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The Attitudes of the General Student Body Toward Gifted Students and Gifted Education: Attitude Profiles and Predictors

Jae Yup Jung | Jihyun Lee

School of Education, The University of New South Wales, Sydney, New South Wales, Australia

Correspondence: Jae Yup Jung (jae.jung@unsw.edu.au)

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ABSTRACT

In this study, an investigation was conducted into the nature of the attitudes of the general student body (comprising *all* students) toward gifted students and gifted education, along with the predictors of such attitudes. For this purpose, survey data were collected from 400 secondary students enrolled in a faith-based school system in Australia. Data were analyzed using exploratory factor analysis, latent class analysis, and multiple regression analysis. Among the study findings were: (a) student attitudes toward gifted students and gifted education exist along two dimensions (i.e., support for gifted student adaptations and perceptions of non-elitism), (b) students may be classified into three groups with distinct attitude profiles that differ from one another along these two dimensions (i.e., strong supporters of gifted students/gifted education, students with neutral attitudes toward gifted students/gifted education and non-supporters of gifted students/gifted education, comprising 13%, 82%, and 5% of students respectively), and (c) the key predictors of student attitudes are school administrative support, academic impact, respect for authority, knowledge of giftedness and contact with gifted persons. The contributions of the study to the research literature are discussed.

1 | Introduction

Attitudes may be described as a predisposition or a psychological tendency to evaluate a particular entity with some degree of favor or disfavor (Eagly and Chaiken 1993; Oskamp and Schultz 2005). Consistent with this definition, a number of studies have investigated the phenomenon in terms of whether individuals are supportive or non-supportive, or are otherwise positive or negative, toward an entity of interest. Indeed, in the field of gifted education, which focuses on the education of students (i.e., gifted students) who possess outstanding natural abilities that place them significantly above the average (e.g., among the top 10% of age peers; Gagné 2009), attitudes toward gifted students and gifted education have often been investigated in terms of whether key stakeholders (e.g., teachers) have supportive attitudes, or have non-supportive attitudes that are characterized by perceptions of elitism (Bégin and Gagné 1994b; Jung 2014; Lassig 2009; McCoach and Siegle 2007; Mullen and Jung 2019; Palacios Gonzalez and Jung 2021; Wirthwein et al. 2019).

In contrast, other related fields including social psychology and special education have examined the phenomenon by recognizing its association with cognition, affect and behavior (Stern and Keislar 1975). For example, one of the most commonly recognized theoretical perspectives on attitudes in these fields is the *tri-component view*, which proposes that attitude is a single entity that comprises three related components—a cognitive component (i.e., beliefs about an entity), an affective component (i.e., feelings and emotions about an entity), and a

Summary

- The attitudes of the general student body toward gifted students and gifted education exist along two dimensions (i.e., support for gifted student adaptations and perceptions of non-elitism).
- The general student body may be classified into three groups with distinct attitude profiles that differ from one another along these two dimensions (i.e., strong supporters of gifted students/gifted education, students with neutral attitudes toward gifted students/gifted education and non-supporters of gifted students/gifted education, comprising 13%, 82%, and 5% of students respectively).
- The key predictors of student attitudes are school administrative support, academic impact, respect for authority, knowledge of giftedness and contact with gifted persons.

behavioral component (i.e., actions or responses to an entity; Cheung 2009; Oskamp and Schultz 2005). Two variations to the tri-component view exist, both of which also recognize the existence of the cognitive, affective and behavioral components of attitude, but consider them to be more distinct from one another. Specifically, the *separate entities view* considers these components to be separate entities rather than separate components of attitude that may or may not be related to one another, while the *latent process view* similarly has no requirement for the three components to be related, and proposes that an attitude may comprise one, two or all three of these components. The tri-component view and its variations do not frame attitudes in terms of supportive attitudes or non-supportive perceptions of elitism (Cheung 2009; Ewing, Monsen, and Kielblock 2017; Oskamp and Schultz 2005).

The purpose of this study was to investigate the nature of the attitudes of the general student body (comprising *all* students) toward gifted students and gifted education, along with the predictors of such attitudes. The attitudes of the general student body, who are often considered to be one of the primary stakeholder groups (along with teachers and parents) in the education of gifted students, are important to investigate for two reasons. First of all, they may have a substantial impact on the motivation and mindset of gifted students to engage in tasks (including tasks that form part of gifted education provisions) related to their areas of ability (Cheung 2009; Mofield and Parker Peters 2018; Siegle, McCoach, and Roberts 2017; Siegle, DaVia Rubenstein, and McCoach 2020). Secondly, the attitudes of this group may influence the degree to which gifted students fulfill their tremendous potential, and therefore translate their abilities into corresponding achievements (Mofield and Parker Peters 2018; Siegle, McCoach, and Roberts 2017; Siegle, DaVia Rubenstein, and McCoach 2020).

In addition to an understanding of the nature of the attitudes of the general student body toward gifted students and gifted education, a sound appreciation of the predictors of these attitudes may be useful to allow a more sophisticated understanding of how specifically such attitudes may be formed. A clearer and a more complete understanding of both the nature of student attitudes and their formation may inform measures to appropriately support, guide, or otherwise influence the general student body to ensure more optimal educational and related outcomes for gifted students. Such outcomes may include a higher level of achievement, reduced underachievement, and greater socio-emotional well-being.

2 | Review of the Literature

A number of studies have been conducted on the attitudes, along with the conceptually related perceptions and perspectives, of various student cohorts toward gifted students and gifted education. Nevertheless, the research base is not comprehensive, and is not as broad or as deep as the research base on the attitudes of other key stakeholders in the education of gifted students (i.e., teachers or parents). Furthermore, while some studies have investigated the attitudes of student cohorts that comprise both gifted and non-gifted students (e.g., Wirthwein et al. 2019), the focus of many of these studies has been on the attitudes of gifted students toward their giftedness, and/or the educational interventions that have been designed for gifted students (e.g., Berlin 2009). That is, a gap in the research exists on the attitudes of the general student body, that includes students who have *not* been identified as gifted, toward gifted students and gifted education. Moreover, studies in the area have often combined the attitudes, perceptions, or perspectives of student cohorts with those of teachers or parents (e.g., Makel 2009), to prevent a more complete understanding of student-specific attitudes toward gifted students and gifted education.

Broadly, the existing studies in the area may be classified into three categories—studies that have largely found supportive/positive attitudes, studies that have largely found non-supportive/negative/elitist attitudes, and multiple studies that have found a mix of supportive and non-supportive attitudes. Among the studies that have identified supportive or positive attitudes, Wirthwein et al. (2019) noted that gifted students are likely to view their giftedness positively as it may be associated with high levels of confidence in their academic abilities, high levels of motivation, high levels of performance, and positive school functioning. Similarly, Mofield and Parker Peters (2018) identified high academic self-perceptions of gifted students, while Kerr, Colangelo and Gaeth (1988) noted that giftedness may be conducive to opportunities for personal growth, opportunities for advanced learning, high academic achievement, high social recognition and opportunities for societal contribution. In comparison, Berlin (2009) suggested that gifted students are likely to have supportive attitudes, as giftedness may be conducive to special educational experiences, access to a more appropriate curriculum, and access to expert teachers.

Among studies that investigated ability grouping (i.e., one type of gifted education provision), multiple studies have noted that the positive and supportive attitudes of gifted students may be primarily related to the sense of belonging that may be created for gifted students in ability grouped classrooms (Adams-Byers, Whitsell, and Moon 2004; Vidergor and Azar Gordon 2015; Vogl and Preckel 2014). Similarly, Zeidner and Schleyer (1999) found that gifted students who studied in self-contained gifted classes appreciated being part of a group of students with similar

interests/needs/abilities, the positive teacher-student relationships in such classes, and the general positivity of the learning environment in such classes. Nevertheless, irrespective of any grouping arrangements, Peairs, Putallaz and Costanzo (2019) found that gifted and non-gifted students may enjoy similar status among their peers, and that gifted students are likely to exhibit pro-social characteristics and behavioral profiles (e.g., non-aggression and pro-social leadership). It must be noted, however, that most of the studies that have identified supportive or positive attitudes reflect the attitudes of gifted students, rather than the general student body (that includes non-gifted students), who may not necessarily share the views of gifted students.

In contrast to the positive or supportive attitudes identified in these studies are studies that have identified non-supportive or otherwise negative attitudes toward giftedness, gifted students and gifted education. In many of these studies, provisions to support gifted students appear to be perceived in elitist terms, due to a view that special privileges are being offered to those who are already advantaged, a lack of comfort in making distinctions between the intellect or ability of people, or a fear that giftedness may represent a threat to others (Geake and Gross 2008; Jung 2014; McCoach and Siegle 2007; Mullen and Jung 2019). One such study is the seminal study by Tannenbaum (1962) that investigated the perceptions of general high school students (that includes gifted and non-gifted students) toward three characteristics that may be highly relevant to gifted students—academic brilliance, studiousness and athleticism. Using hypothetical student characters, Tannenbaum (1962) found that the participants had the most favorable attitudes toward students who were academically average, non-studious and athletic, and the least favorable attitudes toward students who were academically brilliant, studious and non-athletic. These findings were explained, in part, by the anti-intellectual attitudes held in societies that espouse an egalitarian ethos, that may be conducive to elitist perceptions of gifted students and gifted education (Austin 2019; Jung et al. 2011; Tannenbaum 1962).

