

An investigation of gender and age differences in academic motivation and classroom
behaviour in adolescents

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Word count: 7554

Abstract

This study investigated gender and age-related differences in academic motivation and classroom behaviour in adolescents. Eight hundred and fifty five students (415 girls and 440 boys) aged 11-16 (M age = 13.96, SD = 1.47) filled in a questionnaire that examined student academic motivation and teachers completed a questionnaire reporting student classroom behaviour. Interestingly, early adolescent boys' (11-12 years) self-reported academic motivation was significantly more closely associated with reports of student classroom behaviour completed by teachers. However, a surprising result was the significant drop in girls' adaptive motivation from early to mid-adolescence (13-14 years) and a significant increase in mid-adolescence (13-14 years). Furthermore, teachers reported a significant increase in negative classroom behaviour in mid-adolescent and late adolescent girls (15-16 years). The need to further understand the association between academic motivation and classroom behaviour at different stages in adolescence, and to design interventions to improve classroom behaviour, is deliberated.

Key words: adolescents, gender, age, motivation, behaviour

The decline in academic motivation during early adolescence has emerged as an important issue in educational research over the last twenty years (Anderman, Maehr & Midgley, 1999; Fredricks & Eccles, 2002; Kurita & Zarbatany, 1991; Midgley & Edelin, 1998; Murphy & Alexander, 2000; Wigfield, Eccles, Schiefele, Roeser, & Davis-Kean, 2006). Adolescence is a time of change and development and understanding age-related changes in motivation at this time is essential in ensuring that students attain their academic potential (Mansfield & Wosnitza, 2010). Research also suggests that there is a close relationship between motivation and observable classroom behaviour particularly for boys (e.g. Bugler, McGeown & St Clair-Thompson, 2013), and age differences in increases in observable classroom behavioural problems from middle childhood to late adolescence have also been revealed (e.g. Stanger, Achenbach, & Verhulst, 1997). Although academic motivation has been found to decline and negative behaviour has been found to increase during adolescence there is little research linking these two constructs and their interrelationship in developing adolescents.

Teacher perceptions of student's classroom behaviour are important and may offer a distinctive perception of the emotional and behavioural problems that children and adolescents experience (e.g. Achenbach, McConaughy & Howell, 1987; Glaser, Kronsoble & Warner Forkner, 1997). This in part due to the fact that teachers, like parents, spend a considerable amount of time every day with the students but the context in which teachers and students interact is more structured than that of their home life (Liljequist & Renk, 2007). However, research suggests that when teachers are asked to rate student classroom behaviour they may base their judgement on behaviour observed in domains other than in the classroom (Brennan, O'Neill & Liljequist, 2002). Nevertheless, research indicates that teachers perceive that they spend significant amounts of time dealing with observable behavioural issues in the classroom (e.g. Little, 2005), and view classroom management as one of the main challenges of teaching (Merrett & Wheldall, 1993) with social defiance cited as the most challenging to

secondary teachers, especially to less experienced teachers (Johnson & Fullwood, 2006). There is also concern of the negative effects of disruptive and problematic behaviour, for example for student's attainment (e.g. Arbuckle & Little, 2004; Kaplan, Gheen & Midgley, 2002). Examining psychological factors related to student's disruptive behaviour is therefore of interest to both researchers and practitioners, in order to inform appropriate interventions. One such factor is motivation.

Different theories investigating motivation often include behavioural constructs (e.g. adaptive behaviours (self-belief, learning focus, valuing of academic study) and maladaptive behaviours (self-sabotaging academic attainment, disengagement from the learning process) (Martin, 2007a), and motivation is frequently theoretically associated with behaviour (Dornyei, 2000; Martin, 2012; Skinner, Furrer, Marchand & Kinderman, 2008).

The relationship between adolescents' motivation and behaviours has also been reported in research investigating the goals that students pursue (Kaplan & Maehr, 1999) particularly mastery and performance goals. Goal theory, one of the most prominent theories of motivation (e.g. Ames, 1992; Ames & Archer, 1988; Kaplan & Maehr, 1999) has provided an understanding of why students want to achieve at school and what the individual and contextual factors are that are crucial to success (e.g. Kaplan & Maehr, 2002). This theory may explain the changes in motivation and behaviour across adolescence as research has reported changes in adolescents' goal orientation from one of mastery to that of performance during an academic year (Bong, 2005; Corpus et al., 2009; Shim et al., 2008) and changes in these goal orientations have also been reported in other cultures. For example, Yeung and McInerney, (2005) investigated changes in goal orientations in adolescents aged 12-18 years in Hong Kong and reported a steady age-related decline in goal orientation which was significantly more positive in seventh grade (11-12 years) than in ninth grade students, but was more positive in ninth grade than in eleventh grade (16-17 years) students. An

understanding of the factors responsible for this decline in goal orientation is crucial so that educators can prevent a slide in achievement at aged 16.

