Perfectionism and Academic Emotions in Gifted Adolescent Girls

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Abstract

The study examined the relationship between perfectionism and discrete academic emotions among highly gifted girls; the predictive values of perfectionism to academic emotion; and differences in academic emotions and performance among adaptive, maladaptive and non-perfectionists. 225 gifted adolescent girls from a secondary school participated in the study. High standards was a predictor of positive academic emotions while discrepancy was a predictor of negative academic emotions. Maladaptive perfectionists experienced higher levels of shame. Perfectionists were found to experience higher level of anxiety than non-perfectionists. Findings suggest the need to promote high standards among gifted adolescent girls to promote positive academic emotion; and teach skills to help them manage their expectations and decrease negative academic emotions.

Keywords: perfectionism; academic emotions; highly gifted adolescent girls; cluster analysis

Introduction

Perfectionism is one of the key issues in the well-being of gifted students, especially among female gifted students (Miller, Silverman, & Falk, 1994; Silverman, 1999). One of the characteristics of gifted students is that they set high expectations of self and others (B. Clark, 1992) which could result in intolerance and perfectionism that contribute to depression. Moreover, Reis and McCoach (2000) reviewed and delineated characteristics of gifted underachievers to have low self-esteem, to be depressed, anxious, and self-critical or perfectionistic; and feeling guilty about not living up to the expectations of others. In addition, such negative emotions may lead to undesired consequences such as suicide among the gifted (Delisle, 1986, 1990; Hewitt, Flett, & Turnbull-Donovan, 1992). Thus, perfectionism among gifted students can be one of the risk factors in their developmental trajectory and socio-emotional well-being.

Empirical studies using FMPS to measure perfectionism among gifted adolescents consistently indicate that two forms of perfectionism- adaptive and maladaptive- exist among the gifted (Chan, 2009a; Parker, 1997; Schuler, 2000). It seems that delineating the levels of perfectionism and their associated emotions could help to identify protective factors that build resilience of this group of learners. The concept of perfectionism has a body of literature with selected populations, such as adult outpatients (Burns, 1980; Pacht, 1984), undergraduates (Bieling, Israeli, Smith, & Antony, 2003; Rice, Lopez, & Vergara, 2005), as well as academically gifted pupils (Chan, 2009a; Parker & Stumpf, 1995; Stumpf & Parker, 2000). Except for the academically gifted population, most studies involved high proportion of female participants of the general population (see Stoeber & Otto, 2006 for review). Since perfectionism has been found to be more prevalent among females (Slaney & Ashby, 1996), it underscores the significance of this study.

In Singapore, academic stress is prevalent among the highly gifted adolescent girls as all stakeholders have high expectations on their academic outcomes. A range of academic emotions associated with perfectionism displayed among the highly gifted adolescent girls has consistently been the key area of concern among teachers and parents. However, little is known in the current literature about the associations between perfectionism and academic emotions that provide nuanced understanding in delineating and shaping intervention programmes. Thus, it is pivotal to explore the associations between perfectionism and academic emotions with this targeted group of learners.

Literature Review

The Debate on Perfectionism

Perfectionism is negative self-evaluation and self-defeating behaviour with feelings of conditional self-acceptance (Burns, 1980). Hamachek (1978) points out that these behaviours and feelings are indicators of fear of failure as a result of "overvalue performance and undervalue the self" (p. 29) when interacting with significant others in social settings such as school or family.

There are two opposing views in the perfectionism literature. While some researchers hold the unidimensional view that perfectionism is a negative construct (Burns, 1980; Pacht, 1984), others suggest that perfectionism is multidimensional in nature (Frost, Marten, Lahart, & Rosenblate, 1990; Hamachek, 1978; Hewitt & Flett, 1991; Slaney & Ashby, 1996; Stoeber & Otto, 2006). The unidimensional view of perfectionism is commonly associated with negative outcomes such as sense of failure, guilt, shame, low self-esteem and depression (Hamachek, 1978; Hewitt & Dyck, 1986; Hewitt & Flett, 1990; Hollender, 1965; Pacht, 1984) as well as psychological disorders and psychiatric conditions (Shafran & Mansell, 2001). However, the multi-dimensional view of perfectionism demonstrates that adaptive

perfectionism is associated with positive affect while the maladaptive perfectionism is associated with negative affect (see Stoeber & Otto, 2006 for review).

In his seminal work, Hamachek (1978) noted that perfectionism can be seen as a positive personality trait and proposed a continuum of perfectionistic behaviors, ranging from normal to neurotic. Since then, a large body of evidence has confirmed that the two forms of perfectionism can be distinguished (Frost et al., 1990; Hewitt & Flett, 1991; Slaney & Ashby, 1996; Slaney, Rice, Mobley, Trippi, & Ashby, 2001; Stoeber & Otto, 2006). These two forms of perfectionism have been given many labels: positive striving and maladaptive evaluation concerns (Frost, Heimberg, Holt, Matthia, & Neubauer, 1993), positive and negative perfectionism (Chan, 2009b), adaptive and maladaptive perfectionism (Rice & Slaney, 2002), conscientious and self-evaluative perfectionism (Hill et al., 2004). While there are slight theoretical differences among the various labels, there is general consensus that perfectionism can be both a negative and positive trait. However, Greenspon (2000) rejects the notion of normal perfectionism and warns that oversimplification has led to misunderstandings of the construct. He pointed out that perfectionism is "about the unrelenting desire to be perfect" (Greenspon, 2008, p. 266), negative self-evaluation and feelings of conditional self-acceptance, rather than a synonym of striving for excellence.

