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# Student Transition at a Residential STEM School

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STUDENT TRANSITION AT A RESIDENTIAL STEM SCHOOL

A Thesis  
Presented to  
The Faculty of the College of Education and Behavioral Sciences  
Western Kentucky University  
Bowling Green, Kentucky

In Partial Fulfillment  
of the Requirements for the Degree  
Master of Arts in Education

By  
Olivia Kaitlin Gatten

May 2015

STUDENT TRANSITION AT A RESIDENTIAL STEM SCHOOL

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I dedicate this thesis to my parents for fueling my love for learning and education from a young age. I specifically dedicate this to my mother for setting such a great example of how a dedicated gifted educator can make a world of difference.

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## STUDENT TRANSITION AT A RESIDENTIAL STEM SCHOOL

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85 Pages

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College of Education and Behavioral Sciences

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The goal of this qualitative study was to gain insight into which personal factors most affect student adjustment in a state residential STEM school. Factors from Tinto's Model of Institutional Departure were used as the framework to capture the transition of gifted high school students from traditional high school to The Carol Martin Gatton Academy of Mathematics and Science in Kentucky, a statewide residential STEM school. Tinto's Model predicts college persistence using pre-existing individual characteristics and institutional experiences. These qualities and experiences were used to form questions about student traits and transition. Questionnaires were administered to Gatton Academy first-year students, parents, and staff members. Participants included 10 students, two parents, and six staff members. The answers were analyzed using deductive analysis. The study found the student participants at The Gatton Academy came from intact families, were often not challenged at their sending high schools, and entered the residential setting with very few study habits but high self-control. The findings suggest that gifted students are highly adaptable to the college environment despite being younger than traditional college age.

*Keywords:* student transition, residential school, STEM, gifted students

## **Introduction**

Precisely predicting an individual's success in college courses is virtually impossible. However, certain pre-existing characteristics and experiences affect each individual's success at college. Predicting a high-ability high school student's success in college-level courses is equally difficult, and the relevance of these pre-existing characteristics and experiences to a high school student's transition to college is unknown.

Tinto's Model of Institutional Departure (1987a) defined a list of personal traits, goals and commitments, and experiences influencing traditional college students' adjustment to and persistence in college. These pre-existing traits and experiences include family background, prior schooling, skills and abilities, intentions, goal and institutional commitment, external commitments, faculty and peers, extracurricular activities, and academic performance. All of these traits and experiences were shown by Tinto (1987a) to play integral roles in college students' success in college. No previous studies have addressed all of these traits in the success of state residential STEM high school students exclusively enrolled in college-level courses.

High-ability high school students differ from traditional college freshmen enough in age and academic ability to justify a separate study of their transition to college. Many high school students enrolled in residential schools focusing on science, technology, engineering, and mathematics (STEM) possess academic abilities stronger than incoming college freshmen (University of Kentucky, 2014), and, with years of high school remaining, are younger than traditional freshmen.

The Carol Martin Gatton Academy of Mathematics and Science in Kentucky is a state residential STEM high school housed on the campus of Western Kentucky University (WKU) and funded by the Commonwealth of Kentucky. Students at The Gatton Academy are admitted as incoming juniors and exclusively enroll in college courses at WKU. Students at The Gatton Academy are fully immersed in the college environment as juniors in high school (The Gatton Academy of Mathematics and Science in Kentucky, n.d.).

This study examined a sample of current Gatton Academy first-year students to determine which factors most affect their adjustment to the residential college environment. Family background, pre-existing skills and abilities, personal goals and commitment, and institutional experiences and interactions were all factors taken into account. The purpose of this study was to investigate factors that influence acclimation of high-ability high school students exclusively enrolled in college-level courses.

Residential STEM school staff members and their students can benefit from the findings of this study. Findings could assist administrators and students in the admissions process. Administrators could focus on characteristics that lead to student success prior to admission. Also, students could gain insight into whether a residential STEM school is the best option for their academic future.

## **Literature Review**

### **Residential STEM Schools**

Residential high schools offer students a unique educational environment. Many existing residential high school programs are designed to prepare students for careers in STEM fields and allow students to earn college credits before graduating high school

(Jones, 2009). These residential programs come in several different variations: state-funded schools, privately-funded schools, schools on college campuses, and independently-functioning schools. In the United States, special educational services for students with gifts and talents are handled at the state level, which is why some residential STEM schools are state funded.

Five of these state-funded residential STEM schools are housed on college campuses and located in Texas, Missouri, Kansas, and Kentucky (Craft Academy, 2015; NCSSSS, 2015). For example, The Carol Martin Gatton Academy of Mathematics and Science in Kentucky is a state-funded residential STEM school designed to serve Kentucky high school students with strengths in STEM subjects (The Gatton Academy of Mathematics and Science in Kentucky, n.d.). The goal of state-funded residential STEM schools is to support the academic development of students driven to pursue STEM careers and encourage talented individuals to remain in and benefit the state (Roberts & Alderdice, 2015). Students admitted to state residential schools leave a traditional high school environment before graduation and enter a world surrounded by high-ability peers on a daily basis (Cross & Swiatek, 2009).

Residential STEM school students participate in many activities that traditional high school and college students enjoy, such as high school clubs and intramural college athletics. Students are given more freedom to form groups to pursue unique, shared interests than in traditional high school settings. The students often have required study time, curfews, or other built-in safety precautions, since they are minors living away from home at an early age (Jones, 2009). These safeguards, combined with academic and

emotional counseling options, are essential to the successful integration of high-ability students into a new, residential setting (Cross & Frazier, 2010).

Admitted students are ready for advanced learning and accelerated course work specifically in STEM fields (Roberts & Alderdice, 2015). Roberts and Alderdice (2015) explain one of the benefits of state-supported schools: “By including a required residential component, programs are able to draw students from across their state in ways that local or regional magnet programs cannot while ensuring equity in access to all students” (p. 138).

Applying for a residential STEM program is much like applying for a competitive college scholarship. Students must have test scores on par with those of college-bound high school seniors (University of Kentucky, 2014). Essays, test scores, and letters of recommendation are assessed. Some programs, such as The Gatton Academy, utilize interviews to assess a student’s motivation, interests, reasons for applying, and other characteristics that might indicate a good fit (Roberts & Alderdice, 2015). From admissions to student life, the transition from a traditional high school to a residential STEM program mimics that from high school to college in many ways.

### **Tinto’s Model**

A variety of characteristics affect a traditional college student’s success in a traditional university setting (Tinto, 1987a). From pre-college personal experiences to social and academic experiences upon arrival, everything about a student’s life can affect how well he or she performs. The ultimate goal of Tinto’s Model of Institutional Departure (1987a) is focused on the problem stated in the very first sentence of his book,

*Leaving College*: “More students leave their college or university prior to degree completion than stay” (1987a, p.1).

When students first begin their college career, they experience separation from their homes, sending high schools, and families. Tinto (1987a) studied the commonalities of departure due to these factors. The culmination of Tinto’s work (1987a) was a model of attributes, goals, commitments, and experiences before and during a student’s entrance to college that contribute to a final decision: to leave the university or not to leave the university. Figure 1 presents a visual depiction of Tinto’s Model of Institutional Departure.

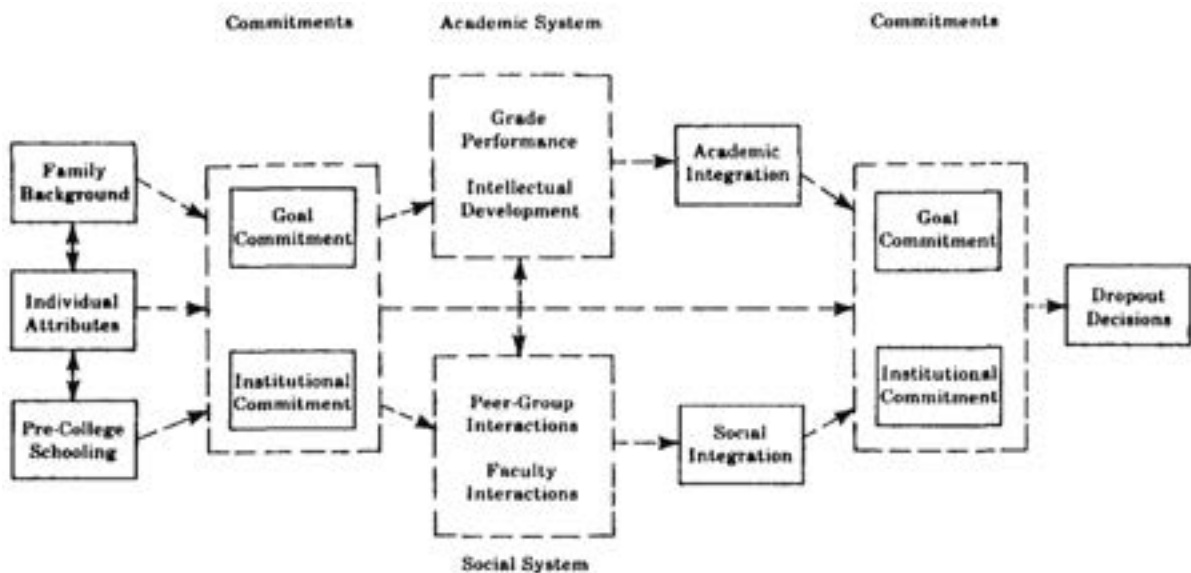


Figure 1. Tinto’s Model of Institutional Departure (1987a).

### Components of Tinto’s Model

As students transition to college, several pre-entry attributes play integral roles in their success and comfort levels. Everything from family background to personal abilities and skills can affect how well a student feels emotionally, performs academically, and

connects socially. These factors are often difficult for receiving institutions to assess, inhibiting intervention or provision of extra services to struggling students.

**Family background.** First-generation college students face a unique set of circumstances. Students can also be labeled as first-generation if neither of their parents earned a four-year degree or if they are the first in their family to pursue education beyond high school (Longwell-Grice & Longwell-Grice, 2008). First-generation students are more likely than their peers to be of a lower socioeconomic status, be slightly older in age, have less family support, and want a degree to help their families financially (Aspelmeier, Love, McGill, Elliott, & Pierce, 2012). First-generation students step foot on a college campus as trailblazers for their family, possibly having no one at home to offer guidance or empathy in times of struggle.

Parental education is a major factor that can both directly and indirectly affect college completion (Astin & Oseguera, 2005). Students whose mothers have higher levels of education earn four-year degrees more frequently than those whose mothers have lower levels of education (Ishitani & DesJardins, 2002). Parents' experience with college can affect parental approval and encouragement of a student's post-high school plans, which can affect the likelihood of that student attending a four-year university (Cabrera, Burkum, & La Nasa, 2005; King, 1996). Words of encouragement or parental approval of an institution may be all a student needs to persist (Bean, 2005).

Degree completion is also more likely when a student is from an intact family (Astin & Oseguera, 2005). Family conflict or lack of cohesion can be foretelling of student adjustment. Family cohesion, as defined by Johnson, Gans, Kerr, and LaValle (2010), is "the commitment, help, and support family members provide for one another"

(p. 608). Overall, Johnson et al. (2010) found that “when emerging adults perceived their families to be less cohesive prior to beginning college, they reported experiencing less academic adjustment, more dissatisfaction with their social adjustment, and more general psychological distress . . . after making the transition to college” (p. 618).

Students from low-income families have repeatedly shown more difficulty with adjustment to and persistence in college (Aspelmeier et al., 2012). Astin and Oseguera (2005) said, “Coming from an intact and socioeconomically advantaged family facilitates degree completion, even when prior achievement, test scores, and various motivational factors are taken into account” (p. 259). Students who tend to leave college do not have financial support from their parents. Even with scholarships and financial aid, low-income families may struggle to fund transportation or incidentals for their student to attend school (Jones, Fleming, Henderson, & Henderson, 2002). This cost alone could hinder an individual’s ability to attend or persist in college.