Interestingly, mastery and performance goals have also been linked to disruptive classroom behaviour (Kaplan & Maehr, 1999). The authors investigated mastery and performance goals in children aged 11-12 and found that students' self-reported motivational inclinations were associated with negative classroom behaviour. Furthermore, a mastery goal inclination was negatively associated with students' self-reported negative classroom behaviour whilst negative classroom behaviour was positively associated with performance goal inclinations. Kaplan, Gheen and Midgley (2002) replicated these results in a study investigating classroom goal structure and student negative classroom behaviour in children aged 14-15. Hall, Howe, Merkel and Lederman (1986, p.109) concluded "student classroom behaviour is the most valid indicator of student motivation".

Factors which may be important in influencing both academic motivation and observable classroom behaviour include age and gender. Research has reported a decline in motivation and engagement in the transition from junior high to middle high school (e.g. Jacobs, Lanza, Osgood, Eccles, & Wigfield, 2004) and middle high school to senior high school (e.g. Martin, 2005), and has also reported girls' motivation to be relatively higher than boys in senior high school. Girls were generally more positively motivated, more inclined to assume a learning/mastery focus, plan schoolwork, manage their study time effectively and persist when faced with challenges (Martin, 2005). These results are consistent with other reports of gender differences in motivation (Bugler, et al., 2013; Darom & Rich, 1988; Davies, 1984; Francis, 2000; Logan & Johnston, 2010; Martino & Meyenn, 2002; Warrington, Younger, & Williams, 2000; Younger & Warrington, 2005). However, although girls tend to report higher levels of adaptive motivation (positive aspects of motivation) they also report higher levels of anxiety (e.g. Bugler et al., 2013; Martin, 2007; Pintrich &

DeGroot, 1990). Anxiety is known to be negatively associated with academic attainment and student's confidence in their ability to achieve (Pintrich & DeGroot, 1990). Findings from several studies present evidence that suggests that girls are more than twice as likely to experience internalising disorders (e.g. depression, anxiety, eating disorders) and this difference persists across adulthood (see Crick & Waxler for review). There has also been substantial research investigating gender differences in students' classroom behaviour in primary and secondary schools, reporting boys to be persistently more troublesome and exhibit more behaviour problems compared to girls (Beaman, Wheldall, & Kemp, 2007; Bugler et al., 2013; Cullingford, 1993; Gibb, Ferguson, & Horwood, 2008; Kaplan, Gheen, & Midgley, 2002; Little, 2005; Stephenson, Martin, & Linfoot, 2000).

Research pertinent to the current study has reported trajectories in gender differences in the level of aggressive behaviour between primary and secondary school (Arbuckle & Little, 2004) and that aggressive behaviour increased for boys but not for girls. A difference in the number of boys and girls exhibiting disruptive behaviour between Year 6 (age 10-11) and Year 7 (age 11-12) was also reported, and both boys and girls were reported to engage in more disruptive behaviours in early secondary school than in primary school. Overall, the results showed an age-related trajectory in adolescent behavioural problems, particularly for boys.

It is worthy of note that in addition to gender differences in motivation and negative classroom behaviour previous studies have reported gender differences in the degree of association between these two constructs. Logan and Medford (2011) suggested that academic motivation was more closely associated with achievement in boys than in girls. Logan and Johnston (2009) reported that boys' attainment in reading was more closely related to attitudes to and interest in reading than for girls (see also Oakhill & Petrides, 2007). Therefore Bugler et al. (2013) examined gender differences in the correlations between

motivation and observable classroom behaviour. There was a closer relationship between motivation and observable classroom behaviour in boys than in girls. However, participants were aged 11 to 16 years and age differences were not examined.

We therefore acknowledge that research has reported both gender and age differences in motivation and observable classroom behaviour during adolescence, but despite substantial literature reporting declines in academic motivation (Murphy & Alexander, 2000; Wigfield, Eccles, Schiefele, Roeser, & Davis-Kean, 2006) and a general age-related increase in problem classroom behaviour (Arbuckle & Little, 2004; Farrington, 2004), research has not explored the relationship or interactions between these constructs as students transition through adolescence. It was of interest to investigate at what age motivation begins to decline, the age at which observable classroom behaviour becomes an issue in an educational context, and associations between these constructs in boys and girls of different ages. It is essential that educators understand the nature of these age-related changes so that pertinent interventions can be implemented at an appropriate time in adolescent development.

This cross sectional study therefore investigated gender and age differences in academic motivation and negative classroom behaviour in 11 to 16 year olds. A series of ANOVAs were used to examine gender and age differences in academic motivation and negative classroom behaviour and correlations to investigate the relationship and strength of association between these constructs during adolescence.

This study had three aims: 1). To contribute to the extant research investigating gender and age differences in adolescent's academic motivation and negative classroom behaviour, 2). To examine gender and age-related differences in the association between academic motivation and classroom behaviour, and 3). To investigate age-related changes in academic motivation and negative classroom behaviours in adolescent boys and girls. It was predicted that girls would report higher levels of positive adaptive academic motivation, in

addition to higher levels of anxiety throughout adolescence. It was also predicted that teachers' reports of negative classroom would be less favourable for boys than for girls across the age range. Furthermore, it was predicted that there would be a closer correlation between boys' academic motivation and teacher reported classroom behaviour for boys throughout adolescence. The constructs of academic motivation predicting classroom behaviour were predicted to be undifferentiated in boys and girls.

