Feature Article

Social–Emotional Characteristics and Adjustment of Accelerated University Students: A Systematic Review

Gifted Child Quarterly
1–23

DOI: 10.1177/0016986220969392
journals.sagepub.com/home/gcq
SAGE

Jolande Schuur[1], Marjolijn van Weerdenburg[1], Lianne Hoogeveen[1], and Evelyn H. Kroesbergen[1]

Abstract

Gifted students who experienced grade-based acceleration in primary or secondary education have to meet the challenges of adjusting to university at a younger age than students who did not accelerate. This systematic review critically evaluates the research on social–emotional characteristics and adjustment of these gifted accelerated university students. Based on a review of 22 studies, we may conclude that accelerated students did not differ very much in domains of social–emotional characteristics from their nonaccelerated gifted and nongifted peers. Factors that facilitated adjustment and well-being were cheerfulness, resilience, self-efficacy, a positive self-concept, high prior academic achievement, and supportive family environment. Furthermore, it was found that studies were incomplete in reporting the previous acceleration experiences of the students and that research on students who individually accelerated by 1 or 2 years was scarce. Future research should include individually accelerated students, previous acceleration experiences, gender differences, and comparison groups.

Keywords

academic acceleration, giftedness, social–emotional adjustment, adjustment to university, systematic review

The transition to university is for many students a challenging period that involves a number of important new tasks such as moving away from home to a new environment, making new friends, establishing independence, and making choices about study and career. Gifted students who experienced grade-based acceleration in primary or secondary education have to meet these challenges at a younger age than students who did not accelerate during their school career. Notwithstanding the positive effects of grade-based acceleration on academic achievement (Rogers, 2004, 2015), there have been ongoing concerns about the effects of this type of acceleration on social–emotional development (e.g., Heinbokel, 1997; Hoogeveen et al., 2005; Siegle et al., 2013; Southern et al., 1989; Vialle et al., 2001). In the current review study, we systematically analyze the research on the social–emotional characteristics and adjustment of grade-based accelerated students in university.

Many countries facilitate grade-based acceleration (e.g., Assouline et al., 2015; Bicknell & Riley, 2013; Gross & Van Vliet, 2005; Heinbokel, 1997; Hoogeveen, 2015; Kanevsky & Clelland, 2013; Kleinbok & Vidergor, 2009; Robinson, 1992; Wu, 1991; Young et al., 2015). However, information on its prevalence is scarce. The most recent information on the prevalence of grade acceleration in the United States dates from 2009. Wells et al. (2009) reported that between 0.6% and 1.4% of children and adolescents experienced grade-based acceleration. They found that females, Asian Americans, and students from the east and west coast were more likely to be grade accelerated in K-7 education than respectively males, other ethnicities, and students from other areas. In the Netherlands, between 2% and 5% of all university students enter university at least one year earlier than regular-aged students (VSNU, P. Pieck, personal communication, January 15, 2019).

Accelerated students start at university with educational backgrounds that differ from those of students who enter university at a regular age, as they experienced one or more forms of grade-based acceleration, such as early admission to kindergarten, grade skipping, curriculum compacting, self-paced instruction, continuous progress or early entrance to university without a high school diploma (Rogers, 2004). Acceleration is often combined with other gifted programs to meet the developmental needs of gifted students (e.g., Gross, 1992; Olszewski-Kubilius, 2004; VanTassel-Baska & Brown, 2007). Therefore, it can be expected that by the time accelerated students enter university, they have had multiple experiences with acceleration and other gifted programs (Brody et al., 2004).

[1]Behavioural Science Institute, Radboud University, Nijmegen, Netherlands

Corresponding Author:
Jolande Schuur, Behavioural Science Institute, Radboud University, Postbus 9104, Nijmegen 6500 HE, Netherlands.
Email: j.schuur@pwo.ru.nl

Social–Emotional Adjustment

Adjustment refers to the process of responding to environmental demands, and students who positively adjust to new circumstances are able to cope effectively with the demands of life (Neihart, 2007). Social adjustment refers to the ability to form satisfying relationships with other people, and emotional adjustment involves the personal acceptance of circumstances, which may include adapting one's attitudes and emotions accordingly (APA Dictionary of Psychology, n.d.). Thus, a socially and emotionally well-adjusted accelerated student is a student who demonstrates appropriate social and psychological responses to being a young student at university. In the research on accelerated students, multiple terms are used with regard to the nonacademic effects of acceleration and the nonacademic adjustment of accelerated students to their new learning environment. For instance, in a meta-analysis, Rogers (2015) found social adjustment measures to include a wide variety of characteristics such as social self-concept, social maturity, peer acceptance, friendships, engagement in organizations, and family relations. Psychological adjustment effects were also measured with a wide variety of characteristics such as personality traits, self-efficacy, locus of control, motivation, self-acceptance, happiness, and well-being (Rogers, 2015). Neihart (2007) used the term "socioaffective impact" to indicate the nonacademic effects of acceleration, and reported that this was measured via characteristics such as social maturity scores, teacher ratings of social skills, participation in extracurricular activities, leadership positions held, self-concept scores, and through teacher or parent ratings of risk taking, independence, and creativity. For the purpose of the current review study, the terms social–emotional characteristics and adjustment are used, and all of the aforementioned characteristics are included to apply a broad perspective on these characteristics and adjustment.

Research on Accelerated Students in University

In research on accelerated students in university, three, mutually nonexclusive, categories can be distinguished. The first concerns students who entered university early in a specially designed and highly selective early entrance to university program for gifted students, mainly in the United States. These early entrance programs vary greatly with respect to entrance age and qualifications, duration, curriculum, and living conditions (Brody & Muratori, 2015). The second category concerns the Study of Mathematically Precocious Youth (SMPY), performed in the United States, with a longitudinal focus on students who have been identified as mathematically precocious around the age of 13 years. These students were encouraged to accelerate their education, which almost all of them (95%) did in one or more ways (Lubinski, 2004). For instance, four in five students took Advanced Placement courses or earned college credits while in high school, half of them skipped grades, and one in five students entered college early (Lubinski et al., 2001). The third category concerns research on students who radically accelerated 3 or more years as the result of the accumulative effect of any combination of accelerative procedures over a period of time. This research has a strong base in Australia and often relates to case studies of "radical accelerants" (Jung & Gross, 2015), but also includes research on students in radical early entrance to university programs in which gifted students can complete the 4 years of high school and 4 years of university in 4 years' time in total (Southern & Jones, 2015).

With regard to the magnitude of the social–emotional effects of acceleration, research overviews on early entrance programs concluded that positive social–emotional adjustment was related to a careful selection for the early entrance program, support from family, adjustment to college life, and friendships with peers in the program (Brody et al., 2004; Brody & Muratori, 2015; Olszewski-Kubilius, 1995). In an overview of research on accelerated SMPY students, Wai (2015) concluded that these students did not differ on various personality traits compared with equally able students who chose not to accelerate, that the accelerated students participated in extracurricular activities to the same extent, and that they were happy with their choice for acceleration. Wai did not report the type of acceleration that the students had experienced. However, a meta-analysis for all school levels by Steenbergen-Hu and Moon (2011) did not include enough studies on postsecondary students to calculate these effects. In a synthesis of meta-analyses on the effects of subject- and grade-based acceleration at elementary, middle, and high school level, Rogers (2015) found moderate social and psychological effects for grade-skipping, as well as moderate psychological effects for early entrance to university and radical acceleration. However, Rogers did not investigate the social–emotional effects of grade skipping and radical acceleration on postsecondary school level.

Based on the above, it can be concluded that significant gaps in the literature remain. First, in meta-analytic studies that have been published so far, postsecondary students were neglected, because studies with those students in the population did not meet the inclusion requirements. Second, review studies so far (Brody et al., 2004; Brody & Muratori, 2015; Gross & Van Vliet, 2005; Jung & Gross, 2015; Olszewski-Kubilius, 1995) summarized the social–emotional adjustment of accelerated students in early entrance programs or talent search programs, or of students who accelerated 3 or more years. As a result, it is not known how students who accelerated 1 or 2 years on an individual basis fare social-emotionally, nor is it known how entering university changes them social-emotionally. Third, studies have not looked into the effect of multiple experiences with acceleration and other gifted programs on the social–emotional adjustment of accelerated students. Fourth, some studies did summarize the literature, but not in a systematic way, possibly leading

to selection bias of included primary studies and to including methodologically unsound studies. Fifth, no systematic review study has been published in which social–emotional adjustment of accelerated students was compared with that of nonaccelerated students at university.

The Current Review Study

The current review study aimed to systematically review empirical studies on the social–emotional adjustment of accelerated university students and compare their adjustment with that of nonaccelerated students. Such a systematic review makes it possible to fill gaps in the existing knowledge on accelerated students (Petticrew & Roberts, 2006). Four research questions will be addressed:

Research Question 1: How do accelerated students function social-emotionally?
Research Question 2: To what extent do social–emotional characteristics of accelerated students differ from those of nonaccelerated students?
Research Question 3: To what extent do social–emotional characteristics of accelerated students change during their time at university?
Research Question 4: Which factors are related to adjustment to university and well-being of accelerated students?

Method

Literature Search

Electronic databases ERIC, PsychINFO, Proquest Dissertations and Theses, and Web of Science, were systematically searched, based on Petticrew and Roberts (2006), using key words in four categories: (a) the high ability of the student, (b) the educational level of the student, (c) the acceleration intervention, and (d) the social–emotional outcomes of the study. To find as many relevant studies as possible, no limits were set on the definition of social–emotional outcomes. Key words included general terms, such as social, emotional, socio, psycho, well-being, self, life, experience, development, relation, attitude, problem, and happiness, as well as specific key words such as fear, anxiety, depression, deficit, disturb, neurotic, aggression, or despair. These key words were combined with the Boolean operator "OR." The results of the four search categories were next combined with the Boolean operator "AND." The search was limited to studies published in English between 1984 and 2017.

Search and Preliminary Selection Process

Studies were included if they matched with five inclusion criteria: First, studies had to address academic acceleration. Second, participants had to be accelerated university students, who were defined as students who were at least 1 year younger than regular-aged university students at university entrance and who were full-time students at a college or university. Studies in which the majority of accelerated students were still in university were included, but studies in which the majority had already graduated from university were excluded. Third, studies had to be empirical and had to have a quantitative, qualitative, or mixed-method design. Case studies of accelerated students without information on the selection criteria were excluded. Fourth, studies had to investigate social–emotional characteristics. Fifth, only peer-reviewed journal articles and doctoral dissertations were included.

The initial databases search yielded 591 results and three records were found by hand searching. After duplicates had been removed, the abstracts of the 505 resulting records were screened in accordance with the inclusion criteria. Almost half of the excluded records were eliminated because they did not address academic acceleration. The other half of the excluded records did not focus on accelerated students or were not empirical research. The preliminary selection process resulted in 43 records. Three doctoral dissertations were excluded, because they were not available online and the authors of two dissertations did not respond to requests to share the dissertations. The author of the other doctoral dissertation advised to include the peer-reviewed journal article based on the dissertation (Muratori et al., 2003). Three studies were available both as a doctoral dissertation and as a peer-reviewed article. The publication that best suited the research purposes was included and this resulted in including two doctoral dissertations (Boazman, 2010; Young, 2010) and one peer-reviewed article (Caplan et al., 2002). Finally, 30 studies were evaluated for their methodological quality, including 24 peer-reviewed journal articles and 6 doctoral dissertations. Figure 1 presents the flow diagram of the search and selection process.

Analysis of Methodological Quality

The 30 studies consisted of 29 studies performed in the United States and one study performed in Australia (Young, 2010). In 18 studies, students were or had been in a radical early entrance to university program; five studies were on students in a 1 year moderate program of early entrance; five studies presented research on accelerated students who were identified as mathematically precocious around the age of 13 years old; and two studies investigated students who had accelerated on an individual basis, including four radically accelerated students in Australia. The research designs of the studies were quantitative (19 studies), mixed-method (five studies), and qualitative (six studies).

