

## Narrative transportability, leisure reading, and genre preference in children 9–13 years old

Jakob D. Jensen<sup>a</sup>, Katheryn Christy<sup>b</sup>, Melinda Krakow<sup>a</sup>, Kevin John<sup>c</sup>, and Nicole Martins<sup>d</sup>

<sup>a</sup>Department of Communication, University of Utah, Salt Lake City, Utah, USA; <sup>b</sup>School of Communication, Ohio State University, Columbus, Ohio, USA; <sup>c</sup>College of Nursing, University of Utah, Salt Lake City, Utah, USA; <sup>d</sup>Department of Telecommunications, Media School, Indiana University, Bloomington, Indiana, USA

### ABSTRACT

Leisure reading behavior is a key predictor of educational success. Transportability is a trait that determines how likely an individual is to become involved in a story, and past research has suggested that involvement may be related to leisure reading behavior. However, available measures of transportability have not been validated with children or related to leisure reading. To address this gap, children 9–13 years old ( $N = 136$ ) completed a revised version of the Transportability Scale. A 13-item version of the scale was found to be unidimensional, reliable, and predictive of 6% of the variance in leisure reading (above and beyond sex, age, reading ability, and student performance). Transportability was also related to genre preference and several interesting sex differences emerged. The Transportability Scale provides researchers with a psychometrically sound measure of narrative involvement to advance research on leisure reading.

### ARTICLE HISTORY

Received 28 May 2013  
Revised 13 March 2015  
Accepted 16 March 2015

### KEYWORDS

Genre preference;  
involvement; leisure reading;  
transportability;  
transportation

Past research has suggested that lifetime leisure reading habits may stabilize at 11 years old (McKenna, Ellsworth, & Kear, 1995). Even though leisure reading is a non-academic activity, it predicts (and possibly cultivates) academic success, literacy, and vocabulary (McKool, 2007). Accordingly, researchers from several disciplines have been working to identify factors that predict leisure reading, especially for children at or around 11 years old (Wigfield & Guthrie, 1997a).

Research on reading motivations has identified both intrinsic and extrinsic predictors of leisure reading (Schiefele, Schaffner, Möller, & Wigfield, 2012). One intrinsic motivational factor that has consistently predicted leisure reading is involvement (Baker & Wigfield, 1999; Guthrie, Wigfield, Metsala, & Cox, 1999; Lau, 2009; McElvany, Kortenbruck, & Becker, 2008; Wang & Guthrie, 2004). Involvement is defined as getting lost in a story (Guthrie et al., 1996), and has also been referred to as narrative escape or absorption (Greaney & Neuman, 1990; Schiefele & Schaffner, in press; see Table 1). In reading research, involvement is typically conceptualized as a trait that is relatively stable, and studies have suggested that it positively predicts reading behavior over time (Schiefele et al., 2012). If this is true, then involvement could be used by researchers and educators to both explain and encourage leisure reading in children.

One limitation of the existing research on leisure reading is that there is no established measure of involvement. Researchers currently rely on multi-item measures with limited reliability (Wigfield & Guthrie, 1997b) or reading motivation indices

that capture the breadth of motivational influences as a combined entity rather than the impact of a single factor (Schiefele et al., 2012). Thus, there is a pressing need for a validated measure of involvement.

Research in the field of communication has made progress in the development and validation of measures of narrative transportation (Green & Brock, 2000). Narrative transportation is a mental process that combines mental imagery, emotion, and thoughts to make the reader feel as if they are lost in the story (Green & Brock, 2000); as such, narrative transportation is conceptually synonymous with the reading research concept of involvement. Narrative transportation instruments have been developed to measure the construct at the state level (i.e., transportation; see Green & Brock, 2000) and the trait level (i.e., transportability; see Dal Cin, Zanna, & Fong, 2004). The trait-level measure has been validated with college students and convenience samples of adults (Dunlop, Wakefield, & Kashima, 2008), but no study to date has documented the psychometric properties of the scale with children or explored whether transportability relates to leisure reading. The goal of the present study was to examine these issues by administering the transportability scale to children 9–13 years old.

### Leisure reading, involvement, and transportability

Leisure reading has been found to predict academic success, adult literacy, and vocabulary development, fluency, and

**Table 1.** Definitions of key constructs.

Concept	Definition
Reading motivation	The extent to which a person is motivated to read (Schiefele et al., 2012). Can be divided into seven subdimensions, some of which are intrinsic motivations and some of which are extrinsic motivations (see Table 2).
Intrinsic reading motivation	The extent to which a person is motivated to read because the act of reading is rewarding (Schiefele et al., 2012).
Extrinsic reading motivation	The extent to which a person is motivated to read because of external reward (e.g., studying because one wants good grades) (Schiefele et al., 2012).
Involvement	Getting lost in a story (Guthrie et al., 1996). One of the seven subdimensions of reading motivation. Synonymous with narrative escape (Greaney & Neuman, 1990), absorption (Schiefele & Schaffner, in press), and narrative transportation (Green & Brock, 2000).
Narrative transportation	A mental process that combines mental imagery, emotion, and thoughts to make the reader feel as if they are lost within a story (Green & Brock, 2000).
Transportability	The predisposition an individual has towards becoming lost in a story (Dal Cin et al., 2004); a trait-level conceptualization of narrative transportation.

Note. Definitions and relevant sources for key terms.

comprehension (Guthrie & Wigfield, 2000; McKool, 2007; Taylor, Frye, & Maruyama, 1990). Unfortunately, the window for the development of lifetime leisure reading habits is relatively small. Hansen (1969) discovered that leisure reading habits tended to stabilize around Grade 5, and subsequent research has supported these findings (Cline & Kretke, 1980; McKenna, Ellsworth, & Kear, 1995). Thus, children who do not develop leisure reading habits by approximately 11 years old are unlikely to ever do so. This is a concern for educators and educational psychologists, and a large amount of time and effort has been put into exploring the origins of leisure reading behavior.

