

Exploring the relationship between adolescent's reading skills, reading motivation and reading habits

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Abstract The present study examines the extent to which adolescents' reading affect (reading motivation) and behaviour (reading habits) predict different components of reading (word reading, comprehension, summarisation and text reading speed) and also adds to the limited research examining group differences (gender, age, ability) in adolescents' reading motivation and reading habits. A representative sample of three hundred and twelve students (aged 11–16) from the UK participated. Adolescents' reading motivation predicted significant variance in their reading comprehension and summarisation skills, after accounting for word reading and text reading speed. Reading motivation also predicted significant variance in text reading speed after accounting for word reading. Notably, however, different dimensions of motivation predicted variance in different reading skills. Of all the reading habits, only fiction book reading emerged as a consistent predictor of variation in the different reading skills, after accounting for the other reading abilities. Group differences (gender, age and ability) were consistent with previous literature.

Keywords Reading · Comprehension · Motivation · Adolescents

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Introduction

Adolescents' reading skills play a crucial role in their educational success as most curriculum subjects use text based materials for study. In addition, opportunities for further education and careers are, to a large extent, dependent on academic abilities and achievements; consequently poor reading skills are likely to have a significant impact on adolescents' post-school opportunities. The present study investigates the relationship between adolescents' reading motivation, reading habits and reading skills, to identify the extent to which these affective and behavioural aspects of reading predict variation in reading skill. Since reading is an activity that often requires focus, sustained interest and effort, motivation has been found to predict reading performance over and above cognitive abilities (Anmarkrud & Bråten, 2009; Logan, Medford & Hughes, 2011; Medford & McGeown, 2011; Taboada, Tonks, Wigfield & Guthrie, 2009). In addition, engagement in independent reading activities is likely to develop a range of reading skills; indeed, the relationship between print exposure and reading ability is well established (Mol & Bus, 2011).

Although there is a significant body of research investigating the relationship between children's reading skills and reading motivation (Baker & Wigfield, 1999; Becker, McElvany & Kortenbruck, 2010; Logan & Medford, 2011; Logan et al., 2011; Morgan & Fuchs, 2007; Taboada et al., 2009; Wang & Guthrie, 2004) and also reading frequency (Echols, West, Stanovich & Zehr, 1996; Guthrie, Wigfield, Metsala & Cox, 1999), there is considerably less research with adolescents. Indeed, Conradi, Gee Jang and McKenna (2014), in a recent review of reading motivation research, found that only 8 % of existing studies had been carried out among high school aged students (9th–12th grades). With regard to reading frequency and activities, in a recent meta-analysis of 99 studies examining the relationship between print exposure and reading (Mol & Bus, 2011), only nine studies could be established to include children with an average age of 11 or older. In addition to the limited literature with adolescents, the majority of research investigating the relationship between reading motivation, reading habits and reading skill has focused primarily on reading comprehension as the outcome reading measure; however there are various different components of reading skill (e.g., single word reading, comprehension, summarisation skills and text reading speed), which are all important elements of reading, but which may relate differently to different dimensions of motivation and reading habits. The present study sought to add to the relatively limited literature focused on adolescents and also included a wider range of reading outcome measures and reading habits than has typically been included in past research. In addition, by including single word reading and text reading speed as initial predictors of comprehension and summarisation skills, and single word reading as an initial predictor of text reading speed, the present study allowed a more critical test of the importance of affective (reading motivation) and behavioural (reading activities) factors on reading outcomes.

Motivation and reading skill

Over the past few years, there has been increasing interest in researching reading motivation, as illustrated in the recent review by Conradi et al. (2014). In a review

of cross-sectional and longitudinal studies examining the relationship between reading motivation and attainment (Morgan & Fuchs, 2007), it has been suggested that the two are reciprocally related. However, motivation is a multi-dimensional construct (Wigfield, 1997), and some dimensions have been found to be more closely related to reading comprehension skill than others. Eccles' expectancy-value theory, a key theory in this field, proposes that students' motivation is strongly influenced by their perceived competence (i.e., expectations of success or failure on the task) and their value of the task (i.e., how attractive and important they view the task) (see Wigfield & Eccles, 2000 for a review). Eccles et al. (1993) have illustrated that expectancy and value dimensions of motivation are distinct, as children differentiate between their expectancy and value beliefs. Nevertheless, both expectancy and value are considered to directly influence children's performance, effort, persistence and choices (Wigfield & Eccles, 2000). The expectancy-value framework of motivation aligns with other theories of motivation, for example constructs similar to expectancy can be identified within attribution (Weiner, 1985), self-worth (Covington, 1992) and self-determination (Deci & Ryan, 1985) theories. In addition, this theoretical framework has been used to study student motivation across a number of different academic domains (e.g., Maths, Reading, Sport, Instrumental music; Eccles et al., 1993; Wigfield et al., 1997). Student's expectancies and values are considered to be influenced by task specific beliefs (e.g., perceived difficulty/importance of the task, memories of past experiences with the type of task), and as a result, the nature of the task will influence student's expectancies and values. Expectancy refers to both ability beliefs (perceptions of current competence) and expectations of success (expectations of future performance). Therefore, expectancy focuses on both immediate perceptions and longer term expectations; though both are closely related (Wigfield & Eccles, 2000). When applied to reading, reading expectancy refers to current estimates of how good one is at reading and expectations of future success or failure in reading. Value on the other hand, aligns with constructs studied within theories of intrinsic and extrinsic motivation (Deci & Ryan, 1985) as value refers to enjoyment gained (intrinsic value), importance of doing well (attainment value) and usefulness of the task (utility value). When applied to reading, reading value refers to the extent to which students' perceive reading as an important, enjoyable and useful activity. It has been found that while expectancy is an important predictor of skill or ability, value perceptions tend to be a stronger predictor of intentions or behaviours (Wigfield & Eccles, 2000). See Wigfield and Eccles (2000) for a comprehensive review of the expectancy-value theoretical framework and Schiefele, Schaffner, Moller and Wigfield (2014) for a recent discussion of the extent to which expectancy-value constructs overlap with other reading motivation concepts.