Method

Participants.

A total of 855 students (415 girls, 440 boys) from schools in the UK participated in this study. Students in Years 7 – 11 (aged 11 – 16, mean age 13.96, 1.47 *SD*) were drawn from five secondary schools. School one and two were inner city schools within low SES areas with between 1000 and 1200 students on roll respectively. School three was within an area of high employment and mobility and School four was within an area of high unemployment with 900 and 1100 students on roll respectively. The fifth school was an ex grammar school in a rural setting attended by students from mostly middle class families with 850 students on roll. The students were a convenience sample and the age groups and sexes were mostly equally represented from each school.

The population was consciously drawn from secondary schools that were not part of a three-tier system i.e. they did not have middle schools so there was no school transition from Year 8 to Year 9. This study did not aim to examine transition effects on behaviour and motivation so the authors were keen to draw the population from schools that were in the two-tier system. . The participants were split into three groups based on age. The authors decided that grouping by age was more appropriate than by grade as we were not measuring transition from one school to another and we could more accurately compare students of the same age rather than grade where there could be a difference in age of several months.

There were 253 pupils (143 males and 110 females) aged 11:00 - 12:11 (early adolescents); 322 pupils (162 males and 162 females) aged 13:00 -14:11 (mid-adolescents); 280 pupils (135 males and 105 females) aged 15:00 - 16:11 (late adolescents). For the purposes of this study the terms 'early adolescents, mid-adolescents and late adolescents' will be used to describe the three age groups.

Materials and procedure.

All students filled in the Student Motivation and Engagement Scale - High School (SMES-HS, Martin, 2007a). This instrument measures the academic motivation of secondary school students using the constructs of adaptive cognition (self-belief, valuing school work, and learning focus), adaptive behaviour (planning, task management and persistence), maladaptive cognition (anxiety, failure avoidance and uncertain control) and maladaptive behaviour (self-sabotage and disengagement). Adaptive cognitions, self-belief relates to student's confidence in their ability to attain academically, valuing of schoolwork relates to how much the student believes learning is useful, of importance and relevant to them whilst learning focus relates to how focused a student is on learning, problem solving and developing academic skills. Regarding adaptive behaviours, planning relates to the how much students plan their schoolwork, task management relates to students' organisation of study time, whilst persistence relates to the level of persistence students will exhibit with challenging materials. Maladaptive cognitions e.g. anxiety describes the feelings of nervousness or worry in relation to academic work, whilst failure avoidance describes the level of motivation exhibited by students in an attempt to avoid failure and uncertain control describes students' feelings of uncertainty in relation to their ability to achieve academically. Lastly, maladaptive behaviours such as self-sabotage, which describes how a student affects their attainment by not striving, and finally disengagement, which describes the degree to which they feel they no longer want to want to strive and disengage with academic study. For

the purposes of this paper these constructs will be referred to as adaptive cognitions, adaptive behaviours, maladaptive cognitions and maladaptive behaviours without extensive descriptors.

The SMES-HS questionnaire consists of 44 items and the students' are asked to agree/disagree with a variety of statements on a 7-point Likert-type scale (ranging from "I disagree strongly" to "I agree strongly"). Scores are calculated for the four separate motivation and engagement constructs by summing student responses on the discrete items. The study was conducted during the school day with questionnaires being completed in the students' form rooms in the presence of their form teacher. Instructions were given to the students to answer the questions honestly and to use the whole range of the Likert-scale. Participating students were English speaking and teaching assistants supported those students with literacy difficulties by reading the questionnaires to them to ensure that reading ability did not affect the data

Form teachers completed the Conners' Teachers Rating Scale Revised (CTRS – R; 1997), Short Version for each student for whom they had responsibility. Form teachers have a unique relationship with their designated students' as they play a key role in the pastoral wellbeing of their students throughout the academic year. This provides them with a picture of the students' behaviour and academic attainment. The CTRS-R consists of 28 items which assess four constructs of classroom behaviour: Oppositional behaviour, cognitive problems/inattention, hyperactivity and ADHD Index. Oppositional behaviour describes rule breaking, disrespect for authority and a propensity to display anger. Cognitive problems/inattention describes problems that students have in being able to concentrate, complete tasks and to be organised. Hyperactivity describes a students' inability to sit still, stay on task, whilst displaying agitated and/or impulsive behaviour. Lastly, ADHD Index refers to behaviours that are associated with students 'at risk' for ADHD type behaviours.

Teachers were asked to grade the degree to which the student exhibited that behaviour during recent weeks for each item on the questionnaire. Teachers responded to each question using the 4-point Likert scale. After the total result for each behaviour construct is calculated for each child, it is then converted into a standardised score. However, as the CTRS - R was developed to measure behaviour in children it has discrete standardised norms for boys and girls. As it was the authors intention to examine trajectories of negative behaviour at different time points across adolescence it was decided to use the teachers' reported ratings (raw scores) to investigate gender differences in behaviour (ANOVA) rather than standardised scores.

