

## Quantitative study on reading attitude: A Meta-Analysis of Quantitative Result

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**Abstract:** This study employed meta-analysis procedures to summarize thirty six experimental and quasi-experimental studies and ten descriptive studies from 1990 to 2011 which covered 7080 participants. Twenty six experimental and quasi-experimental studies employed twenty two intervention programs on reading attitude in elementary, secondary and high schools. Sample size and number of treatment between experimental and control groups from twenty six independent studies were analyzed by meta-analysis software. Furthermore, sample size; mean and standard deviation were analyzed by meta-analysis software for ten descriptive studies. Odds ratio between control and treatment groups from 26 independent studies, investigating the effect of intervention program on the outcomes for students with reading attitude. Average total sample size ranged between 27 and 251 for experimental studies and 58-4018 for ten descriptive studies. The overall intervention programs show a significant improvement on reading attitude.

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### 1. Introduction

This article presents a regular review of the evidence about the effects of the intervention program on reading attitude. Earlier studies show that students made good progress because of intervention programs in different types of schools and through a variety of different approaches. Evaluations of students based on intervention programs typically entail comparisons of students who received the intervention with those who did not. In this meta-analysis study, the researcher tried to compare reading attitude in students who received the intervention program with those who did not. In addition, this study analyzes ten descriptive studies about reading attitude.

### 2. Reading Attitude

The studies conducted by social psychologists have been interesting in the field of reading attitude, its acquisition, and improvement (1). An assessment of the social psychological literature illustrates that attitude has been variedly defined. Some researchers such as Petty and Cacioppo (2) viewed it as “a broad and enduring positive or negative feeling about some individuals, objects, or issues” (p. 7). Beck (3) viewed it as “a positive or negative estimation of a number of persons, objects, or things” (p. 302). Ajzen (4) considered it as “an individual’s disposition to answer positively or not positively to an object, person, organization, or event, or to any other discreditable aspect of the individual’s world” (p. 241). Each of these definitions has been categorized into three groups in social psychology: cognition, affect, and behavior, depending on what part of the theory of attitude is

relatively emphasized (1). As of this point of view, Petty and Cacioppo highlighted the part of feelings that people have with respect to a given attitude object (5). Ajzen focused on the part of behavioral intentions that people have in relation to an exact attitude object (5).

Likewise, discussions of reading attitude in the field of reading research have been within the title of such social psychological definitions. Alexander and Filler (6) defined it as “a structure of feeling connected to reading for which reason the students approach or avoid reading position” (p. 1). McKenna accepted the observation that “attitude is mainly affective in life and that ideas are causally related to it” (p. 938). Every one of these definitions highlights the part of feelings that people have with respect to reading behavior. Mathewson (5) views it as “evaluation of content and idea, feelings about appealing in a particular sort of reading” (p. 1136). It stresses the part of cognitive evaluation that individuals have about an act of reading as well as the part of behavior readiness that individuals have in relation to an act of reading. With respect to the sub type of attitude, discussions have been produced in the field of social psychology. Fishbein (7) and Alexander and Filler (6) accepted a one-component model of attitude where attitude is mostly associated with the affective concept.

Cognitive and behavioral responses are regarded as contributing issues. In contrast, Ajzen (8) accepted a traditional idea of social psychology dividing the dimensionality of attitude into three categories in which each of the three parts of attitude is supposed to take unique discriminate validity not communal with the other two. As in the part of social

psychology, on the other hand, the dimensionality of reading attitude remains controversial for experiential and theoretical factors in the field of reading research. Highlighting the feelings an individual person experiences in relation to a reading activate, McKenna, Kear, and Ellsworth (9) argued that reading attitude is primarily related to the affective concept and that beliefs are causally related to it. In comparison, accepting a three component model of attitude that accentuates the three concepts of the cognitive, affective, and behavioral, Mathewson (5) pointed out that "quantifying all the three of these aspects not only ensures that attitude toward reading has been completely measured, but also permits estimation of their subjective importance" (p. 1151).

Generally, different theoretical forms of general reading attitude have been described by Cothorn and Collins (10) and McKenna, Kear, and Ellsworth (11). Three concepts are intrinsic in every one of the models; they are seen as components of attitude (11). These concepts are affect, cognition and conation. Fishbein and Ajzen (12) developed a model of attitude success, illustrating the causal chain from culture's prospects and consequences to beliefs, to attitudes, to intentions, and finally to behavior. Consequently, they viewed "the process of introducing new beliefs and challenging old ones as an essential possibility for determining attitudes" (11). Liska's (13) adjustment contested the causal sequence and assumed a more multipart model: normative beliefs influence attitudes which, besides intentions, influence behavior.