Hamachek (1978) views perfectionism on the continuum of normal to neurotic. He differentiates the act in terms of the level of intensity and emotions they draw in the process of meeting performance standards, as well as the flexibility in choosing to be less precise in certain situations. While the development of neurotic perfectionism tends to occur in non-approval, inconsistent or conditional positive approval of significant others, normal perfectionism tends to develop through the acceptance of rejection of behaviour of significant others. Some symptoms describe both normal and neurotic perfectionists, but neurotic perfectionists experience them with a greater intensity and for a longer duration. This implies

that perfectionism is not a dichotomy of normal and abnormal, rather the act of perfectionism is a degree or level of behaviours exhibited that causes concerns. In other words, perfectionism is neurotic or pathological only when its intensity causes clinical impairment in life.

As the multidimensional view of perfectionism is becoming popular, several measures such as *Multidimensional Perfectionism Scale* (FMPS) (Frost et al., 1990), *Multidimensional Perfectionism Scale* (HFMPS) (Hewitt & Flett, 1991) and *Almost Perfect Scale-Revised* (APS-R) (Slaney & Ashby, 1996; Slaney et al., 2001) have taken over The *Burns Perfectionism Scale* (Burns, 1980) which was a unidimensional focus, with items measuring high personal standards and concern over mistakes. While FMPS and HFMPS measure different forms of perfectionism and have more validation studies, APS-R consists of questions to probe if a person's perfectionism is adaptive or maladaptive. The subscales within FMPS, especially parental expectations and parental criticism seem to measure the cause of perfectionism rather than define the essential nature of perfectionism (Slaney et al., 2001). Hewitt and Flett (1991) also note that the two dimensions of self-oriented and socially prescribed perfectionism were not entirely independent. Thus, FMPS is not an appropriate measure.

This study chooses the APS-R scale over aforementioned measures as APS-R was developed (a) to specify variables that define perfectionism as opposed to variables that are seen as causal or correlational of perfectionism, and (b) to have subscales that measure the negative and positive aspects of perfectionism independently. The APS-R scale consists of discrepancy, high standards and order subscales. Discrepancy measured the perception that one consistently fails to meet one's standards. High Standards reflected high personal standards and expectations and order reflected the need for orderliness, neatness and organization. High standards and order were purported to measure facets of healthy

perfectionism while discrepancy represents unhealthy perfectionism. The subscales of APS-R can be useful for counselling purposes.

Cluster analyses using the APS-R have consistently yielded three clusters that represented adaptive perfectionists, maladaptive perfectionists and non-perfectionists in several studies with undergraduates (Ashby & Bruner, 2005; Grzegorek, Slaney, Franze, & Rice, 2004; Mobley, Slaney, & Rice, 2005; Rice & Slaney, 2002). Maladaptive perfectionists had consistently significant highest discrepancy subscale scores, followed by non-perfectionists and adaptive perfectionists. However, findings with regard to the high standards subscale score were inconsistent. While several studies found that there was no significant difference between adaptive and maladaptive perfectionists (Ashby & Bruner, 2005; Grzegorek et al., 2004; Rice & Slaney, 2002), Mobley et al. (2005) study found adaptive perfectionists had significantly greater high standards subscale scores than maladaptive perfectionists. Moreover, in general, there was no significant difference in order subscale scores between adaptive and maladaptive perfectionists (Grzegorek et al., 2004; Mobley et al., 2005; Rice & Slaney, 2002). Non-perfectionists had the lowest scores in high standards and order in all the studies reviewed above.

In view of the above findings, this study aims to examine perfectionism among highly gifted adolescent girls with the following hypotheses. We hypothesise that maladaptive perfectionists will yield the highest discrepancy subscale score. In addition, we hypothesise that the subscale score in high standard between adaptive and maladaptive perfectionists has no difference. Finally, we anticipate that both adaptive and maladaptive perfectionists have higher personal standards and a greater need for organization and order as compared to non-perfectionists.

The Association between Academic Emotions and Perfectionism

Academic emotions such as enjoyment of learning, hope, pride, anger, anxiety, shame, hopelessness, or boredom are emotions experienced in learning and are linked to classroom instruction and achievement (Pekrun, Goetz, Frenzel, Barchfeld, & Perry, 2011; Pekrun, Goetz, Titz, & Perry, 2002). These emotions are essential for motivation, learning and memory, as well as development and psychological health (Lewis, 2000; Lewis, Haviland-Jones, & Barrett, 2010). Goetz, Pekrun, Hall and Haag (2006) points out that students' emotional experiences are directly related to their subjective well-being (Diener, 2000) and these emotions impact the quality of students' learning and achievement such as their motivation, study strategies and achievement outcomes (Pekrun et al., 2002). Moreover, student emotions have a significant effect on the quality of communication in the classroom such as student-instructor interaction (Meyer & Turner, 2002).

There are theoretical and practical grounds for our intention to explore the associations between perfectionism and academic emotions. Theoretically, our study is justifiable as research on perfectionism and emotions typically use a general two-dimension construct of emotion: positive and negative affect (Bieling et al., 2003; Chang, Watkins, & Banks, 2004; Frost et al., 1993). Some studies examined perfectionism and negative emotions such as sense of failure, guilt, shame, low self-esteem, anxiety, stress or depression (Bieling, Israeli, & Antony, 2004; Frost et al., 1993; Hamachek, 1978; Hewitt & Dyck, 1986; Hewitt & Flett, 1990; Hill et al., 2004; Hollender, 1965; Mobley et al., 2005; Pacht, 1984). In general, adaptive perfectionists typically exhibit positive characteristic such as experiencing higher levels of positive affect and satisfaction with life (Chang et al., 2004), depending less on the external locus of control (Suddarth & Slaney, 2001) and lower levels of anxiety than non-perfectionists and maladaptive perfectionists (Dixon, Lapsley, & Hanchon, 2004; Mobley et al., 2005). Rice and Slaney (2002) found that adaptive perfectionists experience more positive affect than maladaptive perfectionists.

Investigating the associations between academic emotions and perfectionism will not only shed light on specific academic emotions within the classroom setting, but also making the link between research and practice. For example, Shih (2011) found that adaptive perfectionism was positively associated with positive academic emotions while negative perfectionism was positively associated with negative emotions in classrooms but she did not further distinguish the discrete academic emotions. Exploring the associations between dimensions of perfectionism and discrete academic emotions facilitate the design of suitable interventions and evaluation programmes towards fostering academic emotions, learning and achievement (Astleitner, 2000).