Results

Firstly, analysis to investigate gender differences in academic motivation and negative classroom behaviour was performed. Table 1 reveals the means and standard deviation results for boys and girls separately on the constructs of academic motivation and classroom behaviour. ANOVA was carried out to examine gender and age differences.

----Table 1 about here----

Significant gender and age differences were found after applying Benjamini and Hochberg's (1995) false discovery rate to control for multiple comparisons, these are reported in Table 2.

----Table 2 about here----

There were significant main effects of gender on motivation, where girls reported higher levels of adaptive cognition, adaptive behaviour, and higher levels of maladaptive cognitions. There were also significant main effects of gender on classroom behaviour, with

teachers reporting poorer behaviour in boys for each of oppositional behaviour, cognitive problems/ inattention, hyperactivity and ADHD.

There were significant main effects of age for the adaptive cognition, adaptive behaviour, and maladaptive behaviour constructs of motivation. Pairwise comparisons revealed significant differences between early and mid-adolescents and early and late adolescents ($p < .05$ in each case), but not between mid and late adolescents. There were also significant main effects of age on the cognitive problems/ inattention and hyperactivity constructs of behaviour. Pairwise comparisons revealed that for cognitive problems/ inattention there was a significant difference between early and mid- adolescents only. For hyperactivity the main effect was differences between early and mid-adolescents and early and late adolescents, which both neared significance ($p = .09$ and $p = .08$ respectively).

There were significant interactions between gender and age for each construct of motivation. As can be seen in Figures 1a and 1b for adaptive cognition and adaptive behaviour the interaction arose due to a significant decline in motivation between early and mid-adolescence for girls relative to boys. Thus there were significant gender differences in early adolescence ($p < .01$) but not mid or late adolescence. For maladaptive cognition (Figure 1c) the interaction arose due to an increase in maladaptive motivation between early and mid-adolescence for girls, but a decrease for boys. Thus there were significant gender differences at mid and late adolescence only ($p < .01$ in each case). For maladaptive behaviour (Figure 1d), there was an increase between early and mid-adolescence for girls more so than for boys, with significant gender differences at early adolescence only ($p < .05$).

There were also significant interactions between gender and age for each construct of behaviour. As can be seen in Figures 2a to 2d these were driven by a decrease in boys problematic behaviour between early and mid-adolescence, with girls problematic behaviour either increasing or remaining stable across this period. There were significant gender

differences only in early adolescence for each sub-type of behaviour, with the exception of ADHD behaviours, for which boys received higher ratings than girls in late adolescence as well.

----Figures 1a, b, c, & d about here----

----Figures 2a, b, c, & d about here----

Table 3 reveals the correlations between students' self-reported academic motivation and teachers' reports of negative classroom behaviour for boys and girls separately.

----Table 3 about here----

Overall, there was an inverse association between teacher reports of student negative classroom behaviours and students' self-reports of adaptive cognitions and adaptive behaviours and these associations were stronger in early adolescent boys showing medium to large correlations (-.49, -.50, -.57, -.62). The association with maladaptive cognitions and negative classroom behaviours was weak but mostly positively correlated and showed similar associations in boys and girls at all ages with the exception of ADHD type behaviours where a significant weak correlation was found in late adolescent girls (.23). Maladaptive behaviours however, were significantly and positively correlated with negative classroom behaviours particularly in early adolescent boys and these correlations were strong (.59, .62, .66, .68). It was of interest to determine if the association between academic motivation and negative classroom behaviour significantly differed for boys and girls at different ages. For early adolescent boys and girls there was a significant difference in the strength of the association for adaptive cognition ($z = 5.83$ oppositional, $z = 2.83$ cognitive, $z = 5.17$ hyperactivity, $z = 4.17$ ADHD, all $p < 0.01$), adaptive behaviours ($z = 3.67$ oppositional, $p < 0.01$, $z = 2.17$ cognitive, $p < 0.05$), and maladaptive behaviour ($z = 7.5$ oppositional, $z =$

5.17 cognitive, $z = 5.67$, hyperactivity, $z = 5.67$, ADHD, all $p < 0.01$). These associations were stronger for boys than for girls in all cases. However, examining the strength of association between student reports of maladaptive cognitions and teacher reports of negative classroom behaviour revealed no gender differences. For mid-adolescents significant differences were found for boys and girls in the strength of association for adaptive cognitions ($z = 2.13$, cognitive, $p = < .05$), with associations being stronger for boys than for girls. Conversely, no gender differences in the strength of association between student reported adaptive behaviour, maladaptive cognitions, maladaptive behaviour and teacher reports of negative classroom behaviour in mid-adolescents were found. For late adolescents there were significant differences in the strength of associations for maladaptive behaviours and negative classroom behaviours, ($z = 2.83$, oppositional, $p = < 0.05$, $z = 2.17$ cognitive, $p < 0.05$, $z = 4.33$ hyperactivity, $p = 0.01$, $z = 5.00$ ADHD, $p = < 0.01$). These associations were stronger for girls than for boys in all cases. Conversely, no significant gender differences in the strength of association between late adolescents' reported adaptive cognition, adaptive behaviour, maladaptive cognitions and teacher reports of classroom behaviour were revealed.