### Leisure reading and motivation

Present research suggests that one important predictor of leisure reading is reading motivation, which influences both the amount and range of children's reading behaviors, including leisure reading (Mol & Bus, 2011). There are two types of reading motivation: current reading motivation (a state) and habitual reading motivation (a trait; Perkon, 1993). The extent to which an individual wants to read "a specific text in a given situation" displays a current reading motivation, whereas an individual who is frequently and repeatedly motivated to read is said to have a habitual reading motivation (Schiefele et al., 2012, p. 429). Each of these forms of reading motivation (i.e., state and trait) is a multi-dimensional construct comprised of a subset of either intrinsic or extrinsic submotivations (Schiefele et al., 2012; Wingfield & Guthrie, 1997a, 1997b).

Intrinsic motivations seem to be the best predictor of leisure reading behaviors, with extrinsic motivations tending to have a

nonsignificant—or even negative—impact on leisure reading (Schiefele et al., 2012). Some research has shown that intrinsic reading motivations are excellent predictors of genre preference (e.g., crime, action, romance, biography) and may be related to the development of reading preferences across time (Möller & Retlsdorf, 2008; Philipp, 2010; Wigfield & Guthrie, 1997b). However, these results are very broad, with such studies commonly relying on aggregated measures of intrinsic or extrinsic motivations. Schiefele et al. argued that for reading motivation research to advance, more focus needs to be placed on the various subdimensions of intrinsic and extrinsic reading motivations, as these differing subdimensions are quite likely to have differential impacts on reading behavior.

### The seven subdimensions of reading motivation

Although there is some debate in the reading motivation literature about the exact nature of these subdimensions, a recent review of the relevant literature suggests that there are seven genuine subdimensions of reading motivation: curiosity, involvement, competition, recognition, grades, compliance, and work avoidance (Schiefele et al., 2012). Of these subdimensions, only curiosity and involvement are intrinsic motivations. Definitions for the subdimensions can be found in Table 2.

### Difficulties with measuring reading motivations

One major barrier to the examination of these subdimensions is a lack of suitable measurement instruments. The most popular reading motivation instrument—the Motivations for Reading Questionnaire (MRQ; Wigfield & Guthrie, 1997b)—includes multi-item scales for most of the seven reading dimensions;

**Table 2.** Definitions and intrinsic/extrinsic categorization of reading motivations subdimensions.

Reading motivation subdimension	Definition	Intrinsic/extrinsic motivation
Involvement	Reading to get lost in a story	Intrinsic
Curiosity	Reading due to interest in a particular topic	Intrinsic
Competition	Using reading ability as a way of competing with one's peers	Extrinsic
Recognition	Reading for praise from authority figures (e.g., teachers, parents)	Extrinsic
Grades	Reading to improve an academic grade (e.g., studying)	Extrinsic
Compliance	Reading because of a work or school assignment	Extrinsic
Work avoidance	Not reading at all; actively avoiding tasks that require reading	Extrinsic

Note. Subdimensions of reading motivation defined and labeled as intrinsic/extrinsic.

however, the reliabilities for these subscales tend to be low and quite inconsistent from administration to administration (Wigfield & Guthrie, 1997b). As such, the MRQ does not answer Schiefele et al.'s (2012) call for consistent, standardized measures of the various subdimensions of reading motivations.

### A new way of measuring reading motivations

Fortunately, scholars working in other areas of study have developed measures that could represent several reading motivation subdimensions. For example, one of the primary intrinsic motivations for reading, involvement, is conceptually quite similar to a well-studied phenomenon in communication research: narrative transportation. Involvement is defined as “reading to get lost in a story, for the enjoyment of the plot, character development, the language/prose, or format of the story” (Guthrie et al., 1996, p. 330), and includes experiencing imaginative actions and empathizing with story characters (Schiefele et al., 2012). Narrative transportation is a mental process where thought, emotion, and mental imagery combine to make one feel lost in the story (Busselle & Bilandzic, 2008; Green & Brock, 2000). As such, the two ideas are—to a large extent—conceptually synonymous, with both referring to a feeling of becoming lost in a story world. Thus, it is reasonable to assume that a measure assessing narrative transportation could also be used to assess involvement. There are, in fact, several existing measures of narrative transportation that have been well-validated—particularly within samples of college-aged students—and are remarkably stable from one population to the next in terms of reliability. One such measure is Dal Cin et al. (2002, 2004) measure of transportability.

### Measuring transportability

Transportability is a stable trait that determines how likely an individual is to become transported (i.e., involved) in a story, and as such is likely to be useful in investigations of reading motivation. Dal Cin et al. (2002, 2004) scale was developed by adapting Green and Brock's (2000) original state-based measure of narrative transportation. While the Narrative Transportation Scale asks individuals to assess their involvement with a particular story at a given time, the Transportability Scale (TS) rewrites these items to apply to people's reading experiences in general, across time.

The TS was developed and validated within a college-aged sample (Dal Cin et al., 2002). It was demonstrated to be both reliable (Cronbach's  $\alpha = .87-.88$ ) and stable (10-week test-retest  $r = .62-.64$ ,  $p < .001$ ) across both written and visual materials. Scores on the TS are also highly predictive of the degree to which an individual will become involved with a specific story. In one study investigating four narratives (two films and two stories) transportability was used as a predictor of narrative transportation (i.e., involvement), with standardized beta coefficients ranging from .37 to .47 (all  $p < .001$ ; Dal Cin et al., 2002). The measure has since been used extensively in narrative persuasion and media use research, and has been demonstrated to be reliable and valid outside of the validation sample (e.g., Bilandzic & Busselle, 2008, 2011; Dal Cin, Gibson, Zanna,

Shumale, & Fong, 2007; Dunlop et al., 2008; Greenwood & Long, 2009).

However, the TS has never been used as a potential predictor of leisure reading, nor has the scale ever been tested with children. Thus the aims of the present study were to validate the TS scale within a child sample (RQ1) and to examine whether it is related to leisure reading (RQ2) and genre preference (RQ3). If it is valid and concurrently related, then the TS could serve as a standardized measure of the subdimension of involvement.