Another common reason for non-supportive or negative attitudes appears to relate to beliefs that high intellectual ability leads to negative social consequences for gifted students (Bergold, Wirthwein, and Steinmayr 2018; Lee, Olszewski-Kubilius, and Thomson 2012; Vialle, Heaven, and Ciarrochi 2007). For example, studies have suggested that one of the undesirable aspects of being gifted may be negative peer relationships (Peairs, Putallaz, and Costanzo 2019; Smedsrud et al. 2019; Zeidner and Schleyer 1999), which may be associated with a feeling of difference between gifted and non-gifted students, or perceptions by non-gifted peers that gifted students may be perfectionistic, competitive, eccentric, physically meek, depressed and/or isolated (Cross 2021; Plucker and Levy 2001; Zeidner and Schleyer 1999; Zeidner et al. 2005). The establishment of strong peer relationships may be particularly difficult for exceptionally gifted students, whose ability levels will be substantially different to those of their non-gifted counterparts (Berlin 2009; Lee, Olszewski-Kubilius, and Thomson 2012; Peairs, Putallaz, and Costanzo 2019), along with students who are gifted in the verbal domain, which may be comparatively more visible than giftedness in other domains (e.g., mathematics) to age peers (Lee, Olszewski-Kubilius, and Thomson 2012). Relatedly, Adams-Byers, Whitsell and Moon (2004) have suggested that gifted education provisions such as ability grouping may interfere with the establishment of strong peer relationships with both gifted *and* non-gifted students.

Some scholars point to other socio-emotional issues that gifted students may experience as possible reasons for non-supportive attitudes. For example, in addition to the greater opportunities and learning experiences that may become available for gifted students, Berlin (2009) noted that gifted students may be subject to high academic expectations from themselves and others, while Zeidner and Schleyer (1999) noted the high demands, high levels of competition, and the high levels of test anxiety that may characterize self-contained gifted classrooms. Relatedly, the reference group effect (the "big fish little pond effect"), that may be perceived to reduce the academic self-concepts of gifted students who work in gifted education environments, may be associated with negative student attitudes toward gifted education (Gross 2017; Makel 2009; Marsh and Craven 2002; Zeidner and Schleyer 1999).

Interestingly, a small number of studies have suggested that student attitudes toward gifted students and gifted education may in fact be neither positive nor negative. For example, Jurišević and Žerak (2019) noted that "(i)n general, students ... held neutral attitudes towards gifted students and their education" (p. 111). A number of explanations are possible for such attitudes. First of all, they may reflect an indifference toward gifted students and gifted education by the general student body, due to a lack of knowledge or interest in gifted students and gifted education. In support of this view, Jurišević and Žerak (2019) noted that many students may place excessive reliance on common stereotypes or misconceptions about gifted students, while lacking a "clearly defined attitude towards special provisions for gifted students" (p. 111). In comparison, Cross, Cross and Frazier (2013) suggest that such attitudes may reflect an aggregation of diverse attitudes that may co-exist among the student body, encompassing *favorable* attitudes that gifted students need a stimulating environment with *unfavorable* attitudes such as the belief that special provisions for gifted students may be "unfair." Colangelo and Kelly (1983) provided a third explanation in suggesting that neutral attitudes may be most likely in schools that have long established and accepted gifted programs, where strong attitudes in either direction may be uncommon.

It is noteworthy that the studies in the area have tended to focus on the identification of the nature of student attitudes toward gifted students and gifted education, while making the assumption of homogeneity of the general student population. Only one study could be identified that recognized the possible heterogeneity of the population. Specifically, Cross, Cross and Frazier (2013) collected data from gifted and non-gifted students to assess the nature of their attitudes toward gifted students and gifted education using cluster analysis, and identified three distinct groups of students. One of these groups, whose members had supportive attitudes, recognized the needs of gifted students, saw the advantages of gifted education, and did not consider gifted education to be elitist. A second group, whose members were non-supportive, did not recognize the

needs of gifted students, and believed that gifted education provisions may be elitist. The third "conflicted" group valued giftedness and recognized the needs of gifted students, but considered gifted education provisions to be "hurtful" to non-gifted students. Unfortunately, the findings of this study have not been replicated, and the analyses were conducted using both student and teacher data, which may mean that its findings may not be specific to students.

2.1 | Predictors of Student Attitudes

In comparison to the research base on the nature of student attitudes toward gifted students and gifted education, virtually no studies have had a specific or an explicit focus on the possible predictors of these attitudes. That is, another gap in the research exists on the predictors of student attitudes toward gifted students and gifted education. Nevertheless, a select group of studies allow inferences that one's giftedness may be a possible predictor of student attitudes. For example, Cross, Cross and Frazier (2013) found that students attending a school for gifted students were more likely than students attending a laboratory school (that enrolls gifted students, students with disabilities, and "typical" students) to have supportive attitudes toward gifted students and gifted education. In comparison, Makel (2009) found that while gifted and non-gifted students do *not* differ in their attitudes prior to any formal school identification of gifted students, after such a process, non-gifted students may be less likely than gifted students to see the value of gifted education provisions in addressing their educational needs.

Other studies have indicated the possible relevance of the perceived academic and socio-emotional impacts of giftedness and gifted education, as being potential factors that may inform student attitudes. For example, Berlin (2009), Mofield and Parker Peters (2018), and Wirthwein et al. (2019) recognized positive student *perceptions* about the high academic self-concepts and motivation, along with access to diverse educational opportunities, arising from giftedness and gifted education, that may contribute to positive academic outcomes. In comparison, Adams-Byers, Whitsell and Moon (2004), Lee, Olszewski-Kubilius and Thomson (2012), and Peairs, Putallaz and Costanzo (2019) noted student perceptions of the possible socio-emotional challenges of giftedness and gifted education, including reduced opportunities for interaction with diverse peers, the comparatively low socio-emotional advantages of gifted provisions such as ability grouping (in comparison to the academic advantages), the perceived lower social than academic competencies of gifted students, and the possible struggles that gifted students may experience with interpersonal relationships.

Unlike research studies involving teacher or parent cohorts (Bégin and Gagné 1994a, 1994b; Jung 2014; Lassig 2009; Palacios Gonzalez and Jung 2021), the research to date has not given much direct or indirect attention to *other* potential predictors of general student attitudes toward gifted students and gifted education. Among these predictors may be socio-demographic variables including gender, grade and urban/rural locality. That is, as for teachers and parents, it is possible that student attitudes may be influenced by their: (a) perceptions of the characteristics, norms, behaviors, roles, and activities that a given society considers appropriate for boys and girls, which are socially constructed and change over time (World Health Organization 2024), (b) maturity and life experience (Jung 2014), and (c) experiences of different learning environments, educational resources, opportunities, student numbers, and community attitudes in urban and rural settings (Azano et al. 2014; Jung et al. 2022; Troxclair 2013).

Furthermore, among the psychological or perceptual variables that have been identified to be salient for teacher or parent cohorts (Bégin and Gagné 1994a, 1994b; Jung 2014; Lassig 2009; Palacios Gonzalez and Jung 2021), perceived knowledge of giftedness, contact with gifted persons, school administrative support, and power distance orientation may also be predictive of student attitudes toward gifted students and gifted education. Specifically, as for teachers and parents, students may demonstrate different attitudes according to: (a) whether they consider themselves to be knowledgeable about giftedness or have contact with gifted persons, and are therefore familiar with the phenomenon of giftedness and the benefits of gifted education (Bégin and Gagné 1994a, 1994b; Chessman 2010; Jung 2014; Mullen and Jung 2019; Vidergor and Azar Gordon 2015), and (b) whether the leadership at their school promotes or discourages gifted students and gifted education (Palacios Gonzalez and Jung 2021; Rambo and McCoach 2012).

Power distance orientation, another potential predictor variable, refers to a dimension of culture that may be defined as the degree to which people in society accept or reject differences in power arising from differences in social status, wealth, physical characteristics or *mental* characteristics (Hofstede 2001; Swaidan, Rawwas, and Vitell 2008). Those with high power distance orientation acknowledge a hierarchy among people and demonstrate comfort with human inequality (e.g., believe that those in low power positions in organizations or society should be respectful or submissive toward those in high power positions), while those with low power distance orientation show considerable discomfort with human inequality. In educational organizations and contexts, it is possible that students who have a high power distance orientation may have more supportive attitudes toward gifted students and gifted education (i.e., students with superior mental characteristics and educational provisions for such students), than students who have a low power distance orientation (Jung 2014).

3 | The Present Study

The specific research questions that guided the present study that had the aim of gaining a clearer and a more complete understanding of the attitudes of the general study body toward gifted students and gifted education, along with the predictors of these attitudes, were:

1. What is the nature of student attitudes toward gifted students and gifted education?
2. What predicts student attitudes toward gifted students and gifted education?

