Impact Of Literacy Influences and Perceived Reading Ability on The Self-rated Health Status of 7th And 8th Grade Students

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Literacy and Health

- The World Health Organization recently named health literacy as a global priority (Wilson, 2003).
- Literacy predicts an individual's health status more strongly than age, income, employment status, education level, and racial or ethnic group (Partnership for Clear Health Communication, 2003).
- Educational levels are equivalent to good health (Weiss, Hart, & Pust, 1991; Weiss, Hart, & McGee, 1992; Grosse & Auffrey, 1989; Backlund, Sorlie, & Johnson, 1999). Baker, Parker, Williams, Clark, & Nurss (1997) have posited that educational attainment, not the years of school completed, is the most accurate predictor of health status.
- The current study posits that literacy influences and perceived reading ability could provide a proxy for educational attainment, and also be related to self-rated health status.

Self-Rated Health Research

- The relationship between self-rated health and life expectancy, mortality (Idler et al., 1990; Kaplan & Camacho, 1983; Mossey & Shapiro, 1982; Benjamins et al., 2004; Dowd & Zajacova et al., 2007) and with risk behaviors such as smoking, exercise, sleep, weight, and alcohol consumption (Segovia et al., 1989) is well established among adults.

- The ability of self-rated health status to predict morbidity and mortality rates have been attributed to an adult's ability to rate their dynamic and static health (Ballis et al., 2003).

- Boardman (2006) found self-rated overall health status and physical health status to operate predictably over time, "suggesting that health-related survey assessments administered to adolescents are valid assessments of health, broadly speaking" (p. 406).

Adolescent Self-Rated Health Research

- Because adolescents are generally regarded as healthy (Irwin et al., 2002), physician-assessed, objective mortality assessments would not be the most appropriate measure of health status among adolescents since youth have a low prevalence of chronic health problems.

- In adolescents (Vingilis et al., 1998; Vingilis et al., 2002; Wade, 2000), self-rated health is associated with personal, socio-environmental, behavioral, and psychological factors (e.g., health problems, disability, age, female status, income, smoking, and higher BMI.

- In addition, adolescent self-rated health has been associated with reduced life satisfaction (Zullig et al., 2005) and with increased alcohol and substance use (Zullig et al., 2004).

Study Purpose & Hypothesis

- The purpose of this study was to investigate the impact of literacy influences and perceived reading ability on the self-rated health status of 7th and 8th grade public school students.

- The research question was "to what extent can literacy influences and perceived reading ability effect the self-rated health status of 7th and 8th graders?"

- The hypothesis was that inadequate positive literacy influences (e.g., parental influence, visits to a library or bookstore) and low perceived reading ability would negatively affect students' self-rated health status.

Why explore perceived reading abilities and influences?

- Derived from the established relationship between one's beliefs and competencies.
- For example, one's beliefs (i.e., perceived reading ability and literacy influences), whether they are accurate or not, influence one's actual ability and actions (Maddux & Gosselin, 2003).
- The narrow focus of NCLB on achievement in only two subjects has resulted in academic imbalance, reducing access to a high quality curriculum in health education, physical education, music, and art, social studies, and science (Cawelti, 2006).

Methodology

- During the spring of 2005, a convenience sample of 244 middle school students in grades 7 and 8 were selected from two public school districts to participate -- as one part of a larger study investigating the test-retest reliability of the 2005 Middle School Youth Risk Behavior Survey (MSYRBS) from the U.S. Center for Disease Control and Prevention (Zullig et al., 2006).

- Schools were selected to participate in the study based on previous work in curriculum deliberation and program evaluation, and each was given $250 to assist with student recruitment.

- Classroom-level sampling was done with second period classes to maximize student eligibility.

Table 1
Demographics: Gender, Race, Grade, & Age

Variable (%)	Sample Distribution (%)	National Distribution
Female	54.7	48.8
Male	45.3	51.2
White	93.5	76.7
Other	6.5	23.3
7th grade	80.9	50.3
8th grade	19.1	49.7
<11 yrs. old	1.7	3.1
12 or 13	90.9	80.9
>14	7.4	16.0

Instrumentation

- The MSYRBS is self-administered. Four items request demographic information; two items request student's height and weight; and the remaining items query students on health risk behaviors.