To examine the relationship between reading motivation and attainment in adolescents, Anmarkrud and Bråten (2009) investigated expectancy and value components of motivation and reading comprehension performance, and found that both correlated equally with reading comprehension skill. However, after entering gender and cognitive variables as predictors, only value predicted unique variance in reading comprehension. Other research examining the influence of cognition and motivation on reading skills has been carried out among primary school aged

children. Katzir, Lesaux and Kim (2009) found that reading self-concept was positively related to reading comprehension skill after controlling for verbal ability and word reading. Similarly, Logan et al. (2011) found that children's reading motivation predicted significant variance in their end of year reading skills after accounting for reading skill at the beginning of the school year, suggesting reading motivation also contributes to growth in reading skills. Taboada et al. (2009) also found that both cognitive and motivational variables accounted for significant and independent variance in reading comprehension performance and growth in reading skills. Indeed, they argue that intrinsic motivation (i.e., being internally rather than externally motivated) acts in consort with a student's cognitive abilities, working as an energiser which engages their cognitive resources, leading to better reading performance.

Reading frequency and reading habits

There is good evidence that children and adolescents who engage more often in reading activities have better literacy skills (Anderson, Wilson & Fielding, 1988; Cunningham & Stanovich, 1991, 1997; Guthrie et al., 1999; Leppanen, Aunola & Nurmi, 2005; McBride-Chang, Manis, Seidenberg, Custodio & Doi, 1993; Mol & Bus, 2011); however some types of reading activities have been more consistently associated with reading skill. For example, Anderson et al. (1988) found that time spent reading books was more strongly associated with reading comprehension and reading speed than other text types (e.g., comics, newspapers and magazines). Similarly, Spear-Swerling, Brucker and Alfano (2010) found that fiction book reading was more closely associated with various reading-related skills (i.e., word reading, oral comprehension, vocabulary and reading comprehension) compared to other reading habits.

Over the last decade or so, there has been a steady increase in the time adolescents spend engaging in digital text activities, and an increase in the diversity of these activities. Therefore adolescents' daily literacy experiences cannot be measured solely by their exposure to books, but rather more comprehensively, by their engagement in a variety of literacy activities. Indeed, Clark (2011) and Pitcher et al. (2007) found that digital activities (i.e., text messaging, internet, social networking sites, email) were among adolescents more typical literacy habits. Although there has been concern regarding a reduction in book reading at the expense of other activities, Coiro and Dobler (2007) found that the skills and strategies needed to effectively gather and search for information online were relatively complex (i.e., inferential reasoning, self-regulated reading processes, prior knowledge); comparably more complex than those needed to comprehend printed text. Therefore it is important to consider that different literacy experiences may utilise and develop different reading skills.

Group differences in reading motivation, reading habits and reading skills

There is, within the scientific community, increasing awareness of the importance of replicating results and adding to accumulating data on a specific topic; therefore the

present study also presents results concerning gender, age and ability differences in adolescents' reading motivation and reading habits. This is driven, in part, by the comparatively limited research with adolescents but also by the fairly limited research conducted outside of the US (Conradi et al., 2014), as it is crucial to understand whether findings apply across different cultural and educational contexts. The focus on gender, age and ability comparisons is typical in this research field, and also aligns with a recent study by Wolters, Denton, York and Francis (2014) who examined these three group differences in a sample of adolescent readers in the US. Whether similar results would be found within a different educational and cultural context, and using different measures of reading skill and motivation was of interest. In addition to examining group mean differences, analyses examining group differences in the strength of association between reading skills and reading motivation/habits were also conducted, as very little research has explored group differences in this context.

Gender differences

Gender differences in reading motivation are quite consistently found, with males reporting lower levels of motivation compared to females (Baker & Wigfield 1999; Marinak & Gambrell, 2010; McGeown, Goodwin, Henderson & Wright, 2012; McGeown, 2013; Pitcher et al., 2007); while a recent study with adolescents found little evidence of consistent gender differences (Wolters et al., 2014), it should be noted that this study excluded proficient readers as it only included adequate and struggling readers. In general, girls typically value reading more highly than boys (Durik, Vida & Eccles, 2006; Eccles et al., 1993; Marinak & Gambrell, 2010; Wigfield et al., 1997). Evidence of gender differences in reading expectancy is inconsistent; although some research suggests girls have higher expectancy beliefs (Wigfield et al., 1997), other studies find no evidence of significant gender differences (Eccles et al., 1993; Logan & Johnston, 2009; Pitcher et al., 2007).

While females report reading more frequently than males (Anderson et al., 1988; Coles & Hall, 2002; Logan & Johnston, 2009), in both childhood and adolescence, gender differences have also been found in reading choices (Coles & Hall, 2002; Hughes-Hassell & Rodge, 2007; McGeown, 2013; Merisuo-Storm, 2006). In studies examining gender differences in reading skill, significant gender differences are frequently reported among children (Mullis, Martin, Kennedy & Foy, 2007) and adolescents (Ming Chui & McBride-Chang, 2006); however these differences are typically small and only statistically significant as a result of the very large sample of students participating in these studies. Gender differences in the affective (e.g., motivation) and behavioural (e.g., reading activities) aspects of reading are typically wider than differences found in reading skill (see Logan & Johnston, 2009 for a discussion) and as a result these gender differences are more consistently found with smaller sample sizes. Gender differences have also been reported previously among primary school aged pupils in the strength of the association between reading skill and affective aspects of reading (Coddington & Guthrie, 2009; Logan & Johnston, 2009; Logan & Medford, 2011; Oakhill & Petrides, 2007); in all studies, reading

attitudes, motivation or interest were significantly more strongly associated with level of reading skill for boys compared to girls.

