DO MATHEMATICS AND TEST ANXIETY INFLUENCE THE DECISION TO DROP OUT?

by Amy J. Bruno

GED students and non-traditional adult learners are a vastly understudied population within the field of school psychology. However, we do know that individuals who do not have a high school diploma or GED have poorer life outcomes than their counterparts with high school diplomas and degrees from universities. This study examined the levels of mathematics and test anxiety in a sample of students enrolled in GED courses in order to see if a relationship existed between high academic anxiety levels and the decision to “drop out” of high school. Additionally, this study provides qualitative insight to the rationale adult learners had for leaving high school and returning to get their GED, as well as aspirations they have for their futures and how earning their GED will help them attain those goals. Significant findings, future directions for study of this population of learners, and implications for practitioners are addressed.
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Introduction

Schools termed dropout factories - defined as schools that graduate less than 60% of their freshman cohorts - have emerged, accounting for a majority of the dropouts in the United States (Alliance for Excellent Education, 2011). Students who drop out of high school have been shown to have poorer social outcomes – higher incidence rates of being incarcerated, low paying jobs, increased likelihood of joining a gang, higher prevalence of drug and alcohol abuse, and higher engagement in violent criminal behavior – than their peers. These outcomes are present even when they attain their general equivalency degree (GED) (Martin, Tobin, & Sugai, 2002; Prevatt & Kelly, 2003). There are numerous factors that may place students at-risk for dropping out of high school – some sociological, some educational and others psychological. Among the sociological factors are poverty and living in a single parent household (Randolph, Fraser, & Orthner, 2006; Somers, Owens, & Piliawsky, 2009). Educational issues may include absenteeism, low school involvement, and feeling misunderstood by educators (Mac Iver, 2011; Patterson, Hale, & Stessman, 2008), whereas psychological factors may range from lack of motivation to fear of failure. As a result of these varied risk factors, this study examined the two most common types of anxiety experienced by students within the classroom setting: test anxiety and mathematics anxiety (Academic Anxiety Resource Center, n.d.).

Purpose & Need

As stated in the introduction, the research literature regarding school completion suggests a multitude of factors influencing a student’s decision to drop out, including student mobility (Rumberger & Larson, 1998), lack of student engagement (Archambault, Janosz, Fallu, & Pagani, 2009), and health-related risk behaviors, such as drug use and high-risk sexual practices of teenagers (Warren et al., 1997). Moreover, extensive research on anxiety has revealed a strong relationship between high levels of student anxiety and resultant reduced school achievement (El-Anzi, 2005; Phillips, 1962; Skaalvik, 1997), another factor highly correlated with high school dropout. However, the research regarding the direct relationship between high school dropout and anxiety is fairly limited, and no recent research studies have determined if there is a distinct relationship between the two. The purpose of this study is to explore the anxiety levels of students who have dropped out of high school and the self-perceived effects of anxiety on the decision to drop out.

Need. Within the United States, formal education is viewed as a necessary commodity to not only equip the citizens of this nation to take on the reigns of citizenship, but to position oneself to engage fully in the social marketplace. According to the most recent census in the United States (Julian & Kominski, 2011), for high school graduates, the median annual salary according to the 2011 census was $34,197, and for those with less than a high school education, the median yearly salary ranges from $23,277 to $27,470 (Julian & Kominski, 2011).

Furthermore, youth who drop out of high school are more likely to be incarcerated, have low socioeconomic status, have children who remain in poverty, and experience higher rates of violent crime in their neighborhoods (Martin, Tobin, & Sugai, 2002; Prevatt & Kelly, 2003). The need to study this population and ascertain what interventions can help to ameliorate this cycle is critical. The more we can enhance school completion, the more likely we can ward off the deleterious impact of social ills such as incarceration, single-parent households, gang involvement, and drug and alcohol abuse (Martin, Tobin, & Sugai, 2002; Prevatt & Kelly, 2003).

Hypotheses/Research Questions/Objectives

The objective of this study is to identify whether or not anxiety plays a role in a student’s decision to drop out of high school. Within this study a high school dropout is an individual who
failed to graduate within four years of entering high school and/or removed him or herself from the public school system either with or without parental consent as it was deemed necessary by the student’s age at the time of leaving school. In order to fulfill these objectives, the following research questions will be tested:

1. What are the levels of test and mathematics anxiety among a sample of individuals who dropped out of high school?
2. Does the presence of test and/or mathematics anxiety influence a student’s decision to drop out of high school?

**Literature Review**

Students who drop out of high school have been shown to have poorer life choices and circumstance outcomes than their peers with high school diplomas, even when they attain their GED (Martin, Tobin, & Sugai, 2002; Prevatt & Kelly, 2003). Numerous strategies for dropout prevention have been employed across the United States, yet no single strategy has been repeatedly successful in lowering the dropout rate, nor have any explored the effect anxiety related to testing or mathematics has had on the dropout epidemic. This study aimed to examine the relationship between academic anxiety and the high school dropout phenomenon.

**Risk Factors for High School Dropout**

Urban students face a multitude of factors that negatively impact their education as compared to their suburban and rural peers, including lower socioeconomic status neighborhoods with increased violence and crime rates, a greater number of single-parent households, less involvement with their schools, and negative early educational experiences (Randolph, Fraser, & Orthner, 2006; Somers, Owens, & Piliawsky, 2009). Multiple studies have indicated that when a dropout prevention program was implemented earlier in a student’s educational career it was more likely to be successful, as absenteeism increases drastically from fifth to eighth grade, and even further increases from eighth to twelfth grade (Martin, Tobin, & Sugai, 2002; Mac Iver, 2011). Additionally, students at-risk for failing to complete high school are often minority students, some of whom speak little to no English, and face risk from within the school as well. In a qualitative study conducted by Patterson, Hale, and Stessman (2008), it was discovered that many urban students feel little connection with their school due to a difference in their familial cultures and the school’s culture. Students reported that this made their experiences in school less fulfilling, as they felt ignored in the classroom and believed that the teachers did not understand them or want to help them. A final risk factor influencing the dropout epidemic was the large migration of students to different districts from year to year throughout their education. Rumberger and Larson (1998) discovered that when students relocate to a different district two or more times between the eighth and twelfth grade, they were less likely to complete school due to insufficient amounts of credit hours, behavior problems, or frequent absenteeism.

**Relationship of Family to School Outcomes.** Students are undoubtedly influenced by their lives outside of the educational setting, and the families of the students have a tremendous impact in the student’s perception of themselves, their abilities, and their outlook on education as a general concept (Gorman, 1998). Of these factors, the parental attitude toward education makes arguably the greatest impact on the student’s overall academic success. Gorman (1998) argues that the largest factor influencing a parent’s attitude toward education was the socioeconomic status of the family, and families of lower socioeconomic status (working class) do not see the value of an education, believing that with hard work, an individual can do just as well, if not better, in life as someone who went to college. Gorman (1998) stated that this could be a result of hidden “class injuries” that families of lower socioeconomic status experience at
the hands of their middle class counterparts at school and community social functions where the socioeconomic classes become intermixed. This becomes especially true for individuals who did not enjoy going to school, did not experience a stable home environment, and battled with self-esteem issues. Undoubtedly, the attitudes that the parents have within the home toward education become transmitted to their children, who are still within their compulsory education years. Additionally, when students see that their parents can, and do, live well without a college degree, and in some cases, high school degree, they, too, tend to believe that furthering their education was unnecessary (Gorman, 1998).

