

# Overexcitability in Gifted Sexually Diverse Populations

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This study examined overexcitability in 100 gifted university students. Females scored higher on emotional and sensual overexcitability (OE), and males scored higher on intellectual, imaginal, and psychomotor OE. When examined by orientation within gender, however, nonheterosexual females scored higher than heterosexual females in psychomotor, significantly higher in intellectual, slightly higher in sensual, and slightly lower in emotional and imaginal OE. Heterosexual males scored significantly higher than nonheterosexual males in psychomotor, higher in sensual, slightly higher in imaginal, lower in intellectual, and slightly lower in emotional OE. Each population appears to be unique, and sexual diversity is one factor that seems to have a significant effect on the lives of gifted students.

## Introduction to General Research Question and Background

In November 1998, Sandra Kaplan, President of the National Association for Gifted Children (NAGC) appointed a Gifted/GLBT (G/GLBT) Task Force, and I was one of the individuals selected to be a member. The charge given us by 1999 NAGC President Sally Reis was to: (a) collect research and general information on the special needs of gifted and talented GLBT students, (b) prepare information for dissemination on the needs of GLBT gifted and talented students, (c) sponsor sessions at the NAGC annual convention, (d) share information with various NAGC constituencies through researched articles for *Parenting for High Potential* and other NAGC publications, and (e) determine how GLBT issues will be a continuing focus within NAGC after the task force completes its work. Unfortunately, we found little extant research on G/GLBT students.

Over the next 2 years, we found only one study by Peterson and Rischar (2000) that focused on suicidal ide-

ation and depression of gifted gay and lesbian students, and another by Friedrichs (1997) about the educational needs of gifted gay and bisexual males. Later, three others emerged: (a) Cross, Gust-Brey, and Ball's (2002) psychological autopsy of the suicide of an academically gifted student that mentioned homosexuality and sexual identity issues as risk factors for adolescent suicide; (b) Levy and Plucker's (2003) article that described how the burden of being twice different seems to be related to depression and feelings of isolation for gifted gay and lesbian students; and (c) Jackson and Peterson's (2003) article that focused on depressive disorders in highly gifted students.

Due to the paucity of research on this unique population, I decided that if we could not find that research, I should conduct that research myself, rather than bemoan the lack thereof. I had just read the Bouchet and Falk study (2001) in *Gifted Child Quarterly* in which they examined the relationship among intellectual giftedness, gender, and overexcitability utilizing the Overexcitability Questionnaire II (OEQII). They found that: (a) Gifted and talented students scored higher on emotional and

intellectual OE than students in the Advanced Placement or students in the standard categories, and (b) overall, females scored higher on emotional and sensual OE and males scored higher on intellectual, imaginal, and psychomotor OE.

They concluded that the differences found between males and females seem to result from gender role socialization. I wondered about whether or not their results would have differed if the sexual orientation of the participants had been assessed. I decided to find out, and thus began my effort to replicate this study, but with the additional criteria of asking for the participants' sexual orientation. First, however, I thought it would be wise to learn more about overexcitability and about possible indicators of differences between heterosexual and nonheterosexual populations.

## Review of Literature

Dabrowski (1964), a Polish psychiatrist and psychologist, developed a theory of positive disintegration. The term *disintegration* is the process of development whereby a person's current personality structure comes apart (i.e., disintegrates, and reintegrates at a higher level). It is considered positive because it contributes to personality development. Dabrowski (1967) believed that conflict and inner suffering were necessary for advanced development, for movement from "what is" to "what ought to be," towards a hierarchy of values based on altruism. Dabrowski (1967) observed that not all people move toward an advanced level of development, but that innate ability and intelligence, combined with overexcitability (OE), could predict potential for higher level development. Overexcitability does not mean that someone is "overly excitable," but instead, indicates a heightened sensitivity in certain areas. The term *overexcitability* is a translation of a Polish word whose literal meaning is "super-stimulability" (Gross, 1994). Overexcitabilities are inborn and indicate a heightened ability to respond to stimuli (Lind, 2000). OEs are expressed in increased sensitivity, awareness, and intensity. Dabrowski (1972) stated, "One who manifests several forms of overexcitability, sees reality in a different, stronger and more multi-sided manner" (p. 7).

Although not all gifted individuals have overexcitabilities, researchers have found all five overexcitabilities to be stronger among individuals with intellectual giftedness than among individuals of average intellectual ability (Ackerman, 1998; Gallagher, 1985; Miller, Silverman, & Falk, 1994; Piechowski & Colangelo, 1984; Piechowski & Cunningham, 1985; Silverman & Ellsworth, 1981).

Falk, Piechowski, and Lind (1994) described the five forms of overexcitability:

1. *Psychomotor*: heightened excitability of the neuromuscular system. This includes the capacity for being active and energetic; love of movement for its own sake; and surplus energy demonstrated by rapid speech, zealous enthusiasm, intense physical activity, drivenness, and a need for action (Dabrowski & Piechowski, 1977; Piechowski, 1979, 1991; Piechowski & Cunningham, 1985). When feeling tense, people who are strong in psychomotor OE may talk or act impulsively, display nervous habits, show intense drive (may tend towards "workaholism"), organize compulsively, or become very competitive (Lind, 2000). Individuals high in psychomotor OE may be incorrectly diagnosed as having Attention Deficit/Hyperactivity Disorder (ADHD; Levy & Plucker, 2003).
2. *Sensual*: heightened experience from sensual input emanating from sight, smell, touch, taste, and hearing (Dabrowski & Piechowski, 1977; Piechowski, 1979, 1991). This experience includes an increased and early appreciation of aesthetic pleasures such as music, art, and language and a delight in tastes, smells, textures, sounds, and sights (Lind, 2000). When feeling tense, people who are strong in sensual OE often seek sensual experiences in order to alleviate inner tension and may go on spending sprees, overeat, or seek being the center of attention (Dabrowski & Piechowski, 1977; Piechowski, 1979, 1991; Piechowski & Cunningham, 1985). Others may withdraw from stimulation due to feeling overstimulated or uncomfortable with sensory input. They may become so absorbed in a particular piece of art or music that the outside world may cease to exist for them (Lind, 2000).
3. *Intellectual*: heightened need to seek understanding/truth, to gain knowledge, and to analyze and synthesize (Dabrowski & Piechowski, 1977; Piechowski, 1979, 1991). This OE must be distinguished from intelligence. People who are high in intellectual OE are intensely curious, are often avid readers, and are usually keen observers. They are able to concentrate intently, engage in prolonged intellectual effort, and can be tenacious in problem solving. This tendency may include relishing elaborate planning and they may have extremely detailed visual recall. People high in intellectual OE often love theory, thinking about thinking, and moral thinking. They are independent thinkers, ask persistent probing questions, may be very analytical and strive to synthesize knowledge, love to develop new concepts and search for truth, and sometimes appear critical of and impatient with oth-

ers who cannot sustain their intellectual pace. They could become so excited about an idea that they may inappropriately interrupt (Lind, 2000).