Low-income students sometimes cannot afford to live away from home and work excessive hours to pay for tuition (Longwell-Grice & Longwell-Grice, 2008). Having the funds for room and board, a laptop, or even food for the week is a struggle for these students (Lee, Donlan, & Brown, 2010). When students have to hold part-time or even full-time jobs to make ends meet during college, time spent on campus interacting with other members of the community and forming bonds with peers and faculty is reduced. Students may be forced to depart from college because they cannot afford it (Tinto, 1987a).

State-funded residential STEM schools charge no tuition for admitted students, while also offering a room and board waiver or providing financial aid to help cover the



cost of room and board (Jones, 2009). At The Carol Martin Gatton Academy of Mathematics and Science in Kentucky, tuition, housing, and meals are provided at no cost to the students or their families because these expenses are covered by state funding (The Gatton Academy of Mathematics and Science in Kentucky, n.d.). The nominal expenses for families make a residential academic opportunity accessible regardless of family income.

**Skills and abilities.** Higher academic ability supports greater academic potential (Honken & Ralston, 2013). Academic ability is often conceptualized by receiving institutions using grade-point-averages (GPAs), standardized tests such as the Scholastic Aptitude Test (SAT) and American College Testing (ACT), and high school class rank (i.e., how a student performed compared to other students in his or her class). Cohn, Cohn, Balch, and Bradley (2004) found that if an individual, especially a non-White student, has a low high school GPA and class rank entering college, he or she is much more likely to have frustrations and difficulty upholding college GPA requirements.

One difference between the average population entering college and high-ability high school students in residential STEM schools is entering academic ability. Test scores and high school grades play an integral role in student success at residential schools. Admissions statistics for residential STEM high schools include entering with SAT or ACT scores higher than national averages for college-bound high school seniors and depict the caliber of student (Jones et al., 2002; University of Kentucky, 2014). Students applying for entrance to the Missouri Academy of Science, Mathematics, and Computing, for example, are required to have a minimal score of 24 on the math portion of the ACT (Missouri Academy of Science, Mathematics and Computing, n.d.). The

incoming class of 2017 at The Carol Martin Gatton Academy of Mathematics and Science in Kentucky has an average 30.5 ACT math score (Z. Ryle, personal communication, March 26, 2015). For comparison, at the University Kentucky, 25% of students admitted for the Fall 2013 semester had a 22 ACT math score or lower (University of Kentucky, 2014).

Self-control also relates to academic performance. Self-control is about staying on top of assignments, attending class, and ignoring temptations, and also about monitoring emotions. Being able to regulate emotions is important to college adjustment, because “a person’s ability to manage her emotions effectively may protect her from the risk for maladjustment she faces” (Johnson et al., 2010, p. 610). Honken and Ralston (2013) noted that “self-control explained more variability in [college] GPA than did measures of cognitive ability, and cognitive ability explained more variability in standardized test scores than did self-control” (p. 111).

Often, students enter residential STEM schools accustomed to being the top of their class with a long history of academic success and near-perfect letter grades. The current junior class at The Gatton Academy has an average composite 31.95 ACT score (D. Strode, personal communication, March 27, 2015). Gatton Academy students, then, find themselves surrounded by other with like ability. Coming from an environment where test scores often defined academic ability, students are suddenly in a school where class rank neither matters nor exists (North Carolina School of Science and Mathematics, n.d.). Without the ability to remain on task, some of the most capable students can be unsuccessful at residential STEM schools.

**Prior Schooling.** Tinto (1987b) pointed out academic issues that force students to leave college can be linked to “inadequate prior preparation and the development of poor study habits” (p. 2). Allen and Robbins (2008) linked academic preparation in high school to predicting persistence in engineering. Academic preparation included rigor of courses and match of rigor to ability but excluded high school GPA (Allen & Robbins, 2008).

The quality and intensity of academic preparation of a student’s high school are among the most important determinants for obtaining a four-year degree (Adelman, 1999). Horn and Kojaku (2001) found high school curriculum level has a strong correlation to third-year college persistence. Students completing advanced high school curricula have higher college persistence than students completing a basic core curriculum (Nora, Barlow, & Crisp, 2005).

Tucker (1999) said, “If a student is encouraged to meet the university entrance standards, and then chooses to go to a lesser institute, nothing is lost” (p. 168). Tinto (1987a) believed that the daily atmosphere of a high school can either inspire or discourage academic success. Encouragement to reach university standards can come from either other students or the high school staff. Student performance is a direct reflection of how much emphasis a high school’s student body puts on academic performance as a social status factor (Tinto, 1987a).

High school students apply for residential STEM programs for many reasons, but common motives include boredom at their current schools or a desire for bigger challenges. Advanced students are often bored in class, hoping for challenging curricula

(Jones, 2009). Applicants are aware of the increased academic rigor they would face if admitted to a residential program and welcome the opportunity (Jones, 2009).

Coming from educational environments with few opportunities for advanced learning, many residential STEM school students cannot fathom the true difference between a traditional high school and the residential program until fully immersed. Some students may have experienced large quantities of homework in Advanced Placement courses before, but many students “find learning how to study to be more upsetting than the amount of homework” in a residential STEM school (Coleman, 2002, p. 41). However, despite being out of their comfort zones, students at The Gatton Academy have proven that, with guidance and support from staff, they can learn the necessary study habits and soar academically (Gott, 2011).

**Intentions.** Students with strong intentions, long-term goals, and visions for their future careers have a higher chance of obtaining a four-year degree than students with weak intentions. Tucker (1999) held, “Those who had the easiest transitions seemed to be those who had the clearest, most detailed vision of what they would be doing several years after graduation” (p. 164). Students with no clear direction and no future plans as motivation have little confidence in present collegiate decisions (Tucker, 1999).

Tinto (1987a) argued that students should enter college with well-planned academic intentions. Entering college with a vision increases both confidence and self-measured well-being (Tinto, 1987a). Interests can fuel intentions as early as middle or high school, and intentions dictate the type and level of education necessary. At a young age, students wanting to obtain four-year degrees will seek out challenging course loads,

achieve acceptable grades, and learn the college application process (Cabrera et al., 2005).

With histories of academic success, students admitted to selective universities are more likely to continue being successful (Mortenson, 2005). These successful students tend to have more drive and discipline, as well as more ambitious personal goals.

According to Bean (2005), “When the student and institution are matched, so that the institution wants what the student has to offer and the student wants what the college has to offer, retention is likely to improve” (p. 233).

Residential STEM schools often have selective criteria for admission. The most important component of admissions is to note that each student chooses to participate in the application process (Roberts & Alderdice, 2015). The decision to apply shows commitment to education and personal drive. Students at The Gatton Academy, for example, show ambition and motivation beyond what is typical for high school students. As revealed in interviews, Gatton Academy students do not just want to become engineers, but they want to be chemical engineers developing specific drugs. Gatton Academy students do not just want to go to medical school, but they want to become cardiac surgeons (Glowicki, 2014). Their goals are focused.

**Goal and institutional commitments.** Students should keep their intentions in mind when selecting an institution. Good fit is important when trying to attain academic goals. According to Tinto (1987b), “Some individuals enter colleges with goals which are either more limited than or more extensive than those of the institution” (p. 3). Each person has different goals, and each person chooses which school can best help reach those goals. However, many students enter college without a set-in-stone future. With

vague ideas of what they want to do, it is difficult for students to muster much commitment to such a time-consuming and stressful academic journey.

“The mirror image of individual commitment to the institution is the commitment of the institution, as exhibited in the behaviors of its faculty and staff, to the individual” (Tinto, 1987a, p. 208). Once a student is admitted to a specific institution, that institution has an obligation to educate the student (Tinto, 1987a). An institution must have a commitment to its community members, but also those community members must play an active role in their own education.

While both parties are responsible for retention, students bear the major responsibility for their personal educational experiences. There is only so much an institution can do to retain any given student (Tinto, 1987a). Students must find links to the institution via faculty, staff, and peers and view themselves as established members of their academic community. Tinto (1987a) noted, “The process of integration is an *interactive* one in which individuals also act to reshape their environments” (p. 106). When a student makes a commitment to a given institution, it is in his or her best interest to have a good sense of the educational and social environment beforehand.

Teenage students taking college-level courses early display high levels of commitment to the development of their own talents (Coleman, 2002, p.39). Many have been bored in traditional high schools for a long time and are excited for more demanding courses and to have like-minded peers (Jones et al., 2002). Gattton Academy students have attested to how having shared goals can help students encourage one another (Wilson, 2014).

**External commitments.** Family, friends, finances, and a student's personal ambition and disposition can all play roles in that student's persistence at college (Tinto, 1987a). A student could be academically unsuccessful, for example, due to lack of personal drive, family being unable to live without his or her potential income, or a close family member or friend falling ill. "In a very real sense, a person's ability to leave one setting, whether physical, social, or intellectual, may be a necessary condition for subsequent persistence in another setting" (Tinto, 1987a, p. 96).

Similarly, residential STEM students struggle with fully transitioning from traditional high school settings to a residential setting. Some capable students even opt out of attending altogether. The Texas Academy of Mathematics and Science found that almost one-third of applicants who declined admission would have reconsidered if ROTC, marching band, cheerleading, drill team, or varsity sports were offered (Jones et al., 2002). Students whose home towns were farther from the residential school also expressed concern about being so far from home, friends, and family (Jones et al., 2002). For example, The Gatton Academy is a six-hour drive from Phelps, Kentucky, one of the most eastern towns in the state. These gifted students may not avoid residential schools for fear of academic failure but more likely because of geographic distance from home or because of lack of preferred activities (Jones et al., 2002). Students have debated accepting admission to The Gatton Academy because they are star athletes and could no longer participate in track at their sending school (L. Breedlove, personal communication, March 20, 2015).

**Institutional Experiences.** Tinto (1987a) noted the uniqueness of the college community versus other environments: "Though these institutions of higher education

may often be thought of as small societies unto themselves, they are more bipolar in structure than society in general, being made up of distinct academic and social components” (p. 105). There are distinct separations within these college communities—the academic and social systems, each containing formal and informal settings. Different types of collegiate institutions obviously have different academic and social domains as well as levels of distinction between the two. For this reason, Tinto (1987a) said, “Differences in institutional rates of departure may arise out of discernible differences in the structure and strength of institutional academic and social systems” (p. 107).

Establishing membership in a new academic community is more than going to class and completing the required assignments. It necessitates finding a peer group with which a student can associate as well as receiving necessary support and encouragement from faculty and staff. Being involved in extracurricular activities allows students to make personal connections and likely leads to more informal social interactions. Similarly, positive formal academic experiences, such as classroom time, may lead students to more informal academic connections (Tinto, 1987a).

The integrations of a student into the social and academic systems are interdependent (Tinto, 1987a). The combination of a person’s degree of integration into these two realms culminates in shifting commitments and, ultimately, a decision on persistence (Halpin, 1990). Tucker (1999) called the combination of peer contact and staff interaction a sense of community: “Those who had the greatest sense of belonging in the new environment had a dramatically easier time in making the transition” (p.164).

***Academic performance.*** While students find their niche, they must also adjust to the academic demands of college. Students’ first-year academic performance can affect



not only academic and social experiences but also their persistence and commitment to a degree (Nora et al., 2005). First-year GPA has been shown as a persistence predictor ahead of high school GPA and ACT composite scores. More specifically, higher major-specific grades often predict major and therefore institutional persistence (Allen & Robbins, 2008). For traditional universities, “individuals with low competence but with moderate to high commitment tended to persist in college unless forced to leave because of failing grades” (Tinto, 1987a, p. 43).