To evaluate the methodological quality of the included studies, all studies were appraised by means of criteria described in Appendix A (available in the online Supplemental Material). First, for quantitative and mixed-method studies,

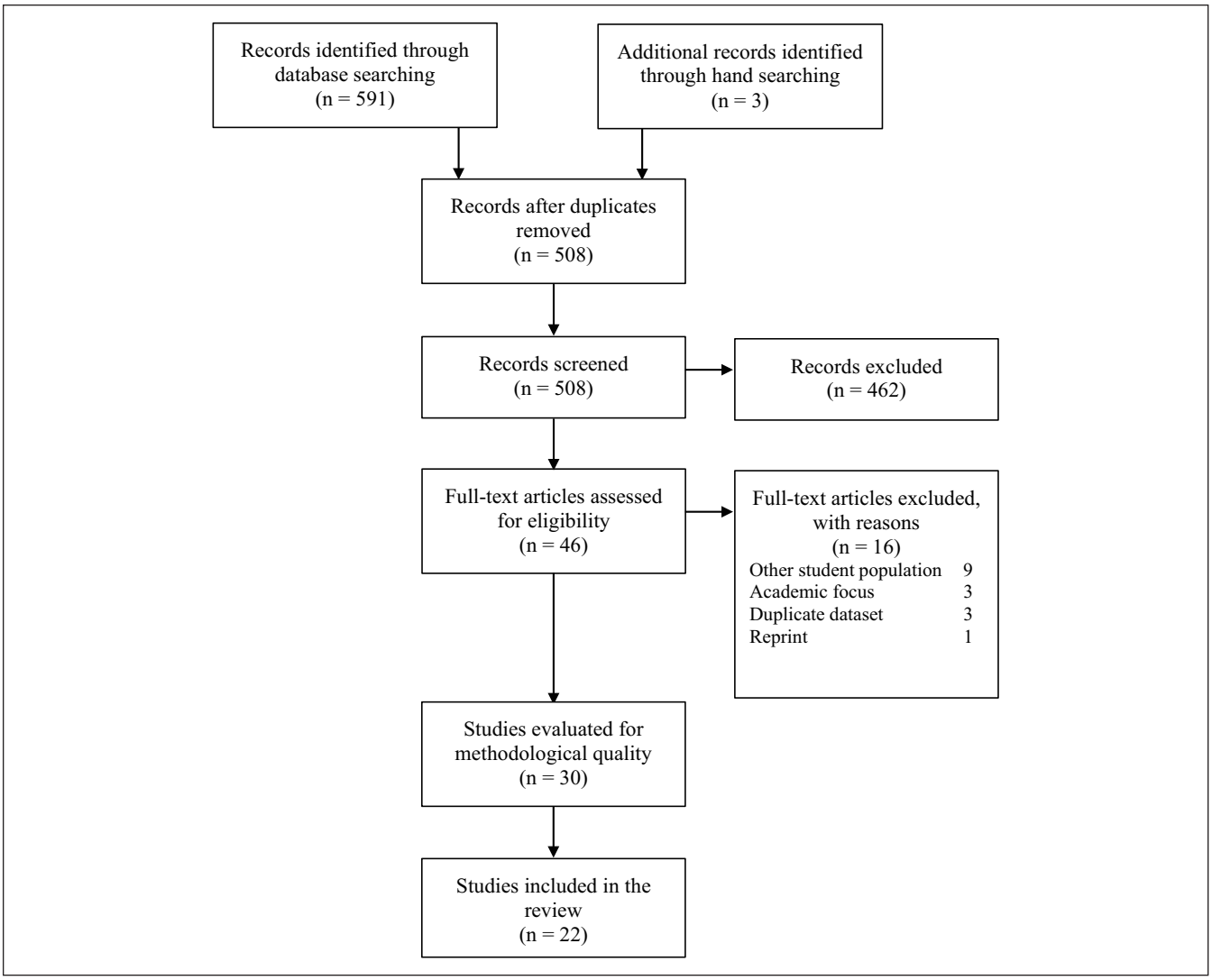

Figure 1. Flow diagram of search and selection process.

seven criteria were applied. These were derived from the framework for appraising surveys by Petticrew and Roberts (2006): response rate, description of the sample, description of the population, comparison groups, reliability of the measures, uniformity of the method, and the quality of the statistical analyses. Second, to evaluate the six qualitative studies, we adapted the aforementioned criteria as follows: sample justification, description of the sample, description of the population, theoretical foundation, reliability of the measures, documentation of the method, and quality of analyses. Studies could obtain 0, 0.5, or 1 point for each criterion, resulting in a maximum possible score of 7 points. Only studies that scored three points or more were judged to be of adequate methodological quality to be included in the final analyses.

The quality appraisal of the quantitative and mixed-model studies is presented in Table 1. Based on this appraisal, five studies (21%) were judged to be of low methodological quality (i.e., Firpo, 2008; Janos et al., 1988; Noble & Childers, 2008; Sethna et al., 2001; Swiatek & Benbow, 1992). The quality appraisal of the qualitative studies, presented in Table 2, resulted in three studies (50%) with low methodological quality (i.e., Brody et al., 1988; Noble & Drummond, 1992; Noble et al., 1999). The conclusions of the studies with low methodological quality did not differ from those of the studies that complied with the methodological criteria; thus, we excluded the eight studies: four out of nine studies from the early entrance program of the University of Washington (UW), two studies from other early entrance programs, and two out of five studies from SMPY. As a result, the current systematic review was based on a final selection of 22 studies. When effect sizes were reported, they were interpreted according to the guidelines of Cohen (1992) and Tabachnick and Fidell (2007).

Table 1. Ranked Methodological Quality Appraisal of Quantitative and Mixed Design Studies.

	Response rate	Sample description	Population description	Comparison groups	Measurement reliability	Method uniformity	Statistical quality	Total score
Hoggan (2008)	1	1	1	0.5	1	1	1	6.5
Lupkowski et al. (1992)	1	0.5	1	0.5	0.5	1	1	5.5
Boazman (2010)	1	0.5	0.5	1	1	0	1	5
Cornell et al. (1991b)	1	1	1	0	0.5	0.5	1	5
Cornell et al. (1991a)	1	0.5	0.5	1	0.5	0.5	1	5
Franklin and Cornell (1997)	1	0.5	0.5	1	0.5	0.5	1	5
Ingersoll and Cornell (1995)	0	0.5	0.5	1	1	1	1	5
Caplan et al. (2002)	1	1	0	0	0.5	1	1	4.5
Richardson and Benbow (1990)	1	0	0	1	1	0.5	1	4.5
Shepard et al. (2009)	1	0.5	0.5	0.5	0.5	0.5	1	4.5
Sayler (1990)	1	0	1	0	0.5	1	1	4.5
Boazman and Sayler (2011)	1	0	0	0.5	1	1	0.5	4
Robinson and Janos (1986)	1	0.5	0	1	0.5	0.5	0.5	4
Swiatek and Benbow (1991)	1	0	0	1	1	0	1	4
Janos et al. (1989)	1	0	0	1	0.5	0.5	0.5	3.5
Janos et al. (1986)	1	0	0.5	0	0.5	0.5	1	3.5
Noble et al. (1993)	0	0.5	0	1	0	1	1	3.5
Noble and Smyth (1995)	1	1	0	0	0	1	0.5	3.5
Brody and Benbow (1987)	1	0	0	1	0.5	0.5	0.5	3.5
Firpo (2008)	0	0.5	0	1	0	0	1	2.5
Sethna et al. (2001)	1	0	0	0.5	0.5	0.5	0	2.5
Janos et al. (1988)	1	0	0	0	0	0.5	0.5	2
Swiatek and Benbow (1992)	1	0	0	0	0.5	0	0.5	1.5
Noble and Childers (2008)	0	0	0	0	0	0	0.5	0.5

Table 2. Ranked Methodological Quality Appraisal of Qualitative Studies.

	Sample justification	Sample description	Population description	Theoretical foundation	Method reliability	Method documentation	Quality of analysis	Total score
Muratori et al. (2003)	1	0.5	1	1	1	1	1	6.5
Young (2010)	1	0.5	0	1	0.5	1	1	5
Navan (1998)	0	0	0	1	1	1	1	4
Noble et al. (1999)	0	0	0	0	0	0	0	0
Noble et al. (1992)	0	0	0	0	0	0	0	0
Brody et al. (1988)	0	0	0	0	0	0	0	0

Results

For each of the 22 studies, an overview of the following study features is presented in Appendix B (available in the online Supplemental Material): author, year of publication, acceleration type or program, time period, measurements, population (sample size, gender, age, aptitude, ethnicity), grades skipped, timing of acceleration, comparison groups, and domains of social–emotional characteristics. This overview shows great variability with regard to many of the features listed.

The total sample size of the 22 studies consisted of 2,803 students, but the number of accelerated students from whom data were obtained was smaller as a result of overlap in samples in the research from SMPY, the UW, and the Liberal Arts College (LAC) for women. For instance, data from SMPY cohorts 1972, 1973, and 1974 were used in two studies (Richardson & Benbow, 1990; Swiatek & Benbow, 1991), as were data from SMPY cohorts 1976 and 1978 (Brody & Benbow, 1987; Swiatek & Benbow, 1991). SMPY cohort 1979 was used only once (Swiatek & Benbow, 1991). Moreover, half of the total sample came from Richardson and Benbow (1990) who used data from 1,247 respondents in SMPY. Even when considering the overlap in SMPY samples, over 70% of the accelerated students in the current review were mathematics or science students. At the UW, four out of five studies used data from partially or completely overlapping cohorts (Janos et al., 1986; Janos et al., 1989;

Table 3. Main Features of Early Entrance to University Programs.

Program	Foundation year	Profile	Timing of entrance	Duration in years	Classes	High school diploma	Residential	Honors program	Guidance/ counselling
EEP University of Washington	1977	General	9th grade	1	EEP only	No	No, commuter program	Possible	Yes
Liberal Arts College Mary Baldwin	1985	General, women	9th to 11th grade	4	EEP only	Yes	Yes (first 2 years EEP only)	No	Yes
Texas Academy of Mathematics and Science at University of North Texas	1988	Mathematics and science	11th grade or earlier	2	Mixed	Yes	Yes, EEP only	No	Yes
EEP science and engineering college	Unknown	Mathematics and science	12th grade (sometimes 11th)	1	Mixed	No	Yes, EEP only	No	Yes
National Academy of Arts, Sciences, and Engineering	1999	General	12th grade	1	Mixed	No	Yes, with regular students	Yes	Yes
EEP Midwestern university	1999	General	12th grade	1	Mixed	Unknown	Unknown	No	Yes

Noble et al., 1993; Robinson & Janos, 1986), whereas research from the LAC for women had overlap in three out of four studies (Cornell et al., 1991a, 1991b; Ingersoll & Cornell, 1995). Consequently, when multiple citations from these three institutions are given in the current review, these may all stem from the same students.

Male and female accelerated students were evenly represented in the total sample. Six studies investigated female accelerated students only, and in Boazman and Sayler (2011) gender ratios were not specified. Thirteen studies did not report ethnicity and in the remaining nine studies, the large majority of accelerated students were of Anglo-American ethnicity. With regard to intellectual ability, 13 studies reported academic achievement scores, 3 studies reported IQ-scores that varied between 115 and 155, and 5 studies did not report the intellectual ability of the respondents.

There was also great variability in the ages of the students, which ranged from 12 to 30 years. Although the eldest respondents in Noble et al. (1993) and Young (2010) had already graduated, the majority of accelerated students in these studies were still at university (see foot notes of Appendix B; available in the online Supplemental Material), and therefore, these studies complied with the second inclusion criterion. Three studies (Boazman, 2010; Brody & Benbow, 1987; Navan, 1998) did not report age data. Furthermore, from 73% of the total sample it was not reported at which stage of their academic career they were at the time of participation in the study. The other 27% were accelerated students in the first year of an early entrance program.