4. *Imaginational*: heightened play of the imagination with rich association of images and impressions, frequent use of image and metaphor, facility for invention and fantasy, detailed visualization, and elaborate dreams. They may escape boredom by creating poetry, dramatizing, indulging in fairy or magic tales, or by living in a world of fantasy (Dabrowski & Piechowski, 1977; Piechowski, 1979, 1991). People high in imaginal OE may have difficulty completing tasks when an intriguing idea sends them off on an imaginative tangent, or may write stories or draw instead of doing paperwork or participating in discussions (Lind, 2000).
5. *Emotional*: heightened, intense feelings, extremes of complex emotions, identification with others' feelings, and strong affective expression (Piechowski, 1991). This could also include physical responses like stomachaches and blushing or concern with death and depression (Piechowski, 1979). People high in emotional OE have a remarkable capacity for deep relationships and show strong emotional attachments to people, places, and things (Dabrowski & Piechowski, 1977). In relationships, they exhibit compassion, empathy, and sensitivity. They are acutely aware of their own feelings and how they are growing and changing and often practice self-judgment and carry on inner dialogues (Piechowski, 1979, 1991). They may be shy or timid, be ultra-enthusiastic, have strong affective recall of past experiences, or concern with death, fears, anxieties, or depression. Emotional OE people are often accused of overreacting. Their concern and compassion for others, their focus on relationships, and their intense feelings may interfere with tasks like homework or household chores (Lind, 2000).

I began looking for more studies on overexcitability and the gifted, and immediately found a study by Miller and Toth (2000), who had explored the relationship between sex, gender, and overexcitability with the same population that Bouchet and Falk (2001) had used. They stated that, although the terms sex and gender are often used interchangeably, the term sex actually refers to the biological designation of male and female, whereas gender refers to the socially and culturally appropriate behaviors for men and women. Miller and Toth compared sex-based correlations to those that are gender-based, and found that the gender of the respondent, not his or her sex, related more strongly to overexcitability. The cross-tabulation of

sex and gender categories revealed females classified as androgynous had higher overall OE, whereas males with higher OE scores tended to be undifferentiated and masculine. Again, this finding raised the question in my own mind as to whether those females classified as androgynous could have been bisexual or lesbian and those males classified as undifferentiated could have been gay or bisexual. In other words, if given an overexcitability questionnaire, would lesbians, gay males, bisexual males, and bisexual females also have higher overall OE?

Understanding the possible variants of overexcitability characteristics as applied to specific sexual orientations will help us to more accurately understand students who have strong indicators of gifted potential. If, indeed, there are differences between the overexcitabilities of nonheterosexual and heterosexual gifted populations, it will be easier to determine how best to provide for their developmental needs in school and to help promote their self-understanding.

The burden of being twice different seems to be related to depression and feelings of isolation for gifted gay and lesbian students (Levy & Plucker, 2003; Peterson & Rischar, 2000). To reconcile this stress, these researchers stated that some of these students coped by academic/athletic overachievement, perfectionism, or overinvolvement in extracurricular activities; others attempt to cope through more self-destructive behaviors such as dropping out of school, running away, substance abuse, or suicide. None of them sought help from adults, possibly due to lack of a suitable model/mentor. Sexually and culturally diverse gifted children oftentimes find themselves in a dilemma in which they must choose between academic success and social acceptance (Levy & Plucker). Sandoval (2002) described intellectually gifted, gay and lesbian, those with learning disabilities, or ethnic minorities as having higher than average dropout rates; insisted that schools have continued to be unresponsive to the needs and issues of gay, lesbian, and bisexual students, and that gay youth need supportive school counselors and a supportive school environment. It could be inferred that the lack of resources to help understand sexually diverse gifted students has only contributed to this dilemma. Perhaps this study will crack open the door to additional studies that can help to understand this twice-exceptional population.

While doing research for this study, I was able to communicate with Dr. Michael Piechowski. He told me about a dissertation completed more than two decades previously by a Ph.D. student at the University of Iowa on lesbian and nonlesbian women that related to overexcitabilities. He offered to send it to me. In this study, Beach (1980) administered two Theory of Positive Disintegration (TPD) instruments, the Overexcitability Questionnaire (OEQ)

and the Definition-Response Instrument (DRI), as well as the Personal Orientation Inventory (POI), to 25 recruited self-defined lesbians and 26 nonlesbians. TPD results suggested that lesbians and nonlesbians were similar in potential for psychological growth and actual attainment of development, but lesbians were somewhat further along in development in TPD Level II and obtained somewhat higher scores on several POI measures of self-actualization. The mean performance by lesbian women on Dabrowskian variables was higher in the areas of intellectual ( $p < .01$ ), imaginal ( $p < .001$ ), sensual ( $p < .01$ ), psychomotor ( $p < .05$ ), and emotional ( $p < .01$ ). There was no notable difference in the Emotional category and no notable difference in the OE Difference score. Because only women were assessed, Beach raised the question as to whether men would score differently. Because the participants had been not been asked if they had been participants in gifted programs, the question still remains as to whether or not gifted lesbians would score higher in these same categories. To be noted was that both the OEQ and the DRI were in early stages of testing for validity and reliability. It is possible that a newer overexcitability measure such as the Overexcitability Questionnaire II (OEQII) may result in different scores.