The harsh truth of residential STEM programs for high-ability students is that, regardless of students’ commitment, they can go home for low grades. Many of the schools have fairly high GPA requirements. The Gatton Academy requires a 2.75 GPA for first semester students to continue and a cumulative 3.00 GPA to remain in good academic standing. Support systems are built in to the students’ first year of classes at The Gatton Academy, including study skills seminars, test preparation, and tutors. A series of warnings and sanctions is also in place for students who do not uphold adequate academic standings (The Gatton Academy of Mathematics and Science in Kentucky, n.d.).

***Faculty and staff interactions.*** Equally as important as being part of the social community is integrating into the academic community. Student persistence can be independently predicted by the frequency and quality of contact with faculty, staff, and other students (Tinto, 1987a). Students often feel intimidated at first by the thought of interacting with instructors and other university faculty members. They do not want to initiate contact with faculty or staff, for fear that the repercussions will be negative (Longwell-Grice & Longwell-Grice, 2008). Systems and programs to initiate contact with

faculty members, such as meet-and-greets or informal social events, can allow students to form bonds with faculty and staff outside of a formal classroom setting. Connections with both the academic teachers and the student affairs staff increase the likelihood of retention for students (Longwell-Grice & Longwell-Grice, 2008).

When an institution is student-centered, it places student welfare and happiness above other goals (Tinto, 1987b). Two of the top factors in college persistence are faculty concern for teaching and student development and interaction with faculty. Students prefer to be active participants in their education (Halpin, 1990). Braxton and Hirschy (2005) found that “faculty who intentionally involve class members in the learning process and engage critical thinking about course materials contribute to student persistence” (p. 78).

Faculty and staff connections are especially critical for first-generation students. A lack of family support sometimes makes students less likely to seek help on campus. For example, one first-generation student felt that the college he attended was not obligated to support his academic endeavors. The university provided him with a library and room and board, and the student assumed “he should be strong enough and smart enough to figure out college by and for himself” (Longwell-Grice & Longwell-Grice, 2008, p. 413). First-generation students often have lower self-confidence in an academic environment. Instead of seeking assistance when struggling, they view approaching faculty members as scary or a risk. They do not get involved on campus, seek active mentors, or form and maintain supportive relationships (Longwell-Grice & Longwell-Grice, 2008).

Within the first few months away from home, college students must master a laundry list of new tasks. Unlike traditional college students, residential STEM school students do not have to fret about learning many of the new tasks required of first-year college students. They are provided an entire team of staff members to help them through possible academic, personal, or emotional challenges (Cross & Frazier, 2010).

Registering, finding appropriate classes, learning how to study, and applying for scholarships are a few tasks with which the staff at residential schools assist students (Jones, 2009).

Gott (2011), the first director of The Carol Martin Gatton Academy of Mathematics and Science in Kentucky, shared how The Gatton Academy counseling services goal from the beginning has been to “help students in all areas of their lives, not just their academics” (p. 16). Reaching out to each student and helping him or her personally allows the staff to build bridges. Having a connection to staff members’ helps students feel comfortable coming to counselors when they are struggling, which in turn creates a sense of community and greater likelihood of persistence (Gott, 2011).

***Extracurricular activities.*** Being involved in extracurricular activities helps enrich students’ personal interests and allows them to make connections with others with similar interests. These personal connections often extend beyond the setting in which they are kindled (Tinto, 1987a). Regardless of the actual organization, “membership in at least one supportive community, whatever its relationship to the center, may be sufficient to insure continued persistence” (Tinto, 1987a, p. 61). Traditional college students can join a fraternity or sorority, complete community service projects, participate in student government, play on an athletic team, or find a small interest group. Whether students

join a large and well-known student organization or a small group of peers with similar views, finding a niche on campus allows students to have a place to call their own.

Residential STEM schools create communities to foster a living-and-learning environment. Residential life staff members create programs to help students interact and create bonds. Students can be involved in many traditional high school clubs and organizations, such as Beta Club and Future Business Leaders of America. Additionally, students may also complete undergraduate level research, compete in intramural college sports, and participate in service projects (Roberts & Alderdice, 2015).

While Gatton Academy students cannot participate in National Collegiate Athletic Association (NCAA) sports or Greek organizations, the program offers a large number of student activities and unique undergraduate-level experiences. One such unique opportunity is the Genome Discovery and Exploration Program for first-year students, which allows students to utilize software to study genetic sequences. Students also have the opportunity to participate in The Gatton Academy's STEM + Critical Language program. The STEM + Critical Language program prepares students for STEM careers in an international arena (The Gatton Academy of Mathematics and Science in Kentucky, n.d.).

***Peer group interactions.*** Tinto (1987a) noted the importance of social interactions with student peers, especially roommates, in successful integration and avoidance of departure. Young adults need to be with like-minded people with similar interests (Cross & Frazier, 2010). Without these social connections, students can feel isolated and gain a sense of separation from the community itself (Tinto, 1987b).

Class is an arena for students to connect with peers with similar interests to themselves. According to Bean (2005), once students make friends, they often feel as if they fit in and gain self-confidence. Students with close friends on campus have more self-confidence, and students with more self-confidence are more satisfied with their college. This satisfaction and students' personal connections make them more likely to persist at a university because they feel as if they fit in (Bean, 2005). Tinto (1987a) believed that "most new students are teenagers who have had precious little chance to live on their own and attend to the many challenging issues of adult life. For them, college is as much a social testing ground as an academic one" (p. 47).

When enrolled in residential STEM schools, students discover that they are not the only person in the world who loves to learn. Some students come to The Gatton Academy as the only "nerd" in their whole school. For the first time, these students are with like-minded peers. Bringing together gifted students does so much more than give them someone with whom to take classes; it affects cognitive behaviors positively (Cross & Swiatek, 2009). Being with intellectual peers increases students' sense of what they can accomplish, who they are, and their ability to find peers (Coleman, 2014).

Some students enter residential STEM schools may have felt alienated at their sending schools for being different and for enjoying learning (Cross & Swiatek, 2009). Being with intellectual peers is known to create more self-confidence in gifted students (Coleman, 2014; Cross & Frazier, 2010). Many students at residential STEM schools form stronger friendships, have increased social acceptance, and do not feel as if they must choose between academic excellence and strong relationships with peers (Cross &

Frazier, 2010). This creates the sense of community that is so crucial to the transition of college students in the first term (Tucker, 1999).

## **Conclusion**

In conclusion, more than 30 years ago, Tinto established a strong model for the traits and experiences affecting traditional college student adjustment to college. The above studies provide insight into how high-ability high school students adjust to state residential STEM schools. However, the studies do not outline which traits and experiences most affect the adjustment of residential STEM students in their transitions.

## **Method**

This section describes how the study was conducted. It includes brief descriptions of the research goals and design, followed by a delineation of the sample and participants studied. The data collection instruments are described, and the specific data collection procedures are defined, followed by a description of the data analysis procedures.

## **Research Goals and Design**

The study focused on which factors most influence adjustment to and retention of high-ability high school students who attend a residential STEM school and exclusively take college-level courses. This research was guided by the characteristics deemed by Tinto (1987a) most influential on student retention from traditional college students in his Model of Institutional Departure. The research question was developed using these identified characteristics and the researcher's prior knowledge of gifted students: Which factors most influence adjustment to and acclimation of high-ability high school students exclusively enrolled in college-level courses at state residential STEM schools? Tinto's model (1987a) focuses on pre-existing traits and connections as well as all institutional

experiences to better predict a college student's probability of persistence. The researcher connected these traits with the emotional, academic, and overall adjustment of minors to a modified version of the college environment. These traits are the foundation upon which the study was built.

The study was qualitative in nature. Open-ended questionnaires for students, staff members, and parents of students (See Appendix A, Appendix B, Appendix C, and Appendix D) were administered at a residential STEM-based high school.

### **Sample and Participants**

The sample frame used comprised first-year students at The Carol Martin Gatton Academy of Mathematics and Science in Kentucky, parents of first-year students at The Gatton Academy, and staff members of The Gatton Academy. The first-year students were targeted to capture adjustment data as concurrently with their transition to college as possible and to keep collected data accurate.

The research employed a volunteer-based sampling method (Patton, 2002). Email requests for volunteers were sent to all first-year students, the parents of all first-year students, and all staff members (See Appendix E). A consent form was attached to each email request (See Appendix F, Appendix G, and Appendix H). Those returning a signed consent form within two weeks were enrolled in the study. A volunteer-based sample was best for this study because the study aimed to measure accurately the adjustment of students without adding demands and stress (Patton, 2002). If students were chosen more individually, stress to complete an unanticipated task may have complicated those students' adjustment and affected data accuracy.

**Student sample.** With an overall population of 63 first-year students, a sample size of ten students captured just over 16% of the population. The sample was also split fifty-fifty based on gender (i.e., five males and five females), reducing gender bias in the study. Table 1 depicts information about the student participants.

**Parent sample.** No imposed goals were made for parent responses. Only two parent responses were returned, one female and one male. Both parents have graduate-level degrees. One parent has two children who are graduates of or are currently enrolled at The Gatton Academy. Table 2 depicts information about the parent participants.

**Staff sample.** With a small staff of 11 people, there were no imposed goals on how many staff questionnaires should be returned. Six staff members completed questionnaires (i.e., two females and four males). Staff participants included four residential life staff members and two administrative staff members. Table 3 depicts information about the staff participants.



Table 1

*Basic Student Background Information*

Student	Parents married	Parents attended college	Challenge in prior school	Goals	Gatton activities count	No study habits	Roommate experience	Research	Staff connection
1	Yes	Yes	No	Life	4	No	Neutral	Yes	None
2	No	Yes	No	Life	4	No	Negative	Yes	WKU
3	No	Yes	No	Life	3	Yes	Positive	Expected	WKU
4	Yes	Yes	No	Life	1	Yes	Negative	Yes	None
5	-	-	No	Life	0	Yes	Positive	Expected	Gatton
6	Yes	Yes	Yes	Short term	0	No	Positive	Yes	None
7	Yes	Yes	Yes	Life	0	No	Positive	Yes	Gatton
8	Yes	Yes,	No	Life	2	Yes	Positive	Expected	WKU
9	Yes	Yes	Yes	Life	1	No	Positive	Yes	None
10	Yes	Yes	No	Life	3	No	Positive	No	None

*Notes.* - = No Answer

Table 2

*Basic Parent Background Information*

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Parent	Marital Status	Level of Education	Involvement in child's education	Number of children	Number of children who attend(ed) Gatton	Opinion of Gatton Academy experience
1	Divorced	Master's	High	1	1	Positive
2	Married	Ph.D.	High	2	2	Positive

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Table 3

*Basic Staff Member Background Information*

Staff Member	Staff role	Main reason students apply	Gatton provides adequate counseling	Suggestions for improvement
1	Residential	Opportunities	Yes	Yes
2	Residential	Challenge	Yes	No
3	Residential	Opportunities	-	No
4	Administrative	Challenge & acceptance	No	Yes
5	Administrative	Challenge & opportunities	Yes	Yes
6	Residential	Challenge & opportunities	Yes	Yes

*Notes.* - = No Answer

## **Questionnaires**

A questionnaire design was used to collect data from students, parents of students, and staff members. This design was appropriate for data collection for this study because it allowed for primary data collection from all parties directly involved in The Gatton Academy. Direct data collection allowed the researcher to gather first-hand and direct observer accounts (i.e., staff members) of the factors studied in the research.