Reading ability differences

Throughout childhood and adolescence, the relationship between reading skill and reading motivation is well documented (Baker & Wigfield 1999; Gottfried 1990; Taboada et al., 2009; Wang & Guthrie 2004); therefore intuitively good and poor readers would be expected to differ in their reading motivation. Reading habits may also differ, if both groups seek out reading materials suitable to their interests and level of reading skill. However, compared with studies examining gender differences, research examining differences between good and poor readers is limited. With regard to reading motivation, Lau and Chan (2003) and McGeown, Norgate and Warhurst (2012) both found that good and poor readers differed more widely in their levels of intrinsic reading motivation (i.e., internal motivators; e.g. personal interest) than extrinsic motivation (external motivators; e.g., reading to obtain good grades). With adolescents, Wolters et al. (2014) reported that adequate and struggling reader groups differed significantly in terms of their competence beliefs and social goals, but not in their reading value or achievement goals. In terms of ability differences in reading habits, there is evidence to suggest that children's reading skills predict general reading frequency and engagement in reading activities (Mol & Bus, 2011). In addition, the level of reading skill necessary to easily and fully engage in different reading activities will vary. Consequently, good readers may be more likely to spend time reading books as opposed to short texts. Indeed, Anderson et al. (1988) and Spear-Swerling et al. (2010) demonstrated that several reading skills were more closely associated with book reading than other forms of reading (e.g., magazines, newspapers). In terms of ability differences in the strength of the association between reading skill and affective and behavioural aspects of reading, research is scarce.

Age differences

Longitudinal and cross-sectional research studies investigating age related changes in motivation and attitudes to reading have shown that both decrease with age. In a large cross-sectional study, Lepper, Henderlong-Corpus and Iyengar (2005) found that students' general intrinsic motivation (but not extrinsic motivation) significantly decreased with age. Similarly, Unrau and Schlackman (2006) illustrated that both intrinsic and extrinsic reading motivation decreased with age (although decreases were greater in intrinsic than extrinsic motivation). With regard to expectancy and value of reading specifically, cross-sectional and longitudinal research studies suggest that expectancy beliefs (Eccles et al., 1993; Wigfield et al., 1997) and value of reading (Eccles et al., 1993; Wigfield et al., 1997; Jacobs, Lanza, Osgood, Eccles & Wigfield, 2004) decrease with age. A recent study with adolescents by Wolters et al. (2014) found no evidence of academic level (i.e., age) differences in reading competence or achievement goals; however younger students tended to value reading more highly (i.e., saw greater utility in reading for later

career/post school opportunities). This is consistent with Eccles et al. (1993) who reported that students' value beliefs regarding reading tends to decrease more significantly than their expectancy beliefs (Eccles et al., 1993). With regard to age differences in reading habits, in general, adolescents report spending more time engaging in digital than traditional texts, and this greater use of digital activities increases throughout adolescence (Clark 2011). As with ability differences, research examining age differences in the strength of the association between reading skill and affective and behavioural aspects of reading is scarce.

Do motivational influences vary for different aspects of reading?

Research examining the extent to which cognitive and motivational variables predict reading have typically used reading comprehension as the criterion measure. However, readers possess a number of literacy skills, to varying degrees of proficiency. In this study, word reading, summarisation skills and silent text reading speed were also examined to investigate the relationship between reading habits, reading motivation and different literacy abilities. Research has shown that these different aspects of reading are supported, to some extent, by different cognitive skills. For example, phonological decoding skill is acknowledged to be an important skill supporting word reading (Share, 1995), while oral language skills, vocabulary, working memory, inference and integration skills have been found to be additionally important for reading comprehension (Cain, Oakhill & Bryant, 2004; Ricketts, Bishop & Nation, 2007). Furthermore, sight word automaticity and processing speed have been associated with reading speed and fluency measures (Hudson, Pullen, Lane & Torgesen, 2009). Therefore, just as there are differences in the cognitive skills supporting these different components of reading, this study will examine whether reading motivation and reading habits predict some reading skills to a greater extent than others.

The present study

The study had three main aims:

1. To examine the extent to which adolescents' reading affect (motivation) and behaviour (habits) predicts different components of reading: word reading, comprehension, summarisation and text reading speed. In order to critically assess the importance of affect and behaviour on reading, word reading and text reading speed were entered as initial predictors of comprehension and summarisation skills, and word reading was entered as an initial predictor of text reading speed.
2. To examine whether specific aspects of reading motivation (i.e., expectancy, value) and reading habits (e.g., fiction books, digital texts) were better predictors of specific reading skills than others.
3. To examine group differences (gender, age and reading ability) in reading motivation, reading habits and reading skills, and group differences in the relationship between these variables.

Hypotheses

Based on past literature and in line with the aims of this study, it was predicted that:

1. Adolescents' reading motivation will predict significant variance in their reading skills (word reading, comprehension, summarisation, text reading speed), even after accounting for other reading abilities. In addition, engagement in extended reading activities (i.e., books) will predict significant variance in these components of reading after accounting for other reading abilities.
2. The two dimensions of reading motivation will differentially associate with reading skill and reading engagement. More specifically, expectancy will be more closely associated with reading skill, while value will be more closely associated with engagement in reading activities. While engagement in extended reading activities (i.e., books) is expected to predict reading skills, engagement in shorter reading activities, both traditional (e.g., magazines) and digital (e.g., emails), is not.
3. Mean gender differences in reading motivation (specifically, value) and reading habits (specifically, fiction book reading), age differences in reading motivation (specifically, value) and reading habits (specifically, digital text reading) and ability differences in reading motivation (specifically, expectancy) and reading habits (specifically, book reading) will be found. It was also predicted that males reading skill will correlate more closely with their reading motivation; no predictions are made with regard to age or ability differences in the strength of the relationship between reading skills and reading motivation. No mean gender or age differences are expected in adolescents' reading skills.

