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Gender differences in reading motivation: does sex or gender identity provide a better account?

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This study examined sex differences in reading skill and reading motivation, investigating whether these differences could be better accounted for by sex, or by gender identity. One hundred and eighty-two primary school children (98 males) aged 8–11 completed a reading comprehension assessment, reading motivation questionnaire and a gender role questionnaire. While there were no sex differences in reading skill or extrinsic reading motivation, girls had significantly higher intrinsic reading motivation. However, responses to intrinsic motivation were better explained by gender identity than sex. In addition, a feminine identity was more closely associated with many different aspects of reading motivation than a masculine identity. Implications for our understanding of sex differences in reading are discussed.

Gender or sex is frequently used as a mode of analysis in the area of reading research (e.g. Logan & Johnston, 2010). Boys and girls have been shown to differ in their reading choices (Coles & Hall, 2002; Merisuo-Storm, 2006), frequency of reading (Coles & Hall, 2002), attitudes towards reading (Coles & Hall, 2002; Kush & Watkins, 1996; Logan & Johnston, 2009; McKenna, Kear & Ellsworth, 1995; Sainsbury & Schagen, 2004), motivation to read (Baker & Wigfield, 1999; Marinak & Gambrell, 2010; Wigfield & Guthrie, 1997), competency beliefs in reading (Wigfield et al., 1997), value of reading (Durik, Vida & Eccles, 2006; Eccles, Wigfield, Harold & Blumenfeld, 1993; Marinak & Gambrell, 2010; Wigfield et al., 1997) and reading skill (Ming Chui & McBride-Chang, 2006; Mullis, Martin, Kennedy & Foy, 2007), with girls, on average, reading more frequently, having more positive attitudes to reading, higher reading motivation, greater confidence in their reading skills, a higher value of reading and superior reading abilities.

However, while studies in reading research often highlight sex or gender differences in attainment and motivation, the distinction between sex and gender is rarely recognised. Indeed, these two terms are often used interchangeably to mean exactly the same thing, when in fact they are not. While sex refers to biological differences between males and females (and is the context in which sex or gender differences in reading are commonly

reported), gender refers more to the characteristics commonly associated with being male or female. Therefore it is possible that the sex differences found in reading are a result of differences in children's gender identity (i.e. the extent to which they identify with masculine or feminine traits) rather than their sex. In fact, it may be that the characteristics associated with being male or female provide a better predictor of children's reading skill or motivation to read than their sex.

From an early age, reading is recognised within the home environment as an activity more closely associated with females than males (Millard, 1997). For example, when questioned on their home environment, children report that their mothers read more than their fathers, and that their mothers played a more significant role in teaching them to read (Millard, 1997). This may help to explain why boys and girls regard reading to be a more feminine activity (Dwyer, 1974). Reading (and other aspects of literacy such as writing) can be contrasted with other academic subjects, such as mathematics, science and sport, which are often associated more with males (Meece, Bower Glienke & Burg, 2006). Indeed, in a review of the literature in this area, Meece et al. (2006) showed that while boys place a greater value and report more interest in mathematics, science and sport, girls place a higher value and report more interest in reading.

As reading is an activity that often requires effort or interest for involvement, children's reading skill has been associated with their motivation to read (Baker & Wigfield, 1999; Gottfried, 1990; Wang & Guthrie, 2004) and children's motivation to read is an area where consistent and substantial sex differences are found (Baker & Wigfield, 1999; Marinak & Gambrell, 2010; Wigfield & Guthrie, 1997). In the literature regarding reading motivation, a distinction is often made between intrinsic and extrinsic motivation (Ryan & Deci, 2000; Wang & Guthrie, 2004; Wigfield & Guthrie, 1997). A child who is intrinsically motivated is motivated via internal factor(s) from within. For example, they may be motivated to read something out of curiosity or interest and will continue to read it if they enjoy it or are interested and understand the reading material (i.e. there are no external pressures or rewards for initiating or sustaining the activity of reading). However, when a child is extrinsically motivated, they are motivated by external factor(s), for example, via external values or demands such as the need to attain a good reading mark or gain recognition for their reading from parents or teachers. In other words, they are engaging in the activity to achieve a separable outcome, rather than engaging in the activity purely for the enjoyment of it.

