Adult Second Language Reading in the USA: The Effects of Readers' Gender and Test Method

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Abstract

Bernhardt (2003) claims that half of the variance in second language (L2) reading is accounted for by first language literacy (20%) and second language knowledge (30%), and that one of the central goals of current L2 reading research should be to investigate the 50% of variance that remains unexplained. Part of this variance takes consists of passage content or background knowledge, and as the reader develops, proficiency presides over passage content. In an attempt to further examine factors involved in the remaining variance, Brantmeier (2002; 2003a, 2003b, 2003c, 2003d; 2004a) conducted a series of studies that include readers' gender[1] as an interacting variable. Results add additional meaning to Bernhardt's (1991) conclusion that background knowledge by itself does not predict comprehension. As proficiency increases, the influence of both background knowledge and readers' gender decrease, or disappear completely. Brantmeier's findings reveal that the interaction of readers' gender and passage content does play a role at the intermediate levels of Spanish language instruction, but not at the advanced stages. The series of studies identifies gender as a moderator of both conceptual and practical importance for the intermediate levels of L2 language instruction at the university. In the present study, reanalysis of data from prior studies was conducted, and findings indicate gender differences in comprehension may be a function of the type of assessment used at the intermediate level. In four studies that utilized the same set of texts across levels of language instruction, the multiple choice test method was inconsistent by gender, and the written recall was consistent by gender with females outperforming males at the intermediate levels of instruction. In addition, findings may indicate a tendency toward readers' gender presiding over topic familiarity on written recall, and topic familiarity presiding over readers' gender on multiple choice at the intermediate levels.

Introduction

Bernhardt's (2000; 2003) most recent L2 reading model includes room for unexplained variance while offering a conceptualization of L2 reading that captures reading over time (see Bernhardt 2000, 803). Young (2003) echoes concerns about L2 reader's development and argues that a real distinction needs to be made in L2 reading research regarding the differences between first/second-year language learners and those who choose to continue studying the L2 in the USA. All too often, researchers fail to note the possibility of differences between these two groups. Interestingly enough, Chavez (2000) contends that, in Romance Language departments,

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[1] Definitions of gender involve social, psychological, and cultural dimensions linked to males and females in different social contexts. A person's gender is often distinguished from sex, as sex is related to the biological aspects of a person such as the chromosomal, anatomical, reproductive, hormonal, and other physiological characteristics that differentiate males and females. More specifically, the term "sex" refers to the biological mechanisms that produce different patterns of physical development that we associate with men and women (Levy 1989). Levy (1998, 306) contends that "sex" refers to biological categories of male and female, and that "gender" refers to the social categorizing of individuals based on social standards. Brantmeier's investigations utilize the term "gender," a socially constructed category, and all participants in each study self-reported on a written questionnaire whether they were male or female.

females outnumber males 4 to 1 at the beginning levels, and this gap widens the higher the level of instruction. Prior studies (Brantmeier 2002; 2003a, 2003b, 2003c, 2003d; 2004a) attempted to explore if gender has an impact on the L2 reading process, and in doing so relied on Bernhardt's (2003) model to help explain the body of findings in a cogent and consistent manner.

There are a number of models of the L2 reading process, but the most comprehensive, interactive one that first captured both bottom-up and top-down processing is the Bernhardt Model (1991). This model combines both cognitive and social perspectives on reading as it offers both text-driven and reader-based views of the L2 reading process. This integrative perspective assumes that reading development and reading proficiency exist. The model encompasses micro-level features, such as word recognition, phonemic/graphemic features and syntax, as well as macro-level features, such as background knowledge and perceptions (both knowledge-driven features). Word recognition is defined as the attachment of semantic value, and phonemic/graphemic decoding entails the process involved in how L2 readers are influenced by the way words look or sound when interpreting a text. Syntactic feature recognition involves the interpretation of the relationship of words (Bernhardt 1991). To borrow Bernhardt's (1991, 170) explanation of a micro-level feature of the model, "…word recognition, represented as an exponential curve, posits that in the early stages of proficiency errors that can be attributed to vocabulary difficulties are fairly common." Background knowledge is whether the text makes sense with respect to a reader's existing knowledge, and perception is the reconciliation of each part of the text to preceding and succeeding elements. To clarify a macro-level aspect, Bernhardt (1991, 170) states that with background knowledge "… the rate of errors due to both content knowledge and knowledge constructed during comprehension decreases as proficiency increases." By re-examining prior databases, the present paper attempts to capture L2 reading

over time while simultaneously examining both stable and transient reader characteristics. In doing so, an important finding related to assessment tasks emerges.

Individual Learner Differences

The unexplained variance in L2 reading may include factors related to individual learner differences. To date, it appears that there is no all-embracing or comprehensive theory of individual difference variables (IDVs) in second language acquisition (SLA) research (Brantmeier 2003d; Skehan 1991; Ellis 1994) let alone second language reading. Reviews of IDV research identify and classify IDV variables in different ways, and consequently IDVs are left without uniform and consistent designation. IDVs may consist of learner's beliefs, affective states, age, aptitude, learning style, motivation and personality. A few reviews include gender as an IDV (Cook 1991; Larson, Freeman, and Long 1991), and most investigations generally explore these factors in oral, communicative situations.[2] Furthermore, it appears that reviews on IDVs have not included studies conducted on reading comprehension (Skehan 1991; Oxford and Ehrman 1993). Because of the disparities in the classification of IDVs in SLA, it is difficult to make predictions based on prior research in this area; however, the following question can be formulated: Can we account for variation in L2 readers' performance by considering gender and other IDVs along with the development and progress of the reader? Most recently, in a book on individual differences in second language learning, Dornyei (2005) claims that gender affects every aspect of the language learning process and that this issue warrants a book on its own. The present study serves as one step in that direction.