However, other studies argue that the key component to understanding the effect that families have on a child’s education lie in the degree to which the parent was involved within the child’s educational life and school (Miedel-Barnard, 2003). When parents rated their involvement in their child’s school, no significant correlations were discovered between parent involvement and high school dropout; however, when teacher ratings of parental involvement were assessed, students whose parents were rated as being less involved in the child’s academic life and school were more likely than their peers with significant parental involvement to have dropped out of high school by the age of 20 (Miedel-Barnard, 2003).

**Mathematics Anxiety**

Mathematics anxiety is the most commonly experienced form of academic anxiety in today’s youth, particularly because mathematics anxiety encompasses both worry and emotionality components, which together form a powerful combination to overcome (Ormrod, 2011). Moreover, Ormrod posits that mathematics anxiety could be caused by school curricula introducing mathematics concepts and procedures before students are cognitively capable of interpreting and understanding the ideas. However, an alternative suggestion for a cause of mathematics anxiety is that students perceive that they have a low ability to do well in mathematics (Ahmed, Minnaert, Kuyper, & van der Werf, 2010). Ahmed et al. (2010) explored the bidirectional relationship between mathematics anxiety and math self-concept and found that lower levels of self-concept predicted later increased mathematics anxiety; additionally, initially high levels of anxiety also simultaneously predicted a later recording of low self-concept in mathematics. Furthermore, the effect of low self-concept on anxiety was more than twice as high as the effect of anxiety on subsequent low self-concept (Ahmed et al., 2010).

Evidence also illustrates that mathematics anxiety could be a result of an individual’s working memory being unable to recall information from long-term storage to address higher-level mathematics problems, simply because students are less frequently asked to process such problems (Ashcraft & Krause, 2007). Additionally, Ashcraft and Krause (2007) are in agreement with Ormrod (2011) regarding mathematical concepts being presented too early to students. Ashcraft and Krause (2007) report that, although complex mathematical problems may have fewer symbols and characters to hold within one’s working memory, they are in fact more difficult to solve because the symbols themselves represent abstract concepts, rather than concrete concepts. When a student experiences mathematics anxiety early in their educational career, it impacts his or her decision to continue taking mathematics classes at increasingly more difficult levels (Hembree, 1990). Hembree (1990) also found that collegiate students studying to be elementary school teachers displayed the highest levels of mathematics anxiety, despite being required to take the fewest number of mathematics courses in order to obtain their teaching degrees in comparison to other majors within the study. This could impact the development of mathematics anxiety in students because if their instructors are uncomfortable with mathematics,
it may show in their teaching, inadvertently influencing their students to develop mathematics anxiety.

Research also suggests that mathematics anxiety may account for some of the gender differences in mathematics achievement between male and female students, resulting in fewer female students enrolling in later mathematics courses during their high school and undergraduate careers (Wigfield & Meece, 1988). Furthermore, the value that students place on the subject of mathematics moderates the effect of students’ math anxiety. Wigfield and Meece (1988) also found that the presentation of mathematics anxiety was extremely similar in younger and older students.

Test Anxiety

Test anxiety is a situational form of anxiety, specific to situations where individuals are being evaluated on their comprehension of a subject (Ormrod, 2011). Female students and African-American students have been found to have greater test anxiety than their Caucasian male counterparts, indicating that individuals of minority status and female gender are at greater risk for experiencing test anxiety (Hembree, 1988). The situations in which anxiety occurs can be broken down into two main subtypes of test anxiety – trace anxiety and state anxiety (Cunha & Paiva, 2012). Trace anxiety occurs when a student has a predisposition to display a certain level of anxiety, be it high or low, which applies across subject areas, without regard to content or test difficulty. State anxiety occurs when a student was preparing for the occasional difficult test or for a test that a student failed to prepare for. Test anxiety can serve both adaptive and maladaptive functions, primarily based on the amount of test anxiety the student was experiencing (Ormrod, 2011), and this section will focus on the maladaptive functions that test anxiety serves for students.

Test anxiety stems from an internal learned anxiety drive, which stimulates a student’s off-task behavior as a result of learned helplessness in testing situations, anticipation of punishment for failing to perform well, and lacking feelings of self-efficacy in testing situations (Hembree, 1988). Test anxiety also forces students to divide their attention between behaviors relevant to the task of studying and their worry, self-criticism, and physiological/somatic concerns. Additionally, students with high levels of test anxiety tend to study more, yet they retain the belief that they will still perform poorly on the assessment, and they display difficulty in encoding the information that they have studied exhaustively (Ormrod, 2011). Test anxiety was pervasive in schools, yet it goes undiagnosed in many adolescents because they fail to refer themselves to school nurses, counselors, or psychologists for emotional concerns because they fear being ridiculed by their peers (Huberty, 2010).

However, McDonald (2001) noted in a literature review that earlier studies failed to account for several factors contributing to test anxiety. For example, McDonald notes that in many of the early studies on test anxiety, the researchers observed students taking additional assessments in a laboratory setting rather than authentic assessments in a classroom setting, which make the validity of the experiments in the studies highly questionable and subject to scrutiny.

Rationale and Purpose

There are many factors that influence a student’s decision to drop out of high school, including low socioeconomic status, chronic absenteeism, living in a single parent household, negative early educational experiences, a disconnect between home and school cultures, and migration from district to district. Although the dropout rate in the United States has steadily decreased since the 1970’s, it is still paramount that the issues and challenges underlying the
causes of high school dropout are addressed. Mathematics and test anxiety are the two most commonly experienced academic anxieties, and there was little research examining whether they too may have a role in contributing to dropout at the time this study was conducted. This researcher believes that these two academic anxieties may play a role in a student’s decision to drop out of high school because of a theory posited by Legault, Green-Demers, and Pelletier (2006), which indicated that students experiencing anxiety related to their ability and effort beliefs may also suffer from academic amotivation, eventually leading to high school dropout.

This study sought to aid in filling in the gaps in the literature by examining two types of anxiety in a sample of individuals who dropped out of school. This provided information on levels of anxiety within this population. In addition, the study provides some exploratory data regarding the relationship between academic anxieties and the phenomenon of high school dropout.

Specifically, the following research questions and hypotheses will be tested:

1. What are the levels of test and mathematics anxiety among a sample of individuals who dropped out of high school?
2. Does the presence of test and/or mathematics anxiety influence a student’s decision to drop out of high school?