- Five additional items serving as the independent variables were appended to the end of the questionnaire:
  - "How would you rate your ability to read this health survey?"
  - "How often do you find yourself reading books, newspapers, magazines, and other reading materials outside of school (do not include school work.)?"
  - "How do you feel about your ability to read?"
  - "How often did you see your parent or caregiver reading something in the past two days?"
  - "Have you been to the public library or a bookstore in the last year?"

Instrumentation

- The dependent variable for this study was self-rated health.
- Self-rated health status was measured with the following question: "In general, how would you describe your health?" Response options were "excellent", "very good", "good", "fair", and "poor".
- The Kappa test-retest reliability coefficient for self-rated health was 61.8.

Table 2: Literacy Items, Sample Responses, and Kappa Reliability Coefficients

Survey Items: Literacy Influences (Questions 2, 4, 5) and Perceived Reading Ability (Questions 1 & 3)	Sample Response N=244 (%)	Students Reporting Fair or Poor Health n (%)	Item Kappa
1. How would you rate your ability to read this health survey?			46.6
It was easy for me to read.	218 (89.3)	12 (5.5%)	
I had some difficulty reading.	26 (10.7)	8 (30.8%)	
2. How often do you find yourself reading books, newspapers, magazines, and other reading materials outside of school?			51.5
Most of the time/always	91 (37.3)	6 (6.6%)	
Sometimes	96 (39.3)	7 (7.3%)	
Never/rarely	57 (23.4)	8 (14.0%)	
3. How do you feel about your ability to read?			67.9
I love/like to read	147 (60.2)	9 (6.1%)	
I will read if I am asked	54 (22.1)	6 (11.1%)	
I do not like to read	25 (10.2)	5 (20.0%)	
I have trouble reading/not sure	18 (7.4)	1 (5.5%)	
4. How often did you see your parent or caregiver reading something in the past two days?			53.0
Every day	130 (53.3)	4 (3.0%)	
1 day	41 (16.8)	1 (2.4%)	
0 days/not sure	73 (29.9)	10 13.4%)	
5. Have you been to the public library or a bookstore in the last year?			63.8
Yes	195 (79.9)	12 (6.1%)	
No/not sure	49 (20.1)	9 (18.4%)	

Data Analysis

- The five questions about literacy influences and reading ability were examined through a series of one-way ANOVAs and Tukey Honest Significant Difference (HSD) tests using PCSAS with self-rated health serving as the dependent variable.

- Effect size (ES) was also calculated from the post-hoc comparisons to determine the magnitude of specific comparisons by dividing the mean difference by the pooled standard deviation.

- Effect sizes of .20, .50, and .80 indicate small, medium, and large effects, respectively (Cohen, 1988).

- All analyses were adjusted for socioeconomic status, as measured by free/reduced priced lunch.

Results

- 'Excellent' self-rated health was reported by 21.0% (n = 51) of the sample; 39.3% (n = 96) of the sample reported 'very good' health; 31.1% (n = 76) reported 'good' health; 6.6% (n = 16) reported 'fair' health; and 2.1% (n = 5) reported 'poor' health.

- These estimates are consistent with findings from a large, international study of adolescent self-rated health (Cavallo et al., 2006).

- Preliminary analyses of variance (ANOVA) indicated that gender (F=0.30, p=0.59) did not significantly affect self-rated health.

Results

- Significantly poorer self-rated health was detected for those who reported:
  - 'having some difficulty reading the survey' (F (1,243) = 16.33, p<.0001) (M = 1.93, SD = 0.87) when compared to those who reported the survey was 'easy to read' (M = 1.20, SD = 1.26) (ES = .71);
  - not visiting or not sure if they visited a public library or a bookstore during the past year (F (1,240) = 10.41, p<.001) (M = 1.67, SD = 1.09) when compared to those who reported visiting a public library or bookstore during the past year (M = 1.21, SD = 0.88) (ES = .78).