With regard to gender identity, it is very likely that there will be variation in the extent to which boys and girls identify with masculine and feminine traits; therefore it is interesting to examine whether children's reading attainment or motivation to read is better predicted by their gender identity, rather than their sex. Indeed, Pajares and Valiante (2001) found that sex differences in writing achievement and motivation could be explained by gender orientation rather than the student's sex, suggesting that gender orientation may be a better explanation for the sex differences found within the domain of writing.

It was predicted that if sex differences were found in reading motivation and reading skill, then gender identity would explain more variance in these variables than sex. It was also predicted that gender identity would explain significant variance beyond that predicted by sex. Finally, it was predicted that feminine traits would correlate more closely with reading motivation than masculine traits.

Method

Participants

One hundred and eighty-two children (98 males) from five primary schools participated in the study. Sixty-three children were in Year 4 (M age 9;0, 0.44 SD), 64 were in Year 5 (M age 10;0, 0.26 SD) and 55 were in Year 6 (M age 11;1, 0.34 SD). All schools were located close to or within towns in areas of average socioeconomic status.

Materials

Questionnaires. The Motivation for Reading Questionnaire (MRQ) Revised Version (Wigfield & Guthrie, 1997) was used to assess reading motivation. Five of the 11 original dimensions were selected to create a shorter questionnaire that included important aspects of intrinsic and extrinsic motivation. Within intrinsic motivation, the concepts of curiosity (the desire to learn about a particular topic of interest), involvement (the enjoyment of experiencing different kinds of literary or informational texts) and efficacy (the belief that one can be successful at reading) were examined. Within extrinsic motivation, the concepts of recognition (the gratification in receiving a tangible form of recognition for success in reading) and grades (the desire to be evaluated favourably by the teacher) were examined. Questions were answered on a Likert scale (4 = *a lot like me*, 3 = *a little like me*, 2 = *a little different from me* and 1 = *very different from me*). Reliability analysis using Cronbach's α met an acceptable threshold for intrinsic dimensions (16 items, $\alpha = .81$) and extrinsic dimensions (9 items, $\alpha = .71$). Reliability analysis was also carried out for each dimension of intrinsic and extrinsic motivation: curiosity (6 items, $\alpha = .72$), involvement (5 items, $\alpha = .63$), efficacy (5 items, $\alpha = .73$), recognition (5 items, $\alpha = .68$) and grades (4 items, $\alpha = .61$). Involvement, recognition and grades failed to meet the acceptable threshold ($\alpha = .70$) for reliability. This will be discussed later.

The Children's Sex Role Inventory (CSRI) Short Form was used to assess gender roles (see Boldizar, 1991). This inventory measures traditional masculine traits (e.g. competitiveness: 'When I play games, I really like to win'), feminine traits (e.g. compassion: 'I care about what happens to others') and neutral traits as filler items (e.g. friendly 'I have many friends'). Questions were answered using a Likert scale (4 = *very true of me*, 3 = *mostly true of me*, 2 = *a little true of me* and 1 = *not true of me at all*). Neutral items were not included in the analysis. The CSRI does not refer to reading or academic attainment or motivation; questions refer specifically to traditional/stereotypical masculine and feminine traits. Reliability analysis using Cronbach's α met an acceptable threshold for feminine traits (10 items, $\alpha = .75$) but not masculine traits (10 items, $\alpha = .66$). This will be discussed later.

Reading comprehension assessment. Finally, all children were assessed using the Group Reading Test II (Macmillan Test Unit, 2000a) which is a group administered test measuring reading comprehension. Reliability and validity for this assessment is high (e.g. K-R 21 for Form C = .88 and for Form D = .84) (see Macmillan Test Unit [2000b] for further details regarding reliability and validity). Based on manual guidelines, children in Year 4 completed Form A or B and children in Years 5 and 6 completed Form C or D. To prevent copying, Forms A and B or C and D were alternately given based on where the children were seated. The examiner read through the practice items with the

children beforehand to ensure they understood the test. No time limit was imposed for completion of the 45-item test. Standard scores were used in the analyses in this article.