**Development of the questionnaires.** The questionnaires were developed by the researcher to capture information about student social, academic, and internal adjustment when transitioning to The Gatton Academy through application of Tinto's Model of Institutional Departure (1987a). Within Tinto's Model, specific themes affecting student adjustment, and ultimately student persistence, were identified. The themes identified by Tinto formed a base for the questions in student, parent, and staff questionnaires for this study. Themes were identified as follows:

- Family background
- Skills and abilities
- Prior schooling
- Intentions
- Goal and institutional commitment
- External commitments
- Academic performance
- Faculty and staff interactions
- Extracurricular activities
- Peer group interactions

The Student Entrance Questionnaire included 24 questions, with an average of two questions applied to each theme. The Student Exit Questionnaire had 13 questions and was a follow-up to the entrance questionnaire. The goal of the Student Exit Questionnaire was to determine how any intentions, goals, or institutional commitments changed as well as to capture academic performance and interactions with faculty, staff, and peers since the entrance questionnaire was completed.

The Parent Questionnaire had 12 questions. The goal of the Parent Questionnaire was to capture external commitments of students as well as their prior school experiences. The Staff Questionnaire had eight questions, focused on capturing goals and intentions of students who applied to The Gatton Academy. The staff questionnaire also asked about students' peer interactions as observed by staff members.

The questionnaires were delivered via email, electronically completed, and returned to the researcher via email within three weeks. Electronic delivery was chosen to allow students more time to complete the questionnaires. Having more time for questionnaire completion allowed for more thorough answers since students maintain a full-time college-level schedule, and parents and staff balance careers and families. Electronic delivery allowed participants to ponder questions before answering and to avoid any hesitancy of answering directly to the researcher.

**Validity of the questionnaires.** Eight WKU faculty members reviewed the questionnaires in Fall 2014. Suggested changes were incorporated in the final form. The questionnaires were reviewed and approved by the Human Subjects Internal Review Board at WKU. (See Appendix I and Appendix J). The board determined the research involved minimum risk to participants.

## **Procedures**

Before data were collected, the WKU Internal Review Board (IRB) approved the proposal because the research involved human subjects. Copies of all questionnaires to be administered, all intended communication with possible participants, and step-by-step procedures were submitted for review. The researcher then appeared before the IRB members for a full-board review. The IRB approved the study, and the researcher began data collection.

First-year students received assent forms and their parents received consent forms (See Appendix F and Appendix G) via email as soon as IRB approval was obtained for the study. Consent forms were also sent to staff members and parents of all first-year students (See Appendix H) via email. Requests for participation were sent to The Gatton Academy first-year student listserv, first-year parent listserv, and staff listserv. Parents were asked to return the consent forms only if they did not want their son or daughter to participate in the study. No parents opted for their child to be excluded. The assent form stated that students were not required to participate in the research project and that they would not be penalized for choosing not to participate. Students were asked to return a signed copy of the assent form to the researcher if they agreed to participate in the research project.

Along with applying for IRB approval, the researcher applied for a Graduate School research grant at WKU. The grant was approved to pay for an NVivo student subscription and \$10 incentives for all students who completed both the entrance and exit questionnaires. The grant was approved after the requests were sent for participation, so students were told about the incentive when they received the exit questionnaires.

**Student questionnaires.** Student participants were sent Student Entrance Questionnaires via email during the Fall 2014 semester. Each questionnaire was estimated to take a maximum of one hour to complete. The participants were asked to return their questionnaires via email to the researcher within two weeks. The Student Entrance Questionnaire measured students' initial adjustment to The Gatton Academy. Completed questionnaires were assigned unique identifier codes (UICs) once received. The UICs allowed the researcher to link parents with students once responses were received from both without showing the participants' identities.

Student participants were sent Student Exit Questionnaires via email during the Spring 2015 semester, after their first round of exams (approximately the second week of February). These questionnaires were estimated to take one hour to complete. Also in this email was a promise for a \$10 incentive if they returned both the entrance and exit questionnaires. The participants were asked to return their questionnaires via email to the researcher within two weeks. The Student Exit Questionnaire measured students' long term adjustment to The Gatton Academy.

**Parent questionnaires.** Parent participants were sent questionnaires via email during the Fall 2014 semester once signed consent forms were received. These questionnaires were estimated to take a maximum of one hour to complete. The participants were asked to return their questionnaires via email to the researcher within two weeks. The Parent Questionnaire measured parents' perceptions of their children's adjustment to The Gatton Academy. Completed questionnaires were assigned UICs once received. The UICs allowed parents to be linked with their students, without showing the participants' identities.

**Staff questionnaires.** Staff participants were sent questionnaires via email during the Fall 2014 semester once signed consent forms were received. These questionnaires were estimated to take a maximum of one hour to complete. The participants were asked to return their questionnaires via email to the researcher within two weeks. The Staff Questionnaire measured staff perception of student adjustment to The Gatton Academy. Questionnaires did not include any personal identifiers, such as staff or student names, but staff members were labeled as residential or administrative in results.

The questionnaires were considered controlled because the researcher was the only one administering the questionnaires. The questions were consistent across groups, with all parents answering the same questions, all students answering the same questions, and all staff answering the same questions. The questionnaires were delivered in a uniform fashion.

### **Data Analysis**

Questionnaires were completed by all participants within three weeks of distribution and returned via email to the researcher. Completed questionnaires were uploaded into the qualitative data analysis program NVivo. Each participant was assigned a unique identifying code to protect participants' identities while coding data. Deductive analyses were performed with the data collected from questionnaires to identify themes based off of Tinto's Model of Institutional Departure (1987a).

Patton (2002) defines deductive analysis when "data are analyzed according to an existing framework" (p. 453). Coding involved organizing and categorizing phrases, statements, and answers from the student, parent, and staff questionnaires into themes. The themes identified in Tinto's Model (1987a) were used as a starting framework for



codes. The researcher was open to any new codes that emerged while reading questionnaires.

**Intercoder agreement.** Two coders independently coded 20% of the Fall 2014 student questionnaires, then the two coders met to confirm intercoder agreement (Patton, 2002). Initial themes were identified from the comparison of that 20% of data. All themes were assigned a code to be used for further coding. The researcher sent the other coder a list of passages from both Fall 2014 and Spring 2015 questionnaires from students, staff and parents. The two coders independently assigned the agreed upon codes to each passage and compared answers. There was 93% intercoder agreement using this method (Patton, 2002). The themes were analyzed to identify consistency throughout.

Verification of data was completed by rereading completed questionnaires and codes. The researcher confirmed agreement with previously assigned codes and solidified that all necessary codes had been assigned. Reviewing the codes allowed the researcher a chance to verify or alter hypotheses formed through data analysis.

### **Researcher Bias**

The researcher graduated as a student from The Gatton Academy in 2008 and was a Gatton Academy residential staff member for the duration of the study. These connections could have created bias. The researcher could have allowed past experience to influence identification of themes or been influenced by personal relationships with current students in many portions of the study including formation of questionnaires, data coding, and discussion of results. By including eight WKU faculty members in formation and editing of the questionnaires, biases were hopefully eliminated. Similarly, by

including a second coder and reaching over 93% intercoder agreement (Patton, 2002), biases in coding were hopefully avoided.

### **Results**

As data were coded, similarities among students appeared and themes emerged. These themes were organized within the pre-existing framework of Tinto's Model of Institutional Departure (1987a). The results showed many consistencies with Tinto's Model. Table 4 shows frequency counts and key terms from each theme. Table 5 provides a more detailed account of data from each student.

Table 4

*Thematic Categories*

Theme	Frequency count	Key terms	Key outliers
Family background	39	Both parents, close	2 sets of parents divorced
Prior schooling	27	Not challenging, never studied	
Skills and abilities	9	All A's	
Intentions	34	College, degree	
Goal and institutional commitment	64	Research, good experience, opportunities	
Peer interactions	58	Close friends, good roommate	Dislike roommate
Faculty interactions	36	Enjoy class, outside of class, RCs	No connections
Institutional experiences	31	Research, clubs	Home school clubs
Academic performance	84	Have to study, math class, high stress, manage time	Like CPS

*Notes.* RCs = Residential Counselors, CPS = Computational Problem Solving course

Table 5

*Basic Student Thematic Information*

Student	Family background	Prior schooling	Skills and abilities	Intentions	Goal and institutional commitment	Peer interaction	Faculty interaction	Institutional experience	Academic performance
1	Immigrant, married parents	AP, no challenge	4.0	Help humanity, advanced degree	Loves environment	More friends, neutral roommate	No close connections	4 clubs, research	Learned to study, high stress
2	Immigrant, separated parents	AP, no challenge	High grades	College, engineer, help family	Loves experience	More friends, negative roommate	Foreign language teacher	4 clubs, research	Learned to study, high stress
3	Divorced parents	Honors, bored	High grades	College, CS major, travel	Loves environment	Positive friends & roommate	Foreign language teacher	3 clubs, expected research	Learned to study, stress, low grades
4	Married parents	Took all math offered, bored	High grades	Support family	Loves opportunities	More friends, negative roommate	Calculus TA	1 club, research	Learned to study, high stress
5	-	Honors, no challenge	4.0	Selective university, write novel	Work is worth reward	Positive roommate	Gatton academic advisor	No clubs, expected research, missed "me" time	Learned to study

*Notes.* CS = Computer Science, TA = Teacher's Assistant, AP = Advanced Placement courses

Table 5 continued

*Basic Student Thematic Information*

Student	Family background	Prior schooling	Skills and abilities	Intentions	Goal and institutional commitment	Peer interaction	Faculty interaction	Institutional experience	Academic performance
6	Married parents, mom at home	STEM classes	High grades	Scholarship, college	Love opportunities	Positive friends & roommate	No close connections	No clubs, research	Little change, low stress
7	Married parents, mom at home	High level	High grades	Biology job, marriage	Appreciate free college	Positive roommate	Residential counselor, A.D. of counseling	No clubs, research	High stress, struggle with math
8	Married parents live apart	Highest level, independent studies	4.0	Doctorate	Love experience	Positive friends & roommate	Residential counselor	2 clubs, expected research	Learned to study, struggle with math
9	Married parents	AP, “not a natural”	High grades	Advanced degree, help people	Loves opportunities	Positive friends & roommate	No close connections	1 club, research	Studied a lot, high stress
10	Parents married	AP & honors, no challenge	4.0	Study history, marriage	Loves experience	Positive friends & roommate	No close connections	3 clubs, homesick	High stress, struggle with CS

*Notes.* A.D. of counseling = The Gatton Academy Assistant Director of Counseling Services, CS = Computer Science, AP = Advanced Placement

## **Family Background**

Individuals enter an institution with a range of family histories. Student backgrounds are measured by socioeconomic status (SES) and parental education, as well as other attributes (Tinto, 1987a). Students' financial situations, parental education, family settings, and personal relationships are all factors that affect their adjustment at The Gatton Academy. However, the only personal facts known about all incoming Gatton Academy students are that they are Kentucky residents and that they are entering high school juniors.

**Family setting.** All student participants have parents with college degrees. Some parents have a Ph.D. or an M.D., but all students' parents have at least a Bachelor's degree. Participant 9 noted the importance of education that his or her mother instilled first in her own husband, then later in her child: "Both of my parents attended college. My mom attended right after leaving high school. My dad attended when he met my mom, and she forced him (which was several years after he graduated high school). He thanks her now."

The participants expressed appreciation of education and learning as did the parents. For example, Parent 2 expressed his or her family's shared academic interests: "The entire family is driven intellectually and it is reflected in what we enjoy (museums, science projects, intellectual discussion, etc.) which is certainly not unique but may be different from the average family experience."

Seventy percent of the students in the study live in a traditional family setting with both parents. Many of the participants labeled their living arrangements comfortable or middle class financially.

**Personal connections.** Half of the participants expressed having close relationships with their families. Participant 2 explained how he or she stays in contact with family while at school: “I am very close with my family. I talk with my direct family (mom, dad, sister) every day, while I talk to my [extended] family. . .(aunts, uncles, cousins, etc.) every one or two weeks.”