A number of novel approaches were adopted to address these research questions. First of all, the study went beyond the

dichotomous conceptualization of attitudes that is often found in the field of gifted education particularly among teachers (i.e., supportive attitudes and non-supportive perceptions of elitism), by the simultaneous acknowledgment of the elements of alternative perspectives of attitudes that are espoused in related fields (i.e., cognitive attitude, affective attitude and behavioral attitude), and the incorporation of items designed to assess all five attitude types in the survey instrument. Furthermore, assessment was made of the three possible predictors of student attitudes noted in the research literature (i.e., self-perceptions of giftedness, academic impact, and socio-emotional impact), along with a number of other possible predictors that have been established to be predictive of attitudes for other stakeholder groups (i.e., teachers and parents) in the education of gifted students (i.e., gender, grade, urban vs. rural locality, knowledge of giftedness, contact with gifted persons, school administrative support, and power distance orientation; Bégin and Gagné 1994a, 1994b; Jung 2014; Lassig 2009; Palacios Gonzalez and Jung 2021). Moreover, unlike the majority of existing studies in the area, the collected data were analyzed using multiple methods, including a person-centered approach—latent class analysis—that assumes heterogeneity of the student population (Wang and Wang 2020). Finally, in contrast to many studies on student attitudes toward gifted students and gifted education that focus on the attitudes of gifted students, this study represents the first comprehensive study of the nature and the predictors of the attitudes of the general student body toward gifted students and gifted education.

4 | Method

4.1 | Survey Instrument

An online survey instrument was developed to collect data on student attitudes toward gifted students and gifted education, along with the predictors of such attitudes. For this purpose, a review was conducted of existing scales that assessed the constructs of interest to the study as informed by the review of the literature (Creswell and Creswell 2022). The final instrument comprised those scales that met as many of the following criteria as possible: (a) close match to the constructs of interest, (b) evidence of reliability and validity in previous studies, (c) wide use by other scholars, (d) recency of development or update, and (e) suitability for the participating student cohort (Creswell and Creswell 2022). It is nevertheless noted that modifications were necessary to some of the items and scales to suit the study context (e.g., some original scales were designed to assess teacher attitudes).

A total of 81 items comprised the final instrument that assessed six socio-demographic characteristics of students (i.e., age, gender, grade, ethnicity, place of birth, and urban/rural locality), five different types of attitudes toward gifted students and gifted education (i.e., supportive attitudes, perceptions of elitism, cognitive attitudes, affective attitudes, behavioral attitudes), and seven possible psychological/perceptual predictors of these attitudes (i.e., perceived knowledge of giftedness, contact with gifted persons, self-perceptions of giftedness, power distance orientation, school administrative support, socio-emotional impact, and academic impact). At the beginning of the instrument, guidance was provided on giftedness (i.e., "For the purposes of this survey, a gifted individual is someone whose ability in some area [e.g., academic, work, sport, art, music] is significantly above the average"). Participants were expected to respond to the socio-demographic items in the instrument using an open-ended response format, and to all other items using a seven-point Likert-type scale response format (ranging from *strongly disagree* to *strongly agree*). Appendix A provides greater details of the survey items employed in this study.

4.2 | Participants

The online survey instrument was made available, in 2022, to all secondary school students attending four schools, with a collective enrollment of approximately 3800, within one large faith-based school system in Australia. As members of a faith-based school system, all four participating schools are guided by goals relating to support of the "whole" person, and the promotion of values including a commitment to learning, the realization of potential, respect for the dignity of each person, inclusivity, and support for social justice. These goals and values are reflected in the vision, policies, ethos and culture of schools across the school system.

After discarding survey responses that had more than 50% of the items incomplete, the survey responses completed by 400 participants from the four schools were available for analysis. These participants had a mean age of 14.18 (SD = 1.61), were more likely to be female (63%) than male, were more likely to be born in Australia (86%) than overseas, were more likely to be residing in an urban (97%) than a rural area, and were enrolled in Grades 7–12 (with 70% in the lower secondary Grades 7–9, and 30% in the upper secondary Grades 10–12). The participants had a number of ethnicities, including Anglo-Saxon/Celtic (68%), other Western European (12%), Eastern European (3%), South Asian (2%), East Asian (2%), Southeast Asian (2%), and mixed ethnicity (8%).

4.3 | Analysis

4.3.1 | Screening and Cleaning

The collected data were input in IBM SPSS Statistics (version 28) for screening and cleaning. First of all, missing data, which represented 2.5% of total data, were imputed using the Expectation-Maximization algorithm. Thereafter, 16 of the survey items (i.e., all six items designed to assess socio-emotional impact, all six items designed to assess perceptions of elitism, two items designed to assess supportive attitudes, and one item each designed to assess perceived knowledge of giftedness and academic impact) were reverse coded to ensure that all items that were intended to assess a particular construct had consistent direction, and higher scores on all items were associated with more positive perspectives. While all affected items continued to assess the originally intended constructs, as high scores on the six items that were intended to assess perceptions of elitism would now be indicative of *negative* (rather than positive) perceptions of elitism, a change was necessary to the

name of the construct (i.e., to *perceptions of non-elitism*, as non-elitism is the direct opposite of elitism). In comparison, no change was necessary to the name for socio-emotional impact, despite the fact that high scores on the six items that were intended to assess socio-emotional impact would now be indicative of *positive* (rather than negative) socio-emotional impact, as the name of the construct has no directionality.

4.3.2 | Factor Analysis

Factor analysis was performed on the non-sociodemographic items in the survey data. The procedure allows for an understanding of the underlying structure among a set of variables of interest, by the identification of distinct groups of highly correlated variables (Field 2018; Hair et al. 2019). Initially, confirmatory factor analysis was conducted (which sets a priori constraints on the factors to extract, the numbers of such factors, or the variables that comprise each factor) because the survey items originated from psychometrically rigorous scales. Nevertheless, our results demonstrated the sub-optimal fit of the final confirmatory factor model (i.e., Comparative Fit Index [CFI] and Tucker Lewis Index [TLI] < 0.90), which indicated a need to re-assess and re-conceptualize the constructs.

For this reason, exploratory factor analysis was subsequently conducted. Using IBM SPSS Statistics (version 28) and the maximum likelihood estimator with oblique rotation, the data were assessed according to the criteria for the extraction of factors: Kaiser's criterion (i.e., eigenvalues > 1), location of the "elbow" in the scree plot, and the theoretical interpretability of factors (Field 2018; Hair et al. 2019). As part of this process, items were progressively removed if they had low communality values (i.e., > 0.20), were part of "weak factors" comprising one or two items, cross-loaded (i.e., factor loading > 0.30) on more than one factor, or had no meaningful loading (i.e., factor loading < 0.30) on any factor (Field 2018; Hair et al. 2019). At the conclusion of the analysis, the extracted factors relating to participant attitudes were submitted to the next stage of analysis.

4.3.3 | Latent Class Analysis

Latent class analysis is a form of analysis that identifies distinct groups within a population that differ from one another with respect to a set of key indicator variables (Wang and Wang 2020). Unlike the traditional variable-centered analytical approaches that assume homogeneity across the entire population with respect to the indicator variables, latent class analysis is a person-centered analytical approach that recognizes that the population may instead encompass multiple groups of homogeneous individuals (Morin et al. 2016; Wang and Wang 2020). It does so by the classification of individuals into a single group (i.e., latent class) for which they have the highest conditional posterior probabilities of membership (i.e., most likely latent class membership), determined by their responses to the indicator variables. As the focus of this study was on general student attitudes toward gifted students and gifted education, latent class analysis was employed to identify the different *types* of student attitudes toward gifted students/gifted education that may exist within the population.

A number of steps are necessary to conduct latent class analysis, including a determination of the optimal number of latent classes, followed by an examination of the latent class classifications, and the appropriate labeling of the latent classes (Wang and Wang 2020). Of these steps, the critical first step of determining the optimal number of latent classes typically involves the comparison of a series of latent class models with an increasing number of latent classes. The different models may be assessed using a range of model fit indices and statistical tests (Wang and Wang 2020), including the: (a) Akaike information criterion (AIC; Akaike 1983), (b) Bayesian information criterion (BIC; Schwarz 1978), (c) sample-size adjusted BIC (SA_BIC; Sclove 1987), (d) Vuong-Lo-Mendell-Rubin Likelihood ratio test (VLMR_LRT; Lo 2001), (e) adjusted Lo-Mendell-Rubin Likelihood ratio test (aLMR_LRT), and (f) Bootstrapped Likelihood ratio test (BLRT; McLachlan 1987). As no consensus exists on the optimal model fit index or statistical test (Morin et al. 2016), they should be considered collectively (Wang and Wang 2020).