Discussion

The current study investigated gender and age-related differences in adolescents' academic motivation and negative classroom behaviour, and gender differences in the strength of the relationship between these factors in early, mid and late adolescence. Overall, the results revealed that girls reported higher levels of adaptive cognition, as well as maladaptive cognition, along with lower levels of teacher reported problematic classroom behaviour. However, these differences were most pronounced in early adolescence, with few gender differences at later ages. There were also significant relationships between aspects of motivation and behaviour, and in many cases these were stronger in early adolescence, and particularly for boys.

Early adolescent girls self-reported academic motivation, was higher than boys, in particular adaptive cognition in addition to adaptive behaviour. Although these differences were small, they suggest that in comparison to boys, girls believe in their ability to attain (self-belief), view learning as valuable (value), have greater focus on learning (learning focus), are more organised and plan their work schedule (planning), effectively manage their study time (task management) and show greater persistence in complex tasks (persistence). These results support previous research that has demonstrated small differences in favour of girls in boys' and girls' positive academic motivation (Martin, 2007b; Martin & Marsh, 2005; Marsh, Martin & Cheng, 2008). However, the results of this study further suggest that these differences are specific to early adolescence, and do not extend to mid and late adolescence. This finding will be returned to later.

Consistent with predictions gender differences were found for mid-adolescent and late adolescent girls who reported higher levels of maladaptive cognition and that they felt nervous or concerned about their academic work (anxiety), were concerned with trying to avoid failing (failure avoidance) and felt that they were not always in control of their learning (uncertain control). Therefore although gender differences in favour of girls were revealed in positive aspects of motivation, the results also suggest that girls are prone to more negative maladaptive constructs of motivation which can affect their attainment and this may be more problematic in mid and late adolescence. It has been established that anxiety (particularly anxiety towards tests) is negatively associated with academic attainment and with students' confidence in their ability to attain (Pintrich & DeGroot, 1990) moreover, anxiety is considered to be a maladaptive cognition, and may be as challenging to academic achievement as negative classroom behaviour. This is further supported by research suggesting that associations between anxiety, fear of failure and uncertain control are associated with self-sabotage and disengagement with the learning process (Martin & Marsh,

2003) and fear of failure has been reported to be negatively associated with achievement motivation (Elliot & Church, 1997). Keenan and Shaw (1997) proposed a model to explain sex differences in the increase of internalising problems in girls. They posit that due to early socialisation girls learn to repress externalising behaviours (e.g. aggression) in early childhood which results in internalising adjustment problems (e.g. anxiety and depression).

Additional gender differences were also found as early adolescent boys reported higher levels of maladaptive behaviours (self-sabotage and disengagement), suggesting that early adolescent boys, more than early adolescent girls, have a tendency to lower their ability to succeed at school (self-sabotage) and admit failure and portray helplessness (disengagement). These findings are in agreement with extent research that reported boys to be more inclined to self-sabotage (Martin, 2005).

With reference to negative classroom behaviours, significant gender and age-related differences in teacher reports of negative classroom behaviour were reported with early adolescent boys displaying more negative classroom behaviours. The results support preceding studies, which have reported behaviour problems to be more persistent and prevalent in boys (Gibb et al., 2008; Houghton et al., 1988; Hulme & Snowling, 2009; Moffitt, Caspi, Rutter & Silva, 2003).

The gender difference revealed was particularly large in hyperactivity and ADHD behaviours for boys, with narrower gender differences revealed in oppositional behaviour and cognitive problems/inattention. Interestingly, teachers reported that girls displayed increasing oppositional behaviour and cognitive problems/inattention from early adolescence through to late adolescence. In late adolescence, teachers reported that ADHD type behaviours were significantly more common in boys than in girls. There was however, no significant difference in oppositional behaviour or cognitive problems/inattention between boys and girls beyond early adolescence. This result is interesting as it shows an increase in behaviour

problems in girls in mid adolescence and is supported by additional research (Moffitt et al., 2001). This will be discussed in more detail later.

An unexpected and surprising finding was the significant age-related decline in girls' adaptive cognitions and adaptive behaviours between early adolescence and mid-adolescence. Indeed, there was no significant difference in levels of adaptive cognitions or adaptive behaviours between boys and girls in mid-adolescence. A corresponding significant increase in maladaptive behaviours (self-sabotage, disengagement) for girls was also revealed between early adolescence and mid-adolescence, along with an increase in maladaptive cognition. These results were not in accordance with predictions. Similarly, reported levels of oppositional behaviour in girls increased from early to mid and late adolescence. Thus the overall pattern of findings is one of gender differences in motivation and behaviour, which fade from early to mid-adolescence, due to declines in adaptive motivation and increases in maladaptive motivation in girls compared to boys, and reductions in boys' problematic behaviour, combined with an increase in girls' oppositional behaviour.