## Method

### Participants

Fourth-, fifth-, and sixth-grade students ( $N = 136$ ) were recruited from three elementary schools located in three medium-sized Midwestern towns (populations of 30,000–100,000). The schools were all public and served kindergarten through sixth grade. Students were asked to complete a brief survey in exchange for a small reward (a \$3 yo-yo). The schools were also provided with compensation on a per student basis (\$5 per student).

Participants ranged in age from 9 to 13 years old ( $M$  age = 10.87 years,  $SD = 0.88$  years). Slightly more girls (55.9%) participated than boys (44.1%). The sample was fairly balanced across grade level, with roughly equal numbers of fourth- (39.0%), fifth- (27.5%), and sixth-grade students (22.8%). Most of the participants described themselves as White; however, there was also a relatively large percentage of Hispanic children in the sample (consistent with the demographics of the region): 70.6% White, 20.6% Hispanic/Latino, 2.2% Asian/Pacific Islander, 1.5% Native American/American Indian, and 1.4% Black, with 3.6% describing their race as other.

### Procedure

Principals of elementary and middle schools in the area were contacted through mail. The mailings explained the purpose of the study, the benefits to the school, and the benefits to the students. If a principal agreed to let the research team visit, then the researchers contacted individual Grade 4, 5, and 6 teachers at that school. Thirty recruitment letters were sent out to schools, and six principals expressed interest in the study. Three schools were selected at random from those six to participate. Across the three participating schools, eight teachers (three Grade 4, three Grade 5, and 2 Grade 6) volunteered to let researchers visit their class.

On the first visit to each classroom, the researchers provided all students with consent packets that needed to be taken home to their parents to be signed and then brought back to the school. A drop box was then left in the classroom for approximately one week to collect returned packets. If time permitted, the researchers stopped by the school a second time to check on the number of packets in the drop box. In total, 160 packets were sent and 136 were returned (85% return rate). After sufficient time had passed, the researchers contacted the teachers again to set up a third visit.

During the third visit, students with complete consent packets were allowed to participate in the study. Surveys were then

**Table 3.** Descriptive statistics for transportability items.

	<i>M</i>	<i>SD</i>	Skewness	Kurtosis
1. I feel like I am part of the action.	3.12	1.39	-0.17	-1.09*
2. I can easily lose myself in the story.	3.30	1.40	-0.23	-1.27*
3. I find it hard to tune out things around me.	3.22	1.42	-0.16	-1.33*
4. I can easily see myself in the events described in the story. <sup>a</sup>	3.55	1.27	-0.64*	-0.51
5. I get involved in the story. <sup>a</sup>	3.36	1.38	-0.39	-1.07*
6. I can easily put stories out of my mind after I've finished reading them.	3.19	1.45	-0.10	-1.36*
7. I sometimes feel as if I am part of the story. <sup>a</sup>	3.54	1.31	-0.66*	-0.64
8. I really want to find out how the story ends. <sup>a</sup>	4.28	1.06	-1.80*	2.92*
9. I find that I can easily think like the character(s) in the story. <sup>a</sup>	3.54	1.30	-0.57*	-0.69
10. I am often emotionally affected (sad, angry, happy) by what I've read. <sup>a</sup>	3.47	1.35	-0.49*	-0.93*
11. I have vivid images of the characters. <sup>a</sup>	3.73	1.33	-0.80	-0.46
12. I find myself accepting events that I might have otherwise considered unrealistic. <sup>a</sup>	3.33	1.31	-0.26*	-0.89*
13. I find myself thinking what the characters may be thinking. <sup>a</sup>	3.55	1.29	-0.66*	-0.59
14. I find myself thinking of other ways the story could have ended. <sup>a</sup>	3.88	1.18	-1.06	0.46*
15. My mind often wanders.	2.90	1.43	0.08*	-1.30
16. I find myself feeling what the characters may feel. <sup>a</sup>	3.46	1.23	-0.39	-0.67*
17. I find that events in the story are relevant to my everyday life.	2.71	1.25	0.19	-0.92*
18. I often find that reading stories has an impact on the way I see things.	3.22	1.26	-0.21*	-0.87
19. I have vivid images of the events in the story. <sup>a</sup>	3.85	1.20	-0.81*	-0.24
20. I easily identify with characters in the story. <sup>a</sup>	3.40	1.19	-0.43	-0.49

Note. Seven items were dropped in the final 13-item TS.

<sup>a</sup>The retained items.

\* $p < .05$ .

passed out to participating students. Researchers and home-room teachers monitored participants and answered questions during the survey. The majority of questions were clarification questions (e.g., what a certain type of video game was, what *ethnicity* meant). Upon the survey's completion, the students lined up single-file to receive their yo-yos. A University institutional research board approved the study protocol.

## Measures

### Demographics

Participants reported their sex (male = 0; female = 1), grade (scored 4, 5, 6), and age.

### Transportability

Transportability was measured using Dal Cin et al. (2002, 2004) 20-item scale. Minor revisions in wording were made in order to clarify some items for a younger sample (see Table 3). Psychometric details are provided in the results section.

### Leisure reading

Participants responded to a question that asked, "How often do you do these things?" Several activities were located below the question. Participants indicated how often they did each of the activities using a 4-point Likert-type scale ranging from 1 (*never*) to 4 (*almost every day*). One of the activities listed was "read books for fun" ( $M = 2.75$ ,  $SD = 1.12$ ).

### Reading ability and student performance

The institutional research board overseeing the study did not approve the collection of actual student performance data if there were suitable alternatives less invasive to the participants. Accordingly, they did approve surveying homeroom teachers involved in the study to assess perceived reading ability and student performance for each student. For reading ability, teachers were asked, "Compared to other students at the equivalent grade level, how would you rate the reading ability of this

student?" Teachers responded using a 5-point Likert-type scale ranging from 1 (*below average*) to 5 (*above average*;  $M = 3.85$ ,  $SD = 1.17$ ). Teachers also rated overall student performance in response to the question, "Compared to other students at the equivalent grade level, how would you rate the overall academic performance of this student?" Teachers responded using the same 5-point Likert-type scale ( $M = 3.26$ ,  $SD = 1.30$ ).

### Interest in story types

Participants were asked, "I like to read ..." and provided with 18 types of stories.