A number of other issues need to be considered in the determination of the optimal number of latent classes. First of all, it is important to consider the size of each latent class, as determined by the most likely latent class membership of each individual in the sample. Generally, for a latent class to be meaningful, it should not be very small (Wang and Wang 2020). Secondly, attention needs to be paid to the accuracy of the latent class classifications in each latent class model. An indication of the accuracy of latent class classifications may be gained by examining the probability of correct class membership assignment, which Nagin (2005) suggests should be above 0.70. As an alternative, entropy values (Celeux and Soromenho 1996) may be examined, with values close to 1 indicative of the fewest classification errors (Asparouhov and Muthén 2014; Clark 2010). Finally, and perhaps most importantly, there is a need to examine the conceptual interpretability, meaningfulness, and uniqueness of each latent class (Wang and Wang 2020). Any latent class that is not interpretable, meaningful and unique may not be very useful, regardless of model fit.

In this study, Mplus (version 8.8) was used to conduct latent class analysis, with the robust maximum likelihood estimator. The number of initial stage random starts was 1000 and number of final stage optimizations was set at 250 (i.e., 250 replications) to avoid local optimization of the maximum likelihood results. The exponential moving average algorithm (EMA) was used as the optimization algorithm.

4.3.4 | Identification of Predictors of Latent Class Membership

To identify predictors associated with latent class membership in the optimal model, the classical three-step method was employed. This method is commonly adopted to examine relationships between latent class variables and variables that did not form a part of the latent class analysis (e.g., potential predictors of latent class membership; Wang and Wang 2020), that has been recognized to be particularly useful when the latent class classifications are "good" (as indicated by entropy values > 0.80; Clark 2010). The three steps in the classical three-step method are: (a) the conduct of latent class analysis,

(b) saving the latent class variables as observed categorical variables, and (c) the use of the saved categorical variables as outcome variables in subsequent analysis.

5 | Results

5.1 | Factor Analysis

A total of 21 items needed to be progressively removed during factor analysis for reasons including non-interpretability, low communality values, contribution to "weak factors," substantial cross-loading on more than one factor, and a lack of meaningful loading on any factor (Field 2018; Hair et al. 2019). The resulting 10-factor solution included two attitude factors (i.e., Support for Gifted Student Adaptations, which may be defined as support for educational adaptations to meet the needs of gifted students, and Perceptions of Non-Elitism, or perceptions that gifted students are not an elite group, and/or that gifted education provisions for these students are not elitist). It also comprised eight factors that may potentially be predictive of student attitudes (i.e., Self-Perceptions of Giftedness, School Administrative Support, Contact with Gifted Persons, Academic Impact, Socio-Emotional Impact, Knowledge of Giftedness, Subservience, Authority). These 10 factors had eigenvalues ranging from 1.27 to 9.88, and collectively accounted for 51% of the total variance in the data. The KMO measure of sampling adequacy (0.87) and a significant Bartlett's test of sphericity (10,218, $p < 0.01$) indicated that factor analysis was appropriate for the data. Appendix B outlines the factors that were extracted, the items comprising each factor, factor loadings, and Cronbach alpha values.

5.2 | Latent Class Analysis

5.2.1 | Identification of the Optimal Number of Latent Classes

The two attitude factors extracted at the conclusion of factor analysis (i.e., Support for Gifted Student Adaptations and Perceptions of Non-Elitism) were used as indicator variables to test latent class models with differing numbers of latent classes. Table 1 shows that the various model fit indices and statistical tests produced inconclusive findings. That is, (a) the VLMR_LRT and aLMR_LRT tests each suggested that the two-, four- or five-class models may be superior to the one-, three- or four-class models, respectively, (b) the AIC, ABIC and the BLRT test each indicated a successive improvement in model fit with an increasing number of latent classes, and (c) the BIC indicated that the five- and six-class models may be equally optimal. As such, the other criteria needed consideration.

An examination of latent class size indicated that both the five- and six-class models included small latent classes comprising less than 1% of the sample (i.e., three participants). As such latent classes are not meaningful, the focus shifted to the remaining three latent class models (i.e., the two- to four-class models). The accuracy of the latent class classifications in these three models was assessed by examining the probability of correct class membership assignment. Our review of the classification accuracy of the two-class model revealed that its high entropy value (0.96) was primarily due to a close to 100% classification accuracy of one of the latent classes, as the classification accuracy of the other latent class was only about 80%. The classification accuracy of the second latent class, which was indicative of a not insubstantial one-in-five chance of misclassification, was the lowest for a latent class in the remaining three models. As such, the two-class model was removed from further consideration.

Thereafter, a comparison was made of the profiles of the remaining two latent class models – the three- and four-class models. All latent classes in both models were conceptually interpretable and theoretically meaningful. Nevertheless, unlike the three-class model that comprised latent classes with three distinctive profiles, two of the profiles in the four-class model were broadly similar (i.e., a high value on Support for Gifted Student Adaptations and a low value on Perceptions of Non-Elitism). As such, the three-class model appeared to better satisfy the requirement that the optimal model comprises conceptually interpretable and unique latent classes.

To confirm the three-class model as the optimal model, a comparison was made of the mean values of the two indicator variables across the three latent classes in the three-class model. Table 2 shows that the three latent classes have statistically significantly different mean values on Support for Gifted Student Adaptations in all pairwise group comparisons conducted with Bonferroni's correction. It also shows that the three latent classes have statistically different mean values on Perceptions of Non-Elitism in all but one of the pairwise group comparisons conducted with Bonferroni's correction. Collectively, the findings suggest that the three latent class groups have unique profiles that are distinct from one other.

TABLE 1 | Results of model fit of five solutions from latent class analysis.

Latent classes	Free parameters	Log likelihood	AIC	BIC	ABIC	Entropy	VLMR_LRT *p*-value	aLMR_LRT *p*-value	BLRT *p*-value
2	7	−1051	2117	2145	2123	0.96	0.0017	0.0022	< 0.001
3	10	−1026	2072	2112	2080	0.87	0.2093	0.2288	< 0.001
4	13	−1000	2027	2079	2038	0.85	0.0006	0.0009	< 0.001
5	16	−984	2000	2064	2013	0.89	0.0133	0.0164	< 0.001
6	19	−975	1988	2064	2004	0.91	0.3252	0.3412	< 0.001

Abbreviations: AIC, Akaike information criteria; BIC, Bayesian information criteria; ABIC, Sample−size adjusted BIC; VLMR_LRT, Vuong−Lo−Mendell−Rubin Likelihood ratio test; aLMR_LRT, Adjusted Lo−Mendell−Rubin Likelihood ratio test; BLRT, Bootstrapped Likelihood ratio test.

TABLE 2 | Mean values of the indicator variables across the three latent classes.

Indicator variable	Class	Mean	SD	F	Sig.	η^2	*p*-value (post hoc test with Bonferroni correction)	
							Class 1	Class 2
Support for gifted student adaptations	Class 1	1.64	0.57	446.69**	< 0.001	0.69		
	Class 2	−0.13	0.52				< 0.001	
	Class 3	−2.44	0.71				< 0.001	< 0.001
Perceptions of non-elitism	Class 1	−0.30	1.14	12.59**	< 0.001	0.06		
	Class 2	0.09	0.77				.008	
	Class 3	−0.79	1.41				.107	< 0.001

*$p < 0.05$; **$p < 0.001$.

5.2.2 | Interpretation of the Optimal Latent Class Model

Figure 1 provides a graphical representation of the optimal three-class latent class model. Specifically, it presents the mean values of the participants within each latent class on the two indicator variables of interest (i.e., Support for Gifted Student Adaptations and Perceptions of Non-Elitism). It was apparent that the members of the three latent classes differed much more substantially in their Support for Gifted Student Adaptations than on their Perceptions of Non-Elitism. Indeed, the eta squared (η^2) value for Support for Gifted Student Adaptations was 0.69, while the corresponding value for Perceptions of Non-Elitism was 0.06 (see Table 2). It was therefore reasonable to label the three latent classes primarily on the basis of the nature of their supportive attitudes.

Class 1, comprising 13% of the participants, had the highest score among the three classes in their Support for Gifted Student Adaptations, and a score that was in between the other two classes in their Perceptions of Non-Elitism. This class was labeled *Strong Supporter of Gifted Students/Gifted Education*. In comparison, Class 2, to which most of the participants belonged (i.e., 82%), had a score that was close to zero for both Support for Gifted Student Adaptations and Perceptions of Non-Elitism. This class was labeled *Neutral Attitudes toward Gifted Students/Gifted Education*. Finally, Class 3, comprising 5% of the participants, had the lowest scores for both Support for Gifted Student Adaptations and Perceptions of Non-Elitism. Consequently, this class was labeled *Non-Supporter of Gifted Students/Gifted Education*. Collectively, the three classes addressed the first research question by recognizing the existence of three distinct types of student attitudes toward gifted students and gifted education—"strong support," "neutral attitudes," and "non-support."

5.2.3 | Predictors of Latent Classes

To address the second research question on the predictors of student attitudes toward gifted students and gifted education, multiple variables were assessed for their prediction of latent class group membership.