While the extant studies found the associations between adaptive perfectionists, maladaptive perfectionists and non-perfectionists on specific negative emotions, the delineation on positive emotions are not related to academic settings. In this study, we anticipate the associations between discrepancy and discrete negative academic emotions will be positive while standards as well as order have inversed relationships with discrete negative academic emotions. In addition, the predictive relations between the dimensions of perfectionism and academic emotions should have similar resemblance. Among gifted females, we hypothesize that there are levels of perfectionism (Kline & Short, 1991; Reis, 2002, 2005; Silverman, 1999, 2007), and thus it is necessary to delineate the distribution of adaptive, maladaptive perfectionists and non-perfectionists even among the highly gifted females. Finally, the associations of dimensions of perfectionism and academic emotions among the three possible perfectionist clusters will yield pivotal understandings to extend the literature.

Perfectionism and its Implications to Gifted Students

Scholars in the field of gifted education have strong interests in examining perfectionism and its implications on the psychological and emotional well-being of the

academically gifted students (Chan, 2009a; Kline & Short, 1991; Neumeister, 2008; Roberts & Lovett, 1994; Schuler, 2000). The inquiry on perfectionism and gifted students can be explained by the associations with neurotic, dysfunctional and indicative of psychopathology (Burns, 1980; Pacht, 1984), as well as the frequent observations of perfectionism among gifted students as they strive for excellence in their academic performance (Greene, 2003; Reis, 2005; Silverman, 1999, 2007).

As the conception of perfectionism is increasingly viewed as multi-dimensional rather than unidimensional, Stoeber and Otto (2006) suggests the need to specify the contextual conditions under which gifted individuals striving for perfection would be adaptive. One way to respond to the call for studying contextual conditions of perfectionism is to examine the association between perfectionism and academic emotions among gifted students. Pekrun et al. (2002) showed that academic emotions are significantly related to students' motivation, learning strategies, cognitive resources, self-regulation and academic achievement antecedents. Specifically, goals seem to be central of the relationship between perfectionism and academic emotions. Perfectionistic behaviors and thoughts exhibited by gifted students are directed by goals and high standards they set for themselves (Neumeister, 2008; Neumeister & Finch, 2006). The emotions they experience are a response to the appraisal of the status of their goals. Schutz, Hong, Cross & Osborn (2006) define emotions as "conscious and/or unconscious judgments regarding perceived successes at attaining goals or maintaining standards or beliefs" (p. 344). The awareness of the disparity between the present and future status of standards and goals begin with these judgments and perceptions of the status of their performance in relation to their goals (Schutz et al., 2006). The nexus between perfectionism and academic emotions is necessary in understanding the social and emotional well-being of gifted students. The aforementioned academic emotions include a range of positive and negative emotions (Pekrun, Elliot, & Maier, 2006; Pekrun et al., 2011; Pekrun et

al., 2002; Schutz & Lanehart, 2002) that are ideal in explicating and delineating the types and degree of perfectionism among gifted students. Based on these extant findings, we hypothesize that discrepancy is likely to be associated with negative academic emotions such as anger, anxiety, shame, hopelessness, or boredom, while high standard and order are likely to be predictive of positive emotions such as enjoyment of learning, hope, pride.

Perfectionism and its Implications to Gifted Adolescent Girls

Among issues such as physical appearance (Chamay-Weber, Narring, & Michaud, 2005; May, Kim, McHale, & Crouter, 2006), popularity among peers and the opposite gender, girls today are also concerned with academic success (Francis, 2000). They face high teacher and parental expectations especially if they are of high ability (Harris & Nixon, 1993).

Slaney & Ashby (1996) found gender differences in perfectionism. In their study, women evaluated their perfectionism more negatively and experienced it as more distressing than did men. Compared to boys, girls experience more pressure to achieve from their peers (Francis, 2000; Van Houtte, 2004) and parents (Harris & Nixon, 1993). Thus girls are more vulnerable to academic pressure than boys. A plausible reason that aggravates academic pressure in girls could be an association between maternal criticism with self-criticism in girls but not boys (S. Clark & Coker, 2009). Moreover, Gamble and Roberts (2005) found evidence that adolescents' perception of critical and perfectionistic parents have a more negative effect on cognitive style among girls than boys. Girls are also more affected by their mothers' perfectionism (Woodside et al., 2002).

Research on gifted individuals indicate higher levels of overexcitabilities than general population (Piechowski, 1999). Researchers particularly suggest that gifted girls have higher emotional overexcitability (OE) compared to gifted boys (Ackerman, 1997; Bouchet & Falk, 2001; Miller, Falk, & Huang, 2009; Miller et al., 1994). As such, academic emotions may have a greater impact on the social-emotional well-being and learning of gifted girls since

they are alleged to experience higher emotional overexcitability than gifted boys. Hence, this suggests that gifted girls may experience more intense emotions if they are not taught to set realistic self-expectations.

Our review showed that there is limited empirical research on perfectionism in gifted girls except for the following studies (Baker, 1996; Kline & Short, 1991; Kramer, 1988). Kramer (1988) found that there were more perfectionistic tendencies in gifted adolescents than non-gifted adolescents and that girls, whether gifted or not, showed greater degrees of perfectionism than boys. Kline and Short (1991) show that the level of perfectionism in gifted girls increase as they progress from elementary to high school. Baker (1996) found that exceptional girls in ninth grade reported significantly higher levels of perfectionism than in girls of average ability. The researchers in two of these studies (Kline & Short, 1991; Kramer, 1988) used *Burns Perfectionism Scale* (Burns, 1980). As *Burns Perfectionism Scale* is unidimensional, these findings are limited as they reveal only the negative form of perfectionism and seem to suggest that highly gifted adolescent girls are perfectionistic. Most studies investigate perfectionism with undergraduates (Bieling et al., 2004; Chang et al., 2004; Dunkley, Zuroff, & Blankstein, 2003; Enns, Cox, Sareen, & Freeman, 2001; Frost et al., 1993; Lynd-Stevenson, 1999; Rice, Ashby, & Slaney, 1998; Rice et al., 2005; Suddarth & Slaney, 2001) with the exception of Cox, Enns, & Clara (2002) and partly in Hewitt and Flett (1991) who involved adult samples in their investigations.