Close relationships with family seemed to strain the students’ initial moves to The Gatton Academy. As teenagers, this is the first time they had lived away from their parents for such an extended period of time. Participant 7 shared how difficult parting with family was at first: “Living without my parents was a big adjustment for me.”

Coming from educated families, the student participants were encouraged to pursue academic opportunities. A love for learning was fostered from an early age, contributing to students’ drives to achieve academically. However, being so close to their families, they also struggled leaving home earlier than traditional students.

### **Prior Schooling**

Students come to The Gatton Academy from high schools across the Commonwealth of Kentucky. Tinto (1987a) mentioned how prior schooling can prepare students for college careers, and strong preparation leads to higher likelihood of persistence. The Kentucky high schools represented by the participants did not offer enough advanced classes to engage and challenge 70% of the students. Participant 3 went so far as to say he or she dreaded even going to school: “I dreaded school. I enjoyed learning, but I was bored of sluggish lessons and was already at the point of disregarding as much work as I could.”

Several participants (i.e., six participants) would have exhausted every academic opportunity at their sending high school before the end of their high school career, especially in mathematics. Participants had taken multiple math courses at once, taken math courses traditionally designed for higher grade levels, or some combination of both. Participant 8 and his or her parent, Parent 2, separately touched on how the sending school was not adequately providing for the needs of students advanced at early ages. Parent 2 said, “They would have been limited in what they could learn during the last two years of high school at the local high school, while at Gatton they could continue to grow intellectually and personally.” The child agreed:

My home high school...they didn't have the resources to provide challenging classes for the students they had already advanced. For example, because they let me take both geometry and algebra in 8th grade, I would have to do an independent study for my senior level math, as there is not a calculus 2 class at my school. (Participant 8)

Participants consistently mentioned being enrolled in honors or AP courses at their sending high schools but still not being challenged. Participant 1 recounted: “The AP courses took work but were not that challenging.”

Eight of the 10 participants were unaccustomed to studying and entered The Gatton Academy with very little idea of how to study effectively for challenging courses. At their sending school, they could do very little work and still get better-than-average grades. Participant 5 described his or her prior school experience: “I wouldn't even have to know when the test was because they were so easy for me.”



Lack of academic challenge can cause issues for students beyond just struggling academically. Staff Member 4 noted how coming from such a carefree environment into The Gatton Academy “a large chunk of our students are not academically prepared and the Academy is an academic shock to their development/identity.”

### **Skills and Abilities**

According to Tinto (1987a), high school grade-point-averages (GPAs) can be a precollege predictor of persistence. All participants entered The Gatton Academy with perfect or nearly perfect high school grade-point-averages. Students who did not have 4.0 GPAs were quick to admit that they often did not apply themselves. Participant 3 admitted that a few B’s on his or her transcript were easily avoidable with a little more effort: “Performance wise, I did as little work as possible to get an A and that backfired once in a while. I ended with three high B’s that could have very easily been prevented if I didn’t skip a presentation or turned in one or two more assignments.”

Some students mentioned wanting to attend The Gatton Academy, so they were surrounded by people with similar abilities to themselves:

I was also extremely excited at the prospect of attending a school where I wasn’t just “the smart one” or “the sister of the smart one.” Surrounded by students who are at least as intelligent as I am, most of which are smarter, I hoped to feel less singled out. (Participant 8)

The participants recognized their high academic ability and appreciated like-minded peers.

### **Intentions**

Future educational and personal goals dictate how dedicated students are to their current education. Goals prescribe the level and type of education an individual must pursue (Tinto, 1987a). The participants entered The Gatton Academy with strong personal, educational, and life goals.

**Short-term goals.** Every participant plans on pursuing at least a four-year college degree. Three participants saw The Gatton Academy as a means to attain entrance to highly selective universities, such as MIT and Vanderbilt. Staff Member 5 agreed that The Gatton Academy is viewed as a means to such prestigious institutions: “I also believe that students apply to The Gatton Academy as a stepping stone too for big aspirations. They believe the Academy has a reputation that will help propel them to lofty college goals.” As high school juniors, participants mentioned at least a field of study, if not a specific major, when referencing their futures. Graduate or professional schools were goals for several participants: “I want to pursue a degree (probably a Ph.D.) in mathematics, focusing specifically on number theory” (Participant 8).

**Life goals.** While the participants had extraordinary goals for the short term, themes also emerged among their longer term and life goals. Overall, the participants wanted to make an impression on humanity: “My ultimate goal in life is to do something awesome that impacts humanity in a positive way” (Participant 1). Some had even planned the means by which they wanted to change the world:

My ultimate goal is to have a family and move to a third world nation to build a free clinic and practice medicine free of charge for those who cannot afford it, while simultaneously showing them the Word of God.  
(Participant 9)

Having and helping family was also a common theme. Participants wanted to get married and have children. They revealed a desire to have a good education and job to provide for their own family and children as their parents had for them, or to repay their parents. Participant 2 shared a personal desire to help family: “Be able to pay back dues to my parents (help them out as they get older just like they helped me as I got older).”

Gatton Academy students have well-defined academic goals from the time of admittance. When asked as first semester high school juniors, half of the participants already knew what universities to which they would apply and had an idea of what they wanted to do in life. Parent 1 described his or her child’s aspirations: “He wants to help develop a plane/ship that will go back and forth between our atmosphere and outer space with ease.” The participants have ambitious life goals and a strong desire to give back to humanity and their own families.

### **Goal and Institutional Commitment**

Commitment to personal goals and an institution show a level of dedication to education (Tinto, 1987a). Students display their dedication to a higher level of education than traditional high schools offer in Kentucky by seeking challenge at The Gatton Academy.

**Study hours.** Sixty percent of participants are supportive of the current set of safety nets for incoming students, including required study hours. They appreciate the allotted time for schoolwork, a quiet environment, and easy access to tutors: “Overall, I have found study hours quite helpful, no lie. Mainly because they offer a way of me getting tutored without actually having to consult an adult and schedule a meeting” (Participant 9). The two parents responding expressed appreciation for study hours and

agreed that required study time was beneficial: “I think that the mandatory study time each night and tutors available during that time help tremendously in the first part of the semester” (Parent 1).

Three participants specifically said they find study hours useful only as an introductory tool and desire less required study time after the first few weeks of school: “Study hours were beneficial the first few weeks in helping me get adjusted to the increased workload” (Participant 10).

**Reflect on experience.** When asked whether they would reapply to The Gatton Academy if given the choice, every participant emphatically answered that they would. Exclamation points and positive language were used to describe their appreciation for and dedication to the institution. Participant 6 appreciates how prepared he or she is for the future: “This has been a great experience, and I feel it will be great preparation for everything ahead of me.”

Participant 9 expressed appreciation for the experience as a whole. He or she could not pinpoint which part of the experience was the most beneficial and included many: “This has been the best opportunity I’ve ever been given. Where else could I go on a study abroad, conduct undergrad research, take college courses, and be surrounded by people of likewise qualities?” Participants overall were appreciative of the opportunities presented to them by The Gatton Academy.

### **Peer Interactions**

Social and intellectual integration into an academic community make an individual more likely to continue at that institution. Positive integration encourages goal commitment and strengthens commitment to the institution (Tinto, 1987a). As students

enter The Gatton Academy, the peer bonds formed create motivation for students to remain in the program.

**Like-minded peers.** Upon entry to The Gatton Academy, the participants were surrounded by like-minded peers, many for the first time. Staff Member 6 confirmed this: “I will simply say that the most like-minded students form the strongest personal bonds.” They experienced a whole gamut of emotions associated with this phenomenon. Students showed enthusiasm for being with others who appreciated learning and finding peers to connect with on an intellectual level. Participant 8 was surprised: “Enthusiasm for learning was no longer something which made you a social pariah.”

The participants were not always comfortable with being among other high-ability students. At least two participants felt the environment was uncomfortable and fueled competition. Participant 5 witnessed: “Other Gatton students liked to compare scores to see ‘who was the smartest,’ which made almost all of my classes feel like a competition rather than a learning environment.” Sometimes it was distressing to not stand-out in class: “I also wasn’t used to being an ‘average kid.’ I was the smartest kid at my home high school, and coming here there are so many people smarter than me, and it hurt at first. Now I am used to it though” (Participant 1).

**Roommates.** Learning to live in close proximity with someone new proved to be a challenge for many of the participants. Five participants mentioned learning to share space with others as one of the main adjustments they had to make. Participant 7 simply said: “It was hard learning to share space with other people.” Participant 4 agreed: “The only adjustment issue I had was learning to live in, work in, and share a space with another.” Many of those happy with their roommate pairings mentioned being able to live

together without getting sick of one another or being best friends: “She is around enough that we have developed a friendly relationship but not around so much that we get sick of each other” (Participant 8).

While being surrounded by many other intelligent students was sometimes intimidating to some of the participants, it was overall a positive experience. Four participants expressed appreciation for being part of a whole instead of being an outsider. Their roommate relationships were mostly positive lead-ins to friendships with their roommates or other students.

### **Faculty Interaction**

Faculty and staff who actively engage students in formal and informal academic settings are more likely to increase student persistence. Students academically respond positively to additional contact with faculty outside of class, and engaged students seem to seek this contact (Tinto, 1987a). The Gatton Academy staff strive to make personal connections with the students and help the students in all parts of life (Gott, 2011).

**Gatton Academy staff.** Only two participants expressed that they have personal relationships with a member of The Gatton Academy staff, although the remainder of the participants said they felt that the staff was always there to make them feel comfortable and provided adequate support. The most consistent connections students formed with Gatton staff members were with the Assistant Director of Counseling Services or their Residential Counselor. Participant 10 appreciates this interaction, and staff members also feel as if the counseling team is a great asset: “I go see [the Assistant Director of Counseling Services] once a week and talk to him about whatever’s on my mind” (Participant 10).

The Academy's Assistant Director of Counseling Services is very much involved in students' lives, and does a good job of ensuring students' needs are being met regarding their emotional states. The Residential Counselors are a good resource for students as well, functioning as a more colloquial outlet for students to vent their issues and concerns. (Staff Member 1)

**WKU faculty and staff.** Four participants developed a personal relationship with a university faculty or staff member outside of the classroom. The students seemed to make connections with the faculty in courses they particularly enjoyed. Participant 3 connected with a foreign language professor because of his or her personal interest in the language and culture: "My closest connection with a WKU staff member is with. . .my [foreign language] professor. We chit-chat often in and outside of class about language learning, culture, and my progress as a new student to the course."

The Gatton Academy has seen siblings from the same family through the program. This connection can allow students a pre-established rapport with professors and a topic from the first day, as was the case with Participant 8:

Dr. Thomas<sup>1</sup> taught my brother and spent significant [time] with him, so the first time I met her we already had a topic for discussion. I also enjoy her class and am intrigued by the topic. I found myself staying after class several times to discuss questions I had with her. We also exchanged several emails over the course of the semester. I have also received very helpful personal advice from her over the semester.

While all participants did not form special bonds with Gatton Academy staff members or WKU faculty, the five participants who did were very positive. Having another person from whom to seek advice and with whom to discuss interests was valued.

### **Institutional Experiences**

Low levels of interaction and involvement in the institutional community decrease the likelihood of persistence for college students. It is important for students to find their niche and become involved in activities (Tinto, 1987a). Gatton Academy students are offered many options for involvement, and many of them choose at least one activity outside of required classes.

**Extracurricular activities.** Almost all of the participants (i.e., 70%) mentioned a decrease in club involvement upon entry into The Gatton Academy. Decreased involvement was attributed to an increase in school workload and study time. Participant 9 felt that the course load was simply too demanding to allow much time for clubs: “I cannot bring myself to sacrifice my grades for extracurriculars, especially those that I do not thoroughly enjoy.” Less club involvement could also be attributed to the difference between traditional high school and Gatton schedules.