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[2] See Brantmeier (2003d) for a summary and discussion of books that review L2 research concerning IDVs. The discussion demonstrates the importance attached to IDVs by different authors, but it also reveals the disparities regarding which IDVs are considered to be of greatest importance.

Levels of Foreign Language Instruction

The first and second year L2 courses in Romance Language departments in the USA generally utilize communicative language teaching methodologies that emphasize the development of speaking and listening skills. After this, at the intermediate levels, the focus usually shifts to the development of reading and writing skills with culture and civilization as a major component. Students often read newspapers, magazines, and vignettes from history books, and they may write about what they read. The reading of complete, authentic texts usually begins at the advanced levels of language instruction with courses on advanced grammar and composition. Consequently, the instructional practices shift from a focus on language skills to an emphasis on text analysis and interpretation. The objective of most advanced language courses is to prepare students for the level of reading and writing required in the literature and linguistic courses. In most universities students in the advanced language courses enroll because they choose to, not because they are obliged to take the course in order to fulfill general language requirements. These courses are usually required for the major or minor. At this point we know very little about readers at the advanced levels of language instruction in empirical terms, and it is at this stage of acquisition where more L2 reading research is needed (Brantmeier 2001; Young 2003).

L2 Reading and Passage Content

As is evidenced by research on passage content and background knowledge, the field of L2 reading has continuously shown great concern about the cultural contexts of the learner, but has given surprisingly little attention to the culture of gender.[3] Does gender play a role in L2

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[3] Belcher (2001) discusses gender as a factor in research on L2 writing.

reading at the university level? Specific questions concerning men and women[4], topic familiarity, and reading comprehension across stages of acquisition may hold important conceptual and practical implications. Prior to 2000, only a few studies had considered male/female differences in L2 reading (Chavez 2000), but for some time now, research has investigated the influence of passage content, background knowledge, and topic familiarity on L2 reading with English as a Second Language (ESL) students of many different instructional levels. Results have consistently revealed that a student's prior subject knowledge significantly influences the understanding of L2 reading materials. (Carrell 1981, 1983a, 1983b; Hudson 1982; James 1987; and Johnson 1981). In a closer look at studies with participants from only intermediate and advanced levels of ESL instruction, findings reveal that content schemata, as seen as culturally familiar and unfamiliar content, continue to influence first and second language reading comprehension (Carrell 1987; Pritchard 1990; Steffenson, et al 1979). When ESL students are more familiar with the reading topics, they comprehend better across all levels of language instruction.

L2 Reading, Passage Content, and Gender

In a review article published in the <u>Reading Research Quarterly</u> , Patterson (1995) reported that 45% of the research designs included a description of participants in terms of gender. Unfortunately, only one study included gender as part of data analysis. In order to see if gender is currently being considered in the analysis sections of L1 and L2 studies, for the present investigation all articles in RRQ were reviewed from 1995 to 2004. Approximately 45 articles included a breakdown of participants in terms of gender, and it appeared that only six considered

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[4] Firth and Wagner (1997, 288) argue that SLA research often sees participants in binary terms and that researchers often ignore the social and contextual dimensions of language. In the present article, gender is the label under which other forces emerge (Chavez 2001), and therefore the variation within gender groups is examined in addition to variation between groups.

gender as a variable in the analysis. The deficiency in studies that analyze gender in a journal of reading could suggest that gender does not play a role in the reading process. In contrast, L1 reading researchers have examined gender and passage content on standardized exams and found that gender is an important factor in the reading process (Doolittle and Welch 1989; Hyde and Lynn 1988; Silverstein 2001).

Empirical investigations on L2 reading have revealed that topic of text affects male and female reading achievement. Figure One lists a review of selected L2 studies that examine readers' gender, passage content and other variables across instructional levels.

Bugel and Buunk (1996) reported differences by gender and topic on the national foreign language test in the Netherlands. In their study males performed higher than females on the multiple choice comprehension items for readings concerning laser thermometers, volcanoes, cars, and football players. Females scored significantly higher on the comprehension tests for essays on text topics such as midwives, a sad story, and a housewife's dilemma. Data revealed that the topic of a text is an important factor in explaining gender-based differences in second language reading comprehension. In contrast to Bugel and Buunk (1996), Young and Oxford (1997) found no significant differences by gender with recall scores for all text topics (Economics, Presence of Foreign Cultures, and History). In addition, Young and Oxford found no self-reported differences by gender in the topic familiarity ratings or background knowledge of any of the passages. Schueller (1999) controlled for the effects of passage content by gender and found a higher degree of reading comprehension among females studying German. Schueller utilized a narrative about an older couple rationing food in post-war Germany. Her study was the first to examine gender as a variable when looking at the effects of top-down and bottom-up reading strategies instruction on the comprehension of literary texts. She found that males and

females profit in similar ways from bottom-up and top-down strategy training. In particular, all female groups scored higher on comprehension than the male groups regardless of strategic training and comprehension assessment task with only one exception: males with top-down strategy training did better than females on multiple choice. This was not the case for the written recall.