Method

Participants

A large representative sample ($n = 1,230$) of secondary school students who were taking part in the standardisation of a new reading assessment (York Assessment of Reading for Comprehension (YARC) Secondary; Stothard, Hulme, Clarke, Barmby & Snowling, 2010) were invited to complete a reading motivation and reading habits questionnaire. The questionnaire was completed by 312 students (25.4 % of the standardisation sample). These 312 students form the sample for the present study and all further information relates solely to this group. These students were from 31 schools across the UK: Northern England (31.3 %), Southern England (34.3 %), Scotland (24 %), Northern Ireland (3.2 %) and Wales (7.1 %). The schools covered a range of socio-economic and geographic backgrounds and included suburban, rural and inner-city state-supported schools and fee paying schools. A similar number of students from each school year completed the questionnaire: Year 7 (22.8 %), Year 8 (23.7 %), Year 9 (19.9 %), Year 10 (17.6 %) and Year 11 (16 %), these students were aged 11 (Year 7) to aged 16 (Year 11). The majority of these students were

White British (86.9 %), with the remaining 13.1 % from a range of different ethnic groups. One hundred and seventy-three students (55.4 %) were female and 8.7 % had English as an additional language (EAL). Information regarding socio-economic status was collected using percentage of free school meals (FSM) at the School level. Proportion of FSM across the 31 participating schools varied from 1.5 % to 45 % ($M = 13.3$, $SD = 10.1$). The national average at the time was 13.4 %.

In comparison to the entire sample of students taking part in the standardisation of the YARC reading assessment, those that completed the motivation and reading habits questionnaire were a very representative sample based on sex, year group, ethnic background, EAL and school socio-economic status (see Stothard et al., 2010 for demographic information of all students participating in the standardisation process). However, the students in this study did differ from the standardisation sample in geographic location: 24 % from Scotland (compared to 11 % of standardisation sample) and 34.3 % from Southern England (compared to 18 % of standardisation sample). With regard to reading skills, this group of students had similar mean standardised scores (and distribution of scores) to the larger sample on all reading measures: single word reading ($M = 102.61$, $SD = 13.65$), reading comprehension ($M = 101.62$, $SD = 11.99$), summarisation skills ($M = 100.24$, $SD = 9.56$) and text reading speed ($M = 102.35$, $SD = 10.65$).

Materials

Reading skills

York Assessment of Reading for Comprehension Secondary (YARC) (Stothard et al., 2010).

Reading skills sub-tests

Single word reading test (SWRT) Word reading was assessed using the SWRT. This was an untimed test and students were asked to read aloud a series of 70 words of increasing complexity. The number of words read correctly was calculated and raw scores were converted into standardised scores based on the entire standardisation sample.

Reading comprehension, summarisation and text reading speed

Students completed 3, 4 or 5 comprehension passages from the YARC Secondary. Students were randomly allocated passages from both Level 1 and Level 2 and received at least one factual and one fiction passage. Students completed each passage in turn; they read the passage silently and indicated when they had finished reading. The examiner noted the length of time it took students to read the passage. Students then completed the comprehension questions (each passage contained 13 comprehension questions) followed by the summarisation task (students were asked to recall the main events from the passage). For each reading skill listed below, an

average standardised score across all completed passages was calculated and standardised scores were based on the entire standardisation sample. Full details regarding administration and scoring are available within the YARC Secondary Passage Reading Manual (Stothard et al., 2010). Specific details are given below.

Reading comprehension

At the end of every passage, students were asked thirteen comprehension questions assessing literal and inferential comprehension skills and vocabulary knowledge (see Stothard et al., 2010) for full details. Inferential comprehension questions included cohesive device, knowledge-based inference, evaluative inference, elaborative inference and predictive inference; all required students to draw some type of inference to answer the question. Literal comprehension questions did not require an inference; student's had to provide the answer drawn literally from within the text. Vocabulary knowledge and figurative language questions drew upon student's language skills and their ability to explain word meanings or phrases by using the text. Finally, sequencing questions tapped into student's understanding of the time course of events within the passage. Students were allowed to look back at the passage while answering the comprehension questions, thus reducing the impact of memory on performance. Students received one point for every question answered correctly. Reliability (Cronbach's alpha) for the individual passages ranged from $\alpha = .77$ to $\alpha = .82$.

Reading summarisation

Following completion of the comprehension questions, students were asked to summarise the passage, making clear what the main events were. The passage was removed before asking the summarisation question, as students were not allowed to look at the passage while completing the summarisation task. Students were given sufficient time to provide a full answer and received one point for every main event retold. Students did not need to provide the main events in the correct temporal sequence. Reliability (Cronbach's alpha) for the individual passages ranged from $\alpha = .45$ to $\alpha = .72$; however, inter-rater reliability for the passages was higher; $r = .71$ to $r = .93$.

Text reading speed

The time taken to read each passage was recorded and a silent text reading speed for each passage was calculated.

Reading motivation

Students completed the Motivation to Read Profile (Reading Survey) (Gambrell, Palmer, Codling & Mazzoni, 1996). This 20 item questionnaire has two subscales: self-concept as a reader ($\alpha = .78$, 10 items) (e.g., I am: a poor reader; an OK reader; a good reader; a very good reader) and value of reading ($\alpha = .84$, 10 items) (e.g.,

Knowing how to read well is: not very important; sort of important; important; very important). In line with expectancy-value theory, expectancy questions tapped into student's perceptions of current competence and expectations of future success; while value questions referred to the extent to which student's believed reading was an enjoyable, important and useful activity.