Procedure. Letters were sent to schools and parents, and consent from head teachers, class teachers and parents was required. For both the CSRI and MRQ, each question was read out to the children to ensure that reading skill would not affect their understanding or completion of these questionnaires.

Results

Using ANOVA, sex differences in reading skill, motivation and gender identity were examined. In addition to examining each motivation dimension individually, responses were grouped: efficacy, curiosity and involvement were grouped to form a measure of intrinsic motivation and recognition and grades formed a measure of extrinsic motivation (see Table 1).

Girls had significantly higher intrinsic motivation, $F(1, 170) = 6.40, p < .05, \eta_p^2 = .04$. This effect size would be considered small as only 4% of the between-subject effect was explained by sex. Girls' higher intrinsic motivation was found as a result of greater efficacy, $F(1, 170) = 14.87, p < .01, \eta_p^2 = .08$, and involvement, $F(1, 170) = 7.28, p < .01, \eta_p^2 = .04$. In addition, both these effect sizes are small as only 8% and 4% of the between-subject effect was accounted for by sex, respectively. In addition, significant sex differences were found in masculine, $F(1, 170) = 22.89, p < .001, \eta_p^2 = .12$, and feminine traits, $F(1, 170) = 59.77, p < .001, \eta_p^2 = .26$, in line with stereotypical perceptions. These effect sizes are considered medium (12%) and large (26%), respectively. No other differences were significant. Post hoc tests were carried out using Benjamini and Hochberg's (1995) Linear Step Up procedure. All significant sex differences remained significant when compared against the critical p value.

Correlations were carried out to examine the strength of the association between masculine and feminine traits and the different dimensions of reading motivation and reading skill (Table 2).

Masculine and feminine traits correlated with all motivation dimensions (with the exception of masculine traits which did not correlate with reading involvement).

Table 1. Sex differences in reading skill, motivation and masculine/feminine traits (means and standard deviations).

	Male	Female
Reading skill	99.63 (13.25)	102.33 (17.82)
Intrinsic motivation	44.90 (8.41)	47.88 (6.88)
Extrinsic motivation	25.21 (4.25)	26.10 (4.00)
Efficacy (intrinsic)	9.62 (2.27)	10.80 (1.68)
Curiosity (intrinsic)	15.98 (3.32)	16.10 (2.76)
Involvement (intrinsic)	15.72 (3.31)	17.19 (3.81)
Recognition (extrinsic)	12.99 (2.46)	13.32 (2.35)
Grades (extrinsic)	10.43 (1.97)	10.87 (1.89)
Masculine traits	29.30 (4.13)	26.48 (3.56)
Feminine traits	30.64 (3.86)	34.91 (3.32)

Table 2. Correlations examining associations between masculine and feminine traits with motivational dimensions and reading skill.

	Intrinsic	Extrinsic	Efficacy	Curiosity	Involvement	Recognition	Grades	Skill
Masculinity	.26**	.28**	.19*	.26**	.15	.22**	.27**	-.04
Femininity	.41**	.44**	.43**	.35**	.25**	.36**	.41**	-.08

* $p < .05$; ** $p < .005$.

Table 3. Regression analyses predicting intrinsic motivation, efficacy and involvement with sex, masculinity and femininity.

	Model 1 Sex	Model 2 Sex and masculinity	Model 3 Sex and femininity	Model 4 Sex, masculinity and femininity
<i>Intrinsic motivation</i>				
Sex	.182*	.306**	-.028	.097
Masculinity		.368**		.286**
Femininity			.426**	.363**
R^2	.03	.15	.17	.24
<i>Efficacy</i>				
Sex	.265**	.371**	.076	.179*
Masculinity		.317**		.241**
Femininity			.388**	.337**
R^2	.07	.16	.19	.24
<i>Involvement</i>				
Sex	.199*	.282**	.105	.198*
Masculinity		.249**		.214*
Femininity			.194*	.146
R^2	.04	.09	.07	.11

Note: Standardised final β coefficients from the multiple regression models are illustrated in the table with corresponding significance values:

* $p < .05$; ** $p < .005$.