### Power analysis

G\*Power (Faul, Erdfelder, Buchner, & Lang, 2009) was utilized to calculate the power of the design. Three power analyses were conducted ( $\alpha = .05$ , tested predictors = 1, total predictors = 6;  $N = 136$ ) for three standard effect sizes, small ( $f^2 = .02$ ), medium ( $f^2 = .15$ ), and large ( $f^2 = .35$ ; Cohen, Cohen, West, & Aiken, 2003; Erdfelder, Faul, & Buchner, 1996). The design had excellent power to detect a large (.99) or medium effect (.97), but low power to detect a small effect (.37).

## Results

Approximately 2% of the data were missing and replaced using expectation maximization (Schafer & Olsen, 1998). Ten items were significantly skewed and 11 items were significantly kurtotic (see Table 3). As a set, the items exhibited significant multivariate abnormality (skewness = 121.06,  $Z$ -score = 17.69,  $p < .001$ ; kurtosis = 539.84,  $Z$ -score = 10.55,  $p < .001$ ).

### Confirmatory factor analysis

RQ1 asked whether the TS would be valid with children. Confirmatory factor analysis (CFA) was utilized to examine the underlying factor structure of the 20 transportability

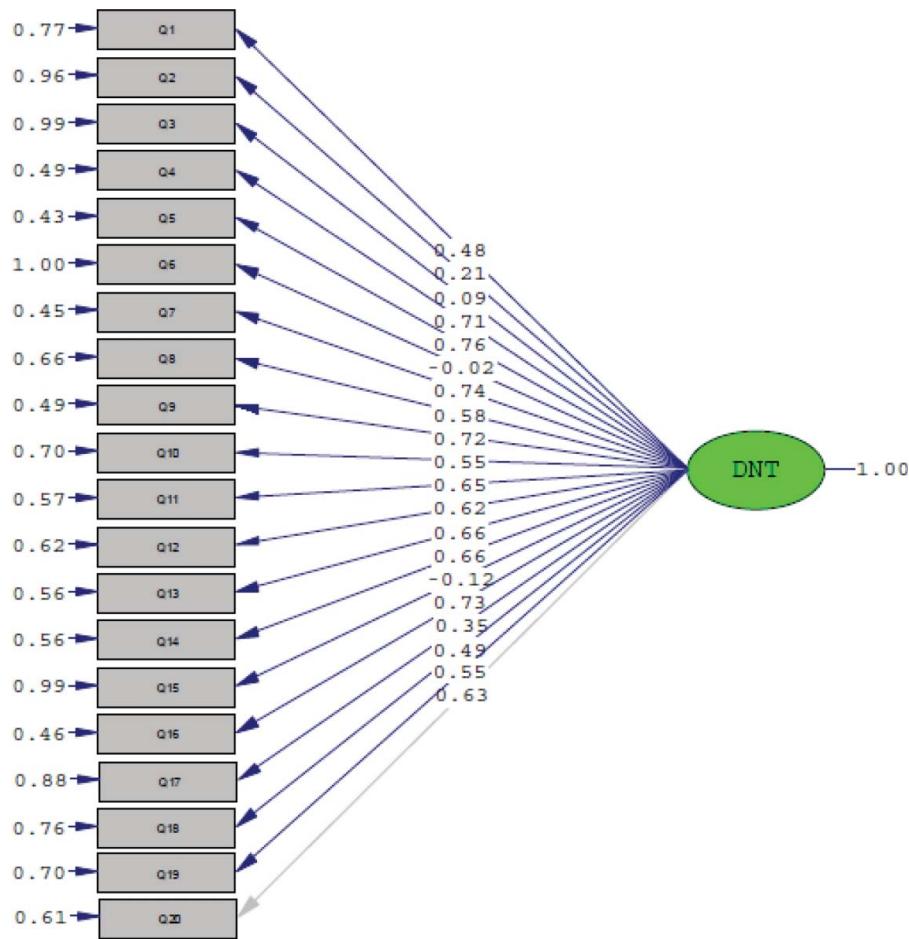


Figure 1. CFA of 20-item transportability scale.

items. The basic measurement model consisted of one latent variable (transportability) and twenty indicators. Model estimation was carried out using Lisrel 8.8 (Jöreskog & Sörbom, 2006). Because the data were non-normal, CFA was carried out using the asymptotic covariance matrix. Thus, a Satorra-Bentler (S-B) chi square is reported, which adjusts for non-normal distributions (see Satorra & Bentler, 2010). In addition to the S-B chi square, which can be sensitive to sample size, five other fit indices were examined:  $\chi^2/df$  ratio, comparative fit index (CFI), root mean square error of approximation (RMSEA), standardized root mean square residual (SRMR), and Model Akaike Information Criterion (AIC). The  $\chi^2/df$  ratio adjusts for sample size by dividing the chi square by the degrees of freedom. Ratios below three indicate a good fit to the data (Kline, 2004). For CFI, conventional standards suggest .95 to indicate good fit (Hu & Bentler, 1999). For RMSEA, .08 and lower indicates good fit, while .05 or lower indicates excellent fit (Holbert & Stephenson, 2008; Hu & Bentler, 1999). The SRMR indicates good fit at .08 or lower (Hu & Bentler, 1999). The Model AIC is used to compare different models; lower scores indicate better fit (Akaike, 1987).

The basic model was a moderate fit for the data, S-B  $\chi^2(170, N = 136) = 265.48, p < .001, \chi^2/df$  ratio = 1.56, CFI = .96, RMSEA = .06, 90% CI [.05, .08], SRMR = .08, Model AIC = 345.48 (see Figure 1). An examination of the factor loadings

revealed that seven items had low loadings ( $< .50$ ), including items 1 (.48), 2 (.21), 3 (.09), 6 (-.02), 15 (-.12), 17 (.35), and 18 (.49). All seven items were removed for the follow-up CFA. Revised Model 1 provided a good fit for the data, S-B  $\chi^2(65, N = 136) = 88.11, p = .03, \chi^2/df$  ratio = 1.36, CFI = .99, RMSEA = .05 90% CI [.02, .08], SRMR = .06, Model AIC = 140.11 (Figure 2). The final 13-item TS proved to be highly reliable ( $M = 3.60, SD = 0.87, \alpha = .90$ ).