Shavelson, Biaggio, Cross, and Lehman (1980) conducted a study in which they discovered that lesbians demonstrated significant differences concerning sex-role adherence as measured by the Bem Sex Role Inventory, with lesbians more masculinely sex-role typed than heterosexual women. Finlay and Scheltema (1991) used Spence and Helmreich's (1978) Personality Attributes Questionnaire, which measures masculinity, femininity, and androgyny, to compare 58 lesbian and 58 gay men to heterosexual men and women ( $n$  not provided). Lesbians manifested higher masculine scores than heterosexual women, and gay men were characterized by lower masculine scores than the heterosexual men. Androgyny measures did not differ by sexual orientation, but did differ by gender. Further analysis revealed that the high masculine score of lesbians were mainly derived from their self-ratings as independent and the heterosexual men's high masculine scores reflected strong competitiveness. The researchers questioned the validity of the Personality Attributes Questionnaire, and yet it seemed, at least in part, to corroborate the results of the Bem studies by Shavelson et al. It is possible that the Bem Sex Role Inventory, if examined more closely, may have revealed that lesbians' perception of independence may have differed from that of heterosexual females, and gay men may have reported different ratings than heterosexual males in the competitive category.

Jonsson and Carlsson (2000) studied the relationship between creativity and androgyny in 164 women and men using the Bem Sex Role inventory and the Creative Functioning Test (CFT). They determined that subjects that scored as being highly androgynous and low on both scales as undifferentiated achieved higher CFT scores than female-typed and male-typed subjects. The sexual orientation of these highly gifted androgynous individuals was not determined. If the scores of the androgynous subjects could be separated by sexual orientation, would their scores be significantly different than nonheterosexuals?

Piirto (1998) stated that whether homosexuals are more creative than heterosexuals is unknown, but it would seem that creative fields are more open to sexual divergence. In addition, Silverman (1993), Tolan (1997), and Sheely (2000) stated that many highly gifted and creative children tend to be androgynous. Silverman claimed that boys may display sensitivity commonly viewed as feminine, and girls may demonstrate independence and aggressiveness associated with masculinity. Sheely reported that few highly gifted people conform to gender role stereotypes. As children, gifted girls and gifted boys are more similar to each other than they each are to their nongifted, same-gender peers, and in adolescence, these teens are harassed in school because they do not fit neatly into the gender norms of our culture.

Tolan (1997) described the highly gifted as being more androgynous than other children, tending to reject strict gender identities, which during adolescence can cause confusion about gender identity. Because high intelligence is often considered to be masculine, highly gifted girls may feel less "girl-like" and sensitive highly gifted boys may feel less "boy-like." Tolan also stated that when they find an intellectually compatible partner of either sex during adolescence, they may experience an "explosion" of feeling. If the partner is of the same gender, the complex cognitive process that accompanies the exploration of feeling may lead the child to assume a homosexual identity that may or may not be accurate. The identification of self as homosexual prior to adulthood may be premature because is not unusual for heterosexuals to have one or more homosexual experiences during adolescence. On the other hand, Tolan mentioned, if 10% of the general population is homosexual, 10% of the highly gifted are also likely to be homosexual. With few positive role models, and real difficulty in finding partners compatible both in sexual identity and in intellectual capacity, the highly gifted adolescent homosexual may find the issues of sexuality so difficult and painful as to become life threatening.

Gay men and lesbians have indicated that they tend to be more androgynous as a whole than heterosexuals.

OutProud, The National Coalition for Gay, Lesbian, Bisexual and Transgender Youth, conducted the 2000 Internet Survey of Queer and Questioning Youth. Out of 6,872 individuals, in the category of gender expression, lesbians and gay males fell closest toward the middle of the Kryzan Scale of Gender Expression, indicating that they expressed more characteristics of the opposite gender than those who were bisexual or questioning.

In addition to the self-reporting of lesbians and gay men as androgynous, I located pertinent research that seemed to indicate that there are differences in thinking between heterosexual and nonheterosexual individuals.

McCormick and Witelson (1991) matched groups of 38 gay men, 38 heterosexual men, and 38 heterosexual women, and tested on three measures of spatial ability and two measures of fluency that typically reveal sex differences. On spatial tests, gay men performed between heterosexual men and women. The pattern of cognitive skills of gay men was different from heterosexual men; gay men had lower spatial ability relative to fluency. In addition, the cognitive pattern of gay men was not significantly different from that of heterosexual women. The researchers also concluded that homosexual men classified on the basis of hand preference possibly formed two subgroups that differed in cognitive pattern. These findings seem to indicate that there may be a neurobiological factor related to sexual differentiation in the etiology of homosexuality. Unfortunately, no lesbians were assessed.

McCormick and Witelson (1994) also conducted a study of 32 gay men, 32 heterosexual men, 30 lesbians, and 30 heterosexual women with a linguistic dichotic listening test. Usually, consistent right-handers demonstrate greater perceptual asymmetry than nonconsistent right-handers, but this pattern did not hold true for gay men and lesbians. Different patterns of functional cerebral asymmetry in gay men and lesbians were found compared with heterosexual people and, more specifically, less association between motor and linguistic components of cerebral asymmetry. This atypical pattern of functional asymmetries was consistent with their previous research that demonstrated an increased prevalence of left-hand preference among gay men and lesbians compared with the heterosexual population (McCormick & Witelson, 1991; McCormick, Witelson, & Kingstone, 1990). They suggested that homosexual orientation has a neurobiological component likely present from birth that is possibly related to hemispheric functional asymmetry.

Moreover, Wegesin (1998) assessed verbal and spatial ability of heterosexual women, heterosexual men, lesbians, and gay men. Results were the same as previously reported sex differences between heterosexual women and men. Gay

men, however, performed similar to heterosexual women on the verbal task and the mental rotation tasks, but not on the Water Level Task (WLT). Both the mental rotation and WLT were indicators of spatial ability. Lesbians performed similarly to heterosexual women. The disassociation in sex-atypicality between lesbians and gay men may indicate that there could be differing neurobiological factors related to both gender and sexual orientation.