Although there has been extensive research on the dimensions of perfectionism (Frost et al., 1990; Hamachek, 1978; Hewitt & Flett, 1991; Slaney et al., 2001) and its psychological correlates (e.g., Hewitt & Flett, 1991; Parker & Stumpf, 1995; Rice & Slaney, 2002), the associations between perfectionism and academic emotions on gifted adolescent girls remains unclear. In Singapore, there is a paucity of research in this area. Empirical studies of such is valuable to gifted adolescent girls, teachers and counselors as well as parents in managing

and guiding those who are maladaptive perfectionists. This study aims to expand the findings on perfectionism in gifted girls by using a multidimensional definition of perfectionism which is more reflective of the currently more supported view that perfectionism can be both a positive and negative trait.

Specifically, this study aims to investigate the relationship between perfectionism and discrete academic emotions in gifted girls with the following research questions:

1. What is the relationship between perfectionism (as defined by the APS-R) and discrete academic emotions?
2. How do the variables of perfectionism (as defined by the APS-R) predict the different discrete academic emotions?
3. What is the proportion of adaptive perfectionist, maladaptive perfectionist and non-perfectionist among gifted girls?
4. What are the differences between discrete academic emotions and performance among different cluster groups of adaptive perfectionists, maladaptive perfectionists and non-perfectionists?

Methodology

Participants and Procedures

225 Secondary Three high-ability girls, aged 14 to 15, from an academically rigorous high school in Singapore participated in the study. This school enrolled the top 3% of the national cohort through the high-stakes national examination- the Primary School Leaving Examination (PSLE). Among them, 28% of were from the top 1% of the intellectually gifted adolescent girls who were identified at the national level at the age of nine. Participants volunteered in the study. Parental consent and participants' assent were obtained. Participants took an average of 25 minutes to complete the self-report questionnaire. All analyses were done using SPSS and AMOS version 17.

Research Design and Measures

This is a cross-sectional study involving gifted adolescent girls when they are at grade 8. APS-R (Slaney & Ashby, 1996) and *Academic Emotions Questionnaire* (Pekrun & Goetz, 2005) were subjected to confirmatory factor analyses (CFA) to obtain the model fit. CFA achieves construct validity by establishing the measurement model. The indices reported include the chi-square test statistic and the chi-square by degrees-of-freedom value as measures of absolute fit, the Tucker-Lewis index (TLI) (Tucker & Lewis, 1973) and the comparative fit index (CFI) were reported as measures of incremental fit, as well as the root-mean-square error of approximation (RMSEA), which accounts for the error of approximation in the population.

Perfectionism. The 23-item APS-R (Slaney & Ashby, 1996) with a 5-point Likert scale ranging from 1 (*strongly disagree*) to 5 (*strongly agree*), was used to measure perfectionism. There were three subscales: Discrepancy (12 items), high standards (7 items) and order (4 items). Discrepancy measured the perception that one consistently fails to meet one's standards. High Standards reflected high personal standards and expectations and order reflected the need for orderliness, neatness and organization. Sample items include 'I often feel frustrated because I can't meet my goals' (Discrepancy), 'I have high expectations for myself' (High Standards) and 'I like to always be organized and disciplined' (Order). For APS-R, a maximum-likelihood confirmatory factor analyses using AMOS 17 yielded X^2 =64.05, *df* =51, *p* =.104, *TLI* =.987, *CFI*=.990, *RMSEA* =.034. The items specified to define the three constructs had a reasonably good fit with the three-factor model.

Academic emotions. Items from the Academic Emotion Questionnaire (Pekrun & Goetz, 2005) such as the enjoyment of learning, hope, pride, boredom, anger, anxiety, hopelessness and shame, were measured. The subscales measured emotions on learning of chemistry. Participants indicated their response on a 5-point Likert-type scale ranging from 1

(strongly disagree) to 5 (strongly agree). A higher score would reflect a higher endorsement of each emotion experienced on learning of chemistry.

One of the items measured emotions during studying was modified to fit the local context. Sample items include 'I worry about not completing my Chemistry work' (modified item for anxiety) versus 'Worry about not completing the material makes me sweat' (original item for anxiety); and 'While studying Chemistry, I feel so annoyed that I feel like venting my emotions' (modified item for anger) versus 'I get so angry I feel like throwing the textbook out of the window' (original item for anger). Additional 2 items for hope and 1 item for pride were created by the authors based on a review of literature on academic emotions (Govaerts & Grégoire, 2008). There were 8 subscales, each with 5 items. Instead of an eight-factor structure as postulated by Pekrun et al., (Pekrun & Goetz, 2005), a six-factor solution comprising of enjoyment of learning, hope, anger, anxiety, hopelessness and shame emerged. Two factors--- namely pride and boredom, did not emerge. Hence, the present study would only examine six discrete emotions. Using AMOS 17, a maximum-likelihood confirmatory factor analyses yielded X^2 =180.84, *df* =120, *p* =.000, *TLI* =.968, *CFI*=.975, *RMSEA* =.04. This showed that the six-factor solution represented a reasonably good fit to the data.