5.2.3.1 | Sociodemographic Predictors of Latent Class Group Membership. Using the socio-demographic data collected using the survey instrument, assessments were made of the possible predictive role of gender, grade level, and urban/rural locality (i.e., categorical variables) on latent class group membership. Table 3 shows that chi-square tests indicated that none of these variables had statistically significant associations with the three latent classes (i.e., $\chi^2(2) = 0.46$, $p = 0.80$, Cramer's V = 0.03 for gender; $\chi^2(2) = 0.96$, $p = 0.62$, Cramer's V = 0.05 for grade level; $\chi^2(2) = 0.81$; $p = 0.67$, Cramer's V = 0.05 for urban/rural locality).

5.2.3.2 | Psychological/Perceptual Predictors of Latent Class Group Membership. The eight psychological or perceptual variables (i.e., continuous variables) that were extracted during factor analysis were thereafter assessed for their prediction of the three latent groups using between-subjects one-way independent ANOVA. The results of the analyses, including post hoc test results with the Bonferroni correction, are outlined in Table 4. The table shows that six out of the eight psychological or perceptual variables (i.e., Knowledge of Giftedness, Contact with Gifted Persons, Self-Perceptions of Giftedness, School Administrative Support, Academic Impact, and Authority) were statistically significant in explaining latent class membership. The mean values of all six psychological/perceptual predictors were statistically significantly different (at least at the $p = 0.05$ level) for comparisons between Classes 1 and 2, and between Classes 1 and 3. Nevertheless, only the mean value of School Administrative Support was statistically significantly different (at the $p = 0.01$ level) across all three class comparisons.

Of the six statistically significant psychological or perceptual variables, the largest effect size (i.e., $\eta^2 = 0.124$) was found for Academic Impact. Such an effect size, which is close to a "large" effect according to Cohen (1988), is indicative of a substantial difference among members of the three latent classes in their perceptions of the academic impact of gifted education. In comparison, "medium-large" effect sizes were found for Knowledge of Giftedness (i.e., $\eta^2 = 0.099$) and School Administrative Support (i.e., $\eta^2 = 0.092$), while smaller effect sizes were found for Authority (i.e., $\eta^2 = 0.059$), Self-Perceptions of Giftedness (i.e., $\eta^2 = 0.043$) and Contact with Gifted Persons (i.e., $\eta^2 = 0.026$).

5.2.3.3 | Relative Importance of Statistically Significant Predictor Variables. After the identification of individual

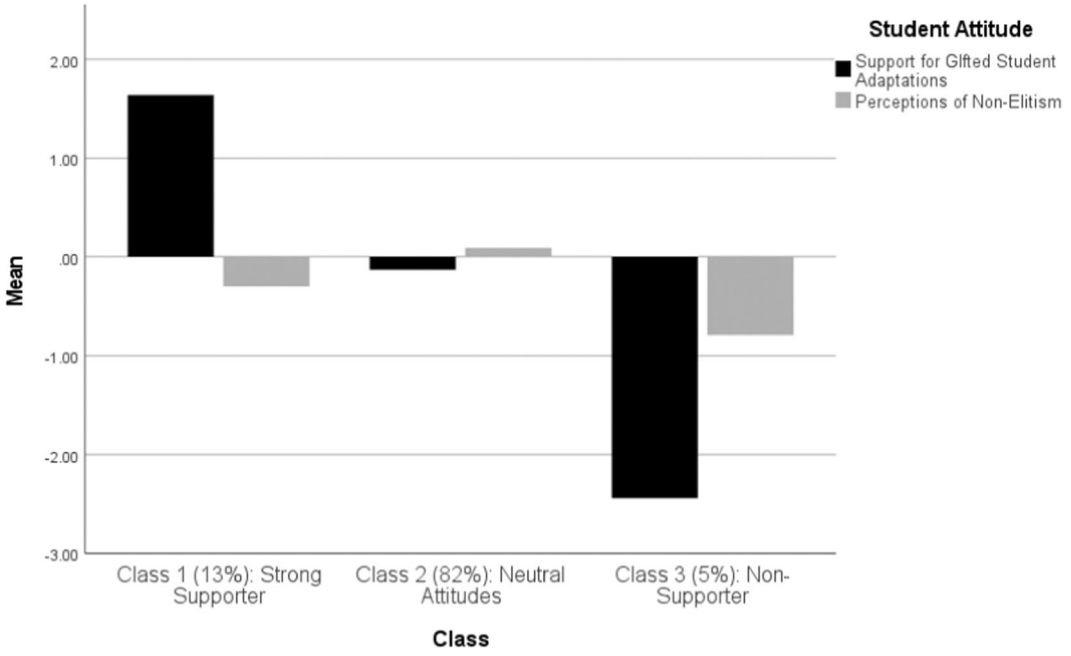

FIGURE 1 | Latent class analysis results.

TABLE 3 | Chi-square test results of the associations between the three latent classes and sociodemographic variables.

	Class 1		Class 2		Class 3				
Variable	**#**	**%**	**#**	**%**	**#**	**%**	**Pearson χ^2**	**Cramer V**	***p*-value**
Gender									
Female	34	14%	207	82%	10	4%	0.46	0.03	0.80
Male	19	13%	121	82%	8	5%			
Grade									
Lower secondary	36	14%	218	83%	10	4%	0.96	0.05	0.62
Upper secondary	15	13%	94	81%	7	6%			
Region									
Urban	46	13%	293	83%	14	4%	0.81	0.05	0.67
Rural	1	9%	9	82%	1	9%			

variables that were statistically significant predictors of student attitudes toward gifted students and gifted education, multiple regression analysis was conducted to assess the relative importance of these predictor variables. Specifically, two multiple regression models were developed, with one of the indicator variables (i.e., Support for Gifted Student Adaptations or Perceptions of Non-Elitism) as the dependent variable in each model, and all six of the statistically significant predictor variables from the between-subjects one-way independent ANOVA (i.e., Knowledge of Giftedness, Contact with Gifted Persons, Self-Perceptions of Giftedness, School Administrative Support, Academic Impact, and Authority) as independent variables in both models. The independent variables were entered into the multiple regression models using the forced entry approach (Field 2018).

Table 5 outlines the results of the multiple regression analyses. The table shows that Knowledge of Giftedness, Contact with Gifted Persons, School Administrative Support, and Authority remained as statistically significant predictors of Support for Gifted Student Adaptations, when controlling for the effect of the other predictor variables. An examination of the positive/negative direction of the beta values for these variables indicated that those participants who have higher scores on perceptions of Knowledge of Giftedness ($\beta = 0.169$, $p = 0.006$), School Administrative Support ($\beta = 0.311$, $p < 0.001$), and respect for Authority ($\beta = 0.152$, $p = 0.001$), may have greater Support for Gifted Student Adaptations, while those who have greater perceived Contact with Gifted Persons ($\beta = -0.131$, $p = 0.018$) may have lower Support for Gifted Student Adaptations. Of these four variables, participant perceptions of School Administrative Support was identified to be the *strongest* predictor of Support for Gifted Student Adaptations, as it has the greatest absolute value of beta ($\beta = 0.311$).

A somewhat different set of variables (i.e., Contact with Gifted Persons, Academic Impact, and Authority) were identified to be statistically significant predictors of Perceptions of Non-Elitism,

TABLE 4 | Group differences of the three latent classes on key psychological/perceptual predictor variables.

Predictor variable	Class	Mean	SD	F	Sig.	η^2	*p*-value: post hoc test with Bonferroni correction	
							Class 1	Class 2
Knowledge of giftedness	Class 1	0.69	0.89	21.91***	< 0.001	0.099		
	Class 2	−0.08	0.86				< 0.001	
	Class 3	−0.59	1.19				< 0.001	0.050
Contact with gifted persons	Class 1	0.35	1.00	5.21**	0.006	0.026		
	Class 2	−0.04	0.90				0.015	
	Class 3	−0.33	1.11				0.021	0.554
Self-perceptions of giftedness	Class 1	0.48	0.97	8.84***	< 0.001	0.043		
	Class 2	−0.06	0.92				< 0.001	
	Class 3	−0.38	1.39				0.003	0.468
School administrative support	Class 1	0.63	0.98	20.15***	< 0.001	0.092		
	Class 2	−0.06	0.86				< 0.001	
	Class 3	−0.78	1.36				< 0.001	0.003
Academic impact	Class 1	0.84	0.86	28.10***	< 0.001	0.124		
	Class 2	−0.14	0.83				< 0.001	
	Class 3	0.01	1.58				0.002	1.000
Socio-emotional impact	Class 1	−0.03	1.12	1.25	0.288	0.006		
	Class 2	0.02	0.84				1.000	
	Class 3	−0.32	1.48				0.744	0.362
Authority	Class 1	0.47	0.91	12.41***	< 0.001	0.059		
	Class 2	−0.05	0.77				< 0.001	
	Class 3	−0.51	1.42				< 0.001	0.064
Subservience	Class 1	−0.03	1.03	0.13	0.882	0.001		
	Class 2	0.01	0.86				1.000	
	Class 3	−0.08	1.15				1.000	1.000

*$p < 0.05$; **$p < 0.01$; ***$p < 0.001$.

TABLE 5 | Multiple regression analysis of the predictors of student attitudes toward gifted students/gifted education.