In addition to these apparent sex role, as well as thinking pattern and ability, differences between heterosexual and homosexual persons, other studies have found indications of physical differences. For example, McFadden and Pasanen (1998) compared the auditory systems of heterosexuals and homosexuals. Click-evoked otoacoustic emissions are known to be stronger in females than in males, but they actually discovered that click-evoked otoacoustic emissions of homosexual and bisexual females were found to be intermediate to those of heterosexual females and heterosexual males.

There is also evidence of biological differences in specific areas of the brains of gay males. Swaab and Hofman (1990) conducted a morphometric analysis of the human hypothalamus that revealed that the suprachiasmatic nucleus in gay men was 1.7 times as large as that of heterosexual male subjects and contained 2.1 times as many cells. However, in the sexually dimorphic nucleus, located in the immediate vicinity of the suprachiasmatic nucleus, they did not find differences in either volume or cell number. This finding indicates the selectivity of the enlarged suprachiasmatic nucleus in gay men, but did not support the hypothesis that gay men have a "female hypothalamus." The brains of females were not studied, so we do not know if this there is a difference in the same area of the lesbian and heterosexual female brain.

Allen and Gorski (1992), however, did examine 90 postmortem brains from gay men, heterosexual men, and heterosexual women. They found that the midsagittal plane of the anterior commissure in gay men was 18% larger than in heterosexual women and 34% larger than in heterosexual men. They stated that this anatomical difference, which correlates with gender and sexual orientation, might, in part, underlie differences in cognitive function and cerebral lateralization among gay men, heterosexual men, and heterosexual women. This finding supported the hypothesis that factors operating early in development differentiated sexually dimorphic structures and functions of the brain, including the anterior commissure and sexual orientation. No lesbian brains were examined, so we do not know if there is an anatomical difference that correlates with females and sexual orientation.

In yet another study that suggested differences in brain structure, LeVay (1991) examined postmortem tissue and measured the volumes of four cell groups: INAH 1, 2, 3, and 4 within the smaller interstitial nuclei of the anterior hypothalamus. The subject groups were women, men who were presumed to be heterosexual, and gay men. It should be noted that it was difficult to obtain detailed information about the sexuality of the supposedly heterosexual subjects, so this restricted the ability to make correlations between brain structure and the diversity of sexual behavior that existed within the homosexual and the heterosexual populations. No differences were found between the groups in the volumes of INAH 1, 2, or 4. INAH 3, however, was more than twice as large in the heterosexual men as in the women and was more than twice as large in the heterosexual men as in the gay men. This finding indicates that INAH size differs with sexual orientation, at least in men, and suggests that sexual orientation has a biological substrate. Because females were not assessed, this raises the question as to whether there would be differences between the brain structure of lesbians and heterosexual women.

LeVay (1991) noted that the discovery that this nucleus differed in size between heterosexual and gay men demonstrated that sexual orientation in humans may be studied at the biological level, and that this discovery could open the door to studies of neurotransmitters or receptors that might be involved in regulating this aspect of personality. More than a decade later, Kinnunen and Moltz (2003), in their study of the reuptake of serotonin, a neurotransmitter, claimed to demonstrate that sexual orientation among men appeared to be connected with brain metabolism. This study demonstrated differences between exclusively homosexual and exclusively heterosexual men in glucose metabolism in the hypothalamus and other areas of the brain after the administration of fluoxetine, otherwise known as Prozac. According to Kinnunen and Moltz, the hypothalamus is strongly connected with sexual activity and the neurotransmitter serotonin is associated with sexual behavior and arousal. Prozac selectively inhibits the reuptake of serotonin in the brain. The subjects were also administered radioactive glucose, which provided a marker for a Positron Emission Tomography (PET) brain scan to determine where in the brain the drug acted to inhibit the reuptake of serotonin. Heterosexual men had a much stronger response in the hypothalamus to the Prozac than did gay men. This finding suggested that there are differences in how the neurotransmitter serotonin works in heterosexual and homosexual brains.

If sexual orientation is indeed biological in origin, then it is also possible that other measures will also demonstrate differences according to sexual orientation. Whether sex-

ual orientation is biological in origin or not, is not the purpose of this study, however. These studies were included to describe rationale on which I based my hypotheses.

## Summary

Results of pertinent research seem to indicate that there are biological differences in the brains of heterosexual and homosexual populations, as well as in hearing. Functional differences have also been noted. Even gays and lesbians themselves have indicated that they differ notably in gender expression, expressing more characteristics of the opposite gender. Although the OutProud (2001) survey by *Oasis Magazine* indicating gender expression is possibly an accurate portrayal of the majority of gays and lesbians, there are definitely exceptions. There are gay males who are not effeminate and lesbians are who not masculine, and both gay males and lesbians who are not androgynous. The survey results, however, in combination with the other research on biological and mental processing differences, gives reason to examine whether or not there is a difference in overexcitability when sexual orientation is considered. An early study by Beach (1980) did indicate differences in OE scores for lesbians and nonlesbians, although it was noted that a previous version of the OE measure was used. However, gay and heterosexual males were not assessed. The overexcitability study by Bouchet and Falk (2001) found that there were sex differences in certain areas of the OE. The overexcitability study by Miller and Toth (2000) not only found that there were gender differences, but also noted that androgynous individuals tended to score higher on total OE. It was unknown as to what results would occur when current OE measures are applied to heterosexual and nonheterosexual males and females.

## Specific Research Question

What is the relationship among giftedness, sexual orientation, and overexcitability in intellectually gifted individuals?

## Hypotheses/Assumptions

1. The Bouchet and Falk (2001) overexcitability study results indicated that gifted and talented students scored higher on intellectual OE than students in the standard categories. Males also scored higher on intellectual OE. The Shavelson et al. (1980) sex role inventory study, how-

ever, revealed that lesbians were more masculinely sex-role typed than heterosexual women. Higher masculine scores of lesbians than heterosexual women on the Finlay and Scheltema (1991) questionnaire supported this finding. Therefore, it was expected that there would be a difference in Intellectual OE scores between gifted heterosexual and nonheterosexual females.