Reading habits

Using a questionnaire format, students were asked to report what they read during the previous weekend and how much time they spent engaged in the different forms of reading using a five point Likert scale: 1 = didn't read this, 2 = 30 min or less, 3 = 1 h, 4 = 2 h, 5 = 3 h or more. Fourteen reading habits were included (e.g., fiction books) and were categorised as follows: Extended traditional texts (fiction books, factual books and school textbook), short traditional texts (magazine, comic, newspaper, song lyrics, instructions/manual, poetry) and short digital texts (text messages/email, social networking site, computer game, factual website, Twitter). This was to compare extended texts with shorter texts and traditional texts with digital texts. Cronbach's alpha values were calculated to measure reliability. These were as follows: extended traditional texts (3 items, $\alpha = .42$), short traditional texts (6 items, $\alpha = .59$), short digital texts (5 items, $\alpha = .63$). Due to the low internal consistency on the extended traditional texts, these were split to examine each book type separately. In addition, previous research had highlighted differential relationships between these different book types and reading skill (Spear-Swerling et al., 2010). An item deletion approach was adopted for short traditional texts and short digital texts; however this did not improve the alpha value, therefore no items were removed.

Procedure

Students completed the reading assessments (YARC Secondary) individually with an assessor. This session lasted approximately 1 h. Following this, students were asked to participate in an online or paper and pencil version of the questionnaire (which assessed both reading motivation and reading habits). Students completed this in their own time and as an incentive were entered into a prize draw. Questionnaire completion took approximately 15 min. Students were asked to be honest when responding and were told that it was not a test. They were also told that their individual responses would be confidential.

Results

Means, SDs and score distributions are presented in Table 1.

Correlations were carried out to examine the relationship between adolescents' reading skills, motivation and reading habits. Adolescents' reading skills (word reading, comprehension, summarisation and text reading speed) correlated significantly with their reading motivation (see Table 2). Each correlation coefficient was converted into a

Table 1 Means, SDs and score distributions for all variables

	M	SD	Skewness	Kurtosis
Word reading	102.60	13.65	-.327	-.093
Reading comprehension	101.62	12.00	-.592	-.108
Reading summarisation	100.24	9.57	-.473	-.122
Text reading speed	102.35	10.65	-1.041	1.324
Motivation (expectancy)	29.29	4.18	-.412	.128
Motivation (value)	28.08	5.18	-.476	-.108
Fiction book reading	2.48	1.38	.558	-.932
Factual book reading	1.58	.88	1.282	.1486
School textbook reading	2.27	1.01	.721	.326
Short traditional text reading	1.63	.46	1.951	8.350
Short digital text reading	2.34	.69	.609	.359

z-score using Fisher's r-to-z transformation to examine differences in the strength of the correlations. All reading skill measures (word reading, comprehension, summarisation and text reading speed) were significantly more closely related with reading expectancy than value. On the other hand, reading value was more closely associated with time spent engaging in all texts; although comparisons were not all significant. Both dimensions of motivation were more closely associated with frequency of fiction book reading than other literacy activities. In addition, reading comprehension and summarisation skills were significantly associated with time spent reading fiction and factual books, but not other literacy activities. Furthermore, the correlations between these reading skills and frequency of fiction book reading were notably stronger. In addition, frequency of fiction book reading also correlated significantly with word reading and text reading speed.

Hierarchical multiple regression analyses were carried out to examine the amount of variance explained by reading motivation before and after accounting for basic reading skills, for each component of reading. Word reading, reading comprehension, summarisation skills and text reading speed were used as criterion variables and three regression models were tested. The first model examined the extent to which the different components of reading were predicted by adolescents' reading affect; therefore only reading motivation was entered as a predictor. In the second and third model, the extent to which reading motivation predicted different components reading, after taking into account word reading (Model 2) and word reading and text reading speed (Model 3) was examined.

The regression models were tested by running collinearity statistics. For the models in Table 3 the variance inflation factor varied between 1.297 and 1.689 (average VIF = 1.409) and tolerance statistics varied between .592 and .771, which indicates that collinearity was not an issue. In Model 1, expectancy emerged as the strongest predictor of all components of reading skill. The results from Models 2 and 3 were very similar therefore are summarised together. Value was the strongest predictor of comprehension and summarisation skills, and explained significant variance in these skills after accounting for word reading and text reading speed.

Table 2 Correlations between reading skills, reading motivation and reading habits

	Motivation (expectancy)	Motivation (value)	Fiction books	Factual books	School books	Short traditional texts	Short digital texts
Word reading	.50**	.17**	.29**	.08	.04	.02	-.04
Reading comprehension	.47**	.30**	.47**	.14*	-.05	-.05	-.09
Summarisation skills	.36**	.25**	.35**	.16**	.10	-.01	-.13
Text reading speed	.40**	.17**	.29**	.09	.07	.12	.05
Motivation (expectancy)			.42**	.19**	.06	.17**	.09
Motivation (value)			.52**	.37**	.13*	.29**	-.10

** $p < .01$; * $p < .05$

Table 3 Hierarchical multiple regression analyses predicting reading skills with word reading, text reading speed and reading motivation as predictors

Enter	Model 1 (motivation)		Model 2 (word reading; motivation)		Model 3 (word reading, speed; motivation)	
	ΔR^2	Final β	ΔR^2	Final β	ΔR^2	Final β
Word reading						
1(1)		.555**				.581**
1(1)	.239	-.191				.059
Reading comprehension						
1(0), 2, 3(1)			.464	.607**		.581**
1, 2(0), 3(1)					.468	.059
1(1), 2, 3(2)		.429**		.100 [†]		.091
1(1), 2, 3(2)	.226	.094	.501	.148**	.502	.147**
Reading summarisation						
1(0), 2, 3(1)			.267	.462**		.453**
1, 2(0), 3(1)					.266	.020
1(1), 2, 3(2)		.316**		.066		.063
1(1), 2, 3(2)	.134	.100	.292	.141*	.290	.140*
Text reading speed						
1 (0), 2(1)			.279	.446**		
1(1), 2(2)		.404**		.163**		
1(1), 2 (2)	.151	-.019	.298	.021		