Independent variable	Dependent variable					
	Support for gifted student adaptations (R^2: 23%)			Perceptions of non-elitism (R^2: 25%)		
	Beta	S.E.	Sig.	Beta	S.E.	Sig.
Knowledge of giftedness	0.169**	0.06	0.006	0.083	0.06	0.169
Contact with gifted persons	−0.131*	0.06	0.018	−0.205***	0.05	< 0.001
Self-perceptions of giftedness	0.029	0.06	0.624	−0.006	0.05	0.918
School administrative support	0.311***	0.05	< 0.001	−0.007	0.05	0.896
Academic impact	0.078	0.06	0.158	−0.451***	0.05	< 0.001
Authority	0.152**	0.05	0.001	0.192***	0.05	< 0.001

Note: S.E. = Standard Error of the coefficient.
*$p < 0.05$; **$p < 0.01$; ***$p < 0.001$.

when controlling for the effect of the other predictor variables. Specifically, an examination of the positive/negative direction of the beta values indicated that those participants who have greater perceived Contact with Gifted Persons ($\beta = -0.205$, $p < 0.001$) or have more positive perceptions of the Academic Impact of gifted education ($\beta = -0.451$, $p < 0.001$) were less likely to have Perceptions of the Non-Elitism of gifted education, while those participants who have respect for Authority ($\beta = 0.192$, $p < 0.001$) were more likely to have Perceptions of the Non-Elitism of gifted education. Of these predictor variables, perceptions of the Academic Impact of gifted education was identified to be the strongest predictor of Perceptions of Non-Elitism, as the absolute value of the beta for this variable (i.e., $\beta = 0.451$) was the largest of all three variables.

6 | Discussion

This study represents the first comprehensive study of the nature, and the predictors, of the attitudes of the general student body toward gifted students and gifted education. Many of the major findings may be considered as novel contributions to the body of knowledge in the area. Among these findings was the extraction of two attitude factors (i.e., Support for Gifted Student Adaptations and Perceptions of Non-Elitism) that may represent two key dimensions of student attitudes toward gifted students and gifted education. An analysis of these attitudes suggested that three distinct groups of students with differing attitude profiles may exist (i.e., "strong supporters," "neutral attitudes," and "non-supporters"). Among the statistically significant predictors of membership in these groups (i.e., Academic Impact, Authority, Contact with Gifted Persons, Knowledge of Giftedness, and School Administrative Support), perceptions of School Administrative Support was identified to be the strongest predictor of Support for Gifted Student Adaptations, while perceived Academic Impact was the strongest predictor of Perceptions of Non-Elitism.

A number of findings in the study were particularly notable. First of all, the extraction of only two attitude factors from the data, when the survey instrument used to collect data from the participants was designed to assess a total of five factors, was somewhat unexpected. The outcome suggests that the traditional conceptualization of attitudes toward gifted students/gifted education within the field of gifted education for teachers, that has recognized both supportive attitudes and perceptions of elitism (Jung 2014; Lassig 2009; McCoach and Siegle 2007; Mullen and Jung 2019), may be relevant for the student cohort as well. At the same time, it was apparent that the tri-component and related views on attitudes, which proposes that attitudes may comprise affective, behavioral, and cognitive elements (Cheung 2009; Ewing, Monsen, and Kielblock 2017; Oskamp and Schultz 2005), may not be particularly useful in understanding student attitudes.

Of the items in the survey instrument that were designed to assess the predictors of student attitudes toward gifted students and gifted education, six of the psychological/perceptual predictor variables (i.e., Knowledge of Giftedness, Contact with Gifted Persons, Self-Perceptions of Giftedness, School Administrative Support, Socio-Emotional Impact, and Academic Impact) were extracted during factor analysis as intended. This was indicative of the relevance of these predictor variables, that have previously been used to assess the predictors of teacher attitudes (Jung 2014; McCoach and Siegle 2007; Mullen and Jung 2019; Palacios Gonzalez and Jung 2021) for students. Nevertheless, the items designed to assess power distance orientation was split into two factors—Authority (i.e., having respect for those in positions of authority) and Subservience (i.e., the need for subservience among those who are not in positions of authority). The finding was indicative of the distinction between these two related concepts among students.

With respect to the classification of the participating students, the optimal latent class model comprised three groups with distinctive attitude profiles, in terms of their supportive attitudes and perceptions of non-elitism. As the three groups differed much more substantially in their supportive attitudes than perceptions of non-elitism, it was apparent that student perceptions of the support of gifted student adaptations may be much more important than their perceptions of non-elitism, in the formation of their overall attitudes. It is possible that the finding reflects a tendency or preference among the student cohort to consider special educational provisions for gifted students along the relatively simple dimension of "agreement with" or "approval for," rather than the arguably more complex dimension of superiority, privilege, or favoritism.

In any case, the proportions of the three latent groups (i.e., 82% "neutral attitudes," 13% "strong supporters" and 5% "non-supporters") suggested that as a whole, the student cohort may have fairly *neutral* attitudes toward gifted students and gifted education, with those expressing strong support or non-support very much in the minority. This is consistent with the findings of other studies (Colangelo and Kelly 1983). A number of explanations are possible, including a general lack of knowledge or education about gifted students and gifted education, the general lack of exposure to gifted students and gifted education in the lives of the students, or a high level of ambivalence or indifference toward gifted students and gifted education among the student cohort (Colangelo and Kelly 1983; Cross, Cross, and Frazier 2013). Alternatively, it may reflect the relatively young age and potentially limited life experiences of the participants, and therefore, the reduced likelihood of any strong or firm attitudes, in either direction, being formed. Another possibility is that it may reflect the combined effect of multiple values that are espoused in the faith-based school system that the participants are from, some of which may lead to supportive attitudes (e.g., a commitment to learning and the fulfillment of one's potential), and others that may be conducive to non-supportive attitudes (e.g., inclusivity and support for social justice).

Of the other two latent groups, the number of students who were members of the strong supporter group was close to triple the number of students who were members of the non-supporter group (i.e., 13% vs. 5%). The finding suggests that if any strong attitudes are formed at all by students, they are more likely to be positive. Interestingly however, these two groups shared similarities. That is, members of both groups had negative mean values in their perceptions of non-elitism, to suggest that the members of both groups may consider gifted students to be an elite group, and/or that gifted education provisions for

these students may be elitist. As such, the strong supporter group simultaneously had supportive attitudes toward adaptations for gifted students *and* perceptions of elitism. The co-existence of these two attitude components is contrary to the more intuitive inverse relationship between these attitude components found among teachers (Jung 2014). One possible explanation is that the student cohort may not necessarily consider elitism in negative terms, which is consistent with perspectives on elitism found in some high power distance cultures (Hofstede 2001).

6.1 | Predictors of Student Attitudes

Among the possible predictors of membership into the three groups of students, psychological or perceptual variables generally appeared to be more important than socio-demographic variables. That is, *six* of the psychological/perceptual variables and *none* of the socio-demographic variables were identified to be statistically significant predictors of membership into the three groups, when bivariate analyses were conducted. As psychological or perceptual variables may be considered more malleable and controllable than socio-demographic variables, these findings suggest that the development and implementation of appropriate interventions based on such variables may be effective in any efforts to support, guide or modify the attitudes of students who have neutral or negative attitudes toward gifted students and gifted education (Jung 2014; Mullen and Jung 2019; Palacios Gonzalez and Jung 2021). Such measures are important, as any indifference, ambivalence, disapproval or hostility of the general student body toward gifted students and gifted education (which may be conducive to either neutral or negative attitudes), may possibly lead to education-related challenges for gifted students such as a lack of close peer relationships, social isolation, deliberate underachievement for peer acceptance, and bullying (González-Cabrera et al. 2019; Jung et al. 2011; Jung, McCormick, and Gross 2012; Laffan et al. 2024; Peterson and Ray 2006; Robinson 2008).

The six statistically significant predictors of membership into the three groups may actually be organized into three tentative tiers on the basis of their relative importance. In the *top tier* may be the predictor variables that have been identified to be the strongest predictor of either of the two dimensions of student attitudes toward gifted students and gifted education, while controlling for the effect of the other predictor variables (i.e., School Administrative Support and Academic Impact). In comparison, the *second tier* may comprise predictor variables that have been identified to be statistically significant predictors of one or both of the two dimensions of student attitudes toward gifted students and gifted education, while controlling for the effect of the other predictors (i.e., Authority, Knowledge of Giftedness, and Contact with Gifted Persons). Finally, the *bottom tier* may comprise the predictor variable that was not identified to be a statistically significant predictor of either of the two dimensions of student attitudes toward gifted students and gifted education, when the effect of the other predictor variables were controlled (i.e., Self-Perceptions of Giftedness).