Performance score. Subject-specific performance score**,** that is Chemistry in this study, was used to measure academic outcome in response to Goetz and associates (Goetz, Frenzel, & Pekrun, 2006; Goetz, Pekrun, et al., 2006) findings on domain specificity of academic emotions and Stoeber and Otto's (2006) call for the need to specify the contextual conditions when investigating perfectionism. 50.2% of the students scored at least 70 out of 100 marks in a mid-year examination in Chemistry. 28.4% of the students scored between 60 to 69 marks. 13.3% of the students scored between 50 to 59 marks and 8% scored below 50 marks. In order to eliminate the confounding factor of more than one assessor for all the examination scripts, these marks were converted into z-scores.

Data Analysis

Besides the descriptive statistics, zero-order correlation analysis was conducted to address the relationship between perfectionism (as defined by the APS-R) and discrete academic emotions. Assuming that the dimensions of the perfectionism as defined by the APS-R are the linear function of discrete academic emotions, multiple regression analysis was conducted to obtain the regression coefficients. Cluster analysis was used to obtain the proportion of adaptive perfectionist, maladaptive perfectionist and non-perfectionist among gifted girls. Finally, Multivariate analyses of variance (MANOVA) were conducted to examine whether the clusters differ according to the different academic emotions and performance score.

Results

Descriptive Statistics

The overall descriptive statistics and reliabilities among the subscales of perfectionism, academic emotions and performance score are presented in Table 1. The reliability for all subscales were .81 and above. Missing data was handled using mean substitution as suggested by Arbuckle (1995).

Associations between Perfectionism, Academic Emotions and Performance

Table 1 shows the correlations between APS-R subscales, AEQ subscales and chemistry performance. There were significant moderate positive correlations between discrepancy and high standards $r(223)=.26$, $p<.01$. Discrepancy had moderate positive correlations with anxiety $r(223)=.22$, $p<.01$, hopelessness $r(223)=.23$, $p<.01$, and shame $r(223)=.35$, $p<.01$. High Standards had moderate to moderately large and positive associations with enjoyment of learning $r(223)=.30$, $p<.01$, and hope $r(223)=.37$, $p<.01$. With regard to negative academic emotions, high standards had negative association with anger $r(223) =-.18$, $p<.01$. Orderhad small and positive correlation with enjoyment of

learning $r(223) = .16$, $p < .05$. Order had a positive correlation with anxiety $r(223) = .18$, $p < .01$ but a negative correlation with anger $r(223) = -.13$, $p < .05$. Performance was positively associated with high standards $r(223) = .21$, $p < .01$, enjoyment $r(223) = .24$, $p < .01$ and hope $r(223) = .32$, $p < .01$ and had negative associations with anger $r(223) = -.14$, $p < .01$, anxiety $r(223) = -.21$, $p < .01$ and helplessness $r(223) = -.23$, $p < .01$.

Table 2 reports multiple regression coefficients on the predictive relations between the dimensions of perfectionism and academic emotions. Simultaneous regression analyses revealed that high standards, $t(221) = 3.89$, $p < .000$, $\beta = .26$ and order $t(221) = 2.12$, $p < .036$, $\beta = .13$ accounted for 12% of the variance for enjoyment for learning, $F(3,221) = 10.36$, $p < .000$. Discrepancy yielded $t(221) = 1.95$, $p < .052$, $\beta = .13$ and it missed the statistical significance slightly in predicting enjoyment for learning. Discrepancy, $t(221) = -2.23$, $p < .03$, $\beta = -.14$ and high standards $t(221) = 6.26$, $p < .000$, $\beta = .40$ accounted for 16% of the variance for hope, $F(3,221) = 14.12$, $p < .000$.

As for negative academic emotions, high standards, $t(221) = -3.01$, $p < .003$, $\beta = -.20$ and order, $t(221) = -2.12$, $p < .035$, $\beta = -.14$ were negative predictors to anger and accounted for 7% of the variance, $F(3,221) = 5.68$, $p < .001$. Discrepancy, $t(221) = 3.96$, $p < .000$, $\beta = .26$ and order, $t(221) = .19$, $p < .004$, $\beta = .19$ were found to be positive predictors for anxiety and accounted for 9% of the variance, $F(3,221) = 7.66$, $p < .000$. Discrepancy was found to be positive predictor to hopelessness, $t(221) = 4.27$, $p < .000$, $\beta = .28$ while high standards was a negative predictor to hopelessness, $t(221) = -3.02$, $p < .003$, $\beta = -.20$. Discrepancy and high standards accounted for 9% of the variance, $F(3,221) = 7.45$, $p < .000$. Finally, discrepancy, $t(221) = 5.29$, $p < .000$, $\beta = .35$ was found to be the only predictor of shame which accounted for 11% of the variance.

Distribution of Clusters of Adaptive Perfectionist, Maladaptive Perfectionists and Non-Perfectionists

Consistent with similar studies (Grzegorek et al., 2004; Parker, 1997; Rice & Slaney, 2002), a two-step procedure using both hierarchical and non-hierarchical cluster analyses were implemented to classify perfectionists. We used Ward's linkage method and the squared Euclidian distance measure for hierarchical cluster analyses. Centroids derived from the hierarchical three cluster solution were used as starting points for non-hierarchical *k*-means cluster analyses. A solution converged in eleven iterations. The first cluster labeled as "adaptive perfectionists" consisted of about 36% of the participants (82 participants) that has significantly lower mean scores on discrepancy compared to the second and third cluster. The first cluster also had the highest mean scores on order. The second cluster classified as "maladaptive perfectionists" consisted of 34% of the participants (77 participants) and this cluster had statistically significant higher mean discrepancy score and also had the greatest on mean high standard scores. The third cluster labeled as "non-perfectionists" consisted of 29% of the participants (66 participants) that had discrepancy and high standards mean scores between that for the other two clusters. It also had significantly lower mean order scores among the clusters.