The results of the present study therefore suggest that sex differences in behaviour are more evident in early adolescence with boys exhibiting more behaviour problems than girls, and is supported by additional research which posits that boys are more prone to antisocial behaviour from an early age and that this pattern of sex differences in antisocial behaviour is evident across childhood and early adolescence, but is narrower in mid adolescence (Moffitt et al., 2001). The closer association between younger students' (and boys in particular) reports of their own cognitions and behaviours and teachers' reports of their behaviour could be explained in part by the contrast observed between the sexes in terms of behaviour in early adolescence. This is in contrast to the increase in girls' problem behaviour in mid adolescence where there is no significant difference in behaviour between boys and girls. Therefore

teacher reports of behaviour are more general to the group at this time as their behaviour is more alike than dissimilar, rather than to a particular gender.

Farrington (2004) found trajectories in negative behaviour and reported conduct disorders, violent crime and delinquency to be significantly more prevalent in boys than girls at most stages in adolescence. Furthermore, research suggests that there is considerable stability in externalising behaviours in boys in that for some boys these behaviours were evident in childhood and persisted into adolescence (see Crick & Zahn-Waxler, 2003 for review). However, girls do not exhibit this stability, even if diagnosed with conduct disorders in childhood they were not as likely to continue into adolescence (Moffitt et al., 2001). This is contrary to the findings of this study as boys displayed more behaviour problems in early adolescence and these problems faded over time whilst for girls, they displayed less behaviour problems in early adolescence but increasing behaviour problems as they moved through adolescents.

In their longitudinal developmental study Moffitt et al., (2001) acknowledge that boys are more likely to exhibit externalising behaviour problems and suggest that some boys follow one of two trajectories, which are differentiated by the time of onset, early-starter or childhood-onset trajectory and the adolescence-limited trajectory. The first trajectory (early-starter or childhood-onset trajectory) assumes that some boys begin to exhibit behaviour problems in childhood and is associated with a social environment that is high-risk (ineffectual parenting, weak peer relations) with additional biological vulnerabilities (e.g., temperament, hyperactivity, cognitive deficits). Moffitt et al., (2001) posit that boys who show antisocial problems in childhood (childhood-onset) were at most risk for continued and serious behaviour problems in adulthood. This in contrast to the current study which found that boys as young as 11 years (early-starter) were reported by teachers to be exhibiting problem behaviours, but by mid adolescence boys' behaviour was showing some

improvement rather than a continuing decline. This could be explained however in terms of their biological weaknesses e.g. hyperactivity and cognitive deficits. In the current study there was a decline in teacher reported boys' cognitive problems and hyperactivity from early adolescence through to late adolescence which could explain in part the improvement reported in boys' behaviour. It is intuitive that as cognitive problems decrease students would be less likely to exhibit hyperactivity due to an increased engagement in learning activity as a result of a greater understanding and self-efficacy in the task. Moffitt and Caspi (2001) further suggest that the two developmental trajectories of antisocial behaviour proposed for boys (childhood-onset and adolescence-limited) may also be pertinent for girls (Moffitt et al., 2001). Although a relatively small percentage of girls, compared to boys, do display behaviour difficulties in childhood, the most significant developmental stage for girls' conduct problems is adolescence. The adolescent-limited trajectory is purported to be more typical for girls than the childhood-onset trajectory (Moffitt & Caspi, 2001). This model of girls' externalising behaviour problems supports and mirrors the findings of the current study where girls did not display behaviour problems until mid adolescence. According to Moffitt et al., (2001) girls' rebellious behaviour emerges during adolescence as opposition towards figures of authority and in an effort to attain adult status. This could explain the increase in problem behaviour observed in girls in mid adolescence in this study.

It is interesting to note, that a significant relationship was consistently revealed between student self-reported academic motivation and teacher reports of student behaviour and these correlations were, on the whole, strong particularly for boys. Adaptive cognitions and adaptive behaviours were inversely associated with teacher reports of classroom behaviour, particularly in early adolescence. However, these associations were closer for early adolescent boys. In addition, maladaptive behaviour was positively associated with negative classroom behaviours; this relationship was stronger for early adolescent boys and

late adolescent girls. Maladaptive cognition was also positively associated with negative behaviour, although in many cases these relationships were not significant.

The finding that motivation and behaviour were correlated more closely in boys than in girls is consistent with previous findings (Bugler et al. 2013; see also Logan & Medford, 2011), and suggests that low levels of adaptive cognition and adaptive behaviour and high levels of maladaptive behaviour in boys may put them at risk of problematic behaviour. In contrast, girls with low levels of adaptive motivation or high levels of maladaptive behaviour may be more able to control their classroom behaviours. Future research may benefit from exploring possible reasons for these gender differences. For example, one influencing factor may be gender differences in personality. Females typically report higher self-discipline and dutifulness, and higher levels of conscientiousness (e.g. Costa, Terracciano, & McCrae, 2001; Vecchione, Alessandri Barbaranelli, & Caprara, 2012).