I hypothesize that GED students will exhibit significantly higher test and mathematics anxiety than typical students because they have left a traditional education program, potentially for several years, before returning to earn their GEDs. Further, the level and difficulty of work required to earn a GED may seem daunting to a non-traditional student (Wigfield & Meece, 1988).

**Methodology**

This study is an exploratory mixed methods research project. Mixed methods is often used to combine quantitative and qualitative data to understand the question of why an individual or group of individuals performed a given action. Tashakkori and Creswell (2004) defined mixed methods research as the editors for the Journal of Mixed Methods Research as:

research in which the investigator collects and analyzes data, integrates the findings, and draws inferences using both qualitative and quantitative approaches or methods in a single study or a program of inquiry. (Creswell & Tashakkori, 2007, p. 4)

Greene (2007) added to this definition, by stating that mixed methods research, “actively invites us to participate in dialogue about multiple ways of seeing and hearing, multiple ways of making sense of the social world, and multiple standpoints on what is important and to be valued and cherished.” (p. 20)

In terms of this research project, the researcher sought to investigate the questions of why do individuals make the decision to drop out of high school before graduation, and do test or mathematics anxieties have any impact on this decision. To accomplish this goal, a survey method was used to gather quantitative data utilizing the Attitudes Towards Mathematics Inventory, the Test Anxiety Inventory, and a demographic questionnaire, which included questions about participants’ childhood backgrounds and parents, while individualized interviews with willing participants were conducted to delve further into their rationales and provide an additional way of making sense of their decisions, which were encapsulated in unique and challenging circumstances that they faced as older adolescents preparing to make a life-changing decision. The researcher was particularly interested in studying this population of
students, as they have perspectives on education and school climates that are vastly underexplored because of the difficulty following up with high school dropouts after they have left the school environment.

Participants

Fifteen adult learners working toward their GED certificates were recruited to take the quantitative survey, while 10 of these 15 participants participated in an additional interview to glean more in-depth qualitative data. Where the literature predicted that more males than females would be high school dropouts, more participants in this study were female. The subjects in this study were high-school dropouts who elected to attend GED courses in two community resource centers and adult education centers in Southwest Ohio. The first center was located in a family resource center in a medium-sized rural town, and the classes were open to all adults in the county. The GED courses were offered during the evening hours only (6 – 9 PM), as the center offered other programs during business hours, and the class times were set in order to promote employment during the typical day among its participants. The second center was located in a community services building in a small city setting, and the classes were open to any adults living in the county. Classes at this center were offered during the daytime hours, and they catered primarily to individuals in the community who were unemployed at the time of this study. At the time this study was conducted, the employment rate for the county in which both centers were located was 6.2% (U.S. Department of Labor, n.d.). The subjects from both centers ranged in age from late teen’s to mid-60’s, and their educational experiences varied as widely as their ages. The participants were recruited from GED classrooms within the centers, after permission was obtained from the center directors. Each student was provided with a survey, and students were given the option to decline participation on the consent form, which was paper clipped to the survey. Of the participants who completed the additional interview, four were randomly selected to win a $25 gift card as appreciation for their time and participation. Participants’ self-reported childhood neighborhoods conflicted with the literature, which suggests that the dropout epidemic primarily affects urban youth (Lehr et al., 2004; Schargel, 2004).

However, the self-reported ethnicities and incomes of participants support the literature base, which indicates that those from minority backgrounds are more likely to drop out of high school, and individuals who dropped out of high school earned an average monthly salary of $1920, which translates to an annual gross salary of $23,040 (U.S. Census Bureau, 2014). The participant demographic information is reported in Table 1.

Table 1
Participant Demographic Information

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Percentage</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td>53.3%</td>
<td>8</td>
</tr>
<tr>
<td>Male</td>
<td>46.7%</td>
<td>7</td>
</tr>
<tr>
<td>Ethnicity</td>
<td></td>
<td></td>
</tr>
<tr>
<td>White</td>
<td>40%</td>
<td>6</td>
</tr>
<tr>
<td>Hispanic</td>
<td>6.7%</td>
<td>1</td>
</tr>
</tbody>
</table>
Participants were also asked to report the level of education their parents had attained, as the research base indicated that individuals are more likely to drop out of high school if their one or both of their parents had dropped out of high school and experienced success in the workplace (Gorman, 1998). The responses from participants are illustrated in the table below.

### Table 2

**Participants’ Parental Education Levels**

<table>
<thead>
<tr>
<th>Education Level</th>
<th>Mother (n = 15)</th>
<th>Father (n = 15)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Less than High School</td>
<td>40%</td>
<td>26.7%</td>
</tr>
<tr>
<td>High School/GED</td>
<td>46.7%</td>
<td>26.7%</td>
</tr>
<tr>
<td>Some College</td>
<td>6.7%</td>
<td>6.7%</td>
</tr>
<tr>
<td>2-year degree (Associate’s)</td>
<td>0%</td>
<td>6.7%</td>
</tr>
<tr>
<td>4 year degree (Bachelor’s)</td>
<td>0%</td>
<td>6.7%</td>
</tr>
<tr>
<td>Unknown</td>
<td>6.7%</td>
<td>26.7%</td>
</tr>
</tbody>
</table>

**Protection of Human Subjects**

The researcher successfully completed the CITI online ethics training, as required by the Miami University Institutional Review Board, and completed a classroom training session led by Dr. Neal Sullivan of the Research Compliance Office at Miami University. Furthermore, the researcher submitted a protocol to the university Institutional Review Board, including all materials that participants were presented with, and began the study once approval was received. Participants were fully informed of the purpose of the study via the informed consent protocol, and no deception techniques were utilized, as the study does not involve elements of social desirability. All survey data collected from participants were numerically coded, and all collected data were saved electronically, in password-protected documents that only the
researcher and her thesis committee could access. Participants were informed that at any time during the course of the study, if they became uncomfortable or did not wish to participate further, that they could remove themselves from the study without repercussion. Adult education sites were contacted prior to data collection, and permission was obtained from site directors, as well as any educators of the classes requested to become part of the study’s sample.

**Materials and Measurements**

To assess students’ anxiety levels, a 60-item survey was administered using pencil or pen and paper, with additional demographic information administered after the 60 items regarding participant’s anxiety level in high school, current anxiety level in GED coursework, and the reason the participant elected to drop out of high school. Items included in the survey were taken from the Attitude Toward Mathematics Inventory (ATMI) (Tapia & Marsh, 2004) and the Test Anxiety Inventory (TAI) (Spielberger et al., 1980). Each survey was coded using a number from one to 15 to prevent the identification of any participant from being compromised. The consent form for the survey contained three options for participants to select from. One option was for participants to decline participation in the survey, while the other two options indicated consent for participation in the survey, with one adding additional consent to be individually interviewed.