With 132 learners of Spanish at the advanced stages of acquisition, Brantmeier (2002)[5] reported no significant gender differences in comprehension of two different passages. On the contrary, with the same reading passages, Brantmeier (2003a) reported significant interactions between readers' gender and passage content with comprehension among 78 intermediate L2 learners of Spanish. For both studies, Brantmeier utilized a vignette from a short story about a housewife and college roommate with all characters being female, and the other vignette was from a short story about two male spectators at a boxing match. Both passages consisted of approximated 600 words each. Topic familiarity differences were significant by gender and text topic across all levels. At the intermediate levels, males scored higher than females on both written recall and multiple choice with the boxing passage, and females scored higher than males on both assessment tasks with the housewife passage. When examining overall results across passages with these same participants mean scores indicated better performance by females on both recall scores and multiple-choice questions. With participants from both the advanced grammar classes and literature courses, females achieved higher recall scores across passages than males did. However, for the advanced levels, mean scores for multiple choice items across passages were the same by gender. Based on the findings, Brantmeier suggested that as learners

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[5] The reading materials were commonly used at these levels of language instruction. Brantmeier does not suggest that male and female comprehension exists. The issue involves male/female topic familiarity. Topic familiarity differences by gender were borne out statistically. In addition, no significant degrees of variation in topic familiarity levels within gender groups were found.

advance in their language studies differences between men and women in reading comprehension may depend on assessment tasks used to measure comprehension rather than on passage content. With the same reading passages but without focusing on comprehension, Brantmeier (2003b) reported that with 78 readers at the intermediate level, gender differences do not account for difference in strategy use when reading a second language, even though there are topic familiarity differences by gender. In conclusion, Brantmeier contended that successful second language reading comprehension may depend on a variety of mechanisms, and with students from the intermediate courses of Spanish, some important interacting factors to be considered are readers' gender, passage content, topic familiarity and assessment tasks.

With native readers, Brantmeier (2003c) utilized the same reading passages and comprehension assessment tasks as Brantmeier (2002, 2003a) to see if comprehension is affected by passage content, and to see if gender plays a role in native readers strategy use. More specifically, Brantmeier (2003c) investigated whether gender differences by text topic will disappear with L1 readers of Spanish as they did with advanced L2 readers of Spanish (Brantmeier 2002). The participants in the study were 70 adults (age 22-30) native Spanish speakers (27 men; 43 women) studying intermediate level English as a Foreign Language (EFL) in San José, Costa Rica. Results did not yield any significant differences by gender for reported topic familiarity; however, with the passage about a housewife, results yielded significant main effects by gender on the recall assessment task. Females scored higher on recall more than males for this passage. No gender differences were found with strategy use. Results paralleled prior research that revealed higher achievement of females on L1 literacy tests with specific passage topics and with a writing task (instead of multiple choice) as a measure of comprehension.

To further explore additional individual differences in L2 reading, Brantmeier (2003d) examined the effects of male and female self-reported levels of enjoyment, interest, and topic familiarity on written recalls with 86 learners from the intermediate levels of Spanish. Findings revealed higher comprehension by males with the boxing passage and higher comprehension by females with the female-oriented passage, and results were only partially explained by the predicted variables. Enjoyment and interest mattered little at this level. Reading for meaning appeared to be hindered by a lack of topic familiarity, but not by the other IDVs in the study.

Brantmeier (2004a) utilized passages that yielded no topic familiarity differences by gender to examine male/female differences in scores with two comprehension tasks. With 69 advanced male and female L2 readers at the university, she examined the topic familiarity levels and comprehension of two different authentic violence-oriented texts of 700 words each. Some Latin American authors treat violence as a principal theme in their works, and two short stories commonly used at this level were chosen for the study. One story is about a decapitated chicken (DC) and involves a female victim and the assailants are male, and the other story concerns a naptime slaughter (SN) with an adolescent boy who decides to end his dog's life. Findings revealed that male and female readers at the advanced levels of instruction were equally familiar with violence-oriented content of the target culture. However, females outscored their male counterparts on L2 comprehension tasks (both multiple choice and recall) for the DC text, which involved male-to-female violence. The overall results repeat earlier findings by Brantmeier where females may have an advantage over males in the free written recall task. Though the results provide support for a multifactor model of L2 reading (Bernhardt 1991), one cannot assert that the apparent gender difference in the comprehension of passage DC is due to the victim's

gender. Consequently, Brantmeier asserted that future research should demonstrate this effect in the opposite direction with learners at various levels.

L2 Reading and Gender: Formulating Generalizations

The aforesaid L2 reading investigations studied whether gender interacts with other variables to account for differences in the reading processes (strategies) and product (comprehension measured via various tasks) with adults at various levels of language acquisition. For some time, variations in research design and methods, especially regarding level of instruction and passage type, made it problematic to offer generalizations about L2 reading and gender (Brantmeier 2001). Bugul and Buunk's (1996) study was conducted with more advanced language learners and the passages were essays; Young and Oxford's (1997) participants were from the intermediate level of the university and the passages were essays taken directly from textbooks; Schueller's (1999) participants were enrolled in second-year courses at the university and the passages were gender-neutral narratives; Brantmeier's (2002; 2003a; 2003b; 2003c; 2004a) participants were from intermediate and advanced levels of the university and the passages were 4 different authentic vignettes from short stories. Given the discrepancies in both research methods and procedures, it is not alarming that findings across studies are somewhat contrasting. However, the studies illuminate gender as an important variable involved in L2 reading that merit investigation.

Of course gender alone does not predict comprehension. Furthermore, background knowledge by itself does not predict comprehension. While these IDV variables do influence comprehension, they alone do not predict comprehension. Results show that as proficiency increases, the influence of both background knowledge and readers' gender decrease, or disappear completely. This finding substantiates Bernhardt's L2 reading model. Again, the

combined results of Brantmeier's (2002; 2003a; 2003b; 2003c; 2004a) studies emphasize the importance of readers' gender and passage content at the intermediate level of language instruction in the USA, and moreover, an interesting finding emerges across several studies: generally, females appear to outperform their male counterparts on the written recall task while performance by gender on multiple choice items across studies is inconsistent.