Liska's (14) also supposed that behavior has a direct effect on attitude and that contingency variables affect the expectations and consequences within the culture. In 1994, Mathewson developed a model of reading in which attitude is a factor in one's reason to read, and the result of a specific reading experience is feedback to influence attitude (11). He stated that attitude consists of feelings, act readiness, and beliefs. McKenna, et al. (11) argued that the theory is limited since it does not explicate long-term effects on reading, and emphasized an underlying relationship between beliefs and feelings, or attended to "the opportunity that social norms may have a direct effect on attitude" (p. 938). In 1994, McKenna proposed that reading attitude is mostly affective and develops over time as a result of three major issues: 1) Beliefs about the results of reading 2) Beliefs about the probabilities of others in light of one's motivation to conform to those probabilities and 3) The results of specific events of reading (p. 938). Cothorn and Collins (15) identified five main factors of attitude: 1) Attitudes give growth

to the motivated behavior. 2) Attitudes are different on a level from negative to positive. 3) Attitudes are contained by organizations, and the attitudes in an organization are interrelated. 4) Attitudes have continuity. and 5) Attitudes are learned from culture, mostly from relations and peers. (pp. 87-88).

### 3. Method

#### 3.1. Criteria for selection results

Suitable researches for this meta-analysis include the following: 1) The effectiveness of the intervention program in reading attitude and also relationship between reading attitude and reading skills; 2) Measured reading attitudes; 3) Student data at the elementary, secondary and high school levels, 4) Reported experimental and descriptive data 5) Reported data based on the time of the intervention program, sample size, mean and standard deviation in order to test experimental and descriptive designs. The meaning of attitudes in this study is the one developed by McKenna and Kear (16), who asserted that when students view reading as a positive activity, they are more likely to engage in activities to read for longer periods of time.

#### 3.2. Search for published studies

Search terms were produced using specific elements of the operational definitions of reading attitude in the present study. The keywords included reading attitudes, attitudes and feeling toward reading. These descriptors were then employed as search terms in the following databases with limited years: ProQuest Dissertations and Theses with fulltext, SAGE Journals online, Science Direct and Scopus. Database searches yielded 670 studies; a summary of the studies recognized by search term and database are reported in Table 1. All resources were downloaded and classification was made for each search term. References were at first screened in their abstracts and after that, the insertion criteria were immediately eliminated from consideration. Consequently, the remaining references were screened further in depth compared with the inclusion criteria, with a resulting 26 experimental, quasi-experimental and 10 descriptive studies identified as eligible. These thirty six studies were included in the current study with a total of 7080 participants within those designs, sample sizes for experimental and quasi-experimental studies ranged from 27 to 251 and sample sizes for descriptive studies ranged from 58 to 4018. A summary of these studies is given in Tables 2 and 3.

Table 1. Results from Database

Databases	Keyword	Number of Study
ProQuest	Reading attitudes, attitude & feeling toward reading	427
Sage	reading attitudes, attitude & feeling toward reading	60
Science Direct	reading attitudes, attitude & feeling	114
Scopus	reading attitudes, attitude & feeling toward reading	69

Table 2. Summary of experimental and quasi-experimental studies

Authors	Sample	Attitude Scale	Intervention	Location	Grade
1. Yoon (17)	119	R.A	Sustained Silent Reading	Korean	4
2. Matthew (18)	74	R.A	CD-ROM interactive story books	University of Houston	3
3. Saunders (19)	251	R.A	Sustained Silent Reading	Southeast (Lincoln & Nebraska)	10-12
4. Schrode-Fries (20)	100	R.A	Computer Program	Southeastern Pennsylvania Southeast U.S	4 K-3
Continue Table 2					
5. Al-Hazza (21)	163	RA	America Reads Tutoring Program		
6. Burns (22)	52	RA	K-W-L Reading Strategy	Northeastern Pennsylvania	4
7. Hobson (23)	56	RA	Sustained Silent Reading	Northern Montgomery	4
8. Albright (24)	95	RA	Read aloud picture book	South and Central America	7
9. Kingsriter (25)	30	RA	Various Music Elements	Mid-Sized Midwestern	2
10. Andrews (26)	58	RA	Integrated reading & Music instructional	North Carolina	4
11. Kotaman (27)	40	RA	Dialogical Storybook	Turkey	K
12. Sallee (28)	27	RA	Sustained Silent Reading	Southern Illinois	1-5
13. Peeples (29)	50	RA	HELP (Home Enrichment Component)	Mississippi	1
14. Eliason (30)	128	RA	Accelerated Reader Program	Pacific Northwest	3-5 K-2
15. Jones, H.J (31)	40	RA		North Central Texas	
Continue Table 2					
16. Borneman (32)	96	RA	Cross-age Program	Campus	1-5
17. Moody (33)	44	RA	Direct Instructional Program	Central Virginia	9
18. Moore (34)	128	Heathington Attitude Scale	Basal Reading Program	Alabama	2-6
19. Westberry (35)	26	RA	Reading Partnerships	Naples, Florida	6
20. Ruth (36)	27	RA	Sustained Silent Reading	Illinois	2
21. Watson (37)	105	RA	Bibliotherapy Techniques	Inner city	4
22. Schulhauser (38)	105	RA	Literary Discussion	Washington	4
23. Karlonis (39)	56	RA	Reciprocal Teaching	Pennsylvania	5
24. Marshall (40)	191	RA	Reciprocal Teaching	North Carolina	5
25. Lynn (41)	46	RA	Allowed Choice Program	Philadelphia	9
26. Mihandoost (42)	64	RA	Barton Intervention Program	Ilam, Iran	3,4