The participants who elected to participate in the interview portion of the study were asked seven questions developed for this study (Appendix A) to delve further into the participant’s decision to drop out of high school, as well as for participants to reflect on their level of anxiety during high school to assess how large of a role it played in their decision to leave school early. The interview items were written and asked in an open-ended format to give participants the opportunity to explain their answers and reflect upon their experiences. The interview followed a semi-structured format, with follow up questions asked where necessary to obtain in-depth responses from participants, and it was recorded using a digital handheld device for later transcription.

**Attitudes Toward Mathematics Inventory.** The Attitudes Toward Mathematics Inventory (ATMI) is a 40-item instrument that utilizes a five-point Likert scale to rate users’ confidence, anxiety, value, enjoyment, and motivation, with regard to mathematics (Tapia & Marsh, 2004). It was chosen because it was created relatively recently, and was still in print, unlike its predecessors, the Mathematics Anxiety Rating Scale (Suinn & Richardson, 1972) and the Fennema-Sherman Mathematics Anxiety Scales – Revised (Fennema & Sherman, 1976). Participants respond to items on the ATMI with the responses of Strongly Disagree, Disagree, Neutral, Agree, or Strongly Agree. The ATMI typically takes between 10 and 20 minutes to complete (Tapia & Marsh, 2004), and has a reliability coefficient of .95, indicating that the inventory is able to address students’ attitudes towards mathematics exceptionally well. For the purposes of this study, all four subscales were compared to the sample of participants from the Lim and Chapman (2013) study, as a standardization sample does not exist for the ATMI.

**Test Anxiety Inventory.** The Test Anxiety Inventory (TAI) (Spielberger et al., 1980) has been found to be an effective measure of test anxiety, as well as a measure of individual differences within test anxiety as a situational personality trait. For the purposes of this study, the TAI, in its full, original version, measured the level of anxiety participants felt during their high school careers, and, as test anxiety has been shown to be relatively static across the lifespan, the presence and level of test anxiety the participants reported on the TAI should be indicative of whether or not the student also displayed the trait of test anxiety earlier in their educational careers, although the levels of test anxiety may have fluctuated with the passage of time (Ping, Subramaniam, & Krishnasimy, 2008). The TAI has been used extensively with high school and
college students, who typically take 8 to 10 minutes to complete the 20-question survey (Taylor & Deane, 2002). Each item asks students to respond using a 4-point Likert scale, and the alpha coefficient was .93 for the full TAI (Spielberger et al., 1980), which was utilized for the current study.

**Procedures**

Two adult education centers were contacted to gain their approval to contact their student populations. In order to obtain approval, the researcher met with center directors to discuss basic information about the study, how students would be asked to participate, what potential rewards participants could earn from full completion of the study, and any professional development that the center director wanted the researcher to conduct regarding students and anxiety (following completion of the study). After approval was obtained, the survey was administered to the GED students in two groups, one at each educational center, at mutually agreed upon times by the researcher and center directors. After the survey was administered to all fifteen participants, each participant was given the option to participate in an individual interview, based upon his or her response on the consent form. A digital voice recorder was used to record the participants’ responses, and after all interviews were recorded, participants’ responses to each question were coded into the natural categories that emerged after listening to all participant responses to individual questions. Of the participants who completed the additional interview, four were randomly selected to win a $25 gift card as appreciation for their time and participation. After the responses were categorized, the original recordings were erased. After all data were collected, data analysis commenced.

**Analyses**

Descriptive statistics were analyzed to determine the range of participants’ demographic characteristics and the age at which the participants dropped out of high school. In order to effectively evaluate whether or not the participants varied from the normative sample on the TAI, a one-sample t-test was conducted utilizing participants’ scores obtained on the Test Anxiety Inventory (TAI) and comparing them with the standardization sample for the TAI. Because the TAI split its normative samples into categories based upon education level, and further delineates the sample by breaking each category down by gender, the experimental sample was also split into male and female groups so that comparisons could be made. Additionally, mean scores were computed from the data gathered via the Attitudes Toward Mathematics Inventory (ATMI) to assess participants’ level of mathematics anxiety, after re-combining the data set. This portion of the data was used for the exploratory purpose of evaluating the levels of mathematics anxiety experienced by the participants, as well as examining the number of participants who experienced mathematics anxiety independent of test anxiety. Additionally, the co-occurrence rates of mathematics and test anxiety in the participants were calculated.

In order to gain a greater perspective on participants’ rationales for leaving high school before graduating, qualitative data was gathered using an interview method. The interviews were semi-structured, with a specific list of questions that each participant was asked, with further clarifying questions and follow-up questions asked as needed to obtain the full picture of the participants’ experiences. All questions asked during the interview portion of the study can be found in Appendix A. Each interview was conducted in a one-on-one setting in a private room within both GED centers, to allow participants’ privacy to be maintained and respected. Each interview was digitally recorded, and later transcribed verbatim. After the interviews were transcribed, participant responses were categorized into themes that represented their experiences.
about their decisions to leave, their motivations for returning, goals they had for their futures and how the GED would help them attain those goals, and ways the participants felt they could be better supported toward earning their GEDs.

Results

Test Anxiety Inventory

Participants in this study were administered the Text Anxiety Inventory (TAI) (Spielberger, et. al, 1980) to assess their retrospective levels of test anxiety, as test anxiety is stable across an individual’s lifespan (Ping, Subramaniam, & Krishnasimy, 2008). The standardization sample of the TAI is segmented by education level and gender, and participants in this study were compared to high school students in the TAI standardization sample. The TAI allowed for participants’ percentile rank and normalized T-scores to be calculated based upon the raw scores earned by the participants. The TAI manual also allowed for the TAI Total Score, Worry Subscale score, and Emotionality Subscale score to be compared to the normative sample. In order to conduct comparisons of the experimental sample and normative sample, several one-sample t-tests were conducted in order to determine if the sample of GED students in this study differed significantly from the normative sample. The data collected from the TAI are presented in the table below, with normative sample information indicated in parentheses where available.

Table 3
Test Anxiety Inventory Scores

<table>
<thead>
<tr>
<th>Scale/Gender</th>
<th>Mean</th>
<th>Range</th>
<th>Standard Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>TAI Total Score/Male</td>
<td>42.43</td>
<td>(40.87)</td>
<td>15.27 (12.77)</td>
</tr>
<tr>
<td>TAI Total Score/Female</td>
<td>44.88</td>
<td>(45.72)</td>
<td>18.50 (13.63)</td>
</tr>
<tr>
<td>TAI Worry Score/Male</td>
<td>17 (15.60)</td>
<td>11–28</td>
<td>5.80 (5.33)</td>
</tr>
<tr>
<td>TAI Worry Score/Female</td>
<td>16.5 (17.06)</td>
<td>8–26</td>
<td>6.85 (5.76)</td>
</tr>
<tr>
<td>TAI Emotionality Score/Male</td>
<td>17.14 (16.61)</td>
<td>9–30</td>
<td>8.09 (5.47)</td>
</tr>
<tr>
<td>TAI Emotionality Score/Female</td>
<td>19.38 (18.91)</td>
<td>8–30</td>
<td>8.72 (5.88)</td>
</tr>
</tbody>
</table>

In order to determine if the sample of participants in the current study exhibited higher test anxiety than the standardization sample, multiple one-sample t-tests were utilized comparing the male and female participants to the standardization sample, using the means from the standardization sample as the test statistic in each case. The males in this study did not differ significantly from the standardization sample for TAI Total score, t(6) = .27, p = .796, TAI Worry subscale, t(6) = .64, p = .547, and TAI Emotionality subscale, t(6) = .17, p = .87. Additionally, the females in this study did not differ significantly from the standardization sample on TAI Total score, t(7) = -.129, p = .901, TAI Worry subscale, t(7) = -.23, p = .824, and TAI Emotionality subscale, t(7) = .15, p = .88.