2. Bouchet and Falk (2001) also indicated that females scored higher on emotional and sensual OE than males. The Finlay and Scheltema (1991) personality attributes questionnaire results indicated that gay men had lower masculine scores than the heterosexual men. Moreover, McCormick and Witelson (1991) found that the cognitive pattern of gay men was not significantly different from that of heterosexual women. Wegesin (1998) also concluded that the pattern of cognitive skills of gay men was different from heterosexual men. The differences between gay males and heterosexual males were confirmed by biological evidence as determined by examinations of the brains of homosexual males (Allen & Gorski, 1992; LeVay, 1991; Swaab & Hofman, 1990), and neurotransmitter processing (Kinnunen & Moltz, 2003). Therefore, it was expected that there would not be a significant difference in the scores of gay males and heterosexual females in the emotional and sensual OE or the scores of lesbians and heterosexual males on psychomotor OE.

3. On the OutProud (2001) Internet survey, gay men and lesbians indicated that they were more androgynous as a whole than heterosexuals. The Miller and Toth (2000) overexcitability study results indicated that those people classified as androgynous had higher overall OE. In addition, Beach (1980) found that lesbians were somewhat further along in development in TPD Level II and that they scored higher in all OE categories except for Emotional. The Emotional scores were similar between lesbians and heterosexual women. Therefore, it was expected that there would not be significant differences between heterosexual women and lesbians in the Emotional category. It was also expected that there would be differences between heterosexual and nonheterosexual scores in the other categories.

## Need

There is little extant research on students who are both gifted and gay. It is hoped that this study will be one of many, and will perhaps spur others to begin research on gifted gay, lesbian, bisexual, and transgender individuals. It is important to understand that if there are indeed differences between the overexcitabilities of heterosexual and nonheterosexual gifted populations, it will be easier to

understand and meet the needs of these unique individuals. Knowing more about the similarities and differences between and among these populations will help us determine how best to provide for their developmental needs in school and to help promote their self-understanding.

## Method

The purpose of this study was to explore relationships between the overexcitability characteristics of gifted heterosexual, gay, lesbian, and bisexual populations. I converted the Overexcitability Questionnaire II to a digital format and posted it on a survey Web site. An invitation was sent out to two listservs to ask students to participate in an electronic survey of individuals who have attended gifted, Advanced Placement (AP), honors, or International Baccalaureate (IB) classes prior to attending this Midwestern university. In addition, flyers were posted in various locations. Each flyer had tear-off sections containing the name of the study and the URL for the survey.

Participants were asked if they were at least 18 years of age and if they attended this university. They were required to indicate that they had read the disclosure statement for protection of participants. If any of the four questions on gifted classes, age, attendance at the university, or participation agreement were answered "no," the software would not allow them to participate in the survey. If they indicated agreement in all the preliminary questions, they were directed to questions that asked about their gender and sexual orientation, and then they could answer the 50 Overexcitability Questionnaire II questions.

## Participants

The participants in this study were 100 college/university students in a Midwestern university who previously had been in gifted, honors, Advanced Placement (AP), or International Baccalaureate (IB) classes prior to enrolling in the university.

These participants were recruited in the following ways:

1. An e-mail requesting participation was sent to the following listservs: the university's Instructional Systems Technology (IST) listserv and the university's Gay, Lesbian, Bisexual, Transgender Student Support Services (GLBT) listserv, which, in turn, sent the request to the other Indiana University diversity listservs; and

2. flyers with tear-off tabs on which the name of the survey and the Web site were written were posted through-

out the Education building and the Honors College at the university.

The listserv method recruited 78 participants, 54 of which were from the GLBT listserv, and 24 of which came from the IST listserv. The flyers only recruited 18 participants, only one of which was from the Honors building. The other four participants found out about the survey through friends. This seems to indicate that the most efficient manner of recruiting participants for this particular study was via the listserv. It was interesting that 22 heterosexual females came into the study via the GLBT listserv, but only two heterosexual males entered it that way. No heterosexual males came in via flyers in the Honors building. More females than males participated (63 females and 37 males). It is unknown whether or not this demonstrates more open-mindedness to topics of sexual orientation by females. Certainly the numbers of heterosexual females (22 out of 36 females were heterosexual) responding from the GLBT listserv was unexpected, as was the percentage of nonheterosexuals responding from the IST listserv (41.7%, or 10 out of 24). Because the announcement about the survey indicated that the study was on gifted sexually diverse populations, it is possible that individuals who were more open-minded about sexual orientation may have also been more likely to participate in the study.

Although the intent was to differentiate between those who had been in gifted programs and those who had only been in either honors, AP, or IB classes, it was found that 84% of all participants had been in gifted programs, but only three individuals had been in gifted programs and not in AP, honors, or IB. Ninety-two percent of participants had been in honors, 86% had been in AP, and 7% had been in IB. No participant had been in all four of these options commonly offered for gifted students. All participants had been in one or more options. It therefore did not seem worthwhile to compare gifted versus the other options, as there was so much overlap and very few numbers in only one option, and the orientation varied within those numbers.

The participants consisted of 12 bisexual females, 3 bisexual males, 12 lesbians, 24 gay men, 39 heterosexual females, and 10 heterosexual males. If the bisexual and homosexual numbers were combined, 14 nonheterosexual females, 27 nonheterosexual males, 39 heterosexual females, and 10 heterosexual males participated. If the numbers for all orientations were combined by gender, 53 were female and 37 were male. If the numbers for both genders were combined, 41 nonheterosexuals and 49 heterosexuals participated. Table 1 lists the participants according to how they came into the study.

## Instrumentation

The assessment used for this study was the Overexcitability Questionnaire–Two (OEQII), constructed by Falk, Lind, Miller, Piechowski, and Silverman (1999). This questionnaire measures overexcitability (OE), a basic concept in Dabrowski's theory of positive disintegration. It consists of five dimensions: (1) psychomotor, (2) sensual, (3) imaginal, (4) intellectual, and (5) emotional.

The OEQII is an easily administered and scored version containing a 5-point Likert scale for item response. "This version is for research with group data and is not intended to provide diagnostic information about an individual" (Falk et al., 1999, p. 2).