Regression models 1, 2, 3 presented. In Model 1 (Step 1 Reading motivation), in Model 2 (Step 1 Word reading, Step 2 Reading motivation), in Model 3 (Step 1 Word reading and Text reading speed, Step 2 Reading motivation). Numbers in parenthesis equal order of entry for each regression model: (0) = variable not entered, (1) = entered at Step 1, (2) = entered at Step 2

** $p < .01$; * $p < .05$; [†] $p < .06$

Table 4 Hierarchical multiple regression analyses predicting reading skills with word reading, text reading speed and reading habits as predictors

Enter	Model 1 (reading habits)		Model 2 (word reading; reading habits)		Model 3 (word reading, speed; reading habits)	
	ΔR^2	Final β	ΔR^2	Final β	ΔR^2	Final β
Word reading skill						
I(1)		.304**				
I(1)		-.043				
I(1)		.017				
I(1)		-.028				
I(1)	.067	-.020				
Reading comprehension						
I(0), 2, 3 (1)			.445	.579**		.558**
I, 2(0), 3(1)					.448	.039
I(1), 2, 3(2)		.498**		.321**		.315**
I(1), 2, 3(2)		.036		.061		.062
I(1), 2, 3(2)		-.072		-.082 [†]		-.081 [†]
I(1), 2, 3(2)		-.149*		-.133*		-.136*
I(1), 2, 3(2)	.239	-.035	.550	-.023	.549	-.024
Reading summarisation						
I(0), 2, 3(1)				.433**		.437**
I, 2(0), 3(1)					.238	-.007
I(1), 2, 3(2)		.339**		.207**		.208**
I(1), 2, 3(2)		.103		.121*		.121*
I(1), 2, 3(2)		-.140*		-.147**		-.147**
I(1), 2, 3(2)		-.073		-.061		-.061
I(1), 2, 3(2)	.137	-.050	.310	-.041	.307	-.041

Table 4 continued

Enter	Variable added	Model 1 (reading habits)		Model 2 (word reading; reading habits)		Model 3 (word reading, speed; reading habits)	
		ΔR^2	Final β	ΔR^2	Final β	ΔR^2	Final β
Text reading speed							
1(0), 2(1)	Word reading				.517**		
1(1), 2(2)	Fiction book		.315**		.158**		
1(1), 2 (2)	Factual book		-.043		-.021		
1(1), 2(2)	School book		-.012		-.020		
1(1), 2 (2)	Short tradition		.086		.101		
1(1), 2 (2)	Short digital	.090	.021	.336	.031		

Regression models 1, 2, 3 presented. In Model 1 (Step 1 Reading habits), in Model 2 (Step 1 Word reading, Step 2 Reading habits), in Model 3 (Step 1 Word reading and text reading speed, Step 2 Reading habits). Numbers in parenthesis equal order of entry for each regression model: (0) = variable not entered, (1) = entered at Step 1, (2) = entered at Step 2

** $p < .01$; * $p < .05$; † $p < .07$

Text reading speed on the other hand was better predicted by expectancy, after accounting for word reading.

Hierarchical multiple regression analyses using adolescents' reading activities were also carried out. As before, three regression models were tested (see Table 4).

The regression models were tested by running collinearity statistics. For the models in Table 4, the variance inflation factor varied between 1.092 and 1.752 (average VIF = 1.329) and tolerance statistics varied between .571 and .915, indicating that collinearity was not an issue. Overall, fiction book reading emerged as the strongest predictor of all components of reading skill and predicted significant variance in all reading skills. As before, the results from Models 2 and 3 were very similar, therefore they are summarised together. After accounting for word reading (and text reading speed), fiction book reading and, to a lesser extent, traditional short texts, predicted significant variance in reading comprehension (the latter was inversely related). All book types predicted significant variance in reading summarisation skills after accounting for word reading and text reading speed (school book was inversely related); however the shorter (traditional and digital) texts did not.

Gender, reading ability and age differences were also examined. See Table 5.

Gender differences

Using a one-way MANOVA, no significant gender differences were found on the reading skill measures, $p > .05$, therefore these were not entered as covariates. Girls reported significantly higher reading motivation for expectancy; $F(1, 270) = 4.58$, $p > .05$, $\eta_p^2 = .02$, and in particular, value of reading; $F(1, 270) = 20.67$, $p < .01$, $\eta_p^2 = .07$. Similarly, girls reported spending more time reading fiction books; $F(1, 270) = 4.25$, $p < .05$, $\eta_p^2 = .01$. There were no other significant gender differences. To control for multiple comparisons, Benjamini and Hochberg's (1995) Linear Step Up procedure was used. All significant differences remained significant when compared against the critical p value. Analyses were also carried out to examine whether males and females differed in the strength of the association between all reading skills and their reading motivation and habits. Correlation coefficients were compared using Fisher's r -to- z transformation; males and females did not differ in the strength of any relationships (28 comparisons), $p > .05$.