Table 3. Summary of Relationship studies

Authors	Sample	Measure of Attitude	Location	Grade
1. Kush (43)	190	RA	Southwestern	1-4
2. Swalander (44)	4018	PISA	Stockholm	8
3. Logan (45)	232	Questionnaire reading Attitude	UK	1-5
4. Feiwell (46)	75	RA	Southwest	2
5. Whiteway (47)	58	RA	St.John's	5
6. Pink.B.A (48)	74	RA	Newfoundland	4-6
7. Galipault (49)	63	RA	Florida	1-5
8. Abromitis (50)	75	RA	Chicago	3
9. Harris (51)	64	RA	Tennessee	8
10. Brown (52)	60	RA	St.John's	2

RA= Reading Attitude Scale for Elementary School

### Coding and reliability

This study employed experimental studies to identify potentially essential study aspects. A coding form was made to record data (for two study groups) pertaining to 1) Sample descriptors; 2) Events and

sample size in each group; 3) Mean; 4) Standard deviation; and 5) Significance test information. Based on the literature review, the following moderators with associated levels were identified: publication type (journal articles, theses, conference papers, reports,

other fugitive literatures), grades (elementary, secondary, high schools), genders (male, female, mixed). Sample size for the experimental and quasi-experimental studies was between 27 and 560 and also sample size for relationship studies was between 31 and 4018. All participants were dated from 1990 to 2011 covering 7080 school students.

**Results**

In this study, the researcher used thirty six studies retrieved from the internet. The characteristics of each study are detailed in Tables 2 and 3. The studies were conducted in the United States, United Kingdom, Stockholm, Korea, Iran and Turkey. These studies were experimental, quasi-experimental and descriptive. The overall meta-analysis for experimental and quasi-experimental studies illustrated a statistically significant OR: 1.51; 95% CI: 1.15, 1.99 was statistically significant ( $p < .01$ ) (see Table 4), and also the Q statistic for heterogeneity of 60.96 was statistically significant ( $p < .000$ ). In this study, the

sensitivity of the Q statistic is high because the studies (e.g.,  $n > 20$ ) are included in the meta-analysis, so that the test could detect a moderate degree of heterogeneity. Table 4 shows that positive effect on these results, odds ratio [OR]: 1.51, 95% confidence interval [CI]: 1.15, 1.99, Z-Value=2.95 was statistically significant ( $p < .01$ ). The overall meta-analysis for descriptive studies shows a statistically significant, Point estimate: 19.20, Standard error: .07; 95% CI: 19.7, 19.34 were statistically significant ( $p < .000$ ) (see Table 5), and also the Q statistic for heterogeneity of 4473.60 was statistically significant ( $p < .000$ ). In this study, the sensitivity of the Q statistic is high. Table 5 shows positive effect on this result, Mean: 19.20, 95% confidence interval [CI]: 19.7, 19.34, Z-Value=282.36 were statistically significant ( $p < .000$ ).

Table 4 illustrates positive effect on this result, total of odds ratio [OR]: 1.51, 95% confidence interval [CI]: 1.15, 1.99, Z-Value=2.95 was statistically significant ( $p < .01$ ).