## Procedures

The data collection for the OEQII was done by using a SurveyShare Web tool. The data was downloaded into an Excel format, which was then imported into SPSS in order to determine scores and conduct statistical analyses.

The scores were computed according to the OEQII manual by adding 10 items from each category and then dividing by 10. The participants were asked to indicate their gender and sexual orientation, as well as how they found out about the online survey.

## Results

This study assessed 100 university students at a Midwestern university who were previously in gifted, honors, AP, or IB classes prior to enrolling in their university. The data confirmed the Bouchet and Falk (2001) study as overall, females scored higher on emotional and sensual OE and males scored higher on intellectual, imaginal, and psychomotor OE, but these results were complicated by gender and orientation interaction. The Wilks' Lambda multivariate results for the overall effect on the combined dependent variables demonstrated a significant finding for gender,  $\Lambda = .863$ ,  $F(5, 90) = 2.851$ ,  $p = .020$ , and a trend for sexual orientation,  $\Lambda = .833$ ,  $F(10, 180) = 1.719$ ,  $p = .079$ . The interaction between gender and orientation was also significant, with  $\Lambda = .815$ ,  $F(10, 180) = 1.940$ ,  $p = .042$ . These results are reported in Table 2.

Most importantly, the gender/orientation interaction suggested that the relation between orientation and gender dependent variables was significant and justified a separate analysis. When the scores of heterosexuals and nonheterosexuals were compared by gender, notable differences appeared. Post Hoc Tests of Multiple Comparisons dem-

Table 1

**How Participants Came Into the Study**

Gender	GLBT Listserv	IST Listserv	Flyer Educ. Building	Flyer Honors College	Friend	Total
<b>Female</b>						
<i>Bisexual</i>	6	2	3	0	1	12
within orientation	50.0%	16.7%	25.0%	0.0%	8.3%	100.0%
within how came in	16.7%	14.3%	33.3%	0.0%	33.3%	19.0%
<i>Gay/Lesbian</i>	8	2	2	0	0	12
within orientation	66.7%	16.7%	16.7%	0.0%	0.0%	100.0%
within how came in	22.2%	14.3%	22.2%	0.0%	0.0%	19.0%
<i>Heterosexual</i>	22	10	4	1	2	39
within orientation	56.4%	25.6%	10.3%	2.6%	5.1%	100.0%
within how came in	61.1%	71.4%	44.4%	100.0%	66.7%	61.9%
<i>Total</i>	36	14	9	1	3	63
within orientation	57.1%	22.3%	14.3%	1.6%	4.8%	100.0%
within how came in	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
<b>Male</b>						
<i>Bisexual</i>	1	1	1		0	3
within orientation	33.3%	33.3%	33.3%		0.0%	100.0%
within how came in	5.6%	10.0%	12.5%		0.0%	8.1%
<i>Gay/Lesbian</i>	15	5	3		1	24
within orientation	62.5%	20.8%	12.5%		4.2%	100.0%
within how came in	83.3%	50.0%	37.5%		100.0%	64.9%
<i>Heterosexual</i>	2	4	4		0	10
within orientation	20.0%	40.0%	40.0%		0.0%	100.0%
within how came in	11.1%	40.0%	50.0%		0.0%	27.0%
<i>Total</i>	18	10	8		1	37
within orientation	48.6%	27.0%	21.6%		2.7%	100.0%
within how came in	100.0%	100.0%	100.0%		100.0%	100.0%

Table 2

**MANOVA Results for Gender x Orientation Effects on OE's**

Effect	Wilk's Lambda	<i>df</i>		F	<i>p</i>
		Effect	Error		
Gender	.863	5	90	2.851	.020
Orientation	.833	10	180	1.719	.079
Gender x Orientation	.815	10	180	1.940	.042

onstrated similar trends for nonheterosexual females ( $p = .054$ ) and heterosexual males ( $p = .058$ ) in the intellectual category and a significant finding for heterosexual males in the psychomotor category ( $p = .029$ ). This specifically pointed out that gender and sexual orientation have differing effects on scores in each of the five areas. When examined by orientation within gender, nonheterosexual

females scored higher than heterosexual females in the psychomotor category, significantly higher ( $p = .023$ ) in the intellectual category, slightly higher in the sensual category, and slightly lower in the emotional and imaginative categories. The scores are shown in Figure 1.

When examined by orientation within gender, heterosexual males scored significantly higher than nonheterosex-