### Bivariate correlations

Correlations between the TS and other constructs were examined (see Table 4). Transportability was not related to

Table 4. Correlation matrix.

	1.	2.	3.	4.	5.	6.
1. Transportability	—					
2. Age	-.01	—				
3. Grade	.04	.84**	—			
4. Sex	-.04	-.05	.04	—		
5. Leisure reading	.36**	.12	.06	.18*	—	
6. Reading ability	.41**	-.10	-.07	-.03	.29**	—
7. Student performance	.31**	-.20*	-.16	.14	.30**	.37**

Note. Bivariate correlations between all variables.

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

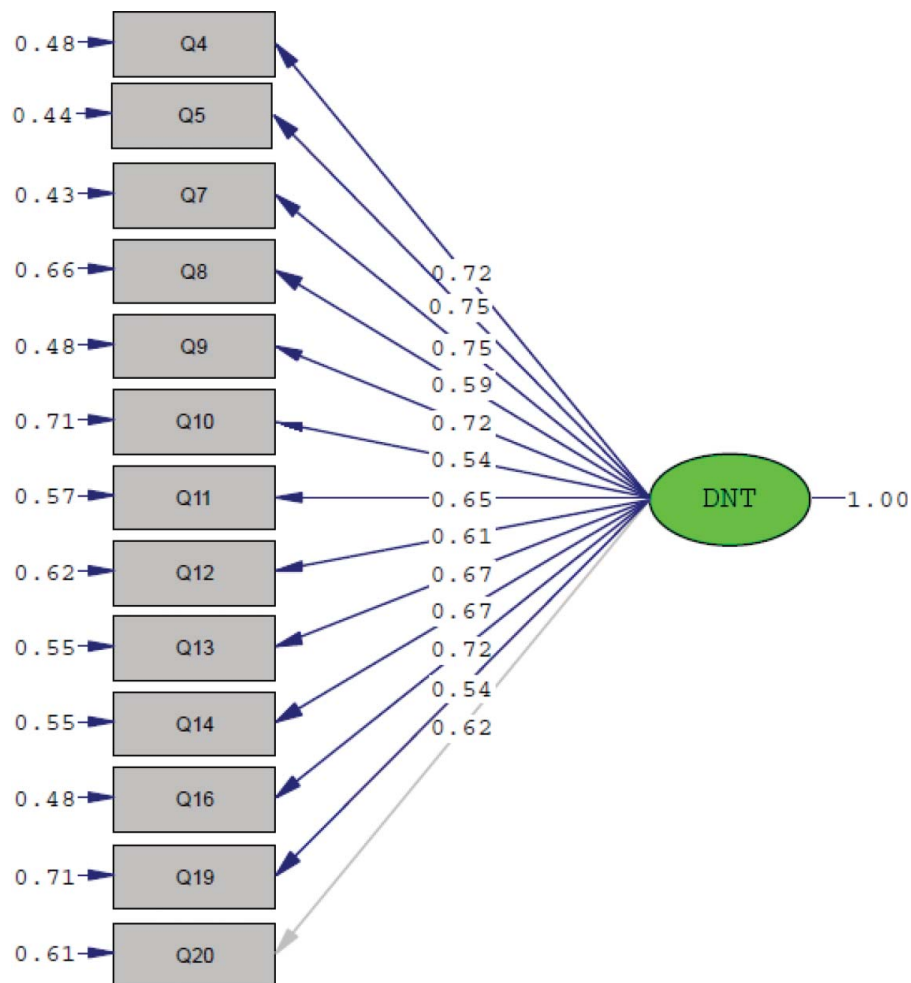


Figure 2. CFA of 13-item transportability scale.

age, grade, or sex. As expected, transportability was positively correlated with leisure reading, reading ability, and student performance. Sex was positively related to leisure reading such that girls were more likely to engage in the activity. Age was negatively correlated with student performance such that older students were more likely to perform poorly. Conversations with teachers in the study suggested that the latter relationship was a byproduct of students being held back for performance issues.

### Hierarchical regression—Predicting leisure reading

To evaluate concurrent validity with leisure reading (RQ2), a hierarchical regression was carried out with leisure reading as the outcome variable and predictor variables blocked as follows: age and sex (block 1), reading ability and student performance (block 2), transportability (block 3), and the interaction between transportability and sex (block 4). Sex was tested as a moderator because it was significantly related to leisure reading. All predictors were centered per the guidelines of Aiken and West (1991). Interactions were analyzed using probing procedures outlined by Hayes and Matthes (2009).

The model was significant at the first, second, and third blocks (reported at block 3):  $R = .49$ ,  $R^2 = .24$ ,  $F_{change}(1, 127) = 9.85$ ,  $p = .002$  (see Table 5). Transportability predicted 6% of the variance in leisure reading above and beyond

variance predicted by age, sex, reading ability, and student performance. Girls reported more leisure reading, but the interaction between transportability and sex was not significant.

### Partial correlations—Relationship between transportability and interest in story types

RQ3 queried whether TS would be related to genre preference. Partial correlations were examined between transportability and interest in 18 story types, controlling for age and grade and

Table 5. Hierarchical regression predicting leisure reading.

	Reading	
	$\beta$	$\Delta R^2$
Block 1		.05*
Age	.12	
Sex	.19*	
Block 2		.14**
Reading ability	.23**	
Student performance	.23*	
Block 3		.06**
Transportability	.27**	
Block 3		.00
Transportability $\times$ sex	.10	

Note. Standardized betas and  $R^2$  change are listed at each block.  
\* $p < .05$ ; \*\* $p < .01$ .