Ability differences

Differences in reading habits and motivation between good and poor readers were examined using a one-way MANOVA. Adolescents with reading comprehension scores one standard deviation below 85 ($n = 24$) or above 115 ($n = 38$) the mean were identified as poor or good readers, respectively. Unsurprisingly, these groups differed substantially on all of the reading assessments: word reading; $F(1, 60) = 118.80$, $p < .001$, $\eta_p^2 = .66$, reading comprehension; $F(1, 60) = 1,876.91$, $p < .001$, $\eta_p^2 = .97$, summarisation skills; $F(1, 60) = 190.44$, $p < .001$, $\eta_p^2 = .76$ and text reading speed; $F(1, 60) = 38.67$, $p < .001$, $\eta_p^2 = .39$. However, given that

Table 5 Group differences in reading skill, reading motivation and reading habits (means, with SD in brackets)

	Male	Female	Good readers	Poor readers	Years 7 and 8	Years 10 and 11	Score range
Word reading	102.27 (12.45)	103.51 (14.61)	115.40 (9.45)	84.67 (12.79)	104.15 (13.51)	101.51 (13.34)	<70 to >130
Reading comprehension	101.59 (11.89)	102.80 (11.34)	117.71 (2.54)	78.03 (4.67)	104.35 (11.79)	99.45 (10.47)	<70 to >130
Summarisation skills	100.64 (9.89)	100.74 (8.71)	108.92 (6.81)	86.21 (5.40)	102.60 (9.09)	97.68 (9.00)	<70 to >130
Text reading speed	102.25 (10.47)	102.89 (10.71)	109.24 (6.35)	93.71 (13.21)	105.15 (10.63)	100.27 (8.79)	<70 to >130
Motivation (expectancy)	28.81 (4.23)	29.88 (4.05)	32.47 (3.34)	27.13 (4.62)	29.87 (4.49)	29.17 (3.46)	10–40
Motivation (value)	26.41 (5.38)	29.28 (4.98)	30.71 (4.82)	26.13 (5.74)	28.76 (5.62)	26.86 (4.77)	10–40
Fiction book	2.28 (1.29)	2.62 (1.41)	3.58 (1.38)	1.54 (.65)	2.50 (1.34)	2.41 (1.46)	1–5
Factual book	1.68 (.87)	1.82 (.79)	1.84 (.72)	1.50 (.59)	1.69 (.85)	1.59 (.86)	1–5
School textbook	2.19 (1.08)	2.32 (.93)	2.26 (.94)	2.13 (1.03)	2.11 (.94)	2.50 (1.12)	1–5
Short traditional texts	9.59 (2.58)	9.94 (2.95)	9.53 (2.02)	9.87 (2.09)	9.36 (2.49)	10.22 (3.35)	6–30
Short digital texts	12.69 (3.87)	12.01 (3.58)	11.53 (4.14)	12.13 (3.80)	11.19 (3.57)	13.67 (3.72)	5–25

ability differences were of interest, these were not entered as covariates. Significant group differences were found in reading motivation but with larger differences in their expectancy; $F(1, 60) = 27.87, p < .001, \eta_p^2 = .32$ than value of reading; $F(1, 60) = 11.47, p < .005, \eta_p^2 = .16$. For reading habits, the groups differed significantly only on time spent reading fiction books; $F(1, 60) = 45.10, p < .001, \eta_p^2 = .43$. In all comparisons, the scores of good readers were higher than those for poor readers. Benjamini and Hochberg's (1995) Linear Step Up procedure was used and all significant differences remained significant. Analyses to examine whether good and poor readers differed in the strength of the association between all reading skills and reading motivation and habits were conducted. Correlation coefficients were compared using Fisher's *r*-to-*z* transformation; good and poor readers differed most significantly in the relationship between reading expectancy and word reading, and this relationship was stronger among poor readers ($r = .51$) than good readers ($r = .10$); however this was not a reliable effect, $p = .058$ (two-tailed). All other 27 comparisons were not significant; $p > .05$.

Age differences

To draw comparisons between students who would not share a chronological age, students in Years 7 and 8 ($n = 125$) were compared with students in Years 10 and 11 ($n = 90$) using a one-way MANOVA. The groups differed significantly in a number of reading measures, namely reading comprehension; $F(1, 213) = 9.93, p < .005, \eta_p^2 = .04$, summarisation skills; $F(1, 213) = 15.45, p < .001, \eta_p^2 = .07$ and text reading speed; $F(1, 213) = 12.73, p < .001, \eta_p^2 = .06$. Therefore these were entered as covariates to ensure that age differences would not reflect ability differences. After co-varying for these reading skills, no age differences were found in reading motivation but were found in school textbook reading; $F(1, 210) = 8.24, p < .01, \eta_p^2 = .04$, reading of short traditional texts; $F(1, 210) = 6.94, p < .01, \eta_p^2 = .03$, and short digital texts $F(1, 210) = 23.86, p < .001, \eta_p^2 = .10$, with older students reporting spending more time in all activities. Benjamini and Hochberg's (1995) Linear Step Up procedure was used; all significant differences remained significant. Correlation coefficients were compared using Fisher's *r*-to-*z* transformation; younger and older students did not differ in the strength of association between reading skills, motivation and habits (28 comparisons), $p > .05$.

Discussion

The present study examined the extent to which adolescents' reading affect (motivation) and reading behaviour (habits) predicted different components of reading (word reading, comprehension, summarisation and text reading speed), after accounting for basic reading abilities; thus testing the relative importance of reading affect and behaviour on different reading outcomes. In general, reading motivation and fiction book reading were significant predictors of adolescents' reading comprehension and summarisation skills (after accounting for word reading and text reading speed) and text reading speed (after taking into account word reading).

Interestingly, different dimensions of reading motivation and reading habits emerged as significant predictors of different reading skills. In addition, the pattern of group differences was consistent with past literature; girls reported greater reading motivation (specifically, value) and more fiction book reading, good readers reported greater reading motivation (specifically, expectancy) and more fiction book reading and older readers reported spending more time reading school books, short traditional and short digital texts. No group differences were found in the strength of associations between reading skill and reading motivation/habits.

In the correlational analysis, similar to Wigfield and Eccles (2000), reading expectancy was more closely associated with reading skill, while reading value was more closely associated with engagement in reading activities. With regard to the correlations between reading skill and motivation, all were statistically significant; however differences between expectancy and value dimensions were particularly wide for word reading. Of all the reading skills assessed, the ability to read single words is a skill which adolescents will likely be able to judge most readily their level of accuracy, which may explain this strong association. On the other hand, word reading is arguably not a skill particularly closely associated with adolescents' perceptions of how enjoyable, useful and important reading is. Interestingly, reading motivation was more closely related to some reading activities than others. Reading motivation was significantly correlated with fiction and, to a lesser extent, with factual book reading but not with school book reading; as students have more autonomy over recreational reading activities, their reading motivation is likely to be more closely correlated with these activities.