Participants were classified by the researcher as having low, average, or high anxiety based upon the percentile rank earned on the TAI, with average scores falling between the 25th and 75th percentiles, low scores falling below the 25th percentile, and high scores falling above the 75th percentile. Of the 15 participants, 3 were classified as having low test anxiety, 6 were classified as having average test anxiety, and 6 participants were classified as having high test anxiety. The percentage of participants falling into the high, average, and low test anxiety categories is illustrated in the table below.
Table 4
*Categorization of Participant Test Anxiety Levels*

<table>
<thead>
<tr>
<th>Category</th>
<th>Male (N = 7)</th>
<th>Female (N = 8)</th>
</tr>
</thead>
<tbody>
<tr>
<td>High Anxiety</td>
<td>28.6% (n = 2)</td>
<td>50% (n = 4)</td>
</tr>
<tr>
<td>Average Anxiety</td>
<td>71.4% (n = 5)</td>
<td>12.5% (n = 1)</td>
</tr>
<tr>
<td>Low Anxiety</td>
<td>0% (n = 0)</td>
<td>37.5% (n = 3)</td>
</tr>
<tr>
<td>Total</td>
<td>100%</td>
<td>100%</td>
</tr>
</tbody>
</table>

Overall, female participants (M = 1.88, SD = .99) reported higher test anxiety levels than their male counterparts (M = 1.71, SD = .49), despite the fact that all participants classified with low test anxiety were women. Additionally, more female participants earned test anxiety scores falling above the 75th percentile than men.

**Attitude Toward Mathematics Inventory**

As an exploratory measure within this study, participants also completed the Attitudes Toward Mathematics Inventory (ATMI) (Tapia & Marsh, 2004) to examine their enjoyment, motivation, self-confidence, and value placed on mathematics learning using a five-point Likert scale. Mean scores and standard deviations for all four subscales were calculated, and they are represented in the table below.

Table 5
*Attitudes Toward Mathematics Inventory Subscale Means*

<table>
<thead>
<tr>
<th>Scale</th>
<th>Mean</th>
<th>Range</th>
<th>SD</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Enjoyment</td>
<td>33.867</td>
<td>18 – 50</td>
<td>7.75</td>
<td>15</td>
</tr>
<tr>
<td>Motivation</td>
<td>16.800</td>
<td>11 - 22</td>
<td>3.45</td>
<td>15</td>
</tr>
<tr>
<td>Value</td>
<td>42.400</td>
<td>35 – 49</td>
<td>4.19</td>
<td>15</td>
</tr>
<tr>
<td>Self-Confidence</td>
<td>47.000</td>
<td>23 - 64</td>
<td>10.00</td>
<td>15</td>
</tr>
</tbody>
</table>

After calculating the mean scores for this study, the data were compared to Lim and Chapman’s 2013 data, which examined the utility of the ATMI with 801 pre-tertiary students enrolled in courses in preparation for the General Certificate of Education Advanced Level (GCE “A” level) Mathematics Higher 2 (Syllabus 9740) examination, using one-sample t-tests to determine if the participants in this study differed significantly from the large sample size of the 2013 study conducted by Lim and Chapman, by using the means found in the Lim and Chapman study as the test statistic. The data revealed no significant differences between the two samples for the Enjoyment subscale, t(14) = -.425, p = .677 and Motivation subscale, t(14) = .871, p = .398. However, there were significant differences between the two samples for the Value subscale, t(14) = 6.88, p < .001, and the Self-Confidence subscale, t(14) = -8.325, p < .001. When the individual items comprising the Value subscale were examined, in all cases participants from the current study reported higher average scores, indicating stronger agreement with the statements. Additionally, the individual items comprising the Self-Confidence subscale were examined, and for all but four of the items, participants in the current study reported lower average scores, indicating stronger disagreement with the statements.

In addition to examining the subscores and comparing them to the Lim and Chapman (2013) study using one-sample t-tests, ATMI total scores were calculated for all participants, as well as the interquartile range, to determine which participants displayed anxiety towards mathematics. In order to evaluate participants’ levels of mathematics anxiety, participants’ total
ATMI scores were compared Tapia and Marsh’s (2004) original sample of 545 high school students enrolled in mathematics courses. The interquartile ranges are illustrated in Table 6.

Table 6

<table>
<thead>
<tr>
<th>Percentile Rank</th>
<th>Tapia &amp; Marsh, 2004 (N = 545)</th>
</tr>
</thead>
<tbody>
<tr>
<td>25th</td>
<td>118</td>
</tr>
<tr>
<td>50th</td>
<td>137.36</td>
</tr>
<tr>
<td>75th</td>
<td>157</td>
</tr>
</tbody>
</table>

Based upon this information, a one-sample t-test was conducted comparing the current study to Tapia and Marsh’s (2004) original sample, and no significant difference was found between the two samples, \( t(14) = -0.694, p = 0.499 \). Thus, the participants were identified as having “high” math anxiety if their score fell at or above the 75th percentile, “typical” math anxiety for those between the 25th and 75th percentiles, and “low” math anxiety for those with ATMI total scores below the 25th percentile, to aid with examining the co-occurrence rates of high test anxiety and high mathematics anxiety within the current study.

Table 7

<table>
<thead>
<tr>
<th>Participant Mathematics Anxiety Qualitative Descriptors</th>
</tr>
</thead>
<tbody>
<tr>
<td>Qualitative Descriptor</td>
</tr>
<tr>
<td>-----------------------------------------</td>
</tr>
<tr>
<td>High Math Anxiety</td>
</tr>
<tr>
<td>Average Math Anxiety</td>
</tr>
<tr>
<td>Low Math Anxiety</td>
</tr>
</tbody>
</table>

Co-occurrence Rates of Test Anxiety and Mathematics Anxiety

In order to answer the question of whether a combination of math anxiety and test anxiety was present in above average levels within the participants, the co-occurrence rates for test and mathematics anxiety were calculated using a crosstab analysis in SPSS. In addition to examining the co-occurrence rates between high test anxiety and high mathematics anxiety, the percentage of participants falling into each possible category was also calculated, and the results are displayed in Table 8.