Masculine and feminine traits did not correlate with reading skill. Feminine traits were more closely associated with all motivation dimensions. An examination of differences in the strength of association between feminine traits and masculine traits with each motivation dimension was carried out (Chen & Popovich, 2002). It was found that feminine traits were more closely associated with the motivation dimension of efficacy than masculine traits (t difference = 2.57, $p < .05$). No other differences were significant.

Regression analyses using the dimensions of reading motivation which showed sex differences were set as the criterion variables, while gender, masculine and feminine traits were predictor variables.

Only those motivation dimensions in which sex differences were found (see Table 1) were included within the regression analyses. The order in which the variables were entered was applied to examine whether identification with masculine or feminine traits would predict additional variance in reading motivation beyond that predicted by sex (see Table 3). When entered alone (Model 1), sex predicted significant variance, $F(1, 174) = 5.96$, $p < .05$, in intrinsic motivation. However, masculine traits (Model 2), $F(2, 172) = 15.04$, $p < .01$, and feminine traits (Model 3), $F(2, 172) = 17.71$, $p < .01$,

when entered alone predicted significant additional variance after entering sex as a predictor. In addition, masculine and feminine traits combined explained significant additional variance over sex (Model 4), $F(3, 170) = 18.11, p < .01$. For efficacy, when entered alone (Model 1), sex predicted significant variance, $F(1, 176) = 13.35, p < .01$, in efficacy. In addition, masculine traits (Model 2), $F(2, 175) = 16.09, p < .01$, and feminine traits (Model 3), $F(2, 175) = 19.98, p < .01$, when entered alone predicted significant variance after entering sex as a predictor. Also, masculine and feminine traits combined explained significant additional variance over sex (Model 4), $F(3, 173) = 17.81, p < .01$. Finally, for involvement, when entered alone (Model 1), sex predicted significant variance, $F(1, 174) = 7.16, p < .05$, in involvement. In addition, masculine traits (Model 2), $F(2, 173) = 8.64, p < .05$, and feminine traits (Model 3), $F(2, 173) = 6.36, p < .05$, when entered alone predicted significant variance after entering sex as a predictor. Finally masculine and feminine traits combined explained significant additional variance over sex (Model 4), $F(3, 170) = 6.74, p < .05$.

Discussion

The aim of this study was to examine whether differences in reading attainment or motivation may be better predicted by children's identification with masculine or feminine traits, rather than their sex. While there were no sex differences in reading skill, girls had significantly higher intrinsic reading motivation (specifically, reading efficacy and involvement). In line with the hypotheses, gender identity explained additional variance in children's intrinsic reading motivation after sex had been taken into account. Indeed, gender identity explained more variance than sex in predicting children's intrinsic reading motivation. Considerable sex differences were found on the masculine and feminine traits, with boys and girls identifying with their stereotypical gender traits. Finally, feminine traits correlated more closely with all aspects of reading motivation compared with masculine traits; however, only efficacy was significantly more closely correlated. These results have implications for our understanding of sex differences in reading and identifying the most effective routes towards redressing these differences.

Much of the previous research into sex or gender differences in reading has focused on biological sex differences, with girls and boys being compared in many different aspects of their reading (e.g. attainment, book choice, reading frequency, motivation, attitudes, competency beliefs, etc.). However, this study is unique in that it emphasises the importance of distinguishing between sex and gender. By examining gender in terms of identification with specific traits, the results suggest that differences in motivation may be better predicted by identification towards masculine or feminine traits rather than sex. It is important to note that only reading motivation was associated with these gender traits; reading ability was not. Therefore while reading may be regarded as a more feminine activity or academic subject (Dwyer, 1974), it appears that it is not reading ability as such which is associated with more feminine traits, but rather being motivated to read. In addition, it was only intrinsic motivation in which sex differences were found, not extrinsic motivation. Previous research has illustrated that intrinsic and extrinsic motivation show different relationships with children's reading attainment and engagement in reading activities. For example, Lepper, Henderlong Corpus and Iyengar (2005) and Wang and Guthrie (2004) found that while intrinsic motivation was positively associated with academic/reading performance, extrinsic motivation was negatively