Of the top tier predictor variables, a high score on perceived school administrative support was found to be associated with supportive attitudes toward the provision of educational adaptations for gifted students. The finding is consistent with the findings of Palacios Gonzalez and Jung (2021) with respect to teachers. It is unsurprising that the support of the school leadership for gifted students and gifted education, which may be conducive to the establishment of school gifted education policies and procedures, the allocation of resources for gifted students/gifted education, the introduction of special provisions such as acceleration or ability grouping, and/or the promotion of a pro-gifted student/gifted education school culture, may mean that students at the school will have supportive attitudes toward gifted students and gifted education. This may be particularly the case for a young cohort (i.e., students), and particularly in the many schools where students do not have much prior knowledge of, or training in, giftedness or gifted education.

In comparison, any beliefs about the positive academic impacts of special educational provisions for gifted students were found to be associated with negative perceptions of non-elitism (i.e., perceptions of *elitism*). The relationship is suggestive of the view that the offering of special educational interventions for gifted students may be an elitist practice that nevertheless leads to substantial academic benefits for gifted students. As noted above, this may reflect student perceptions of elitism in positive terms, that may allow the student cohort to have supportive rather than non-supportive attitudes toward gifted education provisions. It is speculated that the relatively young age and naivety of the student cohort may explain, to some degree, their greater "acceptance" of practices that they may consider elitist, in comparison to more mature cohorts such as teachers and parents. Alternatively, and as identified in Cross, Cross and Frazier (2013), the finding may reflect a "conflicted" perspective that some students may have between perceptions of elitism and support for gifted students and gifted education, which may be particularly salient in a school system that simultaneously espouses multiple values that may either align or not align with giftedness and gifted education.

Of the second-tier predictor variables, a high score on respect for individuals in positions of authority was identified to be predictive of both supportive attitudes toward educational adaptations for gifted students and perceptions of non-elitism. With respect to the first relationship (i.e., between respect for authority and support for gifted student adaptations), it is possible that the student cohort associates the high abilities of gifted students with a high level of "authority." Supporting this argument, the items that assess respect for authority in this study were derived from a scale designed to assess power distance orientation, which is a construct that assesses differences in power (i.e., authority) among people on the basis of factors including their *mental* characteristics (Hofstede 2001; Swaidan, Rawwas, and Vitell 2008). Therefore, the student cohort may respect the high abilities of gifted students, and consequently have supportive attitudes for any educational adaptations that support such abilities. In comparison, the second of the relationships (i.e., between respect for authority and perceptions of non-elitism) may be explained by the fact that those students who respect the high abilities of gifted students, may better recognize and understand the unique educational needs of these students that will be different (rather than superior) to the needs of non-gifted students. As such, these students may consider

gifted education provisions in terms of their "fit" or match to gifted students, rather than in elitist terms (Jung 2014).

Another of the second-tier predictor variables, perceived knowledge of giftedness, was identified to be positively related to supportive attitudes toward special educational adaptations for gifted students. Those students who consider themselves to be knowledgeable about giftedness are likely to have a sound understanding of the specific educational needs of gifted students, along with the necessity and benefits of educational adaptations for gifted students. It is therefore unsurprising that these gifted "experts" will be supportive of the provision of educational adaptations for gifted students. Nevertheless, as self-perceptions of giftedness was *not* identified to be a statistically significant predictor of support for gifted educational adaptations, it is possible that knowledge of giftedness is gained through means other than personal experience as a gifted student, such as personal investigations.

Finally, contact with gifted persons was identified to be a statistically significant predictor of both support for gifted educational adaptations and perceptions of non-elitism. Surprisingly, but in alignment with the findings of multiple studies (Mullen and Jung 2019; Palacios Gonzalez and Jung 2021) for teachers, the direction of these relationships was negative, to indicate that a high level of contact with gifted persons may be associated with non-supportive attitudes toward gifted educational adaptations and perceptions of elitism. One possible explanation for these findings is that as the student cohort may not have a sound understanding of giftedness, they may rely on common stereotypes or misconceptions (in the identification of gifted students) that outline distorted profiles of gifted students and highlight possible negative outcomes from gifted provisions such as burnout, stress, social difficulties, or the development of an inflated ego (Baudson 2016; Wirthwein et al. 2019; Zeidner and Schleyer 1999). Alternatively, it is possible that contact with gifted individuals may be insufficient to allow a meaningful understanding of the specific educational needs of gifted students, the benefits of gifted education, or the idea that gifted education provisions represent appropriate (rather than superior) interventions that meet the specific educational needs of gifted students.

7 | Implications

The findings of the study have a number of implications for both research and practice.

7.1 | Implications for Research

In terms of research, it is noted that as some survey items that were originally designed to assess cognitive, affective and behavioral attitudes loaded onto the supportive attitude factor during the conduct of factor analysis in this study, the possibility exists that the supportive attitude factor may be further divisible into cognitive, affective and behavioral subcomponents. This implies that the supportive attitude factor may have a multi-level factorial structure that could be the focus of a future study. Such a factorial structure, if it exists, may be considered to represent a possible "marriage" of the dichotomous conceptualization of attitudes found in the field of gifted education with alternative perspectives on attitudes espoused in related fields.

Secondly, it may be useful to further explore the non-intuitive co-existence of two attitudes toward gifted students and gifted education—highly supportive attitudes and perceptions of elitism—among participants with the most supportive attitudes toward gifted students and gifted education (i.e., *Strong Supporter of Gifted Students/Gifted Education*). For this purpose, a qualitative study, involving interviews or focus groups, that obtains descriptive elaborations on, and reasons for, specific student attitudes toward gifted students and gifted education may provide important insights. Additionally, to address the possibility that the finding may be age-related, a longitudinal study may be conducted of a student cohort, as they progress through their schooling. Furthermore, the replication of this study with other student cohorts may allow for an understanding of whether the finding is generalizable across diverse student cohorts.

A third area for future research may be an expansion of the range of predictor variables beyond the socio-demographic and psychological/perceptual variables that were investigated in this study, to allow for a more sophisticated understanding of how student attitudes toward gifted students and gifted education may be formed. Although a fairly large number of predictors were assessed in this study, other potential predictors, including those related to value orientations that are the focus of theories of culture, may be useful. For example, future studies could investigate cultural dimensions other than power distance orientation from Hofstede (2001; e.g., individualism/collectivism, short term/long term orientation, and uncertainty avoidance) and one or more cultural values from Schwartz (1999; e.g., conservatism, intellectual autonomy, affective autonomy, hierarchy, egalitarianism, mastery, and harmony).

7.2 | Implications for Practice

In terms of implications for practice, the school leadership appears to have the potential to play a particularly pivotal role in the enhancement of supportive attitudes toward gifted students and gifted education. As such, school leaders and administrators should be encouraged to promote giftedness and gifted education in their schools through the allocation of adequate funding (e.g., a devoted gifted education fund), the establishment of school guidelines on gifted education (e.g., a school gifted education policy), the implementation of a range of gifted education programs (e.g., curriculum differentiation, ability grouping and acceleration), teacher professional development in gifted education (e.g., financial support and/or teaching relief for teachers to participate in external gifted education training), and regular communication of pro-gifted student/gifted education messages to the school community (e.g., a devoted gifted education column in the school newsletter). All of these efforts may contribute to the creation of a pro-gifted student/gifted education culture within the school community.

Additionally, in recognition of the positive predictive relationship that was found between knowledge of giftedness and supportive attitudes in the multiple regression analysis, schools should be encouraged to educate the student body about gifted students and

gifted education. This may either be integrated into the delivery of the regular school curriculum or organized as separate student information sessions. For example, giftedness could be covered in the personal development/health curriculum, perhaps as part of a series on student diversity (that may also cover topics such as disability, ethnicity, cultural background and language background), to promote awareness of the phenomenon, an understanding of the associated academic and socio-emotional issues, and a recognition of appropriate actions and responses. Of note, student diversity is a curriculum focus or requirement of many education systems around the world (Australian Curriculum, Assessment and Reporting Authority 2024; New York State Department of Education 2024). Furthermore, in acknowledgment of the positive predictive relationship between respect for authority and supportive attitudes, the actions of the school leadership and the measures designed to educate the student body about gifted students and gifted education, should be accompanied by the message that giftedness in any domain should be respected and valued. This could take the form of regular celebrations of the achievements of gifted students in the different domains of giftedness through awards and other recognitions. Collectively, the above measures may be useful in the promotion of more supportive attitudes toward gifted students and gifted education among the student body, that may eventually lead to more optimal educational and related outcomes for gifted students.

8 | Limitations

A number of limitations of the study need to be acknowledged. First, it is noted that all data were collected from a single source, without any corroborating information from significant others, such as the teachers or parents of the participants. Second, as all data were collected at a single point in time, and therefore qualify as cross-sectional data, any non-correlational inferences (e.g., causal inferences) from the study findings may be inappropriate. Third, as all collected data relate to students enrolled in a faith-based school system in Australia, the study findings may not be generalizable to students enrolled in other school systems in Australia, or to students enrolled in schools or school systems located in other parts of the world. Finally, while every effort was made to be inclusive of relevant student attitude types and the predictors of student attitudes, it is not possible to claim that all salient attitude types and predictors were incorporated into the study.

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Data Availability Statement

The data that support the findings of this study are available from the corresponding author upon reasonable request.