**Table 6.** Relationship between transportability and interest in different types of books.

	Transportability	
	Males	Females
Stories with lots of danger	.64**	.34*
Mystery stories	.57**	.15
Stories about monsters or creatures	.54**	.39**
Stories with lots of action	.53**	.28*
Choose your own adventure	.53**	.28*
Scary stories	.51**	.14
Stories about exotic places	.49**	.35**
Stories about the future	.44**	.30**
Stories with kids in them like me	.41**	.41**
Stories about real people	.33*	.30*
Comic books	.22	-.16
Stories about sports	.19	.13
Stories about relationships and dating	.19	.31**
Stories with fighting	.18	.22
Stories about survival in the wilderness	.10	.33**
Stories about knights and wizards	.08	.24*
Short stories	.04	-.08
Stories with lots of pictures in them	-.07	-.07

Note. Partial correlations controlling for age and grade.

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

splitting the analysis by sex (see Table 6). Transportability was related to interest in 10 story types for boys and 11 story types for girls. Several intriguing differences were observed between sexes. For boys, transportability was related to interest in mystery and scary stories. For girls, transportability was related to interest in stories about relationships/dating, survival in the wilderness, and knights and wizards. Finally, for both sexes, transportability was not related to interest in comic books, short stories, stories with lots of pictures, and stories about sports or fighting.

## Discussion

A 13-item version of the TS proved to be reliable and concurrently related to leisure reading and genre preference. The TS predicted 6% of the variance in leisure reading above and beyond relevant control variables. The TS was also related to genre preferences in ways that parallel past research. For example, Philipp (2010) found that intrinsic reading motivations were least predictive of preference for comic books. Accordingly, the TS was not related to interest in comic books for either boys or girls.

The results of this study suggest that the TS is a suitable measure of involvement. Schiefele et al. (2012) advocated that measures for subdimensions of reading motivation should exhibit consistency and reliability. That standard necessitates additional research with the TS to further document and validate its psychometric properties. Researchers should explore whether the 13-item model identified in the current sample replicates to other children. Dal Cin et al. (2002, 2004) have advocated using the full 20-item measure with college students and adults—even though models with fewer items exhibited superior fit—as they could not replicate briefer models across samples. The 20-item model was a moderate fit within our sample, but seven items exhibited relatively low loadings (below .50). Dropping the items improved the fit considerably and that led us to support the 13-item model. Still, in light of

past research, future work should be cautious and reexamine the validity of the 13-item model.

Assuming the 13-item model is the best fit for children, researchers should consider whether the validity of those items provides valuable insight to teachers and instructions. Put differently, if transportability is an important target for educators to cultivate, then do the TS items suggest possible targets? In the 13 retained items, four focus on how characters think or feel. Students with higher transportability scores appear to be more interested in how characters think/feel. Children with underdeveloped emotion recognition skills have greater language/academic delays (Neslon, Welsh, Vance Trup, & Greenberg, 2010). Accordingly, researchers have found that targeting and supporting emotional development can improve educational outcomes, notably in high-risk children (Hamre & Pianta, 2005). Thus, teachers should consider incorporating material into their curricula that encourages students to contemplate the emotions/thoughts of characters in stories. This strategy could cultivate both transportability and emotional development.

Conversely, two of the dropped items focused on distractions (e.g., tuning things out, mind wandering). It is plausible that transportability is higher for individuals with greater ability to ward off distractions (Dal Cin et al., 2002). The current data suggest that transportability and distractibility are two separate constructs in children 9–13. Curriculum combating distractibility could have pedagogical value (Bremer & Stern, 1976; Morgan, Farkas, & Wu, 2012); however, the data in hand suggest that it will not directly influence transportability. Researchers should consider the possibility that distractibility is indirectly related to transportability as one might moderate/mediate the effects of the other.

In a larger sense, the TS provides researchers with a tool to study the development of transportability/involvement over time. TS was not related to age in the present sample (age range: 9–13 year olds), but that does not mean that it is an innate trait. Indeed, a logical hypothesis is that transportability develops at a young age—perhaps younger than 9 years old, based on these data—and is influenced by educational and structural factors. If researchers could identify those factors, then they could form the basis for interventions/curricula designed to increase transportability (for a similar intervention, see Marinak, 2013).

From a theory standpoint, transportability could be one mechanism responsible for the widening gap that manifests between good and bad readers over time (i.e., the Matthew Effect; see Kempe, Eriksson-Gustavsson, & Samuelsson, 2011; Stanovich, 2008). In other words, differences in transportability could explain why some readers flourish while others flounder. High transportability children are motivated to independently leisure read, which develops reading ability and cultivates student performance. Low transportability children lack the same intrinsic motivation, and thus must rely on other motivations to leisure read or they will likely exhibit reading/student performance deficits over time.

Interestingly, the biological programming hypothesis postulates that “early disadvantage produces adaptations in structure and function of the brain with enduring effects” (Swanson & Wadhwa, 2008, p. 1009). This suggests that early disadvantages

(e.g., lack of parent or guardian coreading) could produce changes in the structure and function of the brain such as reduced transportability. Testing this hypothesis will require researchers to identify disadvantages that could produce transportability adaptations in the brain (e.g., limited access to reading material, abusive or dangerous or unstable home environments, unfiltered media use at a young age, child labor) and corresponding research investigating whether the brain adapts. Researchers should also consider is whether early educational experiences bolster or mitigate such disadvantages. Survey research examining the relationship between transportability and the aforementioned disadvantages would be a good first step.

Transportability research could also examine the underlying gratifications of transportability. Is higher transportability a form of escapism, stress release, and/or interactive learning? Does one of these gratifications better cultivate transportability for particular populations, notably those known to be at high risk? For instance, past research has shown that high sensation seekers (HSS) are typically less likely to engage in leisure reading. Interestingly, this relationship vanishes for HSS children with higher transportability scores (Jensen, Imboden, & Ivic, 2011). Identifying situations where transportability moderates pedagogically meaningful relationships—and explicating the underlying mechanisms involved therein—is a priority for future research.

The current study was limited in several ways. First, all children were recruited from schools in Indiana. Children from other regions may react to the TS differently or demonstrate different relationships than those observed here. Second, children younger than 9 years old or older than 13 years old could respond differently to the TS. Ideally, the instrument will prove valid for children as young as 5 years old (if the questions are read to them) and as old as 16 years old. This would allow researchers to study developmental issues with the same scale for all age groups. Finally, several constructs in this study were measured with single items (e.g., leisure reading). Future researchers should replicate this work with multi-item measures. For example, reading motivation research has often utilized indices such as the MRQ (Wigfield & Guthrie, 1997b). Researchers could examine the relationship between the TS and the MRQ to better understand how scores on the former relate to the latter. Moreover, a good test of the TS would be to evaluate whether it can predict leisure reading above and beyond the MRQ. Comparative research could also reveal avenues for refining both measurement tools.