At least 40% of the accelerated students in the current review study entered university in an early entrance program, but the exact amount of acceleration these students had experienced, was not reported. These programs varied in profile, timing of entry, duration in years, homogeneity of students in classes, residential facilities, and provision of honors classes and of a high school diploma. All programs offered guidance and counseling services to their students. Table 3 lists the main features of the early entrance to university programs.

The features of the early entrance programs, especially the timing of entrance, homogeneity of students in classes, and residential facilities, defined the entry characteristics as well as the academic and social environment for the accelerated students. The early entrance program at the LAC for female students from Grade 9 onward offered the most adapted four-year program, with classes for accelerated students only, and residential facilities that provided them with a group of peers of the same age and ability during the first 2 years of the program. The UW offered a highly adapted curriculum as well, with a 1-year commuter program that allowed accelerated students to combine a challenging academic program with the stability and support from family and friends, before enrolling as full-time students at the university. Students at the Texas Academy of Mathematics and Science (TAMS) at the University of North Texas had accelerated 2 years or more, had their own residential facilities, but took classes together with regular-aged students from the university, which gave them the opportunity to build friendships with regular-aged students. At the three early entrance programs that offered 1 year of acceleration, all students took classes with regular-aged university students, but residential facilities varied. Consistent with Steenbergen-Hu and Moon (2011), we found that none of the early entrance studies reported on acceleration experiences before high school.

Researchers from SMPY provided little information on the type and amount of acceleration of their respondents, who accounted for 53% of the accelerated students in the current review. They did not report whether the students had entered university individually or in a group (Brody & Benbow, 1987; Richardson & Benbow, 1990; Swiatek & Benbow, 1991), and the amount of acceleration was given for less than 6% of all SMPY respondents in the current review (Swiatek & Benbow, 1991). In fact, the amount of grade acceleration was not reported for 91% of the students

in the current review. Only studies on individually accelerated students, less than 6% of the total sample of students, provided detailed information on the acceleration background (Sayler, 1990; Young, 2010). These studies reported that acceleration in primary school was two to three times more frequent than in high school, and that in primary school students accelerated through early admission, grade skipping, subject acceleration, and extension groups, whereas in high school grade skipping, international baccalaureate, earning college credits, early college entrance, subject acceleration, dual enrolment, and distinction courses were means of acceleration. Only Young (2010) provided the acceleration history of all participants in her qualitative study of 12 accelerated students in Australia.

The 22 studies investigated a very wide variety of social–emotional characteristics, comparable to those listed by Neihart (2007) and Rogers (2015). For the purpose of overview, these characteristics were clustered into eight domains: (a) personality traits, including social maturity, self-efficacy, creativity, and resilience (18 studies); (b) (social) self-concept, self-acceptance, and self-esteem (13 studies); (c) family relationships (12 studies); (d) peer relationships, including peer acceptance, friendships, and social skills (11 studies); (e) locus of control and motivation (seven studies); (f) participation in extracurricular activities, including engagement in organizations and leadership positions (seven studies); (g) satisfaction with acceleration (seven studies) or personal well-being and happiness (three studies); and (h) adjustment to college (two studies).

Social–Emotional Functioning of Accelerated University Students

To answer the first research question, studies were summarized to present an overall picture of the social–emotional characteristics of accelerated university students, their satisfaction with acceleration, and whether these characteristics differ by gender. Outcomes from the quantitative studies are presented first, followed by findings from the qualitative studies.

Social–Emotional Characteristics. Four quantitative studies observed that students' personality traits, their peer and family relationships, extracurricular activities, and their social–emotional well-being gave no cause for alarm, whereas one study reported serious psychological problems. Radically accelerated students at the UW, mathematically precocious students, and individual, moderately accelerated students at Purdue University participated in two to four extracurricular activities (Brody & Benbow, 1987; Noble et al., 1993; Sayler, 1990; Swiatek & Benbow, 1991). Around 70% of the individually accelerated students in the study of Sayler (1990) participated in extracurricular activities. These students were able to build relationships with new friends, both age peers and regular-aged students; did not feel their age was relevant to their social relationships; had satisfying relationships with their family; and over 80% of them felt supported by their parents in their choice for early entrance at Purdue University. Sayler cited one example of a lack of support from parents who were concerned about the influence of the university environment on their child. In contrast to these outcomes, Cornell et al. (1991b) reported that the first cohort of 44 radically accelerated female students at the LAC experienced serious social–emotional problems as assessed by staff ratings. These problems included depression (25 students), suicidal behavior (5 students), and stress-related attrition (13 students). Adjustments in the admission requirements for prior academic achievement and emotional stability, as well as improvements in counseling support for the students, resulted in better adjustment and a significant decline in stress-related attrition. This was confirmed in follow-up studies that compared accelerated students with nonaccelerated students (Cornell et al., 1991a; Ingersoll & Cornell, 1995).

Three qualitative studies also reported positive outcomes on social–emotional characteristics of accelerated students, although some problems were observed as well. In two studies on moderate early entrance programs, students were able to build satisfying new peer relationships, within the program at first and later on also outside the program (Muratori et al., 2003; Navan, 1998), even including those (three students) who felt seriously homesick (Muratori et al., 2003). Muratori et al. (2003) also reported that their young age was not important in their peer relationships, although for some students it had a negative effect on dating. Moreover, some of the students preferred to be treated by the program staff as regular-aged students because their age was very close to that of regular-aged students. The female students in Navan (1998) had a strong intrinsic motivation and a high degree of self-efficacy, but contrary to the students in the study of Muratori et al., they also experienced parental pressure on academic achievement. The 12 individually accelerated Australian students showed the same characteristics: a strong intrinsic motivation, support from family, active participation in extracurricular activities, the capacity to find new friends within the larger academic community, and no major drawbacks from their younger age (Young, 2010). However, for radically accelerated students it was more difficult to find new friends and participate in extracurricular activities than it was for moderately accelerated students. These problems were ascribed as due to legislative restrictions concerning alcohol consumption and driving a car. Two students experienced serious psychological problems, originating in primary or secondary school, that interfered with a smooth adjustment to university and for which they needed professional counseling (Young, 2010).

Satisfaction With Acceleration. Percentages of satisfaction with acceleration varied across studies. Some studies inquired after acceleration in general, whereas other studies

evaluated program satisfaction. Students at TAMS were very satisfied with acceleration, as 93% of them would choose early entrance again. Seven percent of TAMS students would not chose early entrance again, for the following reasons: lack of maturity in themselves or TAMS peers, missing relationships at home, academic disadvantages, and program stress (Boazman & Sayler, 2011). High levels of satisfaction were also reported at the UW, where 24 out of 27 female students were happy with their choice, 8 students expressed wanting to further accelerate their education, and 20 students reported they would make the same choice again (Noble & Smyth, 1995). Slightly lower satisfaction rates (64%, 39 students) were reported in an earlier study at this institution, before a Transition School was instituted to optimize the transfer to university (Noble et al., 1993). In this study, there were 7 students (11%) who had wanted more and 11 students (18%) who had wanted less acceleration. Reported drawbacks of acceleration were social isolation, family stress (Noble et al., 1993), difficulties with dating older regular-aged students (for female early entrants), and dealing with negative perceptions of acceleration (Noble & Smyth, 1995). Furthermore, Richardson and Benbow (1990) found that when 18-year old accelerated students were negative about the effects of acceleration on self-esteem, self-acceptance/identity, and social interaction, they also had more negative opinions on these effects when they were 23 years old, as compared with students who had reported neutral or positive effects when they were 18 years. As for the individual students at Purdue University, 72% of them would advise acceleration to other gifted students, whereas 16% would advise against it (Sayler, 1990).

Two qualitative studies underlined the social and academic benefits of acceleration. Muratori et al. (2003) observed that 6 out of 10 students were very happy they had skipped the last year of high school, 2 students expressed mixed feelings, and 2 students regretted acceleration, all due to missing relationships at home. As for the 12 Australian individually accelerated students interviewed by Young (2010), none of them, including the students who reported severe social–emotional problems, regretted acceleration. Rather, it gave them the opportunity to escape social isolation and academic boredom, and instead spend time with intellectual peers. These students would also advise other gifted students to shorten their time in school, under the condition that they have the right motivation and personal attitude. Accelerated students who had entered university without a high school diploma were just as satisfied as students who accelerated earlier in their school career and entered university in the regular way (Young, 2010).

Gender Differences. Five studies compared male and female accelerated gifted students on social–emotional characteristics. At the UW only minor differences were found between male and female students, as female students saw themselves as more socially skilled, more assertive, and less inhibited than male students. Female students also reported that acceleration had a more favorable effect on their social lives than did male students (Noble et al., 1993). No differences were found for the other social–emotional characteristics measured: not for the personality traits of risk taking, conservativeness, imagination, emotional stability, and introversion, or for the reported effect of acceleration on acceptance of abilities, ambition, emotional stability, and the ability to get along with age mates, mental peers, and adults. At the same institution, Janos et al. (1986) investigated whether male and female achievers (with Grade Point Average [GPA] above 3.0) and underachievers (GPA below 3.0) at the same program differed in personality traits and family environment. They found no differences in self-control, study habits, family environment, or extracurricular participation, but underachieving male students scored lower on responsibility, achievement via conformance, achievement via independence, and intellectual efficiency than high achieving male students, whereas for female students the effect was in the opposite direction (Janos et al., 1986).

Within the group of students with exceptional mathematical ability, Swiatek and Benbow (1991) investigated whether gender and amount of acceleration were related to self-esteem, locus of control, and extracurricular participation. They found that neither gender, nor the amount of acceleration were related to self-esteem or to the number of extracurricular activities, but students who had accelerated more than 1 year had a stronger internal locus of control than students who had accelerated only one year.

With regard to gender differences in individual students, Sayler (1990) found no differences in extracurricular activity, but female accelerated students had more, older, and closer friends than male accelerated students. This dating pattern was also observed in the Australian students, of whom more male students than female students never dated (Young, 2010).

Social–Emotional Characteristics of Accelerated University Students Compared With Those of Nonaccelerated Students

The second research question focused on differences in social–emotional characteristics of accelerated students as compared with nonaccelerated students. Information was found in 13 quantitative and mixed-method studies and one qualitative study (Navan, 1998). Ten studies compared accelerated students with regular-aged gifted university students, gifted high school students, or both. Comparing accelerated students with nonaccelerated university students is informative on whether accelerated students adapt differently at university, whereas comparing them to gifted nonaccelerated high school students is informative to find out whether accelerated students have social–emotional characteristics that support early entry to university. Ingersoll and Cornell (1995) included female nongifted university and

high school students as comparison groups, and three studies used normative data. Only five studies reported significant differences by means of effect sizes. The findings from the thirteen quantitative and mixed-method studies are listed in Table 4.

As Table 4 shows, studies from the UW compared early entrance students with nonaccelerated gifted university students and to gifted high school students who qualified for early entrance but chose not to accelerate. The nonaccelerated gifted students were on average 4 years older. Accelerated students did not differ from the other groups in self-concept, personality traits, moral development, or peer and parent attachment (Janos et al., 1989; Robinson & Janos, 1986). Robinson and Janos did not find differences in family environment between accelerated students and the other groups of students, whereas Janos et al. found that the family environment of accelerated students was less conventional than that of regular-aged gifted university students. Robinson and Janos also reported gender differences between accelerated students and norm data for gifted high school students that pointed to a less conventional self-representation among accelerated students. Noble et al. (1993) investigated self-beliefs, personality traits, and satisfaction with acceleration, and they found no differences in comparison with the gifted university students who earned national scholarships (NATs). However, compared with students who qualified for early entrance but chose to stay in high school (QUALs), accelerated students were more restrained, more introverted, more cautious, and had more self-doubts. This study also compared satisfaction of accelerated students with satisfaction of nonaccelerants: 77% of accelerated students were happy or had wanted more acceleration, whereas 67% of NATs and 73% of QUALs were satisfied with their school careers. Also five out of 27 NATs and 7 out of 36 QUALs had wanted to accelerate, whereas 11 out of 61 accelerated students reported they would have preferred less acceleration.