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Appendix A

Survey Instrument

Variable	Details	Scale origin	Cronbach α	Sample item	Response format
Sociodemographic variables	Age, Gender, Grade, Place of birth, Ethnicity, Urban/rural locality (1 item each)			"Gender"	Open-ended
Traditional attitudes toward gifted students/ gifted education	Supportive attitudes (6 items)	Originally developed by McCoach and Siegle (2007), and slightly modified by Jung (2014)	0.76 (McCoach and Siegle (2007)); 0.72 (Jung 2014)	"Our schools should offer special educational services for gifted students"	7-point Likert-type scale (*strongly agree* to *strongly disagree*)
	Perceptions of elitism (6 items)	Originally developed by McCoach and Siegle (2007), and slightly modified by Jung (2014)	0.80 (McCoach and Siegle (2007)); 0.75 (Jung 2014)	"Gifted students are already favored in our schools	7-point Likert-type scale
Tri-component and alternative views of attitudes	Cognitive attitude (6 items)	Mahat (2008), which had a special education context	0.77 (Mahat (2008))	"I believe that gifted students should be taught in special settings for gifted students" modified from "I believe that students with a disability should be taught in special education schools"	7-point Likert-type scale
	Affective attitude (6 items)	Mahat (2008), which had a special education context	0.78 (Mahat (2008))	"I get irritated when I am unable to understand gifted students" modified from "I get irritated when I am unable to understand students with a disability"	7-point Likert-type scale
	Behavioral attitude (6 items)	Mahat (2008), which had a special education context	0.91 (Mahat (2008))	"I am willing to support the modification of the learning environment to meet the needs of gifted students" modified from "I am willing to modify the physical environment to include students with a disability in the regular classroom"	7-point Likert-type scale
Psychological/ perceptual predictors	Power distance orientation (7 items)	"Relational hierarchy" scale in Maznesvki et al. (1997), slightly modified by Jung (2014)[a]	0.74 (Jung 2014)	"People at lower levels in organizations should not have much authority"	7-point Likert-type scale

(Continues)

Variable	Details	Scale origin	Cronbach α	Sample item	Response format
	Perceived knowledge of giftedness (7 items)	Jung (2014) from scales including Renzulli (1975) Key Features Model for evaluation of gifted programs and the subjective knowledge scale (Reinecke Flynn, Goldsmith, and Kim 2000)	0.86 (Jung 2014); 0.91 (Mullen and Jung 2019)	"I know quite a lot about giftedness"	7-point Likert-type scale
	Contact with gifted persons (7 items)	Jung (2014) from scales including the Sigelman and Welch (1993) survey of interracial contact, the Koenig et al. (1993) Duke Social Support Index, and the Lechler (2001) social interaction scales	0.77 (Jung 2014); 0.80 (Mullen and Jung 2019)	"I know a gifted person who I would consider to be a close personal friend"	7-point Likert-type scale
	Self-perceptions of giftedness (6 items)	McCoach and Siegle (2007; 5 items) and Jung (2014; 1 item)	0.94 (McCoach and Siegle (2007)); 0.88 (Jung 2014); 0.95 (Mullen and Jung 2019)	"I am gifted"	7-point Likert-type scale
	School administrative support (6 items)	Palacios Gonzalez and Jung (2021), which was adapted from Rambo and McCoach (2012). Both scales had a focus on acceleration.	0.73 (Palacios Gonzalez and Jung 2021)	"My principal would be open to special programs/provisions for gifted students" modified from "My principal would be open to considering acceleration for a gifted student"	7-point Likert-type scale
	Socio-emotional impact (6 items)	Palacios Gonzalez and Jung (2021), which was adapted from Rambo and McCoach (2012). Both scales had a focus on acceleration.	0.73 (Palacios Gonzalez and Jung 2021)	"Gifted programs/provisions are harmful to a student's emotional well-being" modified from "Acceleration is harmful to a student's emotional wellbeing"	7-point Likert-type scale
	Academic impact (6 items)	Academic benefits scale in Rambo and McCoach (2012), which had a focus on acceleration	0.75 (Rambo and McCoach (2012))	"Gifted students placed in special gifted programs are likely to feel confident about their academic abilities" modified from "Students who accelerate in a specific subject are more likely to feel confident in that subject than students of the same ability who did not accelerate."	7-point Likert-type scale

[a]The scale was used to assess power distance orientation in an educational context, as a predictor of teacher attitudes toward educational provisions for gifted students. As the scale assesses a dimension of culture, it is applicable to both teacher and student cohorts.

Appendix B

Factor Solution

Factor/Items	Loading	Alpha
Support for Gifted Student Adaptations		0.90
F30. I believe that appropriate modifications should be made to the learning environment to cater to the needs of gifted students	0.80	
F19. I believe that the regular curriculum of the school should be adapted to meet the needs of gifted students	0.75	
F27. I am willing to support the adaptation of assessment practices for gifted students in order to cater to their specific needs	0.74	
F20. I am uncomfortable when the needs of gifted students are not supported in the classroom	0.74	
F17. I am willing to support the modification of the learning environment to meet the needs of gifted students	0.69	
F11. I get upset when gifted students cannot progress academically due to the constraints of the curriculum	0.65	
F25. I am dissatisfied with the ability of my school to adapt the curriculum to meet the needs of gifted students	0.65	
F22. I am willing to adapt the way I interact with gifted students to ensure that their specific needs are addressed	0.62	
F16. I am willing to provide the necessary support for gifted students	0.61	
F15. Gifted students need special attention to fully develop their talents	0.52	
F21 I am disconcerted that gifted students are required to remain in the regular classroom, regardless of their level of giftedness	0.51	
Perceptions of Non-Elitism		0.70
F28. When gifted students are put in special classes, the other students feel devalued[a]	0.66	
F12. Gifted students might become vain or egotistical if they are given special attention[a]	0.64	
F24. Special programs for gifted students have the drawback of creating elitism[a]	0.61	
F18. By separating students into gifted and non-gifted groups, we increase the labeling of students as strong-weak, good-less good and so on.[a]	0.46	
Self-Perceptions of Giftedness		0.88
D20. People consider me gifted	0.94	
D16. Most of my family and friends consider me gifted	0.87	
D11. I am gifted	0.77	
D1. Among my circle of friends, I'm one of the experts on giftedness	0.62	
D18. I would very much like to be considered a gifted person	0.54	
D14. I was, or could have been, in a gifted program in school	0.53	
School Administrative Support		0.85
E9. My school system would support gifted education	0.83	
E10. The leadership at my school is open to special educational interventions for gifted students	0.82	
E4. My principal would be open to special programs/provisions for gifted students	0.72	
E1. My school would consider offering special educational services for gifted students	0.67	
E16. The culture at my school is supportive of gifted education	0.60	
E15. Guidelines for gifted education may be created at my school	0.48	
Contact with Gifted Persons		0.80
D13. Most of my family and friends are gifted	0.88	
D5. Many of my acquaintances are gifted	0.72	

(Continues)

Factor/Items	Loading	Alpha
D12. I regularly come across gifted people in my day-to-day life	0.66	
D7. I have a family member (or a relative) who is gifted	0.46	
D2. I believe that a lot of gifted people live in my neighborhood	0.46	
D3. I know a gifted person who I would consider to be a fairly close personal friend	0.43	
Academic Impact		0.84
E13. Gifted students who are given special educational services are likely to go to university	0.85	
E18. Gifted students who are given a special education are likely to pursue university studies in the area in which they received special education	0.75	
E8. Gifted students who are offered special educational interventions are likely to be admitted into highly selective courses at university	0.68	
E3. Gifted students who receive special educational services are more likely to achieve better academic results than gifted students who do not receive such services	0.57	
E7. Gifted students placed in special gifted programs are likely to feel confident about their academic abilities	0.57	
Socio-Emotional Impact		0.82
E11. Gifted programs/provisions are harmful to a student's social wellbeing[a]	0.78	
E5. Gifted programs/provisions are harmful to a student's emotional wellbeing[a]	0.75	
E12. Gifted students who are placed in special gifted programs may not participate in many social activities[a]	0.64	
E6. Gifted students who are provided with special educational services may experience academic burnout[a]	0.62	
Knowledge of Giftedness		0.82
D8. I am familiar with some of the goals and objectives of programs designed for gifted students	0.73	
D6. I know quite a lot about giftedness	0.71	
D10. I am knowledgeable about the types of classroom activities that are suitable for gifted students	0.66	
D4. I understand the needs of gifted students	0.64	
D19. I have a fairly good idea about how to identify gifted people	0.52	
Subservience		0.75
C7. People at lower levels in organizations should not have much authority	0.77	
C6. Organizations should have separate facilities (such as eating areas) for higher level people	0.76	
C5. People at lower levels in organizations should carry out the requests of people at higher levels without question	0.59	
Authority		0.65
C2. People at higher levels in organizations have a responsibility to make important decisions for people below them	0.60	
C1. A hierarchy of authority is the best form of organization in educational or professional settings	0.58	
C3. People should be rewarded based on their level in the organization	0.52	
C4. The highest-ranking person in a team should take the lead	0.47	

[a]reverse coded.