Overexcitability: Gifted Sexually Diverse

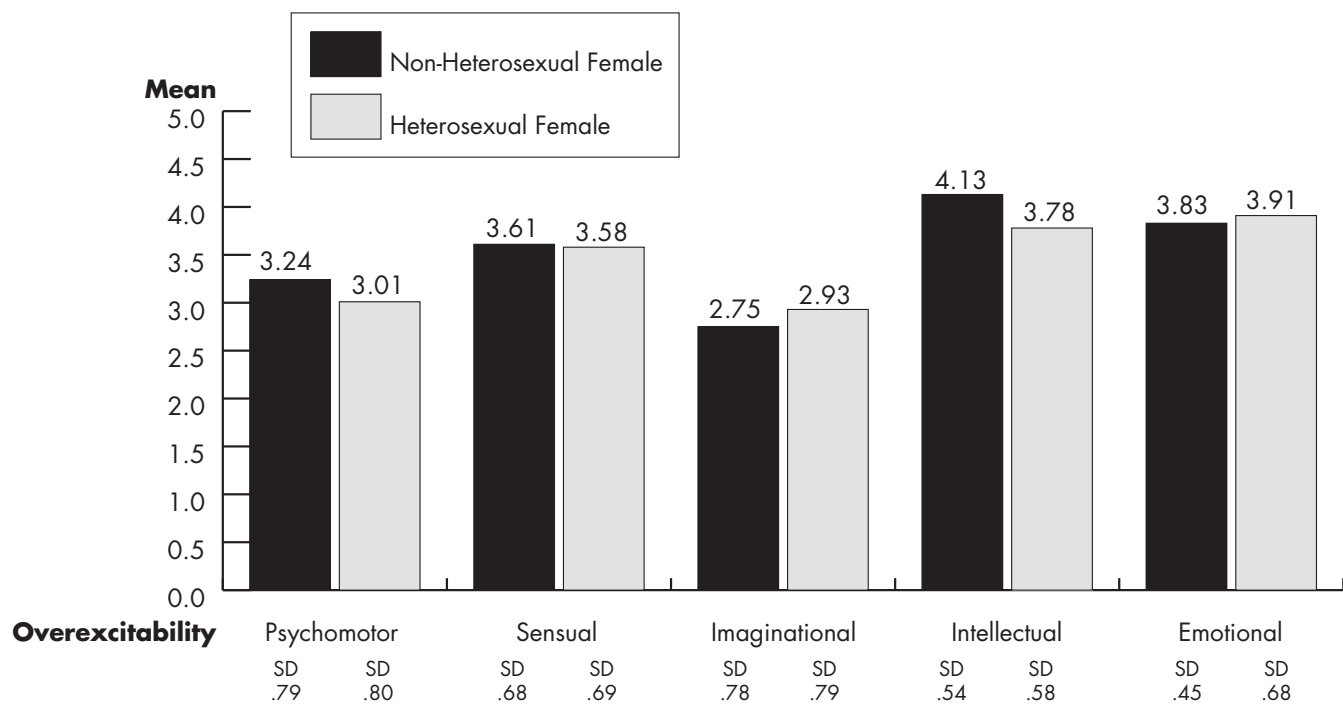


Figure 1. Women's mean overexcitability scores by orientation

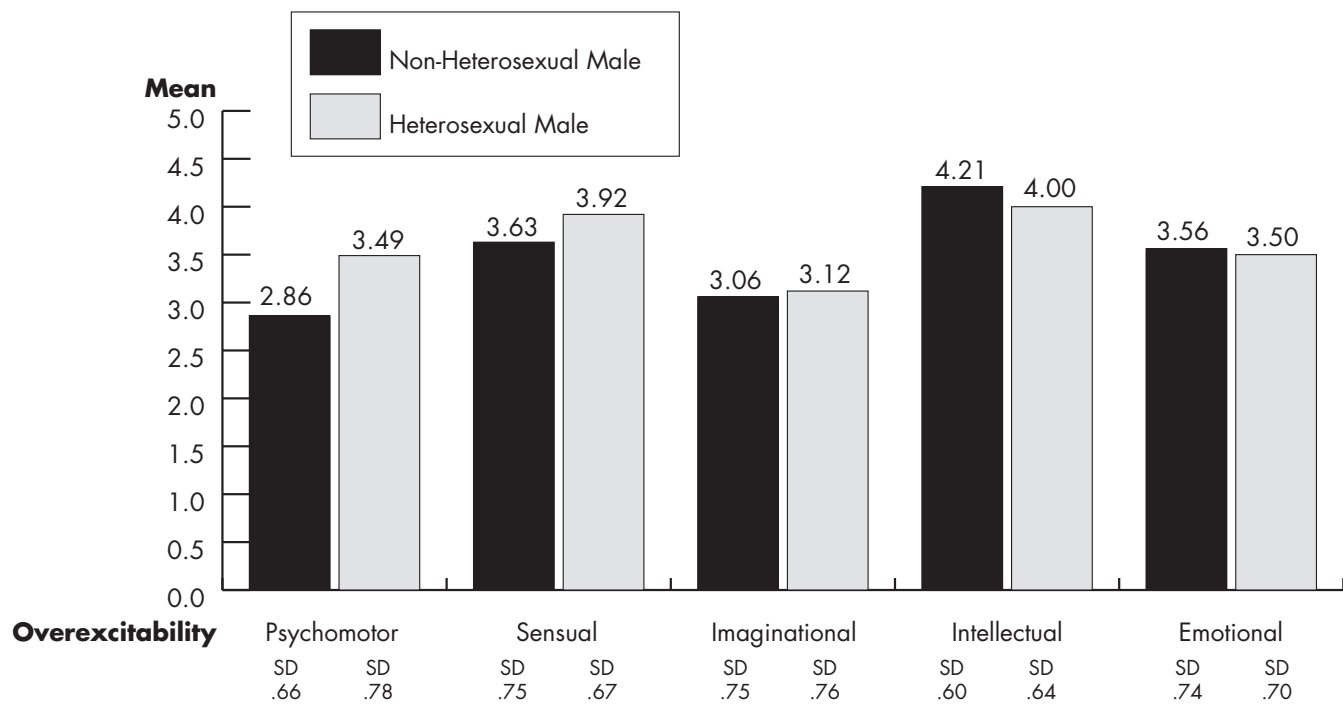


Figure 2. Men's mean overexcitability scores by orientation

ual males in the psychomotor category, higher in the sensual category, slightly higher in the imaginational category, lower in the intellectual category, and slightly lower in the emotional category. These scores are shown in Figure 2.

When the scores of both men and women were analyzed together, in the psychomotor category, the scores

from highest to lowest were as follows: (1) heterosexual males, (2) nonheterosexual females, (3) heterosexual females, and (4) nonheterosexual males. In the Sensual category, the scores from highest to lowest were: (1) heterosexual males, (2) nonheterosexual males, (3) nonheterosexual females, and (4) heterosexual females. To be

Table 3

### Mean Overexcitability Scores of Heterosexual and Nonheterosexual Participants

Orientation	<i>N</i>	Psychomotor		Sensual		Imaginational		Intellectual		Emotional	
		Mean	<i>SD</i>	Mean	<i>SD</i>	Mean	<i>SD</i>	Mean	<i>SD</i>	Mean	<i>SD</i>
Nonheterosexual Female	24	3.24	0.79	3.61	0.68	2.75	0.78	4.13	0.54	3.83	0.45
Heterosexual Female	39	3.01	0.80	3.58	0.69	2.93	0.79	3.78	0.59	3.91	0.68
Nonheterosexual Male	27	2.86	0.66	3.63	0.75	3.06	0.73	4.21	0.60	3.56	0.74
Heterosexual Male	10	3.49	0.78	3.92	0.67	3.12	0.76	4.00	0.64	3.50	0.70