Two studies at the radical early entrance program of the LAC for women compared radically accelerated female students with nonaccelerated gifted age peers who were still in high school. The differences between the groups pointed to a more responsible attitude of the accelerated students, although they had lower self-acceptance and were more concerned with making a good impression (Cornell et al., 1991a). Franklin and Cornell (1997) found no differences in general self-worth, coping deficit, social adjustment, or emotional adjustment, but reported a higher level of autonomous thinking. They also reported elevated scores on depression and schizophrenia as measured with the Rorschach Inkblot Test, which the authors attributed to the highly creative minds of the students rather than to mental problems. Ingersoll and Cornell (1995) compared social adjustment of female accelerated students with nongifted university and high school students and found no differences in social confidence. Accelerated students and university students were just as active in social and solitary activities, and in conformance to social norms, but accelerated students felt they were less socially skilled and felt lower social support. Compared with high school students, accelerated students reported more solitary activity and less social activity, but did not differ in their levels of social support and social skill experienced.

Three studies from TAMS compared radically accelerated students with normative data for young adults and college students, and reported mostly small effect sizes. Boazman and Sayler (2011) and Hoggan (2008) found no differences in composite personal well-being or in the domains of community connectedness and standard of living. Both studies reported higher perceived levels of personal safety and lower levels of satisfaction with personal relationships for the accelerated students, while their future security and achievement in life were at the same level or higher. Furthermore, accelerated students were more serious and had a higher level of self-efficacy (Boazman & Sayler, 2011), but slightly lower self-esteem (Lupkowski et al., 1992) than the norm group. No large negative effect sizes were reported.

Within the group of SMPY students, accelerated and nonaccelerated or subject-accelerated students did not differ in self-esteem, locus of control (Brody & Benbow, 1987; Richardson & Benbow, 1990; Swiatek & Benbow, 1991), or extracurricular activity (Brody & Benbow, 1987; Swiatek & Benbow, 1991) measured at the age 18 and at age 23. At the age of 18 years, however, accelerated students were more open to change than nonaccelerated students and they were involved in other types of extracurricular activities within which they held fewer leadership positions (Brody & Benbow, 1987).

Finally, Navan (1998) found in her qualitative research that female accelerated students who had accelerated 1 year had higher self-efficacy, self-reflective abilities, and self-agency than nonaccelerated gifted students of the same age who were in high school.

To conclude, Table 4 shows that none of the studies investigated the same domains of social–emotional adjustment, but that in all comparisons between accelerated students and other students or youths, hardly any differences were found with regard to personal well-being, personality traits, social activity, or family environment and that, when significant differences were found, these were mostly small.

Changes in Social–Emotional Characteristics During University

The third research question focused on possible changes in social–emotional characteristics of accelerated students during their time at university. Findings from six studies using repeated measures are listed in Table 5. These findings show that, overall, self-concept was stable over the course of the first semester both for moderately accelerated students at Midwestern University (Shepard et al., 2009) and for radically accelerated students at TAMS (Lupkowski et al., 1992).

Table 4. Social–Emotional Characteristics of Accelerated Students Compared With Nonaccelerated Students and Normative Data.

Study	Comparison group	Outcome variable	Findings
EEP Texas Academy of Mathematics and Science			
Boazman (2010)	Gifted university students, i.e. honors students	Personality traits related to personal well-being	*Differences in correlations*: For accelerated students personal well-being was related to cheerfulness ($r = .32$), bad mood ($r = .38$), gratitude ($r = .29$), and hope-agency ($r = .31$). For honors students well-being was only related to hope-agency($r = .38$). *Differences in predictors, no effect size reported*: For accelerated students, personal well-being was predicted by hope-agency and lacking a disposition of bad mood, whereas for honors students only hope-agency was a predictor
Boazman and Sayler (2011)	Normative data of young adults and university students	Personality traits related to personal well-being	*No differences*: Cheerfulness, composite personal well-being, domains of personal well-being: standard of living, community connectedness, health *Higher scores, small effect*: Bad mood ($d = .16$), domains of personal well-being: personal safety $d = .36$, future security $d = .40$, achievement in life $d = .19$, life as a whole $d = .15$ *Higher scores, large effect*: Seriousness ($d = 0.81$), self-efficacy ($d = 1.0$) *Lower scores, small effect*: Personal relationships $d = -.19$
Hoggan (2008)	Normative data of young adults	Personality traits and family factors related to personal well-being	*No differences*: Composite personal well-being, domains of personal well-being: achievement in life, standard of living, community connectedness, future security *Lower scores, small effect*: Domains of personal well-being: health $d = -.25$, personal relationships, $d = -.34$. *Higher scores, large effect*: Domain of personal well-being: personal safety $d = .73$
Lupkowski et al. (1992)	Normative data of college students	Self-esteem	*Effects below cut-off for small effect*: T1 self-esteem (compared with 16- to 19-year, and to 20- to 34-year old students), T1 self-esteem of male ($d = .02$) and female ($d = -.18$) accelerated students (compared with male and female 16- to 34-year old students), T2 self-esteem: $d = -.15$ (compared with 16- to 19-year old students) *Lower scores, small effect*: T2 Self-esteem: $d = -.41$ (compared with 20- to 34-year old students), T2 self-esteem of male accelerated students ($d = -.24$) and female accelerated students ($d = -.41$)
EEP University of Washington			
Janos et al. (1989)	Two groups of gifted university students (REGs, NATs), and one group of gifted high school students (QUALs)	Self-concept Personality traits Family environment Parent and peer attachment	Compared with REGs, NATs, QUALs: *No differences*: Self-concept, dominance, capacity for status, sociability, social presence, self-acceptance, independence, empathy, responsibility, socialization, self-control, good impression, communality, well-being, tolerance, achievement via independence, achievement via conformance, intellectual efficiency, psychological mindedness, flexibility, femininity/masculinity, social maturity (full scale of CPI), moral development, parent and peer attachment Compared with NATs, QUALs: *No differences*: Family environment: cohesion, expressiveness, conflict, independence, achievement orientation, intellectual-cultural orientation, moral-religious orientation, control, organization (full scale of FES) Compared with REGs: *No differences*: Family environment: cohesion, expressiveness, conflict, intellectual-cultural orientation, moral-religious orientation, control, organization *Lower scores, no effect size reported*: Family environment: achievement orientation, moral/religious orientation

(continued)

Table 4. (continued)

Study	Comparison group	Outcome variable	Findings
Noble et al. (1993)	Two groups of gifted university students (NATs, QUALs)	Self-beliefs and -attitudes Personality traits Satisfaction with acceleration	Compared with NATs: *No differences*: Inhibition, risk taking, assertiveness, conservativeness, imagination, emotional stability, introversion, all 13 items on self-beliefs and -attitudes Compared with QUALs: *No differences*: assertiveness, conservativeness, imagination, emotional stability, 11 of 13 items on self-beliefs *Higher scores, no effect size reported*: Introverted *Lower scores, no effect size reported*: Inhibited, risk taking, 2 items on self-beliefs and -attitudes ("I feel I am a person of worth," "Most times I think that I am good")
Robinson and Janos (1986)	Two groups of gifted university students (REGs, NATs), and one group of gifted high school students (QUALs), and normative data	Self-concept Personality traits Parent and peer attachment	*No differences*: Self-concept, dominance, capacity for status, sociability, social presence, self-acceptance, well-being, responsibility, socialization, self-control, tolerance, good impression, communality, achievement via conformance, achievement via independence, intellectual efficiency, psychological mindedness, flexibility, femininity/masculinity (CPI), hypochondriasis, depression, hysteria, psychopathic deviate, masculinity/femininity, paranoia, psychasthenia, schizophrenia, hypomania, introversion, including validity scales L, F, and K (MMPI), parent and peer attachment *Significant differences, no effect size reported*: Female accelerated students scored higher on family environment: achievement via independence, and flexibility, and lower on responsibility and socialization than norm data (female gifted high school adolescents) male accelerated students scored higher on flexibility, femininity/masculinity than norm data (male gifted high school adolescents)
EEP Liberal Arts College			
Cornell et al. (1991a)	Gifted high school students, women	Personality traits	*No differences*: Dominance, capacity for status, sociability, social presence, independence, empathy, socialization, communality, well-being, tolerance, achievement via conformance, achievement via independence, intellectual efficiency, psychological mindedness, flexibility, femininity/masculinity *Higher scores, no effect size reported*: Responsibility, self-control, good impression *Lower scores, no effect size reported*: Self-acceptance
Franklin and Cornell (1997)	Gifted high school students, women	Personality traits	*No differences*: General self-worth, coping deficit, social adjustment (CPI), emotional adjustment (CPI) *Higher scores, no effect size reported*: Schizophrenia, depression, autonomous thinking, when controlling for IQ and age

(continued)

Table 4. (continued)

Study	Comparison group	Outcome variable	Findings
Ingersoll and Cornell (1995)	Nongifted university students and nongifted high school students (boarding school), women	Social conformity, social confidence, social activities, solitary activities, social support, social skill	*No differences*: Social skill, social confidence *Higher scores, large effect*: Social activity: $\eta^2 = .13$, social support $\eta^2 = .15$, solitary activity $\eta^2 = .25$, social conformity $\eta^2 = .33$, total social adjustment $\eta^2 = .26$, controlling for age and ability *Higher scores, no effect size reported*: Scholastic ability Compared with nongifted university students: *No differences*: social conformity, social confidence, social activity, solitary activity *Lower scores, no effect size reported*: Social support, social skill scores Compared with nongifted high school students (boarding school): *No differences*: social confidence, social support, or social skill *Higher scores, no effect size reported*: Solitary activities, social conformity *Lower scores, no effect size reported*: Social activity
Study of Mathematically Precocious Youth			
Brody and Benbow (1987)	SMPY participants, three groups varying in degree of acceleration (nonaccelerated, subject-accelerated, less than 1 year-accelerated)	Self-esteem Personality traits Motivation (locus of control) Extracurricular activities	Accelerated students compared with all groups: *No differences*: Self-esteem, locus of control, ACL (favorable and unfavorable adjectives checked, the 15 need scales, topical scales of self-control, self-confidence, personal adjustment, and ideal self), 16PFQ scale (except openness to change), extracurricular activities: school clubs, athletics, performing arts, and community organizations *Higher scores, no effect size reported*: Openness to change Compared with nonaccelerated students and subject-accelerated students: *Lower scores, no effect size reported*: Involvement in extracurricular community organizations Compared with less than 1 year accelerated students: *No differences*: Less involvement in extracurricular school clubs *Lower scores, no effect size reported*: Extracurricular activities, leadership and officer positions in extracurricular activities
Richardson and Benbow (1990)	SMPY participants, subject-accelerated	Self-esteem Self-acceptance/identity Motivation (locus of control) Social interaction	*No differences*: Self-esteem, locus of control, self-acceptance/identity, social interaction
Swiatek and Benbow (1991)	SMPY participants, nonaccelerated	Self-esteem Motivation (locus of control) Extracurricular activities	*No differences*: Self-esteem, locus of control, extracurricular activity

Table 5. Changes in Social–Emotional Characteristics of Accelerated Students During University.