Table 8

<table>
<thead>
<tr>
<th>Co-Occurrence Rates of High Test and Mathematics Anxieties</th>
</tr>
</thead>
<tbody>
<tr>
<td>High Test Anxiety</td>
</tr>
<tr>
<td>-------------------</td>
</tr>
<tr>
<td>High Math Anxiety</td>
</tr>
<tr>
<td>Average Math Anxiety</td>
</tr>
<tr>
<td>Low Math Anxiety</td>
</tr>
</tbody>
</table>

Of the 15 participants, only two participants (one male, one female) had a co-occurrence of high test anxiety and high mathematics anxiety. However, five participants independently had either high math anxiety or high test anxiety, and an equal number of participants experienced average math and test anxieties. Interestingly, No participants experienced an average or high anxiety in one category while experiencing low anxiety in the other category; and three participants reported low math anxiety and low test anxiety.
Qualitative Data

In addition to conducting statistical analyses to interpret the findings of the current study, qualitative data were also gathered to better understand the rationale current GED students had in making their decision to drop out of high school. Of the 15 participants in this study, 10 participants elected to participate in a follow-up interview about their decisions and experiences. These interviews took place within the adult education centers where the participants were taking courses to prepare for the GED examination, and all interviews contained the questions listed in Appendix A.

Rationale for leaving school. When participants were asked why they dropped out of high school, a variety of responses were garnered. Three participants denoted a teenage pregnancy as the reason they left for school, as one described, “Being a good parent became my priority. I wanted to be better than my mother.” Another participant cited frequent family transiency as a factor in his decision to drop out of high school.

A common theme that emerged among all participants was feeling like they had a lack of positive role models or encouragement to continue on in their educational careers when high school became difficult for them, which caused feelings of being overwhelmed, helpless, and an inability to focus on the classwork.

One participant shared her story – six weeks from graduation, she discovered that she was one half-credit short of graduation. Her mother impressed upon her the cost of paying for a summer school class to earn that credit, which pushed her into taking a full-time position as a landscaper. Another participant shared a similar background, but instead chose to leave prior to graduation in order to take two part-time jobs for the opportunity to save money and move out of the family home.

Two participants reported that they were asked to leave by their school administrators, while one of these participants indicated that this was due to fighting within the school building; this same participant shared more of his story, which highlights some of the social pressure that students struggling in school may feel, stating, “The reason I failed 9th grade was because I had a group of friends who all wanted to graduate at the same time. I think I purposely failed because of that. They were so into that, and I didn’t want to be the one to ruin it. Looking back, I wonder why I even listened to them or cared about their expectations.”

Rationale for returning to earn a GED. It is vital to understand the rationale individuals have for earning their GED, as these influences are often what motivates adult learners to persevere through any difficulties they may encounter. Participants within this study most frequently reported that they wanted to obtain better financial security and greater ease supporting their families; additionally, participants reported a love of learning, and they wanted to earn a GED to prove to themselves that they are capable of doing so. Participants also reported a desire to be able to give back to the community by sharing their stories, and showing other individuals, as well as their children, that they shouldn’t allow obstacles to stand in the way of their goals. Furthermore, an overall theme emerged from the interviews, which illustrated that the study participants focused on the outcomes of earning a GED as their motivation for going back to school, such as getting a good education, finding a better job, and having a brighter future.

Anxiety – Then and Now. During the interview, participants were asked four questions related to anxiety they felt in school as a traditional student and the anxiety they reported at the time of the interview as a non-traditional learner. Participants reported a range of things that made them feel anxious during their primary and secondary school classes, such as missing
many days of school, feeling lost or not understanding the work, inability to focus, and examinations. However, three participants reported feeling no anxiety during their time as a traditional student, which aligns with the data from the co-occurrence rates of math and test anxiety reported by participants.

Participants reported that they felt less anxious as GED students because they felt secure socially, and they felt that their teachers provided the additional classroom support that they needed. Participants also reported that, in some cases, teachers and other students made them feel more anxious about school. Additionally, math class and tests were also anxiety provoking, typically because participants felt that they didn’t know how to ask for help when they were struggling with the class material.

During math classes and testing situations as traditional learners, study participants reported varying degrees of anxiety. One participant responded that their anxiety was “very high,” another reported “pretty bad” anxiety, while two other participants reported no anxiety at all. Rationale for these anxiety levels included poor attendance; exams/math tests were overwhelming, and feeling like they weren’t taught what they needed to know in order to do well. When comparing their anxiety levels as traditional students to their current anxiety levels, participants reported feeling “nervous” during tests, somatic symptoms (headache, increased heart rate, etc.), and feeling no anxiety as an adult learner.

Several participants also chose to share what they felt had alleviated their anxiety as an adult learner. Two participants referenced a higher power giving them the strength and determination to continue through the GED program even when things became difficult; another participant indicated that she had increased parental support, which was motivating for her. Finally, another participant felt that the GED instructors did a better job of preparing the students for tests within their preparation programs.

When asked to compare their experiences as traditional learners and GED students, participants were eager to share what they had learned about themselves, as well as how their perspectives had changed. One participant reported, “Now I know it’s okay to ask questions, to get help, and to fail. Learning is fun now!” while another participant reported, “I feel like I can do anything because I really want it.” Comparatively, participants also reported that because they had more motivation to be successful, they felt that they had more to lose if they failed in their attempt to earn a GED. As one participant said, “It [anxiety] feels worse now because I want it [GED] so much; I just have to learn to calm down and think about how to solve my problem. It [test anxiety] just drives me crazy; I go totally blank.”

**Obstacles, needed supports, and goals.** As adult learners, many GED students face unique challenges that can hinder their progress toward obtaining the GED. Within this study, participants felt that their largest obstacle toward earning their GED was actually passing the examination. At the time the interviews were conducted, the GED examination was about to change format and price from a $40 paper and pencil test to a $120 computer-based examination. Additionally, the higher-level math skills tested in order to earn a GED were intimidating to participants. However, not all participants felt that they faced obstacles to earning their GED, and as one participant eloquently stated, “I really don’t face any [obstacles]. I really just want to focus and learn everything. I’m willing to do what it takes to get it [GED].”

In order to help combat the obstacles that participants felt they faced in the processing of earning their GEDs, those who participated in interviews were asked to think of things that GED programs could provide to help them feel more supported. The top way that the adult learners in this study felt that they could be better supported was if one-on-one instruction or tutoring could
be provided to them, followed by increasing the number of teachers within their program to lower the student-to-teacher ratio for more direct instruction. Additionally, GED students in this study felt that they could be better supported simply by being provided with more study materials, demonstrations of skills with corrective feedback when they attempted it themselves, and more practice test opportunities. Finally, one participant mentioned that having more reliable transportation would be helpful toward earning a GED.