The Present Study: Test-Method Effects Across Studies

Before beginning a discussion about test-method effect, details about participants and data collection instruments across studies are necessary.

Participants

Participants in all 5 studies were adults enrolled in language courses (intermediate through advanced) in the USA or Costa Rica. See Table One for details about level of language instruction and ratio of males and females in each study.

Readings

The two reading passages for Brantmeier (2000; 2003a; 2003c) were selected after carefully looking at different syllabi that are used at the intermediate level throughout the nation. Most courses at this level incorporate short stories by male and female authors, and works by Elena Poniatowska and Julio Cortázar are often included. For these studies, the passage from the short story "La casita de sololoi," by Poniatowska, was taken from a volume of short stories entitled *La pluma mágica*. Cortázar's passage was taken from his short story "La noche de Mantequilla," which is in a book of short stories entitled *Los relatos: Ahí y ahora.* The Cortázar passage was chosen because it centered on male spectators at a boxing match, and all of the characters are men. The Poniatowska passage was selected because it focused on a frustrated mother and wife who visits her college roommate, and all the characters are women. The

passages were not examined for text difficulty levels because the study does not make comparisons of strategy use scores between the two passages, rather it examines the differences in strategy use by gender within each passage.

The complete version of the short stories were not used. Each vignette contained approximately 600 words and consisted of about one-and-one-half pages of text. In this course, students were familiar with texts that included glossed words in the margins. To determine which words needed to be glossed, both passages were given to students in an introduction to literature course to identify words that caused them difficulty. Instructors and supervisors for the course were also consulted about the glossed words. In the end, each passage contained the same number of glossed words. The passages were retyped and formatted so that glosses could be supplied to aid the reading process. The titles of both passages contained misleading and ambiguous terms, so a description of key concepts in the title was included more than half of a page length above the title of the passage.

For Brantmeier (2004a) the vignettes were both taken from short stories and they consisted of approximately 700 words. For this study, the first passage was taken from a short story, La gallina degollada ("The Decapitated Chicken"), by Horacio Quiroga. The second passage by Mempo Giardinelli was taken from a short story entitled Carniceria con siesta ("Slaughter at Naptime"). Both stories were third-person narratives.

The short story about the decapitated chicken involves a female victim and the assailants are male. The story begins with a female servant killing a chicken as four local adolescent males watch. When everyone leaves the house except for the two daughters, the boys in the kitchen kill one of the daughters in the same way that the chicken was killed. The short story about a naptime slaughter is about an adolescent boy who decides to end his dog's life. While his

parents are taking an afternoon nap, the boy takes a machete and brutally tries to kill his dog. His father tries to stop him as his mother frantically screams. To control for authenticity of passage selection, both passages were excerpts from longer texts, but neither was simplified or abridged. The passages were retyped and formatted so that glosses could be supplied to aid the reading process. To determine which words needed to be glossed, both passages were given to students in an introductory literature course to identify words that caused them difficulty. Instructors for the course were also consulted about the glossed words. Both passages had approximately the same number of glossed words.

Comprehension Assessment Instruments

For all five studies reader's performance across two different reading comprehension assessment tasks was used: the written recall and multiple choice questions. Both of these tasks were completed in the learner's native language, English (Bernhardt 1983; Lee 1986a; and Wolf 1993). The written recall protocol requires readers, without looking back at the passage, to recall and write down as much as they can of what they have just read. This free written task does not deny the role of the reader in constructing meaning. Bernhardt (1991) clamed that multiple choice tests can be problematic if they are not passage-dependent, that is, the reader does not always need to read a passage in order to choose the correct answer. Wolf (1991) wrote multiple-choice questions that met the following criteria: (1) that all items are passage dependent, and (2) that some of the items require the reader to make inferences. It was also necessary that all the distracters in the multiple choice questions were plausible (or believable) in order to prevent participants from immediately disregarding responses. These guidelines were meticulously followed while creating the multiple choice items for the present study. In

addition, the researcher of the present study developed a third condition: the test-takers were not able to determine correct responses by looking at the other questions on the page.

Topic Familiarity Questionnaire

Topic familiarity was assessed via multiple-choice questions with five possible choices that ranged from "I knew a lot about the topic" to "I did not know anything about the topic at all." The 5-point scale was used to encourage more precision in rating and encouraged respondents to show greater discrimination in their judgments.

Data Collection Procedures

For all studies (Brantmeier, 2002; 2003a; 2003b; 2003c; 2004a) the same data collection procedures were followed. Participants were asked to complete the following in this order: reading, written recall task, multiple choice task, topic familiarity (or other IDV) questionnaire. Participants were told that they would read a passage and then complete comprehension assessment tasks. They were instructed not to look back at any previous pages while reading and completing all tasks. The researcher or research assistant was present at all data collection times to ensure that participants did not look back at the passage when completing the comprehension assessment tasks.

Data Analysis

Furthermore, for each study the recalls were codified using the same rubric. Each reading was divided into pausal units[i] by two different raters. Pausal units were defined as a unit that has a "pause on each end of it during normally paced oral reading," (Bernhardt 1991, 208). Separately, the researcher and an additional rater identified the total pausal units for each text and then compared results. A template of pausal units was then created for codifying purposes.