Study	Time period	Outcome variable	Findings
EEP Texas Academy of Mathematics and Science			
Boazman (2010)	T1: Start first year T2: Start second year	Personal well-being	*No change*: Personal well-being
Hoggan (2008)	T1: Before first semester T2: After first semester	Personal well-being	*No change*: Composite personal well-being, domains of personal well-being: achieving, standard of living, community connectedness, security *Small decrease*: Domains of personal well-being: health $d = -.25$, personal relationships, $d = -.34$. *Large increase*: Domain of personal well-being: personal safety $d = .73$
Lupkowski et al. (1992)	T1: Start first semester T2: Start second semester	Self-esteem	No change: 19 of 25 Self-esteem items Small increase: Overall self-esteem, $d = .16$ Significant increase, no effect size reported: "things are all mixed up in my life," "I give in very easily," "I often feel upset with my work," "I get upset easily at home," "I usually feel as if my family is pushing me" Significant decrease, no effect size reported: "things don't usually bother me'"
EEP University of Washington			
Janos et al. (1989)	T1: Start first year T2: Start second year	Personality traits Peer relationships Family relationships	*No change*: Dominance, capacity for status, sociability, social presence, self-acceptance, independence, empathy, socialization, communality, well-being, achievement via independence, achievement via conformance, intellectual efficiency, psychological mindedness, flexibility, femininity/masculinity, social maturity (CPI index), parent and peer attachment (scale) *Significant increase, no effect size reported*: Responsibility, self-control, tolerance, good impression, moral development
EEP Liberal Arts College			
Cornell et al. (1991a)	T1: Start first year T2: End first year	Personality traits	*No change*: Dominance, capacity for status, sociability, communality, tolerance, achievement via conformance *Significant increase, no effect size reported*: Social presence, self-acceptance, independence, empathy, well-being, achievement by independence, intellectual efficiency, psychological mindedness, flexibility *Significant decrease, no effect size reported*: Responsibility, socialization, self-control, good impression, femininity/masculinity
EEP Midwestern University			
Shepard et al. (2009)	T1: Start first semester T2: Start second semester	Self-concept	*No change*: Total self-concept, self-concept domains: behavioral adjustment, intellectual and school status, freedom from anxiety, and popularity *Small increase*: Self-concept domain: physical appearance and attributes (Hedge's $g = 0.47$) *Medium increase*: Happiness and satisfaction (Hedge's $g = 0.54$)

Moreover, well-being of TAMS students was not affected at the end of the first semester (Hoggan, 2008), nor at the end of the first year (Boazman, 2010). The changes in a few personality traits reported by the gifted students who radically accelerated at the early entrance program at the UW revealed that students became more mature over the course of the first year (Janos et al., 1989). The personality traits of the female radically accelerated students at the LAC also changed over the course of the first year and indicated personality growth, increased maturity, and self-direction (Cornell et al., 1991a).

Additional quantitative information from three studies that retrospectively investigated how entering university had affected accelerated students social-emotionally, reported mostly positive effects for both students in an early entrance program (Noble et al., 1993; Noble & Smyth, 1995), and for individually accelerated students (Sayler, 1990). Radically accelerated students at the early entrance program at the UW mentioned increased self-acceptance and personal growth, as well as more satisfying social relationships (Noble & Smyth, 1995; Noble et al., 1993), family relationships, and motivation (Noble & Smyth, 1995). Individually accelerated students at Purdue University experienced favorable effects on self-acceptance, social life, and psychological adjustment (Sayler, 1990). These outcomes were corroborated by three qualitative studies that observed positive effects on self-esteem, resilience, peer relationships (Navan, 1998), family relationships of accelerants in moderate early entrance programs (Muratori et al., 2003), and on self-acceptance, personal growth, social life, and peer relationships for individually accelerated students in Australia (Young, 2010).

Factors Related to Adjustment in University and Well-Being

To answer the fourth research question on factors related to adjustment in university and well-being of accelerated students, findings of six quantitative studies are presented in Table 6. For mathematically talented students who radically accelerated at TAMS, self-concept and family environment were correlated to overall adjustment to university and to domains of adjustment. Furthermore, a combination of family factors and overall self-concept predicted adjustment, over and above the influence of demographic variables and academic ability (Caplan et al., 2002). More specifically, family cohesion, conflict, and expressiveness, as well as overall self-concept predicted overall adjustment to college. With regard to factors correlated to personal well-being, Hoggan (2008) and Boazman (2010) found several, for example, cheerfulness, gratitude, hope-agency, good mood, goal orientation, resilience, permissive parenting style (low in control and high in warmth), and first semester GPA. Some of these factors could predict personal well-being: students from a permissive family environment, who excelled in high school academically and who were resilient in adapting to the new environment, had a higher sense of well-being than students without these attributes (Hoggan, 2008), as had students with higher levels of good mood and hope (Boazman, 2010). At the LAC, Cornell et al. (1991b) examined adjustment of radically accelerated female students and found that responsibility, social self-confidence, self-perception of physical appearance, scholastic competence, and social acceptance were positively correlated to various domains of adjustment. Adjustment was also moderately positively correlated to family harmony and communication with mother. In addition, adjustment—as measured in mental health, peer adjustment, behavioral adjustment, and program satisfaction—could be predicted by a combination of personality and family factors.

Additional insights came from three qualitative studies that underlined the importance of peer and family relationships for adjustment to university and well-being of accelerated students. For moderately accelerated students in an early entrance program, their residence hall experiences and extracurricular activities were important factors in establishing new friendships, which led to stronger networks of friends, but students with attachments at home found it more difficult to adjust to university. Furthermore, adjustment was also facilitated by positive learning experiences (Muratori et al., 2003). Navan (1998) found that accelerated girls who dared to take affective risks and connect to new people were more successful in establishing peer relationships in their new early entrance environment. With regard to individually accelerated students in Australia, Young (2010) also reported that participation in clubs in and outside of the university was important in establishing friendships and in adjusting to their new environments, but commuting and being underage made this more difficult. Young (2010) also reported that support from family was essential for the social–emotional adjustment of individually accelerated students.

Discussion

Reviewing the body of research on the social–emotional characteristics and adjustment of accelerated students in university, two issues stand out. First, almost all of the primary studies were incomplete in reporting the previous acceleration experiences of the students. Due to this lack of information and the fact that only two studies investigated individually accelerated students, it was not possible to draw firm conclusions on the relation between form, timing, and amount of acceleration and the social–emotional characteristics and adjustment of the students. Second, 80% of the total sample consisted of accelerated students with exceptional ability and interest in mathematics and science, as investigated in the research from SMPY, TAMS, and by Navan (1998). For the most part, these studies investigated the same social–emotional characteristics as studies on accelerated students without mathematical talents, and the outcomes were comparable. Personality traits of goal orientation, resilience, bad mood, gratitude, cheerfulness, and hope orientation as

Table 6. Correlations and Predictors of Adjustment to University, College, and Personal Well-being of Accelerated Students.

Study	Program	Predictor variable	Outcome variable	Findings
Boazman (2010)	TAMS	*Personality traits*: Cheerfulness, bad mood, gratitude, hope-agency	Personal well-being	*Moderate correlation*: Cheerfulness, $r = .32$; bad mood, $r = .38$; gratitude, $r = .29$; hope-agency, $r = .31$ *Regression model with predictors*: Cheerfulness; gratitude, hope-agency, bad mood *Nonsignificant predictors*: Cheerfulness; gratitude *Medium effect predictor*: Hope-agency, Partial $\eta^2 = .086$; lacking a disposition of bad mood, Partial $\eta^2 = .076$.
Caplan et al. (2002)	TAMS	*Self-concept*: Total self-concept and domains: physical, moral, personal, family, social *Family environment*: Cohesion, expressiveness, conflict, independence, achievement orientation, intellectual-cultural orientation, moral-religious orientation, control, organization	Overall adjustment to college	*No correlation*: Family environment: expressiveness, achievement orientation, moral-religious orientation, control, organization *Weak correlation*: Family cohesion, independence, intellectual-cultural orientation, active-recreational orientation *Moderate correlation*: Family conflict (negative), total self-concept, self-concept subscales: physical, moral, personal, family, social *Regression model with predictors*: gender, age, SES, Caucasian, non-Caucasian, SAT-total, family cohesion, family conflict, family expressiveness, and total self-concept: $R^2 = .292$ *Medium effect predictor*: Family conflict $\beta = -.21$ (within the total regression model) *Large effect predictor*: Total self-concept $\beta = .51$ (within the total regression model)
			Social adjustment	*No correlation*: Family environment: cohesion, expressiveness, intellectual-cultural orientation, moral-religious orientation, control, organization *Weak correlation*: Family conflict (negative), independence, achievement orientation (negative), self-concept subscales: moral, family *Moderate correlation*: Active-recreational orientation, total self-concept, self-concept subscales: physical, personal, social
			Personal–emotional adjustment	*No correlation*: Family environment: expressiveness, achievement orientation, moral-religious orientation, control, organization *Weak correlation*: Family cohesion, independence, intellectual-cultural orientation, active-recreational orientation, self-concept subscales: moral, family *Moderate correlation*: Family conflict (negative), total self-concept, self-concept subscales: physical, personal, social
			Institutional attainment	*No correlation*: Family environment: expressiveness, achievement orientation, moral-religious orientation, control, organization *Small correlation*: Family cohesion, independence, intellectual–cultural orientation, active-recreational orientation *Moderate correlation*: Family conflict (negative), total self-concept, self-concept subscales: physical, moral, personal, family, social
Hoggan (2008)	TAMS	*Personality traits*: Goal orientation, resilience, intelligence beliefs *Family environment*: Cohesion, expressiveness, conflict, independence, achievement orientation, intellectual-cultural orientation, moral-religious orientation, control, organization *Parent authority*: Permissive, authoritarian, authoritative	Personal well-being	*No correlation*: Ninth grade GPA; intelligence beliefs; parental authority style: permissive, authoritarian, authoritative; family environment dimensions: relationship, personal growth, system maintenance *Moderate correlation*: goal orientation, $r = .41$; resilience, $r = .34$; Fall GPA, $r = .23$ *Predictor model*: SAT, ninth-grade GPA, system maintenance, permissive, authoritative, and authoritarian parenting style, resilience, goal orientation and intelligence beliefs, $R^2 = .36$ *Medium effect predictor*: Ninth-grade GPA $\beta = .363$; resilience $\beta = .325$; permissive parenting style $\beta = .386$ (within the model)

(continued)

Table 6. (continued)

Study	Program	Predictor variable	Outcome variable	Findings
Cornell et al. (1991b)	EEP Liberal Arts College	*Self-perception*: Domains: scholastic competence, social acceptance, physical appearance, athletic appearance *Personality traits*: Overall adjustment, interpersonal interest, social self-confidence, responsibility *Family environment*: Harmony, order, independence, achievement orientation, intellectual-cultural orientation, active-recreational orientation, moral-religious emphasis *Parent-adolescent communication*: Mother, father	Mental adjustment	*Moderate correlation*: Communication with mother; family environment: harmony, independence, active-recreational orientation *Predictor, no effect size reported*[a]: Family environment: active-recreational orientation, independence, communication with mother
			Peer adjustment	*Moderate correlation*: Social self-confidence; self-perception of social acceptance; family environment: order *Predictor, no effect size reported*[a]: Social self-confidence, self-perception of social acceptance, family environment: order, moral-religious orientation, active-recreational orientation
			Behavioral adjustment	*Moderate correlation*: Social self-confidence, self-perception of scholastic competence, self-perception of physical appearance, communication with mother, family environment: harmony *Strong correlation*: Responsibility *Predictor, no effect size reported*[a]: Responsibility, social self-confidence, self-perception of physical appearance, self-perception of scholastic competence, communication with mother, family environment: harmony
			Program satisfaction	*Strong correlation*: Family environment: order, harmony *Moderate correlation*: Interpersonal interest, social self-confidence, communication with mother *Predictor, no effect size reported*[a]: Interpersonal interest, social self-confidence, family environment: order
Shepard et al. (2009)	EEP Midwestern University	*Academic variables*: GPA, ACT, first semester academic outcomes	Self-concept	*No correlation*: Between high school GPA, ACT and T1 self-concept *No correlation*: Between first semester academic outcomes and T2 self-concept
Richardson et al. (1990)	SMPY	*Demographic variables*: Gender *Academic variables*: 7th/8th SAT- M, 7th/8th SAT-V	Self-acceptance/ identity Self-esteem Locus of control Social interaction	*No correlation*: Gender; perceived social–emotional effects at age 18 were not correlated to locus of control at age 23 *Significant, no effect size reported*: Perceived social–emotional effects at age 18 were correlated to self-esteem, self-acceptance/identity, social interaction at age 23 (students who reported no effect or positive effects at age 18 had higher self-esteem, self-acceptance/identity, and levels of social interaction at age 23)

Note. SAT = Scholastic Aptitude Test; GPA = Grade Point Average; ACT = American College Testing; SES = socioeconomic status; EEP = Early Entrance to College Program (general term); SMPY = Study of Mathematically Precocious Youth; TAMS = Texas Academy of Mathematics and Science, University of North Texas.
[a]Predictor variables resulted from stepwise regression analysis of all predictor variables.

well as personal well-being were investigated only in TAMS students who scored the same or at a higher level compared with normative data of young adults. It remains unclear whether these outcomes are generalizable to other accelerated students without mathematical talents.