It is particularly worthy of note, however, that the relationships between motivation and behaviour were also particularly strong in early adolescence, suggesting that low levels of adaptive cognition and behaviour and high levels of maladaptive behaviour may be more likely to lead to problematic behaviour in early adolescence compared to mid or late adolescence. One possible reason for this finding is that by mid and late adolescence students' with poorer motivation are better able to regulate their behaviours than in early adolescence. Indeed, research has revealed developmental increases in conscientiousness and self-discipline (e.g. Soto & John, 2012; Vecchione et al., 2012). Alternatively, this finding could reflect differences in the ratings provided by teachers for younger and older students'.

It is also interesting to mention the distinction between boys' self-reported behaviour and teacher reports of their behaviour. Boys' self-reports indicated that their maladaptive behaviours increased whilst teacher reports showed in-school behaviour problems to be decreasing across adolescence. This may highlight a distinction between internal aspects of

behaviour; boys' tendency for self-sabotage and disengagement, and external displays of behaviour; those observed and rated by teachers. Thus, the degree to which boys self-handicap (by not trying to attain), and then disengage, (the degree to which they feel they want to give up and disengage with academic study), may actually increase over adolescence. In contrast, as a result of developmental increases in self-discipline and conscientiousness boys may become better able to control their external classroom behaviour. Other factors that may contribute to this distinction include that students in this age group may develop more adult relationships which may have benefits for student behaviour but not motivation, or it may be that teachers are less accurate reporters for older students.

The current study supports previous research that has reported the adverse effects of externalising behaviour in the classroom (e.g., Arbuckle & Little, 2004; Kaplan et al., 2002), and suggests that one possible means of decreasing this negative behaviour may be to improve students' academic motivation across adolescence. However, these findings raise important issues in relation to age and gender differences in academic motivation and negative classroom behaviour. The gender difference in academic motivation and negative classroom behaviour observed in early adolescence suggests that for boys motivation and behaviour are becoming problematic much earlier than other studies have suggested so that optimising motivation may be better placed in primary school, which may involve a rethink of educational practice. This will be discussed in more detail later.

It is not possible to determine causality due to the correlational nature of the data; however, the findings suggest that there is a closer association between boys' academic motivation and classroom behaviour, particularly in early adolescence. Increasing boys' motivation in the classroom may therefore be one method of addressing their behavioural problems. Such interventions should be implemented in year six, when levels of problematic behaviour are high. For some children this may allow them to maximise their performance

during the transition from primary to secondary school. Research investigating interventions focussed on enhancing behaviour suggest that negative behaviours are impervious to change (Hinshaw, 1992). Furthermore, teachers state that in the classroom they are required to spend much of their time handling behavioural problems (Little, 2005). Targeted interventions at age 11 years targeted at increasing academic motivation may offer a very positive solution to solving these behaviour problems for both boys and girls. The effectiveness of this approach however, is unknown. Extant research indicates that interventions that focus on improving adolescents' motivation lead to increases in motivation and engagement (Martin, 2008), but it is not yet established whether these increases would result in improved behaviour remains to be tested. Interestingly however, Kaplan et al., (2002) stated that changing students' classroom goals towards a focus on mastery as opposed to performance, goals, may lead to improvements in disruptive classroom behaviour. Future studies would also profit from developing an understanding of other factors or situations which influence adolescents' motivation and behaviour.

This study revealed age and gender differences in most aspects of motivation, in addition to behaviour problems, and these differences were particularly marked between early and mid-adolescence (between mid and late adolescence there was some recovery). This finding is pertinent as the boys in our sample were reported to be displaying behaviour problems at age 11. Adolescence is defined as describing the teenage years between 13-19 years. The early adolescent group in this study were age 11-12 and were therefore pre-adolescence. If this is a current trend in boys of this age then this is concerning as research suggests that this may predispose them to adjustment problems in young adulthood (Moffitt et al., 2001).

It is possible that these problems may now be occurring in primary school or early in the first term at secondary school and may be the result of the transition to secondary

education. It has been suggested that the reported decline in adolescent perceived competence or self-belief (Eccles, Roeser, Wigfield, & Freedman-Doan, 1999) could be a result of the change in emphasis between primary school and secondary school, particularly for boys, from an intrinsic to an extrinsic mode of learning (Eccles et al., 1993). An explanation for reported gender differences in academic motivation and classroom behaviour could be that girls and boys are differently affected by academic stressors as girls have been reported to be more prone to internalised symptoms (e.g. Hoffmann, Powlishta, & White, 2004; Pomerantz, Altermatt, & Saxon, 2002) such as anxiety (Martin, 2004) and depression (Moksnes, Moljord, Espnes, & Byrne, 2010), whilst boys characteristically exhibit more behaviour problems and externalised symptoms (Masten, Hubbard, Gest, Tellegen, Garmezy, & Ramirez, 1999) for example cynicism (Salmela-Aro, Kiuru, & Nurmi, 2008).