Leisure reading is a behavior that predicts academic success and the cultivation of related skills (e.g., literacy, vocabulary). The TS was validated in a sample of 9–13-year-olds and, consistent with past research on reading motivations, related to leisure reading and genre preference. The TS provides researchers with a valid measure for studying the intrinsic reading motivation referred to as involvement as well as a means for testing postulates about this potentially important mechanism.

## References

- Aiken, L. S., & West, S. G. (1991). *Multiple regression: Testing and interpreting interactions*. Newbury Park, CA: Sage.
- Akaike, H. (1987). Factor analysis and AIC. *Psychometrika*, 52, 317–332.
- Baker, L., & Wigfield, A. (1999). Dimensions of children's motivation for reading and their relations to reading activity and reading achievement. *Reading Research Quarterly*, 34, 452–477.
- Bilandzic, H., & Busselle, R. W. (2008). Transportation and transportability in the cultivation of genre-consistent attitudes and estimates. *Journal of Communication*, 58, 508–529.
- Bilandzic, H., & Busselle, R. W. (2011). Enjoyment of films as a function of narrative experience, perceived realism, and transportability. *Communications: The European Journal of Communication Research*, 36, 29–50.
- Bremer, D. A., & Stern, J. A. (1976). Attention and distractibility during reading in hyperactive boys. *Journal of Abnormal Child Psychology*, 4, 381–387.
- Busselle, R., & Bilandzic, H. (2008). Fictionality and perceived realism in experiencing stories: A model of narrative comprehension and engagement. *Communication Theory*, 18, 255–280.
- Cline, R. K. L., & Kretke, G. L. (1980). An evaluation of long-term SSR in the junior high school. *Journal of Reading*, 23, 503–506.
- Cohen, J., Cohen, P., West, S. G., & Aiken, L. S. (2003). *Applied multiple regression/correlation analysis for the behavioral sciences* (3rd ed.). Mahwah, NJ: Erlbaum.
- Dal Cin, S., Gibson, B., Zanna, M. P., Shumate, R., & Fong, G. T. (2007). Smoking in movies, implicit associations of smoking with the self, and intentions to smoke. *Psychological Science*, 18, 559–563.
- Dal Cin, S., Zanna, M. P., & Fong, G. T. (2002, February). *Perceiver-based and stimulus-based individual differences in transportation*. Paper presented at the Third Annual Meeting of the Society of Personality and Social Psychology, Savannah, GA.
- Dal Cin, S., Zanna, M. P., & Fong, G. T. (2004). Narrative persuasion and overcoming resistance. In E. S. Knowles & J. A. Linn (Eds.), *Resistance and persuasion* (pp. 175–191). Mahwah, NJ: Erlbaum.
- Dunlop, S. M., Wakefield, M., & Kashima, Y. (2008). The contribution of antismoking advertising to quitting: Intra- and interpersonal processes. *Journal of Health Communication*, 13, 250–266.
- Faul, F., Erdfelder, E., Buchner, A., & Lang, A.-G. (2009). Statistical power analyses using G\*Power 3.1: Tests for correlation and regression analyses. *Behavior Research Methods*, 41, 1149–1160.
- Greaney, V., & Neuman, S. B. (1990). The functions of reading: A cross-cultural perspective. *Reading Research Quarterly*, 25, 172–195.
- Green, M. C., & Brock, T. C. (2000). The role of transportation in the persuasiveness of public narratives. *Journal of Personality and Social Psychology*, 79, 701–721.
- Greenwood, D. N., & Long, C. R. (2009). Psychological predictors of media involvement: Solitude experiences and the need to belong. *Communication Research*, 36, 637–654.
- Guthrie, J. T., Van Meter, P., McCann, A. D., Wigfield, A., Bennett, L., Poundstone, C. C., & Mitchell, A. M. (1996). Growth of literacy engagement: Changes in motivations and strategies during concept-oriented reading instruction. *Reading Research Quarterly*, 31, 306–332.
- Guthrie, J. T., & Wigfield, A. (2000). Engagement and motivation in reading. In M. L. Kamil, P. B. Mosenthal, P. D. Pearson, & R. Barr (Eds.), *Handbook of reading research* (Vol. 3, pp. 403–422). Mahwah, NJ: Erlbaum.
- Guthrie, J. T., Wigfield, A., Metsala, J. L., & Cox, K. E. (1999). Motivational and cognitive predictors of text comprehension and reading amount. *Scientific Studies of Reading*, 3, 231–256.
- Hamre, B. K., & Pianta, R. C. (2005). Can instructional and emotional support in the first-grade classroom make a difference for children at risk of school failure? *Child Development*, 76, 949–967.
- Hansen, H. S. (1969). The impact of the home literary environment on reading attitude. *Elementary English*, 46, 17–24.
- Hayes, A. F., & Matthes, J. (2009). Computational procedures for probing interactions in OLS and logistic regression: SPSS and SAS implementations. *Behavior Research Methods*, 41, 924–936.
- Holbert, R. L., & Stephenson, M. T. (2008). Commentary on the uses and misuses of structural equation modeling in communication research. In A. F. Hayes, M. D. Slater, & L. B. Snyder (Eds.), *The Sage handbook of advanced data analysis methods for communication research* (pp. 185–218). Thousand Oaks, CA: Sage.
- Hu, L., & Bentler, P. M. (1999). Cutoff criteria for fit indexes in covariance structure analysis: Conventional criteria versus new alternatives. *Structural Equation Modeling*, 6, 1–55.