Table 4. Summary of Meta-Analysis for experimental and quasi-experimental studies

Study name	Statistics for each study					Odds ratio and 95% CI
	Odds ratio	Lower limit	Upper limit	Z-Value	p-Value	
Yoon (2002)	1.057	0.289	3.889	0.083	0.934	
Matthew (1995)	1.000	0.346	2.892	0.000	1.000	
Saunders (1991)	11.473	0.664	198.192	1.678	0.093	
Amy Schrode (2005)	12.209	0.657	226.967	1.678	0.093	
Al-Hazza (2002)	71.457	4.234	1208.866	2.961	0.003	
Burns (1994)	1.000	0.275	3.634	0.000	1.000	
Hobson (1991)	1.000	0.347	2.882	0.000	1.000	
Albright (2000)	25.667	1.481	444.766	2.230	0.026	
Kingsriter (1998)	1.333	0.315	5.642	0.391	0.696	
Andrews (1997)	36.676	2.037	660.228	2.443	0.015	
Milandoost (2010)	1.000	0.363	2.751	0.000	1.000	
Kotaman (2008)	22.778	1.199	432.582	2.081	0.037	
Sallee (1991)	63.000	3.041	1308.235	2.679	0.007	
Peeples (1996)	64.304	3.628	1173.222	2.810	0.006	
Ellason (2005)	1.000	0.385	2.697	0.000	1.000	
Jones (1991)	303.400	13.658	6739.787	3.612	0.000	
Borneman (1998)	1.000	0.397	2.619	0.000	1.000	
Moody (1993)	1.000	0.305	3.277	0.000	1.000	
Moore (1990)	2.156	1.046	4.446	2.081	0.037	
Westberry (1996)	1.000	0.119	8.421	0.000	1.000	
Ruth (1991)	0.750	0.132	4.280	-0.325	0.745	
Watson (1993)	29.019	1.703	494.476	2.328	0.020	
Schulhauser (1990)	0.904	0.174	4.698	-0.120	0.904	
Karlonis (1994)	0.733	0.255	2.111	-0.575	0.566	
Marshall (1992)	3.375	0.345	33.040	1.045	0.296	
Lynn (1996)	0.667	0.196	2.263	-0.650	0.516	
	1.514	1.150	1.994	2.952	0.003	

**Meta Analysis**

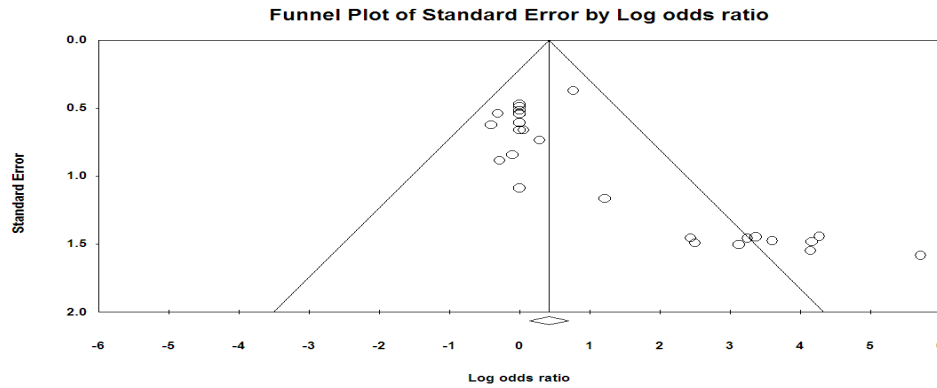


Figure 1. Funnel plot using 26 experimental and quasi-experimental studies. The horizontal axis of figure 1 shows a log odds ratio. This is equivalent to plotting the log-odds ratio on the horizontal axis. The standard error of the log odds ratio is plotted on the vertical axis.

Table 5. Summary of Meta-Analysis for descriptive studies

Study name	Statistics for each study						
	Mean	Standard error	Variance	Lower limit	Upper limit	Z-Value	p-Value
Kush (1998)	169.980	2.142	4.590	165.781	174.179	79.343	0.000
Swalander (2007)	25.100	0.087	0.008	24.930	25.270	289.278	0.000
Logan (2009)	6.400	0.114	0.013	6.177	6.623	56.348	0.000
Feiwell (1997)	28.800	0.517	0.268	27.786	29.814	55.673	0.000
Whiteway (1995)	121.270	2.528	6.389	116.316	126.224	47.977	0.000
Pink.B.A (1996)	123.860	2.464	6.073	119.030	128.690	50.261	0.000
Galipault (2008)	619.000	5.226	27.311	608.757	629.243	118.446	0.000
Abromitis	59.790	1.249	1.561	57.341	62.239	47.856	0.000
Harris (2009)	85.810	1.677	2.812	82.523	89.097	51.173	0.000
Brown (1992)	128.400	2.386	5.694	123.723	133.077	53.808	0.000
	19.127	0.068	0.005	18.994	19.260	280.995	0.000

**Meta Analysis**

Table 5 shows that positive effect on this result, total of Mean: 19.20, standard error: .07 confidence interval [CI]: 19.07, 19.34, Z-Value=282.36 were statistically significant ( $p < .000$ ).