Results

- Significantly poorer self-rated health was detected:
  - among students' reading ability (F (3,243) = 3.12, $p<.05$). However, the overall F-value was small; post-hoc analyses detected significant differences between those who reported 'Love or like reading' (M = 1.16, SD = .96) and 'I do not like reading' only (M = 1.72, SD = 1.04) (ES = .42);
  - among students not seeing a parent or caregiver reading (F (2,240) = 3.11, $p<.05$). However, again the overall F-value was small. Post-hoc analyses detected significant differences between those who reported 'Each day' (M = 1.16, SD = 0.90) and '0 days or not sure' (M = 1.49, SD = 1.08) only (ES = .26);
  - No other significant findings were detected.

Discussion

- Five questions on literacy influences and perceived reading ability displayed moderate to substantial test-retest reliability over a two-week period.

- Students were significantly more likely to report poorer self-rated health if they reported having difficulty reading the survey, did not like reading, did not or were not sure if they saw a parent or caregiver reading during the past two days, and had not visited a public library or bookstore during the past year ($p<.05$).

- These results are the first to quantify how early in life that literacy influences and perceived reading ability are associated with self-rated health status among adolescents, which is a strong predictor of actual and future health status (Boardman, 2006).

Discussion/Student's Perceived Reading Abilities

- Health education classes are one of the few places in the academic curriculum where students themselves are the primary focus of study, namely their personal health needs and interests.

- This can serve as a bridge to youth who have limited background knowledge in basic literacy and health-related skills.

Discussion/Literacy Influences

- Health education classes are also one place where family and community involvement is addressed, including a variety of resources and supports for health literacy.
  - Henderson, Shaver, and Walls (1998) showed significant increases in reading and math achievement when parents were involved in their education. Specifically, students with lower parental involvement have lower attendance rates and lower rates of homework completion.
  - Social Cognitive Theory (Bandura, 1986) suggests that these modeling behaviors (both vicarious and direct) would likely influence children's reading behaviors (e.g., enjoyment of reading and reading outside of school for pleasure).
  - Baker, Scher, & Mackler (1997) found that parents' beliefs about the educational and entertainment purposes of reading played an important role in whether children initiated interaction with print resources at home.

Discussion con't

- From a resource theory perspective (see Diener & Fujita, 1995), the observed differences may also be explained in terms of resources available to meet these children's needs.

- Children whose parents do not value and model literacy-related skills have fewer economic, social, and personal resources than children whose parents value and model literacy-related skills, thereby limiting their children's exposure to positive life experiences.

- Brown, Teufel, & Birch (2007) suggested that students may turn to peers and technological media as a source of health information if they do not see their parents as a main source for health information.

Limitations

- Use of a convenience sample not nationally representative and the use of a cross-sectional study in which no temporal sequence could be established.

- This preliminary study did not attempt to measure reading skills directly, but to query participants in their perceived reading abilities, and some questions had to be collapsed due to small cell sizes for analysis.

- Although schools have achievement tests in reading which are reported to state departments of education under the NCLB policy, this study did not attempt to correlate self-rated health status with actual reading achievement scores. Future studies should do so since an individual's beliefs influence his or her actual ability (Maddux & Gosselin, 2003).

Recommendations

- Research predating NCLB legislation (Shoener et al., 1988) suggests that the reading and math scores of third and fourth grade students who received comprehensive health education instruction were significantly higher than those students who did not receive comprehensive health education instruction.
  - Thus, the relationship of reading and math scores to health instruction warrants further study, including the ways to access health-related information outside of schools.

- Brown et al. (2007) suggested that educators should teach students to use the Internet, parents, and medical professionals to obtain health information more effectively.
  - Future work should explore the differences between boys and girls in how they approach reading and non-reading activities when obtaining health-related information and services.

Conclusions

- The pre-K-12 National Health Education Standards (Joint Committee on National Health Education Standards, 2007) states that "Access to valid health information and health promoting products and services is critical in the prevention, early detection, and treatment of health problems" (p. 28).

- These results help to quantify how early in life that literacy influences and perceived reading ability are associated with self-rated health status. Future research should explore the relationships between literacy influences, reading ability, and health status at even earlier grades.

- Information is also needed on the health literacy skills and reading practices of parents and their impact on their children's self-rated health status from an ecological and cultural perspective.

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