Comparison of Academic Emotions and Performance Score across Cluster Groups

Multivariate analyses of variance (MANOVA) were conducted to examine whether the clusters differ according to the different academic emotions and performance scores. The Box's *M* Test of homogeneity were found to be significant, $F(110,125,375) = 1.44$, $p < .05$. Hence, Pillai's Trace was chosen as the multivariate test. The multivariate effect was statistically significant, Pillai's trace =1.15, $F(213,428)=28.87$, $p < .001$, $\eta^2 = .57$. Univariate ANOVAs revealed significant statistical between-cluster differences on each variable, except the negative academic emotions of anger ($p>.31$) and hopelessness ($p>.24$), and performance ($p>.08$). Tukey's post hoc comparisons and effect sizes ($\eta 2$) for statistically significant mean differences range from .03 to .42 are shown in Table 3. Univariate ANOVAs for order,

hopelessness and shame were conducted with Games-Howell's post hoc comparisons due to unequal variances of the cluster groups (Toothaker, 1993).

For positive academic emotions, there were no statistically significant differences between adaptive perfectionists and maladaptive perfectionists in positive academic emotions such as the enjoyment of learning and hope. However, non-perfectionists reported statistically significant lower mean score in the enjoyment of learning (M=3.54, SD=.75) and hope compared to adaptive (M =3.77, SD=.70) and maladaptive perfectionists (M =3.97, SD=.74). In terms of experiencing anxiety during learning, maladaptive perfectionists and adaptive perfectionists did not have statistical significant differences on the mean score. However, maladaptive perfectionists had a significantly higher mean score in anxiety (M=3.04, SD=1.02) than non-perfectionists (M=2.56, SD=.82). Maladaptive perfectionists (M=2.48, SD=1.07) had significantly higher mean score in shame compared to adaptive (M=2.12, SD=.79) and non-perfectionists (M=2.06, SD=.79). There were no statistical significant differences on anger, hopelessness and performance among the three clusters, $F(2,222)=2.54$, $p<.08$, $\eta^2=.02$.

Discussions

Our investigations on the relationship between perfectionism and discrete academic emotions in gifted adolescent girls have implications for research, theory and practice. As discrepancy represents unhealthy perfectionism while standards and order are purported to measure facets of healthy perfectionism, the patterns of correlations between perfectionism and discrete academic emotions fell generally within our expectations except that the enjoyment for learning and anxiety were correlated with all three dimensions of perfectionism. Similar to findings that have emerged from studies with mixed-ability secondary students (Gilman & Ashby, 2003a, 2003b; Hawkins, Watt, & Sinclair, 2006; LoCicero & Asby, 2000) as well as undergraduates (Grzegorek et al., 2004), in our study,

students who rated themselves high in discrepancy and standards would enjoy learning as well as experience anxiety, hopelessness and shame while those who rated themselves high in standards enjoyed learning, were full of hope and were low in experiencing anger. Our findings ascertained the delineation of associations between dimensions of perfectionism and discrete academic emotions. The associations between the dimensions of perfectionism and academic emotions uncovered in this study suggest that maladaptive perfectionists who are characterised by high scores in self-reported surveys on discrepancy and standards might possibly experience both positive and negative emotions (Ashby & Bruner, 2005; Grzegorek et al., 2004; Rice & Slaney, 2002). This interpretation was supported by subsequent cluster analyses in our study.

Predictors of Academic Emotions

In answering the predictive relations between the dimensions of perfectionism and academic emotions, discrepancy was found to be a negative predictor of hope but a positive predictor of anxiety, hopelessness and shame. Thus, discrepancy, an indicator of maladaptive perfectionism, is mainly associated with negative discrete emotions. This is consistent with the past findings where maladaptive perfectionism is associated with negative affect (Bieling et al., 2003; Chang et al., 2004; Dunkley et al., 2003; Frost et al., 1993) and negative academic emotions in general (Shih, 2011).

On the other hand, high standards, an indicator of adaptive perfectionism (Slaney et al., 2001) was found to be a positive predictor of the positive academic emotions of enjoyment and hope as well as negative predictors of anger and hopelessness. These findings are consistent with past findings, whereby adaptive perfectionism is associated with positive affect (Bieling et al., 2003; Chang et al., 2004; Dunkley et al., 2003; Frost et al., 1993) and positive academic emotions (Shih, 2011). These findings suggest negative academic emotions can be alleviated by teaching gifted girls to set realistic high standards.

Hawkins and associate (2006) found that healthy perfectionists were characterised by higher levels on orderliness and, our study found orderliness was a positive predictor of anxiety. This could suggest that students who have a high need for organization and orderliness may experience anxiety when they feel that their ideas, subject material, or resources are not organized according to their standards. Moreover, while our study found adaptive perfectionists rated themselves high in orderliness, maladaptive perfectionists scored highest on anxiety. This could be an evident for Hamachek (1978) hypothesis that both normal and neurotic perfectionists experience similar symptoms, but neurotic perfectionists experience them with greater intensity and for a longer duration. This conjecture warrants further studies that may include interviews and anecdotal materials to examine the relation between order and anxiety.

The predictive relations uncovered between the dimensions of perfectionism and the delineation of discrete academic emotions in this study has provided us the tools to diagnose and intervene when encountering maladjusted perfectionist highly gifted adolescent girls. Based on our research, strategies for consideration when helping perfectionists include: (a) promote high standards by praising their accomplishments and celebrating successes; (b) manage students' perception of discrepancy; (c) manage self-expectations. Although specific intervention strategies do not arise directly from this research, parents and educators should expect excellence by helping highly gifted adolescent girls set realistic goals and expectations of their learning. Teachers could also provide specific criteria for tasks so that students are not overwhelmed in thinking they have to produce something beyond their ability. Teachers could avoid comparing students' results and teach them to recognize that their self –worth is independent of any single performance (see Schuler, 1999). The effectiveness of these strategies in alleviating negative academic emotions deserves further investigation in future research.