associated with these abilities. In addition, intrinsic motivation is more closely correlated with reading amount (Wang & Guthrie, 2004) and has been found to predict engagement in reading activities and breadth of reading more than extrinsic motivation (Wigfield & Guthrie, 1997). Therefore, interventions aimed at boosting children's motivation should be focused on increasing their intrinsic motivation as this is more likely to influence engagement in reading activities and improve reading skills.

Owing to consistent sex differences in reading motivation (in this study, intrinsic motivation), boys' underachievement in reading has been put down, in part, to their lack of motivation and engagement in literacy-related activities. Projects put into place to raise boys' attainment, for example, The Raising Boys Achievement Project (Department of Education and Skills, 2002) have recognised that boys' low motivation creates a barrier to their academic attainment, particularly in certain academic areas (e.g. literacy). In addition, interventions have been put into place to de-feminise literacy teaching, such as providing male role models/more masculine orientated environments for boys to develop their literacy skills (e.g. *Playing For Success*, Department for Education, 2010). The results of this study suggest that these approaches are important, as children's reading motivation is currently more closely linked to their ideas of feminine qualities than masculine ones. Also, interventions that are focused towards promoting reading between fathers and their children may also be effective at reducing children's early perceptions that reading is a more feminine activity. It may be the case that these early perceptions of reading contribute to children's later motivations; however, further research is necessary to investigate this.

The results of this study are consistent with previous research. For example, in research examining different academic domains, children's ratings of the masculinity and femininity of various school subjects have fallen in line with gender stereotypes (Archer & Macrae, 1991). Children also appear to make judgements of their abilities in line with gender stereotypes; while boys report higher competency beliefs in mathematics and sports, girls report higher competency beliefs in reading and music (Eccles et al., 1993; Wigfield et al., 1997). Boys also report more interest and place more value on sports, while girls report more interest and place more value on reading (Eccles et al., 1993; Wigfield et al., 1997).

The results of the current study are also consistent with Pajares and Valiante (2001), who illustrated that writing motivation was better predicted by gender orientation than sex. Therefore future research should consider the possibility that sex differences found in motivation for literacy-related activities may not necessarily be best explained by sex, but rather by deeper cognitive processes regarding strength of adherence to specific gender identities.

There are some limitations of this study. Firstly, all children had English as a first language and therefore are arguably not representative of the culturally diverse population within the UK classrooms today. It may be that there are cultural differences in children's identification with gender traits and this should be considered in future research. In addition, the schools were all located in areas of average socioeconomic status; therefore it is unknown whether this variable may influence gender identity. In addition, it should be acknowledged that when reliability analysis was carried out on some of the assessments (e.g. the MRQ and CSRI), values failed to meet the acceptable threshold for reliability. In addition, the study only examined sex differences within the context of reading motivation. It would be interesting to carry out similar studies within other areas of reading research (e.g. children's reading choices, attitudes to reading, value

of reading), as it may be that the sex differences commonly found in these areas can be better predicted by children's gender identity than their sex. In addition, similar research in other academic domains (e.g. mathematics, science and sport) would illustrate to what extent gender identity predicts the differences commonly found in these subjects. Future research with younger children would also be interesting; if gender is to be thought of as a context in which children's reading experiences develop, then it is important to understand at what age, and to what extent, younger children identify with specific gender traits and whether these can predict differences in their motivation.

It is important to note that while sex differences are frequently found in the domain of reading, some research studies find no sex differences in reading motivation (Meece & Miller, 1999; Wigfield & Guthrie, 1997), or highlight that differences which were found were small (Durik et al., 2006; Logan & Johnston, 2009). Therefore while sex is often a useful category of analysis in understanding educational differences, it should not mask individual differences within the school population. Acknowledging that boys and girls will differ in their identification with gender traits illustrates an additional element to understanding the complexities surrounding sex differences in reading.

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