Conclusions with regard to the research questions are fourfold. First, the large majority of university students who accelerated in K-12 displayed personality traits that gave no cause for alarm, had satisfying peer and family relationships, participated in extracurricular activities, and were satisfied with acceleration, even those students who reported social–emotional problems. Minor differences were found in social activity between male and female students.

Second, accelerated university students did not differ very much in domains of social–emotional characteristics from their gifted nonaccelerated peers at university. Even the youngest, radically accelerated students who lived at home during the 1-year early entrance program of the UW had similar personality traits to the most outstanding nonaccelerated university students who had earned scholarships for outstanding academic performance. This is a noteworthy outcome, taking into consideration that these accelerated university students were approximately 4 years younger than regular-aged university students. This may indicate that accelerated students are ahead of their age social-emotionally. Also, accelerated university students appeared to be more self-directed and less conventional than gifted nonaccelerated high school students of the same age. These personal attributes may have facilitated both their choice for acceleration and their adjustment to university.

Third, changes in social–emotional characteristics between the start of university and the first semester (or first year) indicate that accelerated students of all types experience personality growth and maturation in university, and that they adapt well to the demands of the university environment. Many students felt that entering university at an early age positively affected their self-acceptance and social life. Facilitative in the process of social–emotional adjustment may be that accelerated students were self-effective, resilient, and open to change. Reported problems were mostly temporary and seemed to be related to the features of the early entrance program or to legislative restrictions, rather than to a deficiency in social–emotional development in the students.

Finally, with regard to factors that predict adjustment and well-being, personality traits and family characteristics seem to be more important than demographic and academic variables. Confident, resilient, and cheerful accelerated students with a supportive family adjusted better to the academically and socially challenging university life than accelerated students without these traits and support.

The outcomes of the primary studies in the current review study are in line with those of numerous studies on adjustment to university of nonaccelerated first-year students (e.g., Elliott, 2016; McGhie, 2017; Scager et al., 2012; Van Rooij et al., 2017). They are also in line with a systematic review on predictors of social–emotional well-being of nonaccelerated first-year students (Van der Zanden et al., 2018) and with a meta-analytic study on the Student Adjustment to College Questionnaire (Credé & Niehorster, 2012). Van der Zanden et al. (2018) found that students' well-being was related to self-efficacy, coping skills, sense of belonging, affect, participation in special first-year programs, previous academic achievement, intrinsic motivation, social relationships, and participation in social and extracurricular activities. In particular, factors within the student, such as students' coping self-efficacy and affect, were related to social–emotional well-being. Credé and Niehorster (2012) concluded that overall adjustment was moderately related to individual traits, such as conscientiousness, self-efficacy, an internal locus of control, and self-esteem, to social support, and to students' relationships with their parents. Extraversion and social support from peers were factors that were more strongly related to social adjustment than to other domains of adjustment. To conclude, based on the current review, factors related to adjustment and well-being of accelerated university students are comparable to those of nonaccelerated university students.

Limitations

The outcomes of the current review study need to be interpreted with care for a number of reasons, most of which relate to the quality of the primary research studies. First, the included studies differed in methodological quality, from adequate to good. The methodological quality of the studies on factors related to adjustment and well-being was higher than that of studies on changes during university, and higher than studies that compared accelerated students with nonaccelerated students. The conclusions should be interpreted likewise. Second, seven studies were based completely or partly on questionnaires specifically designed for the goals of the study without reporting the validity and reliability of those questionnaires. This may have resulted in more favorable outcomes in the reviewed studies than would have resulted from standardized tests (Kimberlin & Winterstein, 2008). Besides, some standardized tests with proven reliability for a general population were not reliable for a gifted population (Boazman, 2010; Franklin & Cornell, 1997, Sayler et al., 2015). This also may have influenced the outcomes of the current review study in a favorable way. Third, the number of students that participated in the primary research studies was in reality smaller than the given total sample size of 2,803 accelerated university students, due to overlapping samples in studies from the UW, the LAC, and SMPY. This reduces the foundation for the conclusions.

Fourth, the most recent study on accelerated university students was 6 years old at the time of the database search and almost 70% of the included studies were more than two decades old, including all of the studies from the UW, the

LAC, and SMPY. This could be attributable to the fact that most early entrance programs were developed between 1977 and 2000. After research showed that the accelerated students adjusted well socially as well as emotionally, the urge to investigate student's social–emotional adjustment may have disappeared, given that most of the programs did not change significantly once they were well established. However, in 2001, the UW added an extra program for gifted students who had finished 2 years of high school, the UW Academy for Young Scholars. One study that compared students at this Academy and students at the Early Entrance Program (Noble & Childers, 2008) complied with the inclusion criteria, but was deleted from the final selection for methodological reasons. The authors concluded that both groups of accelerated students needed a period of academic transitioning in a supportive environment with a peer group and support from staff and parents, but older students at the Academy had a greater need for independence, whereas the younger students at the Early Entrance Program needed more guidance and a more intensive academic program for a smooth transition to university (Noble & Childers, 2008). Additionally, more recent research found that graduates from the UW who had participated in the early entrance program experienced social benefits from entering university early (Hertzog & Chung, 2015; Mammadov et al., 2018). More recent research from SMPY was scarce, and had a longitudinal design that was not focused on the social–emotional development of accelerated mathematically precocious students, but rather on effects on the professional lives and academic accomplishments of the former participants in SMPY. This research showed that grade-based acceleration had a lasting effect on the productivity of those pursuing careers in science, technology, engineering, and mathematics (e.g., Lubinski & Benbow, 2020; Park et al., 2013). To conclude, the lack of recent research on the social–emotional lives of accelerated university students limits the generalizability of the outcomes of the current review.

Next, there are two limitations related to the methodological and analytical choices of the authors. First, in order to understand the social–emotional characteristics of individually accelerated students, one Australian study (Young, 2010) was included, next to 21 studies from the United States of America. This limits the generalizability of the conclusions due to differences in educational programming for gifted students worldwide. Second, both quantitative and qualitative studies were investigated in the current review and even though they were not valued similarly, the outcomes of the qualitative studies may have been overemphasized, taking into consideration that populations in qualitative studies are by definition much smaller than in quantitative studies (Queirós et al., 2017). Still the qualitative studies provided insights into the characteristics and experiences of accelerated students described under the first research question, and added to the other three research questions for which the quantitative and mixed-model studies were most informative.

Future Research

The current review study uncovered several directions for future research. First, most of the primary studies in the current review focused on the effects of newly developed programs for gifted students and did not take the prior educational paths of accelerated students into account when researching the social–emotional adjustment of accelerated university students. At present, a wide range of special programs is available for gifted students, and these are aimed to suit these gifted students at different times in their academic and social–emotional development (e.g., Kim, 2016; Steenbergen-Hu et al., 2020; Wai & Allen, 2019). Therefore, to evaluate the effect of multiple experiences with acceleration and other forms of gifted education, in future research the participants' prior educational paths and experiences with gifted education programs should be reported.

Second, future research should be conducted to provide insights into the relation between the form, timing, and amount of acceleration and the social–emotional characteristics and adjustment of university students who experienced group acceleration in an early entrance to university program, in comparison with individually accelerated students. Based on the current review, various factors should be considered. For instance, individually accelerated students did not have a peer group of other accelerated students like students who enter university via an early entrance program. However, these individually accelerated students were on average older than accelerated students in early entrance programs and this may have facilitated their social–emotional adjustment. Also, individually accelerated students mostly skipped grades in primary education and, as a result, spent most of their schooling with older peers. Thus, entering university after graduating from high school was the next logical step for them as it was for their peers in high school. Contrary to this gradual transition is the sudden propelling into university experienced by gifted high school students who were admitted to an early entrance to university program. For these very young accelerated students, the transition to university was smoothened by the academic and social environment with gifted age peers as well as the support system of the early entrance program. Future research should contribute to understanding the mechanisms and effects of acceleration.

Third, future research needs to focus more on individually accelerated students, as only two studies investigated these students (Sayler, 1990; Young, 2010). Such research is needed to gain more knowledge about the types of educational adaptations that are effective for these students, the timing of acceleration, and whether possible subtypes of individually accelerated students can be distinguished. Research on individually accelerated students is also important from an international perspective, because most countries that facilitate grade-based acceleration do not offer group acceleration in secondary education by means of early entrance to university programs, but instead offer individual acceleration mostly in primary education. If gifted students can accelerate at an

early age and receive additional gifted education in secondary school if needed, they may experience an educational fit early in their school career and may be better prepared for early entrance to university, together with their peers from high school.

Fourth, future research on individually accelerated students should include multiple comparison groups. For instance, it would be interesting to compare individually accelerated students with gifted students for whom acceleration was once considered but not practiced. Such research could contribute to understanding the characteristics of the two groups of students as well as the effects of acceleration. It would also be interesting to compare accelerated students with university students not identified as gifted, and to investigate whether accelerated students adjust differently from nonidentified students and whether additional support services would be needed for individually accelerated students.

Fifth, it would be worthwhile to compare more thoroughly the social adjustment of male and female accelerated students, as the current review showed indications that social adjustment was easier for female students than for male students. Gender differences in social self-concept were also reported in studies on accelerated students in secondary education (e.g., Hoogeveen et al., 2012). Also, the big-fish-little-pond effect may be of influence, as the academic self-concept of girls, but not that of boys, was negatively influenced by the percentage of boys in the class (Preckel et al., 2008). Future research on gender differences would be worthwhile to explore whether such effects can also be found for social–emotional characteristics.

Finally, the current review study found that a minority of accelerated students experienced problems in social–emotional adjustment and that a small group of accelerated students dropped out in their first year at an early entrance program. Future research needs to compare these outcomes with problems and drop out percentages of nonaccelerated university students, in order to find out whether accelerated students drop out more than regular-aged students.

Implications for Practice

Given the limitations of the current review study, some implications for practice can be made. The first implication concerns the identification of gifted students who would benefit from acceleration. The vigorous selection criteria for admission to an early entrance to university program, including outstanding academic achievement, teacher recommendations, interviews with students and their families, and the students' own motivation, excludes students who do not fit these criteria. However, this does not mean that gifted students who do not meet these criteria would not also benefit from being admitted to an early entrance program, as low academic achievement and social–emotional problems can result from chronic educational malnourishment when the learning needs of a gifted student are not met (Cross, 2014; Gross, 2006; Gross & Van Vliet, 2005). Therefore, a broad perspective on selection criteria for acceleration is needed to include gifted students with poorer academic achievement, social–emotional problems, or a less harmonious or supportive family environment. Such a broad perspective would also need to include gifted students from ethnic minorities, who are underrepresented in the research on gifted education (Henfield et al., 2016) and on acceleration as evident from the current review, and who skip a whole grade later than White students (Kuo & Lohman, 2011).