Distribution of Perfectionists and Non-Perfectionists

Past research on gifted girls used a negative one-dimensional definition of perfectionism (Kline & Short, 1991; Kramer, 1988) and were unable to delineate dimensions of perfectionism. Our cluster analysis revealed that 36% of the highly gifted girls were adaptive perfectionists, 34% were maladaptive perfectionists and 30% were non-perfectionists. This one third distribution pattern on highly gifted female adolescents differs from studies that reported participants mostly were adaptive perfectionists (Gilman & Ashby, 2003b; Hawkins et al., 2006; Parker & Stumpf, 1995) or mostly non-perfectionists (Gilman & Ashby, 2003a; Grzegorek et al., 2004; LoCicero & Asby, 2000). The cluster distributions of these studies either showed participants were mostly non-perfectionists or adaptive perfectionists. The distribution of maladaptive perfectionists is generally lower than one third distribution as shown in our study. A future study should be conducted using cluster analysis to see whether the one-third distribution among highly gifted adolescent girls persists. The delineation of perfectionism among highly gifted adolescent girls shows that adaptive or healthy perfectionism exists among highly gifted adolescent girls and that not all of them are maladjusted perfectionists. This finding might be associated with the school climate such as high expectations on highly gifted adolescent girls both from the school and parents, as well as being self-critical to their own performance.

Adaptive and Maladaptive Perfectionists

Differences in dimensions of perfectionism. This study concurs with past empirical studies that adaptive perfectionists had the lowest mean score in discrepancy and that maladaptive perfectionists had the highest mean score for discrepancy (Ashby & Bruner, 2005; Grzegorek et al., 2004; Mobley et al., 2005; Rice & Slaney, 2002). Moreover, this study also ascertains that highly gifted adolescent girls displayed similar adaptive and

maladaptive perfectionistic behaviours as those who are undergraduates (Chang et al., 2004; Frost et al., 1993).

Our findings reveal that maladaptive perfectionists hold significantly higher levels of personal standards than adaptive perfectionists. This finding, however, is inconsistent with previous studies. For example, Mobley et. al.(2005) found maladaptive perfectionists having significantly lower high standard scores than adaptive perfectionists; and other studies showed that there were no statistical significant differences for high standard scores between adaptive and maladaptive perfectionists (Ashby & Bruner, 2005; Grzegorek et al., 2004; Rice & Slaney, 2002). Some studies found gifted students have been found to have higher personal standards than non-gifted students (Kornblum & Ainley, 2005; LoCicero & Asby, 2000). Thus, a possible reason for this inconsistent finding could be the difference between non-gifted students and gifted girls.

Similarities in academic emotions. It is notable that both adaptive and maladaptive perfectionists had similar academic emotions except for their mean scores in experiencing shame on learning. There were no statistical differences on enjoyment, hope, anger, anxiety, hopelessness and performance score between the adaptive and maladaptive perfectionists. These findings are contradictory to past research findings where adaptive perfectionists showed higher levels of positive characteristics than maladaptive perfectionists (Dickinson & Ashby, 2005; Grzegorek et al., 2004; Mobley et al., 2005; Rice & Slaney, 2002).

We note that the maladaptive perfectionists had significantly higher levels of high standards compared to adaptive perfectionists. This finding with regards to high standards subscale score is inconsistent with other studies. For example, Mobley et al. (2005) in their study found that adaptive perfectionists had significantly greater high standards subscale scores than maladaptive perfectionists. Moreover, several studies found that there was no significant difference between adaptive and maladaptive perfectionists (Ashby & Bruner,

2005; Grzegorek et al., 2004; Rice & Slaney, 2002). Further investigation is needed to ascertain whether higher standards could be an explanatory factor since both adaptive and maladaptive perfectionists have similar positive and negative academic emotions. In addition, investigation on interaction effect of high standards, discrepancy, and possibly order on academic emotions could possibly account for the above finding.

Differences in academic emotions. Several differences in academic emotions have been found among the adaptive, maladaptive and non-perfectionists in this study. First, the adaptive and maladaptive perfectionists report experiencing higher levels of anxiety as compared to the non-perfectionists. This is consistent with Hamachek's (1978) suggestion that both normal and neurotic perfectionists tend to experience depression which is a close construct of anxiety. Our study examined anxiety in a specific context and future investigations could find out whether it is a state anxiety or trait anxiety.

Second, maladaptive perfectionists report experienced higher levels of shame compared to adaptive perfectionists. Shame is the core of perfectionism (Greenspon, 2000, 2008; Hamachek, 1978; Hewitt & Dyck, 1986). In our study, shame is being framed in the context of an academic setting experienced by maladaptive perfectionists. It is found to be the highest among the three clusters. Shame typically involves a global self-judgment of failure with respect to attaining personal standards with which an individual identifies (Goldberg, 1991; Lazarus, 1991; Lewis, 2000). This finding has significant implication to the gifted adolescent as shame is related to perfectionism and prolonged perfectionism is predictive of suicide ideation (Delisle, 1986, 1990; Hewitt et al., 1992). Coupled with overexactability of emotion which leads to an increased intensity of affect, perfectionism related to shame is an important finding. Students experiencing shame may interpret failure as a reflection on the global self, not just a particular aspect of self or a separate behavior (Kaufman, 1980). Turner, Husman and Schallert (2000) found that resilient students who recovered from shame, used

volitional strategies such as reminding themselves of their goals, providing rewards for accomplishing planned amounts of studying, and assessing resources they had to accomplish the task at hand. Due to the subjective nature of the emotions examined here, other measures such as behavioral ratings and interviews may be included in future studies to provide more valuable data. However, the results suggest that it may be useful for educators to identify students who may be affected by anxiety and shame and to address these emotions.

Perfectionists versus Non-Perfectionists

Compared to the adaptive and maladaptive perfectionists, the non-perfectionists in this study reported the lowest score on high standards is consistent with past findings (Ashby & Bruner, 2005; Grzegorek et al., 2004; Mobley et al., 2005; Rice & Slaney, 2002). In addition, the non-perfectionists who scored the lowest on high standards also experienced significantly lower levels of hope. For this group of students, teachers could role model "high standards", encourage students to set high personal standards and talk to students how on high standards can serve as motivators (Schuler, 1999).