Finally participants were asked to share what they hoped earning a GED would lead to for them, as well as what goals it would help them achieve in their lives. Overwhelmingly, participants reported that earning their GEDs would allow them to further their education by going to college, trade school, or earning additional certifications for their current job; additionally, participants felt that their GEDs would help them obtain better jobs and/or careers in professional fields. As one participant shared, “I’m ready to go to school and pursue a career in the medical field. I’m currently a C.N.A., and I love helping people; I love giving back.” Another participant shared that she hoped to become a counselor for children. Furthermore, participants believed that by earning their GEDs, they would have better opportunities for their lives, be able to be a positive role model for their children and others in their communities, and achieve greater financial stability, which would lead to self-reliance and the ability to build savings. Multiple participants shared ideas, like the following, “I’d like to open a business one day where I have things set up for young teens that make mistakes or that ‘things happen’ to; I’d like to have a program to make sure they have daycare, transportation, and good teachers so that they don’t have to drop out of school.” One of the most moving moments during interviewing was shared in response to the opportunities that would be available, when a participant confidently stated, “This is a start – not the finish. This opens up other doors for me. I can share my story to motivate others and give back.”

Discussion

The purpose of this study was to fill in gaps in the literature base regarding GED students and the presence of mathematics or test anxiety as a contributing factor to the student’s decision to leave high school prior to graduation. In this section, I summarize and interpret the current study’s findings and relate them to the existing literature base for high school dropouts. I will also discuss the limitations and implications of the study, as well as indicate possible directions for future research.

As mentioned in the Rationale and Purpose section, the primary objectives of this research were to collect data to aid in filling gaps in the literature regarding GED students and academic anxiety. Specifically, this research sought to answer the following questions:

1. What are the levels of test and mathematics anxiety among a sample of individuals who dropped out of high school?
2. Does the presence of test and/or mathematics anxiety influence a student’s decision to drop out of high school?

Levels of Mathematics and Test Anxiety

The first research question of this study sought to determine the levels of mathematics and test anxiety among the participants. In order to do this, participants completed the Attitudes Toward Mathematics Inventory ([ATMI] Tapia & Marsh, 2004) and the Test Anxiety Inventory ([TAI] Spielberger, et al., 1980). Additionally, participants’ scores on these measures were then compared to the standardization samples (where available) or large studies using the measure with comparable populations, such as high school students, to determine how similar or different GED students are when compared to other student populations.
Participants in the current study were compared to Tapia and Marsh’s (2004) original sample for ATMI Total score, and no significant difference was found between the two samples. This allowed for easier identification of participants with high math anxiety, because the upper limit of the average range is the 75th percentile. Only 1 participant was classified with high math anxiety when compared to Tapia and Marsh’s (2004) original sample using the interquartile ranges for both samples.

Additionally, the participant data from this study were also compared to a 2013 study conducted by Lim and Chapman, which closely examined the subscales of the ATMI and provided the best comparison sample. The results from this comparison indicated that participants in the current study did not differ significantly from Lim and Chapman’s (2013) study of pre-tertiary (high school) students for the Enjoyment and Motivation aspects of mathematics. However, the participants in the current study did differ significantly in terms of the value placed on mathematics education, as their mean scores were higher for all questions on the ATMI addressing this component of mathematics anxiety. Additionally, the participants differed significantly for the self-confidence they had in their mathematical abilities, as their mean scores were lower for all but four items comprising this subscale of the ATMI; these data supports the earlier research of Ahmed, Minnaert, Kuyper, and van der Werf (2010), who posited that an alternative cause of mathematics anxiety was that students perceived that they have a low ability to do well in mathematics.

As previously mentioned, participants were also asked to respond to all items of the Test Anxiety Inventory ([TAI] Spielberger, 1980) to asses their levels of test anxiety. Because test anxiety is a static trait across the lifespan (Ping, Subramaniam, & Krishnasamy, 2008), participant self-reports of their anxiety should closely mirror the levels of anxiety they felt as traditional students. Within the current study, participant scores on the TAI did not differ significantly from the standardization sample with regard to their overall test anxiety, worry component of test anxiety, or emotionality component of test anxiety. However, when participants’ individual scores were examined, six of the 15 participants (2 male, 4 female) earned standardized scores on the TAI falling above the average range (25th – 75th percentiles).

Influence of Anxiety on Dropout

The second research question of this study sought to determine if anxiety influenced a student’s decision to drop out of high school. In order to do this, participants who indicated an interest in participating in an individually administered interview were interviewed using the questions in Appendix A. These questions allowed participants to share their stories in a semi-structured format while providing open-ended questions to avoid leading the participants in any direction with their responses.

The participants’ responses to the interview questions revealed that participants did not feel that anxiety played a role in their decision to drop out of high school. Rather, participants most commonly indicated that they dropped out of high school because of feeling overwhelmed, having a lack of resources and supports, and life circumstances, such as pregnancy or financial considerations, which support the earlier qualitative findings of Patterson, Hale, and Stessman (2008). Although the sample was small, female participants reported higher test anxiety levels than their male counterparts, despite the fact that all participants classified with low test anxiety were women; these results are consistent with Hembree (1988), who showed that women and African-American students were more likely to have high test anxiety when compared to their white, male counterparts. Additionally, participant responses to the interview questions brought forth a broader problematic theme of experiencing a lack of a positive school climate, due to
feeling unsupported by teachers, being asked to leave by school administrators, and feeling as though they had no other option than to drop out because no one discussed the potential supports available to help these students succeed.

**Study Limitations**

The findings of the current study need to be interpreted with several limitations in mind. The limitations, the influences they had on the study, and the steps taken to minimize their effects are described within this section. Limitations for this study included the small sample size (N=15) of the quantitative portion of the study, the small geographical area from which participants in this study were currently living, the pro-social desires of the participants to help the researcher, and the lack of a control group.

The small sample size and small geographical area from which the participants in the current study were found are limitations for this study, as they do not allow the findings to be generalized to the larger population of high school dropouts who are currently GED-seeking students within the United States or globally. Additionally, when conducting the analyses of the Test Anxiety Inventory (TAI) data, the already small sample size had to be stratified into male and female components, as the TAI did not provide overall means for a given education level, but only gave means for male and female subgroups. The limitation of a small sample size within this study did not permit the finding of many statistically significant findings in terms of mathematics and test anxiety levels among the greater population of GED students, nor did it allow for correlations to be made between the presence of mathematics and/or test anxiety and the decision to drop out of high school. However, the limitations of a small sample size and small geographic region were minimized by comparing the sample to other samples of much larger sizes, such as the TAI standardization sample and the results of Lim and Chapman (2013), which examined the use of the ATMI on 801 pre-tertiary (high school) students in Singapore. When the current study’s sample was compared to the two aforementioned samples, no significant differences were found within the overall mean scores of the groups, and the statistically significant findings were limited to the Value and Self-Confidence sub-scales of the ATMI, which demonstrated that participants in the current study placed a higher value on their mathematics education, while feeling less confident in their mathematical abilities.

