

Another recommendation from The Mayo Clinic is based on acceptance and commitment therapy (25):

- Reflect on situations that lower your self-esteem.
- Pay attention to your negative thoughts.
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- Repeat the negative thoughts over and over until the words sound strange in order to distance yourself from the negative thoughts.
- Instead of fighting them, accept the thoughts so as to decrease their power. You do not need to control your thoughts, and your negative thoughts do not need to control you.

CONCLUSION

Puberty can be a vulnerable time for adolescents as their body, brain, and self-esteem undergo changes. Low self-esteem is an important risk factor for suicide, which is a major cause of mortality in teens. On the other hand, high self-esteem can protect against suicidality. Building self-esteem could be an approach that saves lives.

Suggested readings

- SAHMSA has a short booklet that can be found at no cost online to help improve self-esteem and practice affirmations (26): https://store.samhsa.gov/shin/content/SMA-3715/SMA-3715.pdf

REFERENCES