Results and Discussion of Test-Method Effect

This section will be framed around two variables that have been demonstrated to affect L2 reading comprehension at certain levels, passage content and readers' gender, with a focus on assessment tasks used to measure comprehension across all levels. Brantmeier's (2002; 2003a; 2003c; 2003d; 2004a) series of L2 studies also tests the hypothesis of gender difference in reading achievement as a function of measurement method.

Even though the use of multiple choice questions to test reading comprehension has been disputed for decades, this method of assessing reading comprehension prevails. As Bernhardt (1991) asserted, reading researchers should use multiple tests of comprehension to gain a more thorough depiction of comprehension, and today it is common for researchers and test constructors to employ a variety of testing techniques in addition to multiple choice. Brantmeier (2002; 2003a; 2003b; 2003c; 2003d; 2004a) included the written recall in order to complement data generated by multiple choice tests. The overall findings across studies with 4 different texts indicate that females may have an advantage over males in the free written recall procedure at both the L2 intermediate and advanced levels of language instruction. The same finding held true for L2 readers. Some gender differences were also found with multiple choice scores, with males performing better at times. Relatively speaking, the results of the series of L2 reading studies show that women perform better on recall (an open-format), while men generally perform the same or better on multiple choice items (a closed-format). Table One lists descriptive statistics for each study. Figures Two and Three graphically display average scores by gender for recall and multiple choice across data sets and instructional levels (Brantmeier 2002; 2003a; 2003c; 2003d).

For some time now, the multiple-choice format for tests in any subject has been criticized for gender bias, favoring men over women (Bell and Hay 1987; Ben-Shakhar and Sinai 1991; Makitalo 1996; Murphy 1982). As reported in the USA and other countries, males perform significantly better than females on L1 multiple choice tests. For instance, Silverstein (2001) contended that one reason for the gender gap on scores for the SAT is the multiple-choice format, which may favor male readers. With an Advanced Placement Exam for several subjects including English, Mazzeo et al (1992) found that men perform better than woman on multiple choice formats than on items with an open format. Murphy (1982) examined gender differences for tasks used on the General Certificate of Education examination and concluded that men perform better than women on objective tests. On three tests of school subjects in Ireland, Bolger (1984) reported that males outperformed females on multiple choice, compared with performance on written examinations. Hellekant (1994) examined gender differences from 1986-93 on an English proficiency exam in Sweden and found that each year boys outperformed girls on multiple choice and girls outperformed boys on the free-response items. In an L2 reading study in the USA, Schueller (1999) asserted that males achieved higher multiple choice scores than females with top-down strategy training.

Contrary to these studies, Bell and Hay (1987) examined gender differences on multiple choice and open format items and found that women performed better than men on both test types with the smallest difference on multiple choice items. Feingold (1988) reported that cognitive gender differences have declined over the years (from 1947-1983), as depicted on multiple choice items on standardized exams in the USA (PSAT and SAT). These contradictory findings echo a study by Mazzeo, et al (1993) where gender differences were not apparent when tested via multiple choice. Furthermore, on an aptitude test in Sweden, Wester (1995) reported

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no differences by gender on multiple choice format or open format. Utilizing data generated from ETS (Educational Testing Service) in the USA, Cole (1997) found that multiple choice format did not account for gender differences across exams. Most recently, Lubliner and Smetana (2003) stated that girls outperformed boys on both multiple choice and constructed response items, with significant gender difference on the constructed response test. It is important to note that Brantmeier (2004a) found that females outperformed males on the multiple choice questions for only one passage, and that in several studies (Brantmeier 2002; 2003a; 2003c; 2003d) male and female readers achieved almost the same scores on multiple choice. These inconsistent findings on the gender biased nature of multiple choice along with the consistent finding that females outperform their male counterparts on written recall at the intermediate levels in this series of investigations call for more in-depth and sustained research of this nature. Of course, results are preliminary because only 1 set of texts utilized with participants across stages of acquisition supports this assertion.

The Unexplained Variance: A Hierarchy of Factors

Brantmeier (2003a) examined the "effects of" reader's gender and passage content on multiple choice and recall, and at that preliminary point she was not yet interested in knowing what combination of variables *best* predicts scores on comprehension tests. The series of follow-up studies indicated, as predicted, that proficiency level seems to be the most important variable to examine when explaining differences in reading performance. Results of Brantmeier's investigations indicate that stage of acquisition moderates the effects of gender and passage content. As predicted by Bernhard's L2 reading model, given more exposure to the language (the higher the level of instruction), the less the effects of readers' gender and passage content. More

explicitly, at the intermediate levels of language acquisition in Romance Languages it may not only be linguistic factors (i.e. the Spanish language; the reader's first language) that hinder L2 reading comprehension, but rather the combination of other significant, interacting factors, such as readers' gender, topic familiarity, and passage content. This does not hold true for advanced levels of instruction where readers' gender and passage content matter little. A hierarchy of IDV variables examined at various stages of acquisition may be beneficial in order to attach additional dimension to the L2 reading model.

In an attempt to answer more comprehensive, multivariate research questions, Brantmeier (2004b) examined existing data to explore the following: How much of the variance in multiple choice and recall did gender account for? Data were re-examined using regression analysis in order to show a predictive relationship among the effect of readers' gender on the performance of readers. The dependent variable was performance on recall and multiple choice, and the independent variable was readers' gender. Results showed that overall (both passages combined) readers' gender accounts for 14% of variance in written recall and 7% of variance in multiple choice questions. To provide even further analysis, both passages were analyzed separately. Results revealed that for the boxing passage, readers' gender accounts for 10% of variance in written recall and 5% of variance in multiple choice questions. For the housewife passage, readers' gender accounts for 17% of variance in written recall and 10% of variance in multiple choice items. These results added new dimension to Brantmeier's (2003a) findings and began to place a hierarchy on IDV variables in the L2 reading process. For instance, one way to interpret these results is that readers' gender accounts for greater variance in the written recall assessment measure than in the multiple choice questions at the intermediate level of language instruction.