**Research.** Research is not required, but many of the participants choose to join a research team on campus. Six participants are currently involved in research projects supervised by WKU faculty members, and three more plan on conducting research before graduating. Students sometimes wait until they have had a semester or two to become familiar with the academic demands of The Gatton Academy, as well as take time to connect with a faculty member with whom they wish to conduct research. Some students



even become involved with research projects in an area that may not have interested them before coming to The Gatton Academy:

I have started two research projects this semester. One is in mechanical engineering focusing on laser scanning and photogrammetry which is in a field I've been interested in for a while. The other research project is a CS project dealing with cryptography which isn't something I thought I'd be interested in when I came here. (Participant 4)

Participants had to pick and choose which activities best fit their needs and interests. It is common to have less time to dedicate to activities outside of classwork.

### **Academic Performance**

Academic performance mirrors an individual's decision on the amount of time and energy committed to maintaining the minimum requirements to persist at an institution (Tinto, 1987a). The Gatton Academy has a set, STEM-oriented curriculum, as well as a minimum requirement higher than that of many universities (The Gatton Academy of Mathematics and Science in Kentucky, n.d.).

**Computer science.** Of the participants, 60% mentioned disliking the required Introduction to Computer Science course the first semester or the follow-up coding course, Computational Problem Solving. Required computer programming courses were consistently the least favorite classes: "My least favorite class last semester was CS, because I'm just not good at coding and didn't enjoy the topic at all" (Participant 5). These courses seemed to raise the students' stress levels and challenge them in a way they were not accustomed to being challenged: "I don't like it because it is challenging, and the concepts take a long time for me to understand" (Participant 1).

**Math difficulty.** Half of the participants revealed that they struggled with their college-level math courses in the beginning, even those considering themselves strong in math: “I was no longer able to pass the tests by only understanding the overlying principles, which was my strength previously” (Participant 8). Some participants just did not know how to study for a subject that had come so easily before, and their self-confidence in math class decreased. Participant 3 felt like he or she had hit a wall: “I did not know how to study for math at all. I was literally stuck in some sort of thought process that you either get math or you don’t, and I thought I reached my limit.”

**Stress.** All but one participant appeared to experience more stress at The Gatton Academy than in traditional high schools. Some students experienced more stress the first semester, because they were learning to study and manage their time. Participant 7 credited his or her struggle to learning how to be a college student along with learning more difficult material: “Last semester, I had to learn how to go to college at the same time I was supposed to be learning things in my classes. Now, I know the drill, and it’s easier.”

For four participants, it was as simple as learning how to manage their time more efficiently. Prioritizing and completing assignments or studying for tests in the most logical order became important: “I’ve just learned how to manage my time better, so now I’m not stressing about getting everything finished like I was last semester” (Participant 5).

The other six participants experienced more stress the second semester, as they took on more credit hours, research projects, and Computational Problem Solving. After an easy first semester, these students took on more than one new challenge. Participants

with easier fall semesters realized how challenging their new ventures were and how that affected their overall workload and grades after the second semester started:

I have come to realize now that I had all easy classes last semester. Now I am experiencing some truly challenging classes. Not only is the content much more involved, but the classes also assign greater amounts of work. I am definitely more stressed, and my grades are a bit lower. (Participant 8)

**Study habits.** Four participants entered the first semester at The Gattton Academy without study skills. Over time, they learned what studying techniques worked for them and how to adequately prepare for tests and assignments. Mastery of these new techniques sometimes did not happen until after realizing old study habits were inadequate for college-level courses:

I didn't do well on any of my first exams. It was a big shock to figure out I had to actually study for them. . . . It was really hard to get into the habit of studying at the beginning of the semester, but now I've found the ways that work best for me. (Participant 5)

Fifty percent of the participants entered their second semester with new plans for studying for regular coursework and finals. They learned what techniques were effective during the first semester and planned to implement those to avoid as much stress the second time around:

I struggled to find how I should study in the first semester; I often tried to cram and learn from the book. This semester I've been taking a different approach, and, if something comes up that I don't understand or had

preexisting knowledge of, I study it the week it was covered. I've already had an exam and I did not cram for it, because I was already prepared.

(Participant 3)

Four participants came to The Gatton Academy having studied infrequently and having developed very few study habits. While learning how to manage time and study effectively, those four participants were also struggling to grasp college-level math courses and master the logic required for computer science. Overall, participants were able to compensate for their lack of study skills and maintain passing final grades.

### **Exceptions**

As data were analyzed, a few exceptions to the above themes were noticed. The following section addresses these exceptions and the participants they affect.

There were two participants, Participants 6 and 10, who mentioned being involved in extracurricular activities with their sending high schools. These students were involved in fewer clubs at The Gatton Academy than the rest of the participants. When asked about his or her extra-curricular activities at The Gatton Academy, Participant 6 shared: "I do not participate in any; however, I help run the robotics team at my previous school."

While the majority of the students' parents were still married and living in the same household, Participant 2 and Participant 3's parents were either separated or divorced and living in separate dwellings. Participant 8's parents are still married but live in different cities for job-related reasons.

Two participants expressed a dislike for their random roommate pairings. They both voiced a desire for a more accessible system to change roommates. Participant 2 described his roommate pairing:

I have not enjoyed my roommate experience at all. Ever since the first week I have not been at the best terms with my roommate. He...has habits that clash with my serious personality. . . . I wish that I could still get a new roommate. (Participant 2)

Students who enjoyed the required Computational Problem Solving course also appeared as outliers. Participants 2 and 9 mentioned how the logic and perspective fit their way of thinking. Participant 2 justified: “Being able to think problems out logically with different perspectives is the best concept to me. I feel like I can express how my brain functions in terms of code.”

Participant 2 emerged as an outlier in all exceptions mentioned but one. However, his self-reported social and academic performance seem comparable to the rest of the participants. He is performing well academically and reports having close friends and family with whom he communicates regularly.

### **Suggestions**

A myriad of suggestions were given when students were asked if there were anything they wish were different about The Gatton Academy. Forty percent of the participants desired a better method for students to get to know one another at the beginning of the year. Other recommendations include second year students offering the incoming class advice on which courses to take and which professors to avoid, helping new students feel comfortable, and creating “more activities to get students to talk to

other students” (Participant 4). Half of the staff members also wished there were more informal opportunities for students to bond during the beginning of the school year. Staff Member 4 felt: “Students are not provided with opportunities to begin to develop relationships in a less structure environment.”

## **Discussion**

In this section, the main findings with regard to the research question are summarized. General conclusions are drawn based on the studies of this thesis. The major strengths and limitations of the research are described. The section ends with suggestions for further research.

The study set out to investigate which personal traits and experiences best predict high-ability high school students’ experiences with college-level courses, living away from home, and living with like-minded peers when entering residential STEM schools. The study used Tinto’s Model of Institutional Departure (1987a) to outline the characteristics and experiences most likely to affect adjustment and persistence of traditional college students but applied them to the high-ability, high school population at The Carol Martin Gatton Academy of Mathematics and Science in Kentucky. The research sought to answer this question: Which factors most influence adjustment to and acclimation of high-ability high school students exclusively enrolled in college-level courses at state residential STEM schools?

The findings were specific to and reported by characteristic and experience. Overall, students came primarily from families with married, educated parents as well as schools that were not meeting their academic or social needs. The students showed strong academic abilities, but typically lacked study skills. Upon arrival at The Gatton

Academy, the students had strong personal short-term and life goals, made strong personal connections with like-minded peers, and had influential experiences that increased their commitment to the school. The studied high school population mimicked the integration into college of traditional college students in many ways, but some differences emerged during the study.

### **Pre-entry Attributes**

All but two participants lived with their married, college-graduate parents. Since these are all high-performing, advanced students, the fact that they come from unbroken families supports the concept that students from socioeconomically advantaged, intact families are more likely to complete degrees (Astin & Oseguera, 2005). These students represent a population raised by parents who were very supportive of their education. As Bean (2005) discussed, parental approval and encouragement is important to student persistence.

Unchallenging prior academic environments left the participants without study skills, but their inherent self-control allowed them to overcome this deficit and provided supporting evidence that self-control can explain more variability in GPA than cognitive abilities (Honken & Ralston, 2013). The amount and quality of preparation by sending institutions influenced the participants' performance in college courses, just as it does traditional college students' performance (Allen & Robbins, 2008). Participants from sending schools that academically challenged them recounted not stressing as much the first semester.

### **Goals and Commitments**

Tinto (1987a) and Tucker (1999) both believed students with a clear vision and goals when entering college allowed them to better transition. The high school participants all shared detailed goals and ambitions with the researcher. From college majors to life goals, the participants had meticulous plans and objectives for both short and long term.

Participants continually mentioned the experiences and positive atmosphere at The Gatton Academy. As Tinto (1987a) mentioned, students must be committed to the process upon acceptance and each student's process has been interactive. Students formed bonds with new, like-minded peers, strong relationships with faculty and staff, and appreciated the opportunity to achieve bold personal goals.

### **Institutional Experiences**

In a residential STEM school environment, students are surrounded by like-minded peers (Cross & Frazier, 2010). The participants expressed relief at the freedom to share their interests and the opportunity to live in such close contact with others who think and feel like them. Their ability to find true peers is increased because of the concentrated gifted environment (Coleman, 2014).

Students need informal and formal experiences and interactions to establish themselves at an institution (Halpin, 1990). This was shown as the participants were involved in a variety of academic and nonacademic settings to assist in assimilation on campus. Many of the students were involved in clubs. However, these differ from traditional college experiences because the clubs hosted by The Gatton Academy mimic those of a traditional high school (The Gatton Academy of Mathematics and Science in Kentucky, n.d.). Participants also participated in undergraduate research. This research,



mixed with clubs and informal social settings within The Gatton Academy, allowed students to connect with faculty members on campus and to form the “Sense of Community” that Tucker (1999) mentioned.

Not all participants formed a connection with a university faculty member or a Gatton Academy staff member. In a traditional college setting, Nora et al. (2005) showed that a lack of bonds with staff members could ultimately create fewer connections to the institution and affect student adjustment. Contrary to this, students expressed satisfaction with their level of relationships with staff members, regardless of whether they had formed a special bond or not.

Academic performance results produced a noticeable difference between the participants and traditional college students. The Gatton Academy has a minimum grade point average requirement for students to persist (The Gatton Academy of Mathematics and Science in Kentucky, n.d.). The participants were almost all in good academic standing as of the Spring 2015 semester, with the exception of Participant 3, who is required to attend nightly study hours.

Students at residential STEM schools enter college courses with higher academic abilities than the average incoming college freshman. This helps lower the attrition rates for the high school students, since demonstrated high school performance and ability are good indicators of college persistence (Cohn et al., 2004).

### **Implications**

It would be helpful to administrators and admissions staff at residential STEM schools to know which characteristics are most influential in a student’s successful integration into that academic community. These characteristics could play a role in the

selection process for future students at The Gatton Academy or similar residential STEM schools. Adding a pre-entry survey would allow residential STEM schools to identify students' pre-existing characteristics. Selecting students with high academic ability, strong goals, self-control, and a desire for like-minded peers will help ensure student success.

Future applicants can also use these characteristics as a means to determine whether The Gatton Academy would be a good option for their education. Students may assume that they must have pre-existing study skills to be successful at Gatton. However, this study can assure students that past academic success and self-control are adequate traits to be a good candidate.

Since participants frequently lacked study habits, the findings from this study may encourage The Gatton Academy staff to establish study habit workshops to determine which study methods are more and least effective for students. Guidelines or suggestions could be produced for future use at similar institutions.

### **Limitations**

There are various limitations to the research. The first is that the research was completed at one residential STEM high school in Kentucky. The conclusions may not be generalizable to students at similar schools outside of Kentucky much less other types of residential schools. The Gatton Academy is also a residential high school based on a college campus, utilizing university staff and faculty. The conclusions may not generalize to similar schools not housed on and utilizing university campuses and faculty.