- Jensen, J. D., Imboden, K., & Ivic, R. (2011). Sensation seeking and narrative transportation: High sensation seeking children's interest in reading outside of school. *Scientific Studies of Reading*, 15, 541–558.
- Jöreskog, K. G., & Sörbom, D. (2006). LISREL 8.8 for Windows [Computer software]. Skokie, IL: Scientific Software International, Inc.
- Kempe, C., Eriksson-Gustavsson, A.-L., & Samuelsson, S. (2011). Are there any Matthew effects in literacy and cognitive development? *Scandinavian Journal of Educational Research*, 55, 181–196.
- Kline, R. B. (2004). *Principles and practice of structural equation modeling* (2nd ed.). New York, NY: Guilford Press.
- Lau, K. (2009). Reading motivation, perceptions of reading instruction and reading amount: A comparison of junior and senior secondary school students in Hong Kong. *Journal of Research in Reading*, 32, 366–382.
- Marinak, B. A. (2013). Courageous reading instruction: The effects of an elementary motivation intervention. *The Journal of Educational Research*, 106, 39–48.
- McElvany, N., Kortenbruck, M., & Becker, M. (2008). Lesenkompetenz und Lesemotivation: Entwicklung und Mediation des Zusammenhangs durch Leserverhalten [Reading literacy and reading motivation: Their development and the mediation of the relationship by reading behavior]. *Zeitschrift für Pädagogische Psychologie*, 22, 207–219.
- McKenna, M. C., Ellsworth, R. A., & Kear, D. J. (1995). Children's attitudes toward reading: A national survey. *Reading Research Quarterly*, 30, 934–957.
- McKool, S. S. (2007). Factors that influence the decision to read: An investigation of fifth grade students' out-of-school reading habits. *Reading Improvement*, 44, 111–131.
- Mol, S. E., & Bus, A. G. (2011). To read or not to read: A meta-analysis of print exposure from infancy to early adulthood. *Psychological Bulletin*, 137, 267–296.
- Möller, J., & Retelsdorf, J. (2008). Lesen oder Fernsehen? Zur Vorhersage von Tätigkeitspräferenzen [Reading or watching TV? On the prediction of activity preferences]. *Zeitschrift für Entwicklungspsychologie und Pädagogische Psychologie*, 40, 13–21.
- Morgan, P. L., Farkas, G., & Wu, Q. (2012). Do poor readers feel angry, sad, and unpopular? *Scientific Studies of Reading*, 16, 360–381.
- Nelson, K. E., Welsh, J. A., Vance Trup, E. M., & Greenberg, M. T. (2010). Language delays of impoverished preschool children in relation to early academic and emotion recognition skills. *First Language*, 31, 164–194.
- Perkun, R. (1993). Facets of adolescents' academic motivation: A longitudinal expectancy-value approach. In M. L. Maehr & P. R. Pintrich (Eds.), *Advances in motivation and achievement* (Vol. 8, pp. 139–189). Greenwich, CT: JAI Press.
- Philipp, M. (2010). *Lesen empeerisch: Eine Längsschnittstudie zur Bedeutung von peer groups für Lesemotivation und -verhalten* [Empirical reading: A longitudinal study on the relevance of peer groups for reading motivation and behavior at the beginning of secondary school]. Wiesbaden, Germany: VS Verlag.
- Satorra, A., & Bentler, P. M. (2010). Ensuring positiveness of the scaled difference chi-square test statistic. *Psychometrika*, 75, 243–248.
- Schafer, J. L., & Olsen, M. K. (1998). Multiple imputation for multivariate missing-data problems: A data analyst's perspective. *Multivariate Behavioral Research*, 33, 545–571.
- Schiefele, U., & Schaffner, E. (2013). Lesemotivation im Grundschulalter—Ergebnisse einer Interviewstudie [Reading motivation of elementary school students—Results from an interview study]. *Psychologie in Erziehung und Unterricht*, 60, 214–233.
- Schiefele, U., Schaffner, E., Möller, J., & Wigfield, A. (2012). Dimensions of reading motivations and their relation to reading behavior and competence. *Reading Research Quarterly*, 47, 427–463.
- Stanovich, K. E. (2008). Matthew effects in reading: Some consequences of individual differences in the acquisition of literacy. *Reading Research Quarterly*, 21, 360–407.
- Swanson, J. D., & Wadhwani, P. M. (2008). Developmental origins of child mental health disorders. *Journal of Child Psychology and Psychiatry*, 49, 1009–1019.
- Taylor, B. M., Feye, B. J., & Maruyama, G. (1990). Time spent reading and reading growth. *American Educational Research Journal*, 27, 351–362.
- Wang, J. H., & Guthrie, J. T. (2004). Modeling the effects of intrinsic motivation, extrinsic motivation, amount of reading, and past reading achievement on text comprehension between U. S. and Chinese students. *Reading Research Quarterly*, 39, 162–186.
- Wigfield, A., & Guthrie, J. T. (1997a). Motivation for reading: An overview. *Educational Psychologist*, 32, 57–58.
- Wigfield, A., & Guthrie, J. T. (1997b). Relations of children's motivation for reading to the amount and breadth of their reading. *Journal of Educational Psychology*, 89, 420–432.

## Appendix A

### Final 13-item Transportability Scale with prompts and scale anchors

Sometimes you read books for school and sometimes you read books for fun. We would like to know more about how you feel when you read books for fun (or pleasure).

	When reading for pleasure...				
	Strongly disagree	Disagree	Don't know	Agree	Strongly agree
1. I can easily see myself in the events described in the story.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. I get involved in the story.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. I sometimes feel as if I am part of the story.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4. I really want to find out how the story ends.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5. I find that I can easily think like the character(s) in the story.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6. I am often emotionally affected (sad, angry, happy) by what I've read.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7. I have vivid images of the characters.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8. I find myself accepting events that I might have otherwise considered unrealistic.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9. I find myself thinking what the characters may be thinking.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
10. I find myself thinking of other ways the story could have ended.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
11. I find myself feeling what the characters may feel.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
12. I easily identify with characters in the story.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
13. I have vivid images of the events in the story.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Copyright of Journal of Educational Research is the property of Taylor & Francis Ltd and its content may not be copied or emailed to multiple sites or posted to a listserv without the copyright holder's express written permission. However, users may print, download, or email articles for individual use.