Another limitation of the study is the pro-social desire of the study participants to aid the researcher in her endeavors. Because the researcher was present for the administration of the ATMI and TAI, as well as personally conducting the individual interviews, participants in this study may have felt a desire to help her find a link between mathematics and test anxiety and their decision to drop out of high school. Additionally, the participants may have been prey to social desirability, particularly within the interview portion of the study, as they did not want to be embarrassed about their background histories or goals for their futures. Urging participants to be completely honest with their answers on the ATMI and TAI minimized this limitation, and the questions posed during the individual interview were intentionally left open-ended and vague in order to glean a wide variety of participant responses with accompanying rationales.

A final limitation of this study is the lack of a control group with which to compare the current sample of GED students. A control group for this study would have consisted of a sample of high school “dropouts” who would have had to self-identify as such, who would not be seeking additional education (i.e. GED programs) or who had recently dropped out of high school, thus eliminating the confounding factor of time having passed between the time of dropping out of high school and the onset of the current study. This limitation influenced the study because no sampling and comparisons between groups of adults who had dropped out of
high school could be made, which makes the findings of this study difficult to generalize to the larger population of students who dropped out of high school. However, this limitation was minimized as much as it could be by making comparisons between the current study’s participants and high school students in the TAI sample and in the Lim and Chapman (2013) study.

Implications for Future Research

The current study’s conclusions, implications, and limitations may provide direction for future research, particularly in the expansion of studies seeking to understand and aid the adult learner population. Researchers can build upon this study by expanding the sample sizes of future study using the ATMI and TAI with GED students and combining the data for GED students with recent dropout data as a control group for comparisons. Additionally, by expanding the sample size in future studies, researchers may be able to glean more information about the levels of test and mathematics anxiety in adult learners, as well as identify solutions and strategies for combating that anxiety to aid in their academic success. Future research should also seek to study a larger geographical region, in order to make the results of the study more generalizable to the overall population of GED students in the United States and worldwide.

Future research studies may also wish to take a longitudinal approach to studying the phenomenon of high school dropout by following a cohort of students from their primary school years through graduation, in hopes of identifying what environmental, psychological, personal, and ecological factors are most influential in a student’s decision to drop out of high school or to remain a student after facing hardships which are frequently referenced by former high school dropouts. This research may aid in developing a comprehensive dropout prevention program using evidenced-based interventions to promote student success.

Furthermore, future research into the study of the dropout phenomenon may want to include exit interviews with recent dropouts or students preparing to drop out of school, to glean data and information from these students that is not impacted by the filter of the passage of time since their decision was made. This may also allow practitioners and school administrators to better understand the climates of their buildings to reduce the impact that school-based factors have on that student’s decision, as well as to help prevent additional students from dropping out for the same or similar reasons.

Additionally, future research in this area could involve a close examination of unmodifiable variables that may impact a student’s decision to drop out, such as socioeconomic background or family structure, family transiency, disability status, and childhood neighborhood type. These variables have been established as factors that have a significant influence on a student’s decision to drop out of high school. These factors are important for further study because they are outside the realm of factors that a student has control over, and therefore, it is crucial to ensure that students and their families experiencing any of these detrimental factors receive additional support and consideration from school personnel to ensure that the student and family are supported to promote educational success.

Finally, future research should consider the impact that modifiable variables have on a student’s decision to drop out of school, such as school climate, grades, absenteeism, and attitudes toward school. These variables are things that school personnel, parents, and peers can affect for a student, and responses from participants in the current study indicate that these factors may be more impactful than status factors, as many struggling students feel that these factors are outside their locus of control, but appropriate interventions and counseling can help students regain an ownership of factors which they influence themselves.
Implications for Practitioners

The current study’s conclusions also provide implications for school-based psychological practitioners, educators, and school administrators with regard to the prevention of the dropout phenomenon by improving school climate to encourage students to persevere despite seemingly overwhelming academic and life circumstances. In two of the interviews that were conducted with participants, the participants indicated that they were asked to leave permanently by a school administrator. It is worth noting that both of these participants also indicated that they were under the age of 30, which means that Positive Behavioral Intervention and Supports (PBIS) programs and the idea of differentiation were in existence and growing in popularity at the time these students dropped out of school. Their experiences may indicate that school administrators need additional training and exposure to these programs by school-based psychologists and other professionals, in order to prevent similar events from occurring in other districts. School-based psychological practitioners should seek to use surveys and needs assessments to gauge their peers’ understanding of PBIS and differentiation, as well as ways to provide additional information and training to improve practices within the buildings they serve.

Additionally, school-based psychological practitioners and other educators should seek to forge strong home-school collaborations with students and their families, as many of the difficulties that students considering dropping out could be mediated with a collaborative plan between their educational and familial environments. This could be fostered through inviting parents to regular conferences in ways that are easily accessible to them, such as by telephone or e-mail, or by conducting home visits, to help parents and students feel more comfortable in their preferred environments. These conferences could help students to realize that there are educators and peers within their schools who truly care about their successes, as well as to provide a bridge to parents who may feel uncomfortable reaching out to educators when they see their children struggling, as they may see their child’s difficulties as a reflection of their ability to provide for their student’s individual needs.

Conclusions

High school dropouts and GED students remain a largely understudied population of students, and studying these groups could one day lead to better understanding and preventing the phenomenon of high school dropout. The current study, which sought to identify a link between test anxiety, mathematics anxiety, and the decision to drop out of high school, is but a small drop in the bucket toward better understanding this unique population of students. While the current study was not able to demonstrate a significant difference between the anxiety levels of GED students and traditional students, it did take a small, yet important, step toward identifying the academic reasons why students may choose to drop out of high school. Additionally, the current study elicited ideas from current GED students about ways adult learners and non-traditional students could be better supported toward achieving their academic goals. This may help GED and Adult Basic Literacy Education (ABLE) programs become more successful in retaining their students and ensuring their ultimate success as students. With further research into the population of dropouts and the factors which make students more likely to drop out of school, educators and school administrators can improve school-based practices, as well as develop stronger, more beneficial home-school collaborative efforts to increase the academic and social successes of their students.
References


Appendix A
Interview Questions

1. Why did you “drop out” of high school?
2. What influenced your decision to go back to school to earn your GED? Why were these influential?
3. During your classes, when did you feel anxious?
4. What aspects of the school environment made you more or less anxious? Why?
5. How would you describe your level of anxiety in math and during testing situations during high school? How does this differ from the level of anxiety you experience now as an adult learner?
6. In what ways do you experience anxiety as an adult learner? Are they different or the same from when you were in high school? How?
7. In what ways do you feel you could be better supported towards earning your GED?
8. What obstacles do you think that you face as a GED student?
9. What do you hope that earning your GED is going to lead to for you? What goals will earning your GED help you achieve in your life?
10. Please tell me any other information that you feel was relevant to your decision to leave high school that we have not already covered.