The sample size was small with only 10 students, two parents, and six staff members. One person's responses could greatly change the results of the study. Those

who returned the questionnaire could possibly be more driven, since they willingly participated in a non-required study. The volunteer-based selection of participants could affect how generalizable the conclusions are to all personality types at residential STEM schools. Participation could also have been altered by the offering of the incentive during administration of the second questionnaire.

The students and staff participants knew the researcher personally. This relationship could have altered their willingness to take part in the study. If they had a positive relationship with the researcher, they may have been more willing to participate, but a negative relationship may have made them less willing to participate.

### **Future Research**

Similar studies at other residential STEM schools may confirm that successful students portray strong personal goals, strong connections with their peers, high academic ability, and self-control. They may also confirm that successful students often enter without established study habits. A longitudinal study with several institutions would allow researchers to confirm the same characteristics manifest in students throughout time in different geographical locations.

### **Conclusion**

It is irrefutable that high school students in state residential STEM schools differ from traditional college students in age, life experience, and academic responsibility. Advanced high school students tend to enter residential STEM schools without study skills and require self-control and dedication to maintain high academic performance. Students who bond with their like-minded peers form stronger connections and commitment to the experience. With high academic ability, strong goals, self-control, and

the promise of strong personal connections, these students enter college-level courses with the tools to be as successful as traditional incoming freshmen.

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## FOOTNOTES

<sup>1</sup>Professor name changed for confidentiality.

## APPENDIX A: STUDENT ENTRANCE QUESTIONNAIRE

*Please answer all of the questions you are comfortable answering. I am interested in any information you have to share. Thank you again for taking the time to help me with my project.*

Please tell me about your reasoning for applying for and accepting your position at the Gatton Academy.

Please describe your family dynamic. (Who you live with, what your parents/guardians do for a living, your financial situation, etc.)

Will you be the first person in your family to attend college?

Please tell me any goals or plans you have for your future. (e.g., where you want to be five and/or ten years from now)

Please tell me about the type of courses you took at your home high school and your performance in those classes.

Please tell me about your friends, relationships and family connections before coming to the Gatton Academy.

Tell me about your extra-curricular activities before coming to the Gatton Academy.

Tell me about your extra-curricular activities at the Gatton Academy. If they are different from those you participated in at your home school, please explain why and how you feel about this.

Are you currently or do you plan on doing research at the Gatton Academy? If yes, please explain what type of research you are doing/plan to do.

Please tell me about your favorite and least favorite classes.

Please tell me about your first semester of classes as a whole. (i.e. stress level, overall grades, etc.) Please explain all answers.

Did your study habits change when you came to the Gatton Academy, and have they changed throughout the semester? If yes, please explain.

Please tell me about your experience with study hours and provide any feedback you have about the study hour process.

Please tell me about your first experience with regular exams at the Gatton Academy.

Please tell me about your roommate pairing at the Gatton Academy.

Please tell me about your friends at the Gatton Academy. Have they changed through the semester?

Please tell me about any special connections you have made with faculty or staff since your arrival at the Gatton Academy.

Please tell me about any Western Kentucky University faculty or staff with whom you have connected.

Please explain any adjustment issues you experienced upon coming to the Gatton Academy.

Please provide feedback about the Gatton Academy orientation process.

Please provide feedback on any guidance and counseling you have received at the Gatton Academy.

What could be done, if anything, during orientation and the first semester to better assist students' adjustment to the Gatton Academy academically and residentially?

Please tell me anything else about your adjustment period overall once you arrived at the Gatton Academy that hasn't been covered yet.

After your first semester, if you had the chance to go back and make the choice to apply for the Gatton Academy again, would you do it? Please explain why.

## APPENDIX B: STUDENT EXIT QUESTIONNAIRE

*Please answer all of the questions you are comfortable answering. I am interested in any information you have to share. Thank you again for taking the time to help me with my project.*

Tell me about your extra-curricular activities at the Gatton Academy.

Are you currently or do you plan on doing research at the Gatton Academy that you did not discuss during the first two interviews? If yes, please explain what type of research you are doing/plan to do.

Please tell me about your favorite and least favorite classes this semester and overall so far.

Please tell me about your second semester compared to the first. (stress level, overall grades, etc.) Please explain all answers.

What was your final GPA for the Fall 2014 semester?

4.0    3.75-3.99    3.5-3.74    3.25-3.49    3.00-3.24    2.75-2.99    2.5-  
2.74    <2.5

Please walk me through your study habits thus far at the Gatton Academy.

Please tell me about how you plan to approach final exams this semester. Will you do anything differently from last semester? If yes, please explain.

Can you please tell me any goals or plans you have for your future? (e.g., where you want to be five and/or ten years from now)

Please tell me about your roommate pairing at the Gatton Academy.

Please tell me about your friends at the Gatton Academy. Have they changed throughout the year?

What could be done, if anything, during the first year to better assist students' adjustment to the Gatton Academy academically and residentially?

Please tell me anything else about your adjustment period overall once you started at the Gatton Academy that hasn't been covered yet.

At this point, if you had the chance to go back and make the choice to apply for the Gatton Academy again, would you do it? Please explain why.



## APPENDIX C: PARENT QUESTIONNAIRE

*Please answer all of the questions you are comfortable answering. I am interested in any information you have to share. Thank you again for taking the time to help me with my project.*

Please tell me about your family's decision for your child to apply for and accept his/her position at the Gatton Academy.

Can you tell me briefly about your home situation (who your son/daughter lives with most of the time, your financial situation, any unique circumstances, etc.)

Please tell me about your child's social life before and after coming to the Gatton Academy.

Please tell me about the rigor of your child's home school.

Please tell me about your perceived rigor of the Gatton Academy.

Please tell me about your child's personal and career goals.

Please tell me about your child's relationships, friend circles and family connections before and after coming to the Gatton Academy.

Please tell me about any special connections your child may have made with faculty or staff since their arrival at the Gatton Academy?

Please explain any adjustment issues your child experienced upon coming to the Gatton Academy.

Please provide feedback on the Gatton Academy's orientation process.

How do you feel about any guidance and counseling your child has received at the Gatton Academy?

What could be done, if anything, during orientation and the first part of the semester to better assist students' adjustment to the Gatton Academy academically and residentially?

## APPENDIX D: STAFF QUESTIONNAIRE

*Please answer all of the questions you are comfortable answering. I am interested in any information you have to share. Thank you again for taking the time to help me with my project.*

Please tell me what you hear as the main reasons why students decide to apply for and accept a position at the Gatton Academy.

Please tell me what you hear students say about the rigor of Gatton compared to their home schools.

What do you observe about students' friend circles and social lives?

What do you hear from students about their friend circles and social lives from before they came to the Gatton Academy?

Have you dealt with any student homesickness or other similar issues? If yes, please provide an example and briefly discuss how it was/is being handled.

Please provide feedback on the Gatton Academy's orientation process.

How do you feel about the guidance and counseling services provided at the Gatton Academy?

What could be done, if anything, during orientation and the first part of the semester to better assist students' adjustment to the Gatton Academy academically and residentially?

## APPENDIX E: RECRUITMENT LETTER

Dear student:

As part of the thesis project for my master's program, I will be conducting a study on student adjustment at The Gatton Academy. I would like to invite you to participate in this study, which has the potential to inform Gatton Academy staff on factors that most affect student adjustment. The attached consent form includes a description of the research project, but please feel to contact me if you have any questions about the study. You are not required to participate in this study. Refusal to participate in this study will have no effect on any future services you may be entitled to from The Gatton Academy. Anyone who agrees to participate in this study is free to withdraw from the study at any time with no penalty. There are no foreseeable risks or discomforts to participants as a result of their participation in this study. The risks associated with participation in this research are minimal and no more than that encountered in everyday activities. Every effort will be made to keep personal information confidential. The results from this work will have implications for both orientation and intervention for future incoming students. Once again, please do not hesitate to contact me if you have any questions.

Best,

Olivia Gatten

MAE Candidate

Western Kentucky University

## APPENDIX F: STUDENT ASSENT FORM

### ASSENT DOCUMENT FOR RESEARCH INVOLVING MINORS



**Project Title:** Adjustment at The Gatton Academy  
**Investigator:** Olivia Gatten, College of Education, 270-952-6161

You are being asked to participate in a project conducted through Western Kentucky University and The Gatton Academy. The University requires that you give your signed agreement to participate in this project.

The investigator will explain to you in detail the purpose of the project, the procedures to be used, and the potential benefits and possible risks of participation. You may ask Olivia Gatten any questions you have to help you understand the project. A basic explanation of the project is written below. Please read this explanation and discuss with the researcher any questions you may have.

If you then decide to participate in the project, please sign on the last page of this form in the presence of the person who explained the project to you. You should be given a copy of this form to keep.

**1. Nature and Purpose of the Project:**

The study will follow Tinto's Model of Institutional Departure to examine the adjustment of high-ability high school students who begin college early at The Gatton Academy. We will be trying to answer the question, "Which factors most influence adjustment to and acclimation of high-ability high school students who attend a math and science residential high school and take exclusively college level courses?" This will allow Gatton Academy staff to assess and possibly reevaluate the orientation and intervention methods for future incoming students.

**2. Explanation of Procedures:**

You will be asked to participate in a research study focusing on your first year at the Gatton Academy. If you participate, we will send you a questionnaire via email during Fall 2014 semester and again Spring 2015 semester, so you will not be required to have a verbal conversation with a researcher if you so choose. You will answer questions about student friendships at home and the Gatton Academy, stress levels, and academic challenges. We think this will take 1 hour or less to complete with the understanding that we can ask follow up questions if necessary. Your parents/guardians have been notified of the research project to grant permission for you to take part in a project

**3. Discomfort and Risks:**

There are no foreseeable risks or discomforts to participants as a result of their participation in this study. The risks associated with participation in this research are minimal and no more than that encountered in everyday activities.

WKU IRB# 15-087  
Approval - 10/28/2014  
End Date - 5/15/2015  
Full Board  
Original - 10/28/2014

**4. Benefits:**

The staff of Gatton Academy will be informed of any common themes with student transition from the final report. No individual student information will be shared. This could possibly lead to better prevention and intervention methods. However, we can't guarantee that you will personally experience benefits from participation in this study. Others may benefit in the future from the information we find in this study.

**5. Confidentiality:**

Every effort will be made to keep research records and other personal information confidential. Only the student researcher and advisors will have access to the data and records. Printed/physical records, such as parental consent, will be stored in a locked cabinet in the investigator's campus office. Publications or presentations related to this study will not include identifiable references to subjects' identities.

**6. Refusal/Withdrawal:**

Refusal to participate in this study will have no effect on any future services you may be entitled to from the University or the Gatton Academy. Anyone who agrees to participate in this study is free to withdraw from the study at any time with no penalty.

You understand also that it is not possible to identify all potential risks in an experimental procedure, and you believe that reasonable safeguards have been taken to minimize both the known and potential but unknown risks.

\_\_\_\_\_  
Signature of Participant

\_\_\_\_\_  
Date

\_\_\_\_\_  
Witness

\_\_\_\_\_  
Date

THE DATED APPROVAL ON THIS CONSENT FORM INDICATES THAT  
THIS PROJECT HAS BEEN REVIEWED AND APPROVED BY  
THE WESTERN KENTUCKY UNIVERSITY INSTITUTIONAL REVIEW BOARD  
Paul Mooney, Human Protections Administrator  
TELEPHONE: (270) 745-2129



WKU IRB# 15-087  
Approval - 10/28/2014  
End Date - 5/15/2015  
Full Board  
Original - 10/28/2014

# APPENDIX G: PARENT CONSENT FORM



## PARENT CONSENT DOCUMENT

**Project Title:** Adjustment at The Gatton Academy  
**Investigator:** Olivia Gatten, College of Education, 270-952-6161

Your child is being asked to participate in a project conducted through Western Kentucky University and The Gatton Academy. The University requires that you give your agreement for him/her to participate in this project.