Another implication is that university staff should become aware of the presence of individually, moderately accelerated students within their academic community and offer these highly talented young students the educational opportunities they desire. Universities could identify these students and invite them for a personal meeting with an academic advisor. This would serve three purposes: first, universities can actively contribute to the talent development of the accelerated students and encourage them not only to pursue academic goals but also to participate actively in extracurricular activities. Second, students can find support from university staff more easily if needed, which may be especially important for students with lower social–emotional well-being or support from family. Finally, meeting the accelerated young students at the start of their university career would provide universities with information for policy development on accelerated students. This would contribute to a smooth transition of these individually accelerated students from secondary education to university, and provide them with the optimal position to make the most of their talents during their years in university.

Declaration of Conflicting Interests

The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

Funding

The author(s) received no financial support for the research, authorship, and/or publication of this article.

Open Science Disclosure Statement

The data for this systematic review are the articles marked in the reference list as such and summarized in Appendix B. The criteria for methodological quality is provided in Appendix A and described in the article. There were no newly created, unique materials used to conduct the research.

ORCID iDs

Jolande Schuur https://orcid.org/0000-0001-6205-5515
Evelyn H. Kroesbergen https://orcid.org/0000-0001-9856-096X

Supplemental Material

Supplemental material for this article is available online.

References

References marked with an asterisk (*) indicate studies included in the systematic review.

References marked with a caret (^) indicate studies that complied with the inclusion criteria, but not with the criteria for methodological quality.

APA Dictionary of Psychology. (n.d.). https://dictionary.apa.org

Assouline, S. G., Colangelo, N., VanTassel-Baska, J., & Lupkowski-Shoplik, A. (Eds.). (2015). *A nation empowered: Evidence trumps the excuses holding back America's brightest students* (Vol. 2). University of Iowa.

Bicknell, B., & Riley, T. (2013). Gifted and talented education in New Zealand schools: A decade later. *APEX: The New Zealand Journal of Gifted Education*, *18*(1), 1-16. https://researchcommons.waikato.ac.nz/handle/10289/8872

*Boazman, J. K. (2010). *Well-being and academic success in gifted college students: Early-college entrants and honors college students* (Publication No. 860121434) [Doctoral dissertation, University of North Texas]. ProQuest Dissertations Publishing Database.

*Boazman, J. K., & Sayler, M. F. (2011). Personal well-being of gifted students following participation in an early college-entrance program. *Roeper Review*, *33*(2), 76-85. https://doi.org/10.1080/02783193.2011.554153

*Brody, L. E., & Benbow, C. P. (1987). Accelerative strategies: How effective are they for the gifted? *Gifted Child Quarterly*, *31*(2), 105-110. https://doi.org/10.1177/001698628703100302

^Brody, L. E., Lupkowski, A. E., & Stanley, J. C. (1988). Early entrance to college: A study of academic and social adjustment during the freshman year. *College and University*, *63*(4), 347-359.

Brody, L. E., & Muratori, M. C. (2015). Early entrance to college: Academic, social, and emotional considerations. In S. G. Assouline, N. Colangelo, J. VanTassel-Baska, & A. Lupkowski-Shoplik (Eds.), *A nation empowered: Evidence trumps the excuses holding back America's brightest students* (Vol. 2, pp. 153-167). University of Iowa.

Brody, L. E., Muratori, M. C., & Stanley, J. C. (2004). Early entrance to college: Academic, social, and emotional considerations. In N. Colangelo, S. G. Assouline, & M. U. M. Gross (Eds.), *A nation deceived: How schools hold back America's brightest students* (Vol. 2, pp. 97-107). University of Iowa.

*Caplan, S. M., Henderson, C. E., Henderson, J., & Fleming, D. L. (2002). Socioemotional factors contributing to adjustment among early-entrance college students. *Gifted Child Quarterly*, *46*(2), 124-134. https://doi.org/10.1177/001698620204600205

Cohen, J. (1992). A power primer. *Quantitative Methods in Psychology*, *112*(1), 155-159. https://doi.org/10.1037/0033-2909.112.1.155

*Cornell, D. G., Callahan, C. M., & Loyd, B. H. (1991a). Personality growth of female early college entrants: A controlled, prospective study. *Gifted Child Quarterly*, *35*(3), 135-143. https://doi.org/10.1177/001698629103500305

*Cornell, D. G., Callahan, C. M., & Loyd, B. H. (1991b). Socioemotional adjustment of adolescent girls enrolled in a residential acceleration program. *Gifted Child Quarterly*, *35*(2), 58-66. https://doi.org/10.1177/001698629103500202

Credé, M., & Niehorster, S. (2012). Adjustment to college as measured by the student adaptation to college questionnaire: A quantitative review of its structure and relationships with correlates and consequences. *Educational Psychology Review*, *24*(1), 133-165. https://doi.org/10.1007/s10648-011-9184-5

Cross, T. L. (2014). Social emotional needs: The effects of educational malnourishment on the psychological well-being of gifted students. *Gifted Child Today*, *37*(4), 264-265. https://doi.org/10.1177/1076217514544032

Elliott, D. C. (2016). The impact of self beliefs on post-secondary transitions: The moderating effects of institutional selectivity. *Higher Education*, *71*, 415-431. https://doi.org/10.1007/s10734-015-9913-7

^Firpo, N.-D. T. D. (2008). *The experience of graduates from early college entrance programs* (Publication No. 304674626) [Doctoral dissertation, Claremont Graduate University]. ProQuest Dissertations Publishing Database.

*Franklin, K. W., & Cornell, D. G. (1997). Rorschach interpretation with high-ability adolescent females: Psychopathology or creative thinking? *Journal of Personality Assessment*, *68*(1), 184-196. https://doi.org/10.1207/s15327752jpa6801_15

Gross, M. U. M. (1992). The use of radical acceleration in cases of extreme intellectual precocity. *Gifted Child Quarterly*, *36*(1), 91-99. http://doi.org/10.1177/001698629203600207

Gross, M. U. M. (2006). Exceptionally gifted children: Long-term outcomes of academic acceleration and nonacceleration. *Journal for the Education of the Gifted*, *29*(4), 404-429. https://doi.org/10.4219/jeg-2006-247

Gross, M. U. M., & Van Vliet, H. E. (2005). Radical acceleration and early entry to college: A review of the research. *Gifted Child Quarterly*, *49*(2), 154-171. https://doi.org/10.117/001698620504900205

Heinbokel, A. (1997). Acceleration through grade skipping in Germany. *High Ability Studies*, *8*(1), 61-77. https://doi.org/10.1080/1359813970080106

Henfield, M. S., Woo, H., & Bang, N. M. (2016). Gifted ethnic minority students and academic achievement: A meta-analysis. *Gifted Child Quarterly*, *61*(1), 3-19. https://doi.org/10.1177/0016986216674556

Hertzog, N. B., & Chung, R. U. (2015). Outcomes for students on a fast track to college: Early college entrance programs at the University of Washington. *Special Issue: Early College Entrance Programs*, *37*(1), 39-49. https://doi.org/10.1080/02783193.2014.976324

*Hoggan, B. (2008). *Success factors among early college entrants* (Publication No. 304539775) [Doctoral dissertation, University of North Texas]. ProQuest Dissertations Publishing Database.

Hoogeveen, L. (2015). Academic acceleration in Europe: A comparison of accelerative opportunities and activities. In S. G. Assouline, N. Colangelo, J. VanTassel-Baska, & A. Lupkowski-Shoplik (Eds.), *A nation empowered: Evidence trumps the excuses holding back America's brightest students* (Vol. 2, pp. 209-223). University of Iowa.

Hoogeveen, L., van Hell, J. G., & Verhoeven, L. (2005). Teacher attitudes toward academic acceleration and accelerated students in the Netherlands. *Journal for the Education of the Gifted*, *29*(1), 30-59. https://doi.org/10.1177/016235320502900103

Hoogeveen, L., van Hell, J. G., & Verhoeven, L. (2012). Social-emotional characteristics of gifted accelerated and non-accelerated students in the Netherlands. *British Journal of Educational Psychology*, *82*(4), 585-605. https://doi:10.1111/j.2044-8279.2011.02047.x

Ingersoll, K. S., & Cornell, D. G. (1995). Social adjustment of female early college entrants in a residential program. *Journal for the Education of the Gifted*, *19*(1), 45-62. https://doi.org/10.1177/016235329501900104

^Janos, P. M., Robinson, N. M., Carter, C., Chapel, A., Cufley, R., Curland, M., Daily, M., Guilland, M., Heinzig, M., Kehl, H., Lu, S., Sherry, D., Stoloff, J., & Wise, A. (1988). A cross-sectional developmental study of the social relations of students who enter college early. *Gifted Child Quarterly*, *32*(1), 210-215. https://doi.org/10.1177/001698628803200105

*Janos, P. M., Robinson, N. M., & Lunneborg, C. E. (1989). Markedly early entrance to college: A multi-year comparative study of academic performance and psychological adjustment. *Journal of Higher Education*, *60*(5), 495-518. https://doi.org/10.2307/1982264

*Janos, P. M., Sanfilippo, S. M., & Robinson, N. M. (1986). "Underachievement" among markedly accelerated college students. *Journal of Youth and Adolescence*, *35*(5), 58-66. https://doi.org/10.1007/BF02145727

Jung, J. Y., & Gross, M. U. M. (2015). Radical acceleration. In S. G. Assouline, N. Colangelo, J. VanTassel-Baska, & A. Lupkowski-Shoplik (Eds.), *A nation empowered: Evidence trumps the excuses holding back America's brightest students* (Vol. 2, pp. 199-208). University of Iowa.

Kanevsky, L. S., & Clelland, D. (2013). Accelerating gifted students in Canada: Policies and possibilities. *Canadian Journal of Education*, *36*(3), 229-271. https://journals.sfu.ca/cje/index.php/cje-rce/article/view/1201

Kim, M. (2016). A meta-analysis of the effects of enrichment programs on gifted students. *Gifted Child Quarterly*, *60*(2), 102-116. https://doi.org/10.1177/0016986216630607

Kimberlin, C. L., & Winterstein, A. G. (2008). Validity and reliability of measurement instruments used in research. *American Journal of Health-System Pharmacy*, *65*(2), 2276-2284. https://doi.org/10.2146/ajhp070364

Kleinbok, O., & Vidergor, H. (2009). Grade skipping: A retrospective case study on academic and social implications. *Gifted and Talented International*, *24*(2), 21-38. https://doi.org/10.1080/15332276.2009.11673527

Kuo, Y.-L., & Lohman, D. F. (2011). The timing of grade skipping. *Journal for the Education of the Gifted*, *34*(5), 731-741. https://doi.org/10.1177/0162353211417219

Lubinski, D. (2004). Long-term effects of educational acceleration. In N. Colangelo, S. G. Assouline, & M. U. M. Gross (Eds.), *A nation deceived: How schools hold back America's brightest students* (Vol. 2, pp. 23-37). University of Iowa.

Lubinski, D., & Benbow, C. P. (2020). Intellectual precocity: What have we learned since Terman ? *Gifted Child Quarterly*. Advance online publication. https://doi.org/10.1177/0016986220925447

Lubinski, D., Webb, R. M., Morelock, M. J., & Benbow, C. P. (2001). Top 1 in 10,000: A 10-year follow-up of the profoundly gifted. *Journal of Applied Psychology*, *86*(4), 718-729. https://doi.org/10.1037/0021-9010.86.4.718

*Lupkowski, A. E., Whitmore, M., & Ramsay, A. (1992). The impact of early entrance to college on self-esteem: A preliminary study. *Gifted Child Quarterly*, *36*(2), 87-90. https://doi.org/10.1177/001698629203600206

Mammadov, S., Hertzog, N. B., & Mun, R. U. (2018). An examination of self-determination within alumni of an early college entrance program. *Journal for the Education of the Gifted*, *41*(3), 273-291. https://doi.org/10.1177/0162353218781745

McGhie, V. (2017). Entering university studies: Identifying enabling factors for a successful transition from school to university. *Higher Education*, *73*(3), 407-422. https://doi.org/10.1007/s10734-016-0100-2

*Muratori, M., Colangelo, N., & Assouline, S. (2003). Early-entrance students: Impressions of their first semester of college. *Gifted Child Quarterly*, *47*(3), 219-238. https://doi.org/10.1177/001698620304700306

*Navan, J. L. (1998). *Perceptions of efficacy of gifted young women in different learning environments* (Publication No. 304488297) [Doctoral dissertation, University of Ottawa]. ProQuest Dissertations Publishing Database.