Consistent with Mobley's et al. (2005) study on cluster analyses, there was no significant difference in chemistry performance scores among the maladaptive, adaptive and non-perfectionists. Similarly, Grezgorek et al. (2004) did not find any significant difference in GPA scores between adaptive and maladaptive perfectionists. One reason of the null result between performance score and perfectionism could be that there are more significant factors such as socioeconomic status, school factors, and peer influences as suggested by Barry (2006). Another reason could be that participants of this study were unusually high achieving as more than 50% of the students scored at least 70 out of 100 marks on the test.

Limitations of the Study

This cross-sectional study has several limitations. The findings reported are based on a sample of gifted girls enrolled in a high achieving secondary school. This study is also

limited by the lack of gifted boys as a comparison group. Future studies should examine whether the similar patterns can be found for gifted adolescent boys and girls in high achieving school setting.

Another limitation of a self-report study is that the data was a representation of participants' current perceptions and it is not certain if subjects are able to accurately recall past behaviors and emotions. Thus, the self-assessment might inflate the associations. One way to counter this artifact is to include other measures such as behavioral observations and interviews to provide further insight in the relationships between the dimensions of perfectionism and the outcomes in the study. Since academic emotions are specific to learning contexts, future studies may address these outcomes in other forms of achievement settings. Moreover, findings on academic emotions are sensitive in particular period of time in an academic year as participants experience greater pressure during the end-of-year examination season for instance. Future studies can also study these outcomes over a period of time.

Conclusion

Despite the above limitations, the present study has surfaced some empirical evidence on perfectionism in gifted adolescent girls. It has showed that there are healthy forms of perfectionism in gifted adolescent girls. The study demonstrated important associations between perfectionism and discrete academic emotions and suggests the need for educators, teachers and parents to encourage high standards and teach skills that help gifted adolescent girls to manage their academic expectations. There is evidence that certain academic emotions such as anxiety and shame in maladaptive perfectionists warrant attention in future research.

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Table 1*: Mean, Standard Deviation, Zero-Order Correlations among the Variables.*

Measures	M	SD	α	1	2	3	4	5	6	7	8	9
1. Discrepancy	2.81	.87	.90	-								
2. High standards	3.79	.78	.88	.26**	-							
3. Order	3.49	.82	.81	-.03	.12	-						
4. Enjoyment of learning	3.77	.75	.85	.19**	.30**	.16*	-					
5. Hope	3.16	.76	.85	-.04	.37**	.09	. 59**	-				
6. Anger	1.90	.76	.86	.08	-.18**	-.13*	-.48**	-.45**	-			
7. Anxiety	2.83	.95	.84	.22**	.06	.18**	-.30**	-.42**	.50**	-		
8. Hopelessness	1.85	.75	.83	.23**	-.11	.00	-.38**	-.47**	.60**	.62**	-	
9. Shame	2.23	.91	.86	.35**	.06	.04	-.16*	-.25**	.37**	.51**	.61**	-
10. Performance score	.00	1.00	-	.02	.21**	.01	.24**	.32**	-.14**	-.21**	-.23**	-.07

Note *$p < .05$ (2-tailed) ** $p < .01$ (2-tailed)

Table 2 *Simultaneous Multiple Regression Analyses for Discrepancy, High Standards and Order as Predictors of Academic Emotions*

	Discrepancy			High Standards			Orderliness					
	B	**SE *B***	***β***	**B**	**SE *B***	***β***	**B**	**SE *B***	***β***	***R²***	***adjusted R²***	***ES***
Enjoyment	.11	.06	.13	.24***	.06	.26	.12*	.06	.13	.12	.11	.14
Hope	-.12*	.05	-.14	.38***	.06	.40	.05	.06	.05	.16	.15	.19
Anger	.11	.06	.13	-.20**	.07	-.20	-.13*	.06	-.14	.07	.06	.08
Anxiety	.26***	.07	.26	-.06	.07	-.06	.19**	.07	.19	.09	.82	.10
Hopelessness	.26***	.06	.28	-.21**	.07	-.20	.06	.06	.07	.09	.08	.10
Shame	.37***	.07	.35	-.09	.08	-.08	.04	.07	.04	.11	.10	.12

Note. *p < .05 ** p < .01 ***p < .001

Table 3: *Means and Standard Deviations of Variables by Cluster Group*

	Adaptive Perfectionists *n=82*		Maladaptive Perfectionists *n = 77*		Non-Perfectionist *n = 66*				
	M	*SD*	*M*	*SD*	*M*	*SD*	*F* (2, 222)	*p*	*η2*
Discrepancy	2.29_a	.72	3.57_b	.66	2.54_a	.42	79.42	<.001	.42
High Standards	3.81_a	.65	4.39_b	.51	3.06_c	.46	94.17	<.001	.46
Order	4.13_a	.52	3.39_b	.70	2.81_c	.43	82.46	<.001	.43
Enjoyment of Learning	$3.77_{a,b}$	.70	3.97_a	.74	3.54_b	.75	6.14	<.01	.05
Hope	3.24_a	.65	3.28_a	.80	2.92_b	.79	4.72	<.05	.04
Anger	1.80	.73	1.93	.80	1.99	.71	1.19	.31	.01
Anxiety	$2.86_{a,b}$	.95	3.04_a	1.02	2.56_b	.81	4.61	<.05	.04
Hopelessness	1.77	.66	1.97	.94	1.83	.57	1.43	.24	.01
Shame	2.12_a	.79	2.48_b	1.07	2.06_a	.79	4.80	<.05	.04
Chemistry Performance	69.59	12.82	72.06	13.50	66.97	14.22	2.54	.08	.02

Note. Values with different subscripts indicate significant within –row differences between the clusters, according to Tukey's post hoc comparisons, $p < .05$. Values for order, hopelessness and shame are based on Games-Howell's post hoc comparisons, $p < .05$.