With regard to the regression analyses, for comprehension, both dimensions of motivation explained variance in this reading skill (although expectancy marginally failed to meet the threshold for significance, and reading value explained more variance; consistent with Anmarkrud & Bråten, 2009). These correlational findings give support to further investigation of interventions aimed at boosting reading motivation. It may be that adolescents who value reading are more cognitively engaged during reading tasks, and as a result, gain a deeper understanding of the text (as proposed by Taboada et al., 2009). For summarisation, only reading value significantly predicted variance after accounting for word reading and text reading speed. It is possible that students who valued reading more highly had engaged more with the text and therefore could remember more events from within it. Alternatively, as the summarisation task was completed after all comprehension questions, it may be that those who valued reading more highly performed better, as they were more inclined to spend time freely recalling information from the passage after completing the comprehension questions. This highlights the importance of considering assessment length when measuring student's reading skill. If an assessment is too long, students' motivation (i.e., their value of the task) might predict the effort they put into the task. Therefore, while it is evident that reading motivation is important, it is crucial to understand why it is important; whether it engages readers more deeply or increases the effort they apply. Expectancy rather than value explained variance in text reading speed after accounting for word reading. Indeed, if reading is easier and less effortful for students who read quickly

and fluently, then it is intuitive that their expectancy rather than their value will be related to their performance.

An additional focus was on adolescents' reading habits and whether these would predict variance in different components of reading after accounting for word reading. While reading motivation is likely to predict variation in different reading skills through greater cognitive engagement or increased effort during the assessment, reading habits are likely to predict adolescents' reading skills via past print exposure and experience of reading for meaning. While adolescents' fiction book reading explained significant variance in all reading skills (after accounting for word reading and text reading speed), time spent engaging in other texts were less consistent predictors. Therefore, it is not the case that past print exposure predicts reading skills but rather exposure to extended texts, in particular fiction book reading. These results are consistent with research demonstrating a closer relationship between reading skills and book reading compared to other text types (Anderson et al., 1988) and fiction book reading in particular (Spear-Swerling et al., 2010). However, the association between reading skill and reading activities is reciprocal (Mol & Bus, 2011), as students' reading habits are also influenced by their reading skills. Therefore, it is of interest not only to understand which types of reading activities students are engaged with but why they have chosen to spend time with them.

As not all forms of print exposure are equally associated with reading skill, it would be interesting to examine the skills that are being developed by different texts, as students' reading habits reflected a shift towards more time spent engaging in digital texts than more traditional texts (consistent with Pitcher et al., 2007). There is currently little research examining the skills supporting (and being developed) by newer literacy activities (however see Coiro & Dobler, 2007; Wood et al., 2011) and this demonstrates an important area for future research.

To add to the limited research with adolescents, group differences were also explored. Consistent with previous literature, girls had higher reading motivation (specifically value) and spent more time reading fiction books. However, gender differences were not found in the strength of relationship between reading skill and reading motivation/habits; inconsistent with past research (e.g., Coddington & Guthrie, 2009; Logan & Medford, 2011); however this was the first study to examine this relationship in adolescence which may explain the different results. Good readers had higher reading motivation (specifically, expectancy) and spent more time reading fiction books, while younger and older students had similar levels of reading motivation but differed in their reading habits, most notably in time spent engaging with digital texts; older readers reported spending more time with these texts. These group differences have important implications for education. For example, understanding differences between good and poor readers is important to identify potentially effective approaches towards improving poor readers' reading experiences and skills, by identifying specific areas that can be targeted or utilised for interventions. Furthermore, teacher awareness of gender and age differences in reading motivation and reading habits are important to ensure that reading activities are selected that are of interest to students, and that efforts to enhance and support reading motivation are targeted and implemented most effectively. However,

although group differences were found, teachers also need to appreciate that these groups are not homogenous and that there still exists considerable variation in the reading motivation and reading habits of boys and girls, good and poor readers and younger and older adolescents.

The results of this study provide an important contribution to the limited research with adolescents, and do so with a large and representative sample. Nevertheless, some limitations should be noted. Firstly, Cronbach's alpha values for short traditional and digital texts were below the acceptable threshold ($\alpha = .70$). However, these categories were retained to be succinct and provide an insight into adolescent's overall engagement in these literacy activities. Furthermore, students were asked approximately how much time they spent involved in a range of literacy activities over a specific time period and were provided with options of '1 h' '2 h' etc. However, a student who believed they spent 1.5 h in a specific literacy activity would be forced to choose between the two. While this is not ideal, the use of specific time markers is better than likert scales used to measure print exposure which often use ambiguous terms such as 'a lot' or, 'a little' (see Mol & Bus, 2011 for a discussion). In addition, when completing the reading motivation questionnaire (Gambrell et al., 1996), students may have been drawing upon their motivation to read books or extended texts; students perceptions of 'readers' are often synonymous with those who read books rather than digital texts (Clark, 2011; Pitcher et al., 2007) which could explain the weaker relationship between reading motivation and digital text reading. Finally, due to the cross-sectional nature of the study, questions regarding causality cannot be answered.

Conclusions

Reading motivation and reading habits (in particular, fiction book reading) were found to predict additional variance in adolescents' reading comprehension, summarisation skills and text reading speed after accounting for variation in word reading skill. This suggests it is worthwhile identifying ways to boost adolescents' reading motivation and engagement in fiction book reading, as a route towards improving reading attainment. Group differences were consistent with past literature, providing greater confidence that these differences exist across different educational and cultural contexts, across different age groups and when using different assessment types.

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