The investigator will explain to him/her in detail the purpose of the project, the procedures to be used, and the potential benefits and possible risks of participation. You may ask Olivia Gatten any questions you have to help you understand the project. A basic explanation of the project is written below. Please read this explanation and discuss with the researcher any questions you may have.

If you then decide to allow your child to participate in the project, please acknowledge on the last page of this form. You should be given a copy of this form to keep.

### 1. Nature and Purpose of the Project:

The study will follow Tinto's Model of Institutional Departure to examine the adjustment of high-ability high school students who begin college early at The Gatton Academy. We will be trying to answer the question, "Which factors most influence adjustment to and acclimation of high-ability high school students who attend a math and science residential high school and take exclusively college level courses?" This will allow Gatton Academy staff to assess and possibly reevaluate the orientation and intervention methods for future incoming students.

### 2. Explanation of Procedures:

Your child will be asked to participate in a research study focusing on his/her first year at the Gatton Academy. If you allow your child to participate, we will send him/her a questionnaire via email during Fall 2014 semester and again Spring 2015 semester, so he/she will not be required to have a verbal conversation with a researcher if so decided. He/She will answer questions about student friendships at home and the Gatton Academy, stress levels, and academic challenges. We think this will take 1 hour or less to complete with the understanding that we can ask follow up questions if necessary.

### 3. Discomfort and Risks:

There are no foreseeable risks or discomforts to participants as a result of their participation in this study. The risks associated with participation in this research are minimal and no more than that encountered in everyday activities.

WKU IRB# 15-087  
Approval - 10/28/2014  
End Date - 5/15/2015  
Full Board  
Original - 10/28/2014

4. **Benefits:**

The staff of Gatton Academy will be informed of any common themes with student transition from the final report. No individual student information will be shared. This could possibly lead to better prevention and intervention methods. However, we cannot guarantee that your child will personally experience benefits from his/her participation in this study. Others may benefit in the future from the information we find in this study.

5. **Confidentiality:**

Every effort will be made to keep research records and other personal information confidential. Only the student researcher and advisors will have access to the data and records. Printed/physical records, such as parental consent, will be stored in a locked cabinet in the investigator's campus office

Publications or presentations related to this study will not include identifiable references to subjects' identities.

6. **Refusal/Withdrawal:**

Refusal to participate in this study will have no effect on any future services you or your child may be entitled to from the Western Kentucky University or the Gatton Academy. Anyone who agrees to participate in this study is free to withdraw from the study at any time with no penalty.

You understand also that it is not possible to identify all potential risks in an experimental procedure, and you believe that reasonable safeguards have been taken to minimize both the known and potential but unknown risks.

**Opt Out of the study** - If you chose not to allow your child to participate in the study. Please sign this form and return within 5 days of receipt. Take no further action to allow your child to continue on with the study with his/her cooperation.

\_\_\_\_\_  
Signature of Parent

\_\_\_\_\_  
Date

\_\_\_\_\_  
Child's Name (Please Print)

THE DATED APPROVAL ON THIS CONSENT FORM INDICATES THAT  
THIS PROJECT HAS BEEN REVIEWED AND APPROVED BY  
THE WESTERN KENTUCKY UNIVERSITY INSTITUTIONAL REVIEW BOARD  
Paul Mooney, Human Protections Administrator  
TELEPHONE: (270) 745-2129



WKU IRB# 15-087  
Approval - 10/28/2014  
End Date - 5/15/2015  
Full Board  
Original - 10/28/2014



## APPENDIX H: INFORMED CONSENT FORM

### INFORMED CONSENT DOCUMENT



**Project Title:** Adjustment at The Gatton Academy  
**Investigator:** Olivia Gatten, College of Education, 270-952-6161

You are being asked to participate in a project conducted through Western Kentucky University and The Gatton Academy. The University requires that you give your signed agreement to participate in this project.

The investigator will explain to you in detail the purpose of the project, the procedures to be used, and the potential benefits and possible risks of participation. You may ask any questions you have to help you understand the project. A basic explanation of the project is written below. Please read this explanation and discuss with the researcher any questions you may have.

If you then decide to participate in the project, please sign on the last page of this form in the presence of the person who explained the project to you. You should be given a copy of this form to keep.

**1. Nature and Purpose of the Project:**

The study will follow Tinto's Model of Institutional Departure to examine the adjustment of high-ability high school students who begin college early at The Gatton Academy. Our research question will be "Which factors most influence adjustment to and retention of high-ability high school students who start college early?"

This could inform the Gatton Academy staff of alternative methods with which to assess and possibly reevaluate the orientation and intervention methods for future incoming students.

**2. Explanation of Procedures:**

You will be asked to answer a questionnaire in reference to students' first year at the Gatton Academy. We think this will take 1 hour or less to complete. This questionnaire will be via email, so you will not be required to have a verbal conversation with a researcher. If you agree to participate, you will answer questions about student friendships at home and Gatton Academy students' stress levels, and academic challenges.

**3. Discomfort and Risks:**

There are no anticipated physical or non-physical risks for participation in this study. There may also be other risks that we cannot predict.

**4. Benefits:**

This study will benefit participants and future Gatton Academy students by providing more insight into the orientation process. Results may also be used to inform Gatton Academy staff on student adjustment periods. The results from this work may have implications for both orientation and intervention for future incoming students. These results will be disseminated through presentations at conferences, journals or other publications, and/or shared with staff members, parents and students.

WKU IRB# 15-144  
Approval - 10/22/2014  
End Date - 8/15/2015  
Expedited  
Original - 10/22/2014

5. **Confidentiality:**

Every effort will be made to keep research records and other personal information confidential. Only the student researcher and advisors will have access to the data and records. Each participant will be assigned a unique identifier code (UIC) that will be used to identify and cross reference all of the data collected from/on them. The UICs will be connected to the identity of the participants by way of a single separate locked master file that will only be accessible to the research team. Printed/physical records will be stored in a locked cabinet. Publications or presentations related to this study will not include identifiable references to subjects' identities.

6. **Refusal/Withdrawal:**

Refusal to participate in this study will have no effect on any future services you may be entitled to from the University. Anyone who agrees to participate in this study is free to withdraw from the study at any time with no penalty.

You understand also that it is not possible to identify all potential risks in an experimental procedure, and you believe that reasonable safeguards have been taken to minimize both the known and potential but unknown risks.

\_\_\_\_\_  
Signature of Participant

\_\_\_\_\_  
Date

\_\_\_\_\_  
Witness

\_\_\_\_\_  
Date

- I agree to the audio/video recording of the research. **(Initial here)** \_\_\_\_\_

THE DATED APPROVAL ON THIS CONSENT FORM INDICATES THAT  
THIS PROJECT HAS BEEN REVIEWED AND APPROVED BY  
THE WESTERN KENTUCKY UNIVERSITY INSTITUTIONAL REVIEW BOARD  
Paul Mooney, Human Protections Administrator  
TELEPHONE: (270) 745-2129



WKU IRB# 15-144  
Approval - 10/22/2014  
End Date - 8/15/2015  
Expedited  
Original - 10/22/2014

## APPENDIX I: IRB APPROVAL LETTER A



*INSTITUTIONAL REVIEW BOARD  
OFFICE OF RESEARCH INTEGRITY*

DATE: October 22, 2014  
TO: Olivia Gatten  
FROM: Western Kentucky University (WKU) IRB  
PROJECT TITLE: [673473-1] Galton Academy Adjustment Period - Adult View  
REFERENCE #: IRB 15-144  
SUBMISSION TYPE: New Project  
ACTION: APPROVED  
APPROVAL DATE: October 22, 2014  
EXPIRATION DATE: August 15, 2015  
REVIEW TYPE: Expedited Review

Thank you for your submission of New Project materials for this project. The Western Kentucky University (WKU) IRB has APPROVED your submission. This approval is based on an appropriate risk/benefit ratio and a project design wherein the risks have been minimized. All research must be conducted in accordance with this approved submission.

This submission has received Expedited Review based on the applicable federal regulation.

Please remember that informed consent is a process beginning with a description of the project and insurance of participant understanding followed by a signed consent form. Informed consent must continue throughout the project via a dialogue between the researcher and research participant. Federal regulations require each participant receive a copy of the consent document.

Please note that any revision to previously approved materials must be approved by this office prior to initiation. Please use the appropriate revision forms for this procedure.

All UNANTICIPATED PROBLEMS involving risks to subjects or others and SERIOUS and UNEXPECTED adverse events must be reported promptly to this office. Please use the appropriate reporting forms for this procedure. All FDA and sponsor reporting requirements should also be followed.

All NON-COMPLIANCE issues or COMPLAINTS regarding this project must be reported promptly to this office.

This project has been determined to be a Minimal Risk project. Based on the risks, this project requires continuing review by this committee on an annual basis. Please use the appropriate forms for this procedure. Your documentation for continuing review must be received with sufficient time for review and continued approval before the expiration date of August 15, 2015.

Please note that all research records must be retained for a minimum of three years after the completion of the project.

If you have any questions, please contact Paul Mooney at (270) 745-2129 or [irb@wku.edu](mailto:irb@wku.edu). Please include your project title and reference number in all correspondence with this committee.

This letter has been electronically signed in accordance with all applicable regulations, and a copy is retained within Western Kentucky University (WKU) IRB's records.

## APPENDIX J: IRB APPROVAL LETTER B



*INSTITUTIONAL REVIEW BOARD  
OFFICE OF RESEARCH INTEGRITY*

DATE: October 28, 2014  
TO: Olivia Gatten  
FROM: Western Kentucky University (WKU) IRB  
PROJECT TITLE: [655238-2] Galton Academy Adjustment Period  
REFERENCE #: IRB 15-087  
SUBMISSION TYPE: Amendment/Modification  
ACTION: APPROVED  
APPROVAL DATE: October 28, 2014  
EXPIRATION DATE: May 15, 2015  
REVIEW TYPE: Full Committee Review

Thank you for your submission of Amendment/Modification materials for this project. The Western Kentucky University (WKU) IRB has APPROVED your submission. This approval is based on an appropriate risk/benefit ratio and a project design wherein the risks have been minimized. All research must be conducted in accordance with this approved submission.

This submission has received Full Committee Review based on the applicable federal regulation.

Please remember that informed consent is a process beginning with a description of the project and insurance of participant understanding followed by a signed consent form. Informed consent must continue throughout the project via a dialogue between the researcher and research participant. Federal regulations require each participant receive a copy of the consent document.

Please note that any revision to previously approved materials must be approved by this office prior to initiation. Please use the appropriate revision forms for this procedure.

All UNANTICIPATED PROBLEMS involving risks to subjects or others and SERIOUS and UNEXPECTED adverse events must be reported promptly to this office. Please use the appropriate reporting forms for this procedure. All FDA and sponsor reporting requirements should also be followed.

All NON-COMPLIANCE issues or COMPLAINTS regarding this project must be reported promptly to this office.

This project has been determined to be a Minimal Risk project. Based on the risks, this project requires continuing review by this committee on an annual basis. Please use the appropriate forms for this procedure. Your documentation for continuing review must be received with sufficient time for review and continued approval before the expiration date of May 15, 2015.

Please note that all research records must be retained for a minimum of three years after the completion of the project.

If you have any questions, please contact Paul Mooney at (270) 745-2129 or [irb@wku.edu](mailto:irb@wku.edu). Please include your project title and reference number in all correspondence with this committee.

This letter has been electronically signed in accordance with all applicable regulations, and a copy is retained within Western Kentucky University (WKU) IRB's records.