Brantmeier then examined the following: Which independent variable (readers' gender or topic familiarity) is superior in influencing L2 reading comprehension at the intermediate level of language instruction? Regression analysis revealed which of the IVs (readers' gender or topic familiarity) is superior (more influential) in producing higher scores on reading comprehension. Findings indicated that with the boxing passage, readers' gender accounts for more variance than topic familiarity in recall (readers' gender = 10%; topic familiarity = 5%), but the reverse is true for multiple choice (readers' gender = 5%; topic familiarity = 11%). Likewise, with the housewife passage, results show that readers' gender accounts for more variance than topic familiarity in recall (RG = 17%; topic familiarity = 14%), and again, the reverse is true for multiple choice (RG = 10%; and topic familiarity = 14%). Brantmeier concluded that at the intermediate level of language instruction, readers' gender is more influential than topic familiarity in producing higher recall scores, but topic familiarity is more influential than readers' gender in producing higher multiple choice scores. These results underscore the need for more research on IDV variables that influence performance on comprehension assessment tasks at the intermediate levels.

The Present Study: Predictive Relationships across Investigations

In order to further explore readers' gender and topic familiarity as predictor variables with multiple choice and recall across levels of instruction, the present study utilizes data collected from previous studies discussed earlier (Brantmeier, 2002; 2003a; 2003c; 2004a), and it asks the following questions separately with each data set[6]:

1.   How much of the variance in multiple choice and recall did readers' gender account for at each level of instruction?

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[6] The author does not combine the four separate databases but rather analyzes each database separately.

2. How much of the variance in multiple choice and recall did topic familiarity account for at each level of instruction?

Data collection instruments and procedures for each study were presented and discussed earlier in this article. Data from each prior study were examined separately using regression analysis in order to reveal a predictive relationship among the effects of the independent variables on the performance of readers. In order to determine the unique relationship of readers' gender and topic familiarity to the multiple choice and recall scores a hierarchical multiple regression equation was calculated. For research question one, the scores for multiple choice and recall were dependent variables, and readers' gender was the independent variable. For research question two, the scores for multiple choice and recall were the dependent variables, and topic familiarity was the independent variable. This preliminary analysis attempts to predict recall and multiple choice scores from readers' gender and topic familiarity. Again, descriptive statistics are listed on Table One, and further results are listed on Tables Two and Three. Figure Four graphically illustrates the combined scores across data sets for MC and Recall with male and female readers

By and large, reanalysis of data uncovered the following finding with two different reading passages: At the intermediate levels of L2 instruction readers' gender presides over topic familiarity on written recall, and topic familiarity presides over readers' gender on multiple choice. The following is a more detailed discussion of results.

As expected, results indicated the following for readers' gender as a predictor variable (see Table Two and Figure Four): With native readers from Costa Rica, readers' gender accounts for 1% of variance in multiple choice and 0% of variance in recall with the boxing passage; and, readers' gender accounts for 0% of variance in multiple choice and 8% of variance in recall with

the housewife passage. The housewife and boxing passages show considerable differences on the recall task. With advanced readers in the USA, findings revealed that readers' gender accounts for 0% of variance in multiple choice and 1% of variance in recall with the boxing passage; and, readers' gender accounts for 1% of variance in multiple choice and 2% of variance in recall with the housewife passage. Here, with the same passage read by more advanced readers, the variance in recall explained by gender decreases. However, with advanced readers who read the violence oriented passages, results revealed that readers' gender accounts for 11% of variance in multiple choice and 7% of variance in recall with the passage about a decapitated chicken. Here, the difference is in the opposite direction of the main finding. There is greater variance with multiple choice items than with recall. With the passage about the slaughter at naptime, there were no differences by gender on both assessment tasks.

As indicated in Table Two, with intermediate L2 readers, readers' gender accounts for greater variance in recall than multiple choice items for both passages. With intermediate L1 readers, readers' gender accounted for almost the same amount of variance (almost 0%) in both comprehension tasks with the boxing passage, and for the housewife passage readers' gender accounted for greater variance in recall than multiple choice. In summary, readers' gender accounts for greater variance in written recall than multiple choice with readers from intermediate levels of language instruction. Overall, further statistical analysis indicated that readers' gender accounts for greater gender difference on written recalls with learners from intermediate levels, with females in both L1 and L2 intermediate course achieving higher scores than males for the written recall protocol. These results need to be interpreted with caution, but relatively speaking, women are generally favored by a written recall format rather than a multiple-choice format for reading comprehension at the intermediate level.