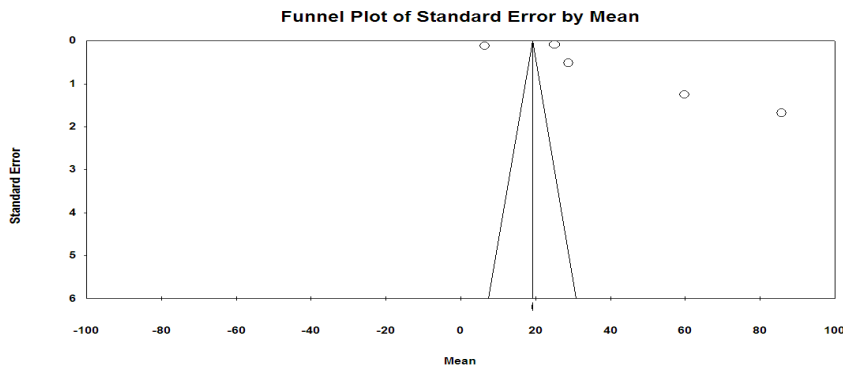


Figure 2. Funnel plot employed 10 descriptive studies. This figure shows that asymmetry in funnel plot. The horizontal axis of figure 2 show mean and the vertical axis show standard error. The horizontal axis of figure 2 is show that mean and standard error shows on the vertical axis.



## Discussion

The purpose of this meta-analysis was to present an objective, quantitative review of the contending evidence yielded by studies. The researcher used experimental, quasi-experimental and descriptive studies. Results from 26 experimental and quasi-experimental studies revealed an overall effect of 1.51 between experimental and control groups. However, significant heterogeneity of effect-sizes revealed that the standardized mean differences between the experimental and control groups across the studies in our group were of consistent importance and therefore were likely to have been sampled from the same underlying population. Results from 10 descriptive studies illustrated an overall effect of 19.20. Nevertheless, heterogeneity of effect-sizes revealed its significance.

Consistent evidence from both experimental and descriptive studies suggests that attitude toward reading had desirable effects for all of grade students, because students with positive attitudes appear to have more developed study habit. In an international study, Mullis, Martin, Kennedy and Foy (53) illustrated that students with high positive attitudes to reading have substantially higher reading achievement than those with lower attitudes to reading. Intervention program may serve as an opportunity not only to learn academic content but also to internalize and develop reading skills. In addition, based on the literature review, the intervention program was effective in study skills in all grade level school students. In a study by Johnson, Maruyama, Johnson, Nelson and Scott (54), it was shown the successful effects of intervention program on reading attitudes. According to Pillar (55), positive changes in reading attitudes and interests may be fostered when teachers provide intervention programs.

The analyses using experimental studies showed that students usually benefit from intervention programs. An experimental study by Healy (56) illustrated that the attitudes of fifth grade students toward reading could be changed through instructional practices. Bullen (57) used three control and three experimental classrooms at each grade level from one through five to determine if more positive attitudes toward reading could be developed. This study shows that the special program positively affected the attitudes of the experimental group as measured by an instrument designed. The intervention program educator may need to be aware of the developmental reading attitude of the students when engaging in intervention program and adjust their type of involvement accordingly. Finally, in experimental studies, the intervention program had positive effects on reading attitude. Also, the literature review illustrated the relationship between reading attitude and reading skills. Reading attitude influences reading ability, since students with a

positive reading attitude will most probably read more often and thus better than students with a negative reading attitude. Studies illustrated that good readers have a more positive reading attitude than poor readers (58). The study by Groff (59) show a relationship between attitude and reading skills in fifth and sixth graders. In addition, a study by Swalander and Taube (44) show a positive relationship between reading attitude and reading skills in secondary schools.

## Future Research

Based on the results of this study, the researcher might suggest guidelines for educators and education policy makers: 1) Schools and teachers should encourage students for the purposes of improving intervention program, reading attitude and reading skills, and decreasing problems with intervention. 2) Student involvement in intervention program should be encouraged for positive attitude and improving attitude.

## Conclusion

Most of previous studies show that the students who received intervention programs have a better situation in reading attitude and school results than students who did not. The results of this research suggest that the students who received intervention programs performed well by having a positive attitude toward reading and by reducing problems with study skills. Evidently, it is important to consider the developmental stage of the students when they receive the intervention program. The findings of this research provide some guidance for future investigations that will be both useful and illuminating for the underlying social and psychological dynamics of students' skills in reading.

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