Table 4

### Mean Overexcitability Scores by Specific Orientation

Orientation	<i>N</i>	Psychomotor		Sensual		Imaginational		Intellectual		Emotional	
		Mean	<i>SD</i>	Mean	<i>SD</i>	Mean	<i>SD</i>	Mean	<i>SD</i>	Mean	<i>SD</i>
Lesbian	12	3.29	0.68	3.43	0.59	2.69	0.68	4.16	0.40	3.71	0.33
Gay Male	24	2.89	0.66	3.67	0.71	3.01	0.75	4.14	0.60	3.55	0.76
Bisexual Female	12	3.19	0.92	3.80	0.74	2.81	0.89	4.10	0.68	3.94	0.53
Bisexual Male	3	2.57	0.72	3.30	1.13	3.43	0.45	4.77	0.06	3.67	0.60
Heterosexual Female	39	3.01	0.80	3.58	0.69	2.93	0.79	3.78	0.59	3.91	0.68
Heterosexual Male	10	3.49	0.78	3.92	0.67	3.12	0.76	4.00	0.64	3.50	0.70

noted are the closeness in scores of both nonheterosexual males and females. In the imaginational category, the scores were: (1) nonheterosexual males and heterosexual males, (2) heterosexual females, and (3) nonheterosexual females. In the Intellectual category, the scores were: (1) nonheterosexual males, (2) nonheterosexual females, (3) heterosexual males, and (4) heterosexual females. In the emotional category, the scores were: (1) heterosexual females, (2) nonheterosexual females, (3) nonheterosexual males, and (4) heterosexual males. It was interesting to note that each of the populations had strengths in different areas. Heterosexual males demonstrated strengths in the psychomotor and sensual categories. Both heterosexual and nonheterosexual males demonstrated strengths in the imaginational category. Nonheterosexual males and nonheterosexual females demonstrated strength in the intellectual category, and both heterosexual females and nonheterosexual females were strong in the emotional category. The scores described are listed in Table 3.

Because the populations were small, especially within the bisexual male category, the results when analyzed by specific orientation within gender appear to indicate the need for further study in this area. The psychomotor scores from highest to lowest were: (1) heterosexual males, (2)

lesbians, (3) bisexual females, (4) heterosexual females, (5) gay males and (6) bisexual males. The sensual scores were: (1) heterosexual males, (2) bisexual females, (3) gay males, (4) heterosexual females, (5) lesbians, and (6) bisexual males. The imaginational scores were: (1) bisexual males, (2) heterosexual males, (3) gay males, (4) heterosexual females, (5) bisexual females, and (6) lesbians. The intellectual scores were: (1) bisexual males, (2) lesbians, (3) gay males and bisexual females, and (4) heterosexual males. The emotional scores were: (1) bisexual females and heterosexual females, (2) lesbians, (3) bisexual males, and (4) gay males and heterosexual males. Overall, regardless of orientation, females scored higher in the emotional category and males scored higher in the imaginational category. To be noted was the exceptionally high score of the bisexual males in the intellectual category. Because only three bisexual males completed the questionnaire, it is possible that these scores may not be generalizable, although it was noted that their scores remained consistent with each other. A wider study with more participants is needed. These results are listed in Table 4.

The Bouchet and Falk (2001) study had indicated that overall, females scored higher on emotional and sensual OE and males scored higher on intellectual, imagi-

Table 5

**Mean Overexcitability Scores by Gender**

Orientation	N	Psychomotor		Sensual		Imaginational		Intellectual		Emotional	
		Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Female	63	3.10	0.80	3.59	0.68	2.86	0.78	3.92	0.59	3.87	0.60
Male	37	3.03	0.74	3.71	0.73	3.07	0.73	4.15	0.61	3.54	0.72

national, and psychomotor OE. My study also indicated that females scored higher on emotional OE and that males scored higher on imaginational OE. However, when examined by orientation, a different story emerged in the areas of psychomotor, sensual, and intellectual OE.

When only gender was compared, it was determined that overall, females scored higher in the psychomotor and emotional category. Males scored higher in the sensual, imaginational, and intellectual categories. The fact that about half (51) of the participants were nonheterosexual may have influenced those scores, pointing out yet again that more studies on this population is needed. The scores listed by gender alone are reported in Table 5.

### Conclusion

Hypothesis 1 stated that there would be a difference in intellectual OE scores between gifted heterosexual and nonheterosexual females. There was indeed a significant difference, with nonheterosexual females scoring higher.

Hypothesis 2 stated that there would not be a significant difference in the scores of gay males and heterosexual females in the emotional and sensual OE or the scores of lesbians and heterosexual males on psychomotor OE. The scores were not significantly different, but they were not equivalent, either. Gay males scored lower in emotional OE and higher in sensual OE than heterosexual females, and lesbians scored higher in psychomotor OE than other females and lower than heterosexual males. To be noted were the closeness in scores of the lesbians and heterosexual males in the psychomotor category, as well as gay males and heterosexual females in the sensual category. The emotional category demonstrated that females score higher in this category for all orientations, with gay males scoring closest to heterosexual males and bisexual females scoring closest to heterosexual females.

Hypothesis 3 stated that there would not be significant differences between heterosexual women and lesbians in the emotional category. This was confirmed in this study. It was also expected that there would be differences between heterosexual and nonheterosexual scores in the

other categories. This was also shown to be true in this study.

Because only 100 individuals (10 heterosexual males, 27 nonheterosexual males, 39 heterosexual females, and 24 nonheterosexual females) were assessed, the data seem to indicate that further study is justified with a larger population.

The scores in this study appear to call into question other studies that analyze by gender only. Each population is unique, and sexual diversity is one of those factors that seem to have a significant effect on the lives of gifted students. There apparently are differences between the overexcitabilities of nonheterosexual and heterosexual gifted populations.

Piirto (1998), in her chapter on avoiding sex-role stereotypes in her book *Understanding Those Who Create*, stated that whether gays and lesbians are more creative than other people is not known; it would seem that creative fields are more open to sexual divergence. If more studies are conducted regarding gifted sexually diverse populations in other areas, such as creativity, perhaps, it will be easier to understand and meet the needs of these unique individuals and to help promote their self-understanding as well.

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