Given the lack of significant differences in comprehension with native readers and advanced L2 readers for the original research questions (Brantmeier 2003c), few differences in comprehension by topic familiarity were expected. Furthermore, Bernhardt's model (2001) predicts that with advanced readers the effects of topic familiarity should disappear (See Table Three for findings across studies). Results indicate the following with native readers from Costa Rica : topic familiarity accounts for 0% of variance in multiple choice and 0% of variance in recall with the boxing passage; and, topic familiarity accounts for 1% of variance in multiple choice and 2% of variance in recall with the housewife passage. With advanced readers in the USA (Brantmeier 2002), a re-analysis of data revealed that topic familiarity accounts for 1% of variance in multiple choice and 0% of variance in recall with the boxing passage; and, topic familiarity accounts for 0% of variance in multiple choice and 3% of variance in recall with the housewife passage. Given the significant finding in Brantmeier (2004a) with advanced readers who indicated being equally familiar with two different violence-oriented passages (females outscored their male counterparts on both multiple choice and recall for texts that involved male-to-female violence); inconsistencies with predictor variables were expected.[7]

Reanalysis revealed a conflicting and intriguing finding: Male and female advanced L2 learners reported significantly different topic familiarity levels for the boxing and housewife passages, and readers' gender did not account for large percentages of variance in either multiple choice or recall. However, ironically enough, for a passage in which men and women again reported equal familiarity levels (the decapitated chicken) the proportion of variance in multiple choice accounted for by gender was 11% (with women achieving one more item correct then

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[7] Results revealed that topic familiarity accounts for 7% of variance in multiple choice and 10% of variance in recall with the passage about a decapitated chicken. Meanwhile, for another violence oriented passage (SN) in that same study in which males and females indicated being equally familiar, Brantmeier (2004) reported that scores were the same by gender for multiple choice with only a slight difference in recall (females scored 2 more than males).

men), and the proportion of variance in recall accounted for by gender was 7%, with females outscoring their male counterparts (males = 7; females = 10). These incongruous findings call for further research of this nature.

Asking different questions at different stages of knowledge about particular areas or reading research is integral to progress in the research database (Mosenthal and Kamil 1991). With different research questions in the present study, re-analysis of data from prior experiments highlights the importance of readers' gender and passage content at the intermediate level of language instruction, and it illuminates the role of assessment tasks across all levels of language instruction. As expected from prior contradictory studies on gender differences in multiple choice items, the multiple choice test method was inconsistent by gender across levels of instruction, but the written recall was consistent by gender across passages and levels of instruction with females outperforming males. Overall, reanalysis of data revealed an important new outcome: Across levels of language instruction readers' gender presides over topic familiarity on written recall, and topic familiarity presides over readers' gender on multiple choice.

One plausible and withstanding explanation for the test method effect phenomenon may be explained in terms of greater verbal skills of females (Maccoby and Jacklin 1974). Murphy (1982) contends that essays and other non-objective types of tasks demand a higher language ability in which women are often better than men. He also states that men often do better on objective items that do not require verbal ability, such as problem solving on multiple choice items. Myerberg (1996) reported that non-MC tests in reading favored females over males. Shakhar and Sinai (1991) examined gender differences on strategies used to complete multiple choice items and found robust differences in guessing tendencies; nevertheless, they concluded

that guessing tendencies accounted for only a small fraction of gender differences on multiple choice items. It appears to date that no research has specifically examined why women outperform men on the written recall task, however it has been asserted that there continues to be a gap in writing and language skills on standardized exams in the USA (Cole 1997). Whatever the explanation, the biasing influence of measurement method by gender on L2 reading achievement should be recognized and explored further. At this point, test constructors of L2 reading should keep in mind that assessment format may advantage or disadvantage readers by gender. Just as Shohamy (1984) questioned why different testing methods result in different scores, future L2 studies that use a range of texts and topics could explain why male and female readers achieve the same or different scores on the same task. Inquiries of this nature could use qualitative research methods to help explain more explicitly what is happening and offer an explanation about why these gender differences exist. The relation between gender and item format has not yet been clearly identified and clarified in either L1 or L2 studies, and again, this phenomenon merits further investigation.

Conclusion

Identifying the most important factors involved in the remaining variance in the L2 reading process is still at an early stage. We may never be able to stipulate exactly the complexity of individual differences in L2 reading, but by answering more extensive research questions about readers, texts and tasks, we can gather useful data on a readers' ability to read across levels. The present study utilizes multivariate research methods with varied comprehension assessment tasks and serves as a preliminary attempt to develop a complete theory of L2 reading that begins to identify and classify significant IDVs across time. Findings must be interpreted with caution because only four different passages were used across studies,

and significant results are supported by 1 set of passages. Gender and the interaction of transient variables (such as passage content and topic familiarity) may be moderating factors that intervene with the actual processing of textual meaning until the reader reaches a higher level of language proficiency. Topic of text does not appear to be an important factor explaining gender differences after readers have reached advanced levels of language instruction, but assessment tasks used to measure comprehension do appear to be important variables worthy of more sustained and in-depth research at all levels of language instruction in the USA. This paper attempts to answer the question of gender difference in L2 reading, but ends with an analysis of gender difference in assessment methods. Future research could examine if readers' gender and topic familiarity show these patterns for multiple choice and recall by exploring the underlying processes involved with varying texts (genre and topic).

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Table One

Descriptive Statistics

			Recall		MC	
			Male	Female	Male	Female
Intermediate L2 USA (n = 78; 29 males & 49 females)						
	Boxing	M	7.93	5.78	6.62	5.92
		SD	2.83	3.40	1.35	1.53
	Housewife	M	7.00	10.85	7.59	8.57
		SD	3.38	4.47	1.84	1.12
Intermediate L1 Costa Rica (n = 70; 27 males & 43 females)						
	Boxing	M	8.22	7.93	5.78	5.33
		SD	5.42	4.26	1.89	2.12
	Housewife	M	12.11	16.23	7.93	8.00
		SD	5.73	7.59	2.22	3.14
Advanced L2 USA (n = 76; 23 males & 53 females)						
	Boxing	M	11.35	12.36	6.09	6.36
		SD	5.29	4.84	2.35	1.93
	Housewife	M	15.65	18.74	8.09	8.43
		SD	9.40	9.15	1.73	1.97
(n = 68; 19 males & 49 females)						
	Dec. Chicken	M	7.00	10.20	6.7	7.9
		SD	4.7	5.8	1.9	1.3
	Naptime Sl.	M	14.2	5.9	8.3	8.4
		SD	5.9	5.9	1.6	1.5
Advanced L2 Literature USA (n = 56; 9 males & 47 females)						
	Boxing	M	11.89	11.09	7.33	7.00
		SD	5.13	3.73	1.32	1.60
	Housewife	M	15.89	18.87	8.56	9.06
		SD	4.91	6.75	1.01	1.03