The results of the present study therefore revealed gender and age-related differences in adolescent motivation and classroom behaviour in students aged 11 years to 16 years. It must be acknowledged that these results may however, reflect cohort effects rather than age difference effects as different cohorts were used in this cross-sectional design. It is of interest to note that at this stage it is not known whether the changes observed in this study reflect developmental trends or are a reflection of educational policy within the secondary schools. For example, with the increase in assessment in primary and secondary education the focus has shifted from one of mastery goals to performance goals. This is particularly true in secondary education where students strive to outperform others (Tuominen-Soini, Salmela-Aro & Niemivirta, 2012). Young adolescents come into secondary schools unprepared for this change of emphasis at a time when they are more likely to engage in social comparison (Fredricks & Eccles, 2002) and are more aware of their social and academic competence. Indeed, Eccles et al., (1993) have argued that the declines observed in early adolescent's motivation could be the result of a poor stage-environment fit due to a less facilitating classroom environment during the transition to

secondary education (Feldlaufer et al., 1988). The match between the student and the school is an important influence that affects students' adjustment to school and their well-being through an educational transition. Adjustments both in the individual and context are occurring in parallel (see Eccles & Roeser, 2009) and the match between the development stage of the student and the environment of the school (Eccles & Midgley, 1989) becomes unbalanced and needs to be constantly reassessed. One approach towards addressing the dip in motivation and increase in problem behaviour during early adolescence and mid-adolescence may therefore be to address the nature of classroom environments in secondary schools.

The findings of the present study have implications for future investigation. Initially, would be of interest to investigate gender and age-related differences in the association between motivation and behaviour in different academic subjects. It has been argued (Gottfried, 1985) that students' academic motivation is affected by academic subjects, with students showing higher levels of academic motivation for some subjects than others (see also Eccles et al., 1993; Green et al., 2007; Jacobs et al., 2002). Furthermore, Green et al., (2007) posited that it may be merit in examining motivation between domains as boys have been identified as being more troublesome in domains for example Modern Languages and English in comparison to other subjects such as Maths, Art and Physical Education (Houghton et al., 1985). Research investigating negative behaviour in girls in specific subject areas has as yet not been reported.

There are limitations that need to be considered when reflecting on the results of this study. Primarily, cross-sectional (the data was gathered at one time point) and correlational designs were adopted to explore the association between academic motivation and negative classroom behaviour and age and gender differences between these aspects; questions concerning causality therefore cannot be addressed. Currently there is very little research examining the strength of the association between adolescents' academic motivation and attainment or indeed behaviour and attainment, therefore assessments of students' academic

attainment would afford additional understanding as to whether there are gender and age related differences in the strength of these associations. Research which has been carried out, has investigated the strength of the relationship between adolescents' motivation and behaviour (Bugler et al., 2013) and gender differences in the strength of that association. Research has yet to examine the strength of the relationship between motivation and attainment and behaviour and attainment. Research that has been carried out has been in a primary school setting (e.g. Logan & Johnston, 2009; Logan & Medford, 2011; Oakhill & Petrides, 2007).

Longitudinal studies following the progression of a cohort of students from primary to secondary school would provide a valuable insight into the developmental aspects of gender differences and age-related trajectories in motivation and classroom behaviour in students over time. Investigating motivation in boys in primary school may highlight at what point positive motivation in boys begins to be replaced by negative motivation allowing educators to devise intervention programmes to address this issue before it negatively affects their attainment. Intervention programmes designed to promote motivation by protecting self-belief and self-worth during the transition from primary school to secondary school may help to prevent, or lessen, the negative academic motivation and behaviour observed in adolescents. This finding is pertinent to the current study as boys in our sample were reported to be displaying behaviour problems at age 11. Adolescence is defined as describing the teenage years between 13-19 years. The early adolescent group in this study were age 11-12 and were therefore pre-adolescence. If this is a current trend in boys then this is concerning as it may predispose them to adjustment problems in young adulthood.

Conclusion

To conclude, the results of this study were in agreement with extant research that suggests girls have higher levels of academic motivation, in addition to higher levels of anxiety, whilst

boys exhibit more negative classroom behaviours. This study also revealed that there are gender differences and age-related changes in academic motivation and negative classroom behaviour. For boys, positive motivation at 11-12 years was significantly lower and teacher reported boys' negative classroom behaviour suggested that boys have more behavioural problems at 11-12 years. However, one of the main surprising and interesting results from this study is the significant decline in girls' positive academic motivation (adaptive cognition and adaptive behaviour) from early to mid-adolescence in addition to an increase in negative classroom. These results may have implications for educational policy in terms of intervention programmes aimed at increasing attainment at aged 16. For boys these interventions would be better placed in primary school as the results suggest that boys at aged 11 - 12 are already lagging behind girls in all positive constructs of motivation and are less able to conform to classroom discipline. These early interventions should be continued through mid-adolescence for boys and girls in order to prevent the slide in motivation and increase in behaviour problems that are evident in both boys and girls at aged 13 -14.