Neihart, M. (2007). The socioaffective impact of acceleration and ability grouping: Recommendations for best practice. *Gifted Child Quarterly*, *51*(4), 330-341. https://doi.org/10.1177/0016986207306319

^Noble, K. D., Arndt, T., Nicholson, T., Sletten, T., & Zamora, A. (1999). Different strokes: Perceptions of social and emotional development among early college entrants. *Journal of Secondary Gifted Education*, *10*(2), 77-84. https://doi.org/10.1177/1932202X9801000204

^Noble, K. D., & Childers, S. A. (2008). A passion for learning: The theory and practice of optimal match at the University of Washington. *Journal of Advanced Academics*, *19*(2), 236-270. https://doi.org/10.4219/jaa-2008-774

^Noble, K. D., & Drummond, J. E. (1992). But what about the prom? Students' perceptions of early college entrance. *Gifted Child Quarterly*, *36*(2), 106-111. https://doi.org/10.1177/001698629203600209

*Noble, K. D., Robinson, N. M., & Gunderson, S. A. (1993). All rivers lead to the sea: A follow-up study of gifted young adults. *Roeper Review*, *15*(3), 124-130. https://doi.org/10.1080/02783199309553485

*Noble, K. D., & Smyth, R. K. (1995). Keeping their talents alive: Young women's assessment of radical, post-secondary acceleration. *Roeper Review*, *18*(1), 49-55. https://doi.org/10.1080/02783199509553697

Olszewski-Kubilius, P. (1995). A summary of research regarding early entrance to college. *Roeper Review*, *18*(2), 121-126. https://doi.org/10.1080/02783199509553712

Olszewski-Kubilius, P. (2004). Talent searches and accelerated programming for gifted students. In N. Colangelo, S. G. Assouline, & M. U. M. Gross (Eds.), *A nation deceived: How schools hold back America's brightest students* (Vol. 2, pp. 69-176). University of Iowa.

Park, G., Lubinski, D., & Benbow, C. P. (2013). When less is more: Effects of grade skipping on adult STEM productivity among mathematically precocious adolescents. *Journal of Educational Psychology*, *105*(1), 176-198. https://doi.org/10.1037/a0029481

Petticrew, M., & Roberts, H. (2006). *Systematic reviews in the social sciences: A practical guide*. Blackwell Publishing.

Preckel, F., Zeidner, M., Goetz, T., & Schleyer, E. J. (2008). Female "big fish" swimming against the tide: The "big-fish-little-pond effect" and gender-ratio in special gifted classes.

Contemporary Educational Psychology, *33*(1), 78-96. https://doi.org/10.1016/j.cedpsych.2006.08.001

Queirós, A., Faria, D., & Almeida, F. (2017). Strengths and limitations of qualitative and quantitative research methods. *European Journal of Education Studies*, *3*(9), 369-386. https://doi.org/10.5281/zenodo.887089

Richardson, T. M., & Benbow, C. P. (1990). Long-term effects of acceleration on the social-emotional adjustment of mathematically precocious youths. *Journal of Educational Psychology*, *82*(3), 464-470. https://doi.org/10.1037//0022-0663.82.3.464

Robinson, N. M. (1992). Radical acceleration in the People's Republic of China: Early entrance to university. *Roeper Review*, *14*(4), 189-192. https://doi.org/10.1080/02783199209553425

*Robinson, N. M., & Janos, P. M. (1986). Psychological adjustment in a college-level program of marked academic acceleration. *Journal of Youth and Adolescence*, *15*(1), 51-60. https://doi.org/10.1007/BF02140783

Rogers, K. B. (2004). Effects of academic acceleration on the social-emotional status of gifted students. In N. Colangelo, S. G. Assouline, & M. U. M. Gross (Eds.), *A nation deceived: How schools hold back America's brightest students* (Vol. 2, pp. 59-68). University of Iowa.

Rogers, K. B. (2015). The academic, socialization, and psychological effects of acceleration: Research synthesis. In S. G. Assouline, N. Colangelo, J. VanTassel-Baska, & A. Lupkowski-Shoplik (Eds.), *A nation empowered: Evidence trumps the excuses holding back America's brightest students* (Vol. 2, pp. 19-29). University of Iowa.

*Sayler, M. F. (1990). *Early college entrants at Purdue University: A study of their academic and social characteristics* [Unpublished doctoral dissertation]. Purdue University.

Sayler, M. F., Boazman, J., Natesan, P., & Periathiruvadi, S. (2015). Subjective well-being of gifted American college students: An examination of psychometric properties of the PWI-A. *Gifted Child Quarterly*, *59*(4), 236-248. https://doi.org/10.1177/0016986215597748

Scager, K., Akkerman, S. F., Keesen, F., Mainhard, M. T., Pilot, A., & Wubbels, T. (2012). Do honors students have more potential for excellence in their professional lives? *Higher Education*, *64*(1), 19-39. https://doi.org/10.1007/s10734-011-9478-z

^Sethna, B. N., Wickstrom, C. D., Boothe, D., & Stanley, J. C. (2001). The Advanced Academy of Georgia: Four years as a residential early-college-entrance program. *Journal of Secondary Gifted Education*, *13*(1), 11-21. https://doi.org/10.4219/jsge-2001-360

*Shepard, S. J., Nicpon, M. F., & Doobay, A. F. (2009). Early entrance to college and self-concept: Comparisons across the first semester of enrolment. *Journal of Advanced Academics*, *21*(1), 40-57. https://doi.org/10.1177/1932202X0902100103

Siegle, D., Wilson, H. E., & Little, C. A. (2013). A sample of gifted and talented educators' attitudes about academic acceleration. *Journal of Advanced Academics*, *24*(1), 27-51. https://doi.org/10.1177/1932202X12472491

Southern, W. T., & Jones, E. D. (2015). Types of acceleration: Dimensions and issues. In S. G. Assouline, N. Colangelo, J. VanTassel-Baska, & A. Lupkowski-Shoplik (Eds.), *A nation empowered: Evidence trumps the excuses holding back America's brightest students* (Vol. 2, pp. 9-18). University of Iowa.

Southern, W. T., Jones, E. D., & Fiscus, E. D. (1989). Practitioner objections to the academic acceleration of gifted children. *Gifted Child Quarterly*, *33*(1), 29-35. https://doi.org/10.1177/001698628903300105

Steenbergen-Hu, S., & Moon, S. M. (2011). The effects of acceleration on high-ability learners: A meta-analysis. *Gifted Child Quarterly*, *55*(1), 39-53. https://doi.org/10.1177/0016986210383155

Steenbergen-Hu, S., Olszewski-Kubilius, P., & Calvert, E. (2020). The effectiveness of current interventions to reverse the underachievement of gifted students: Findings of a meta-analysis and systematic review. *Gifted Child Quarterly*, *64*(2), 132-165. https://doi.org/10.1177/0016986220908601

*Swiatek, M. A., & Benbow, C. P. (1991). Ten-year longitudinal follow-up of ability-matched accelerated and unaccelerated gifted students. *Journal of Educational Psychology*, *83*(4), 528-538. https://doi.org/10.1037/0022-0663.83.4.528

^Swiatek, M. A., & Benbow, C. P. (1992). Nonintellectual correlates of satisfaction with acceleration: A longitudinal study. *Journal of Youth and Adolescence*, *21*(6), 699-723.

Tabachnick, B. G., & Fidell, L. S. (2007). *Using multivariate statistics*. Pearson.

Van der Zanden, P. J. A. C., Denessen, E., Cillessen, A. H. N., & Meijer, P. C. (2018). Domains and predictors of first-year student success: A systematic review. *Educational Research Review*, *23*(January), 57-77. https://doi.org/10.1016/j.edurev.2018.01.001

Van Rooij, E. C. M., Jansen, E. P. W. A., & van de Grift, W. J. C. M. (2017). First-year university students' academic success: The importance of academic adjustment. *European Journal of Psychology of Education*, *33*(4), 749-767. https://doi.org/10.1007/s10212-017-0347-8

VanTassel-Baska, J., & Brown, E. F. (2007). Toward best practice: An analysis of the efficacy of curriculum models in gifted education. *Gifted Child Quarterly*, *51*(4), 342-358. https://doi.org/10.1177/0016986207306323

Vialle, W., Ashton, T., Carlon, G., & Rankin, F. (2001). Acceleration: A coat of many colours. *Roeper Review*, *24*(1), 14-19.

Wai, J. (2015). Long-term effects of educational acceleration. In S. G. Assouline, N. Colangelo, J. VanTassel-Baska, & A. Lupkowski-Shoplik (Eds.), *A nation empowered: Evidence trumps the excuses holding back America's brightest students* (Vol. 2, pp. 73-83). University of Iowa.

Wai, J., & Allen, J. (2019). What boosts talent development? Examining predictors of academic growth in secondary school among academically advanced youth across 21 years. *Gifted Child Quarterly*, *63*(4), 253-272. https://doi.org/10.1177/0016986219869042

Wells, R., Lohman, D. F., & Marron, M. A. (2009). What factors are associated with grade acceleration? *Journal of Advanced Academics*, *20*(2), 248-273.

Wu, W. (1991). Current trends in gifted and talented education in Taiwan, R.O.C. *Gifted and Talented International*, *7*(2), 85-94. https://doi.org/10.1177/026142949100700209

*Young, M. (2010). *Admission to Australian universities for accelerated students: Issues of access, attitude and adjustment* [Doctoral dissertation, University of New South Wales]. http://handle.unsw.edu.au/1959.4/45489

Young, M., Rogers, K. B., Hoekman, K., van Vliet, H. E., & Long, L. C. (2015). Acceleration in Australia: Flexible pacing opens the way for early university admission. In S. G. Assouline, N. Colangelo, J. VanTassel-Baska, & A. Lupkowski-Shoplik (Eds.), *A nation empowered: Evidence trumps the excuses holding back America's brightest students* (Vol. 2, pp. 225-240). University of Iowa.

Author Biographies

Jolande Schuur is a doctoral candidate in educational sciences at the Behavioral Research Institute of Radboud University. Her research focuses on social–emotional characteristics and academic achievement of accelerated students in higher education.

Marjolijn van Weerdenburg, PhD, is an assistant professor at the Behavioural Science Institute and member of the expertise center Radboud Talent in Development. She lectures at the European Council for High Ability (ECHA) and the Radboud International Training on High Ability (RITHA). Her research focuses on (a) effects of interventions in education in general and in the field of educating the gifted; (b) the role of cognition, memory, language in learning processes; (c) the effect of acceleration and enrichment programs on social–emotional characteristics (like school motivation) of gifted students; and (d) the relation between learning potential and intelligence.

Lianne Hoogeveen, PhD, is Program Director of the Radboud International Training of High Ability (RITHA), a postacademic training qualified by the European Council for High Ability (ECHA). She coordinates the master "Gifted Education" at Radboud University, is involved in research on giftedness and education, and she is a guest teacher in several (non-)European universities. As a mental health psychologist, she examines and counsels adolescents and adults with high abilities. Started in September 2020, she is the President of ECHA.

Evelyn H. Kroesbergen, PhD, is a full professor of learning disabilities at the Behavioural Science Institute of Radboud University. She has a special interest in the early identification and education of gifted children and children with learning disabilities. Currently, her research focuses on learning disabilities, giftedness/excellence, creativity, executive functions, and mathematical cognition. She is also Vice Dean of the Faculty Board of the Faculty of Social Sciences.

Manuscript received: November 11, 2019; Final revision received: September 13, 2020; Accepted: October 02, 2020