Table Two
Regression Analysis
Assessment Tasks with Intermediate and Advanced Learners

Predictor – RG

	MC				Recall		
	R^2	T-ratio	P		R^2	T-ratio	P
Intermediate L2 USA							
BX	0.05	-2.10	0.00		0.10	-2.20	0.03
HW	0.10	2.90	0.00		0.17	4.00	0.00
Intermediate L1 CR							
BX	0.01	-.90	0.37		0.00	-.25	0.80
HW	0.00	0.12	0.92		0.08	2.42	0.02
Advanced L2 USA							
BX	0.00	0.53	0.60		0.01	0.81	0.42
HW	0.01	0.64	0.52		0.02	1.33	0.18
DC	0.11	2.81	0.01		0.07	2.16	0.04

Note:
BX = Boxing passage; HW = Housewife passage; DC = Decapitated chicken passage

Table Three

Regression Analysis
Assessment Tasks with Intermediate and Advanced Learners

Predictor – TF

	MC			Recall		
	R²	T-ratio	P	R²	T-ratio	P
Intermediate USA						
BX	0.11	-3.07	0.03	0.05	-1.96	0.05
HW	0.14	-3.50	0.00	0.14	-3.53	0.00
Intermediate CR						
BX	0.00	0.03	0.98	0.00	-0.52	0.60
HW	0.01	-0.88	0.38	0.02	-1.22	0.22
Advanced USA						
BX	0.01	0.88	0.38	0.00	-0.44	0.67
HW	0.00	-0.51	0.61	0.03	-1.41	0.16
DC	0.07	-2.0	0.05	0.10	-2.67	0.01

Note:
BX = Boxing passage; HW = Housewife passage; DC = Decapitated chicken passage

Figure One

Summary of Investigations on L2 Reading and Gender Across Instructional Levels

Title	Participants	Reading Passages	Results
Bügel & Buunk 1996 **Sex differences in foreign language text comprehension: The role of interests and prior knowledge**	High school students in their final year of study in the Netherlands who had 3 or more years of English as a foreign language	11 passages: Female topics: (1) human relations (2) female professions (3) self care and of others (4) home, cooking (5) art, literature, dance (6) pity (7) philosophy Male topics: (1) economy, money (2) politics (3) crime, war, violence (4) sports (5)machines, physics (6) automobiles	Females did better on reading passages about human relations, education, care, art and philosophy; Males did better on politics, sports, violence, economics and technological topics.
Young & Oxford 1997 **A gender-related analysis of strategies used to process input in the native language and a foreign language**	Intermediate level Spanish at the University	Passages taken from textbooks on the following topics: Economics, Presence of Foreign Cultures, and History	No significant differences by gender with recall scores for all text topics. No self-reported differences by gender in the familiarity ratings with passage topics or background knowledge of any of the passages.
Schueller 1999 **The effect of two types of strategy training on foreign language reading comprehension: An analysis by gender and proficiency**	Participants from second-year courses of German at the University	Passages were gender-neutral narratives about an older couple rationing food in post-war Germany (borne out by statistical analyses)	Schueller controlled for the effects of passage content and reported a higher degree of reading comprehension among females. More specifically, every female group scored higher on comprehension than the male groups regardless of strategic training and comprehension assessment task with only one exception: males with top-down strategy training did better than females on multiple choice (but not on recall).
Brantmeier 2002 **The effects of passage content on L2 rding comprehension by gender across**	132 total; 76 Advanced Grammar (9 males; 47females); 56 Advanced Literature (9	Cortázar passage on boxing; Poniatowska passage on housewife; topic familiarity questionnaire; written recall and multiple choice questions	Effects of passage content on L2 rding comprehension by gender do not maintain at higher levels of instruction; topic familiarity differences do maintain.

instruction levels	males; 47 females)		
Brantmeier 2003a **Does gender make a difference? passage content and comprehension in L2 rding**	78 total (29 males, 49 females), Hispanic Culture Course (intermediate level; course beyond first two years)	Cortázar passage on boxing; Poniatowska passage on housewife; topic familiarity questionnaire; written recall and multiple choice questions	Reported topic familiarity differences by gender; passage content affects L2 rding comprehension by gender (for both multiple choice and recall).
Brantmeier 2003b **The role of gender and strategy use in processing authentic written input at the intermediate level**	78 total, (29 males, 49 females) from Hispanic Culture Course (course beyond first two years of Spn). Most strategy use research is conducted with participants from the basic stages of language acquisition. The present study was undertaken with fifth semester students of Spn.	Cortázar passage on boxing; Poniatowska passage on housewife; recall and multiple choice questions; topic familiarity questionnaire; questionnaire on global and local strategies	Although findings of the present study indicated that men use more global strategies than women when faced with the Cortázar passage, results revealed that global and local strategy use did not significantly correlate with performance on comprehension tasks. Type of strategy use did not predict comprehension at the intermediate level
Brantmeier 2003c **Language skills or PC? A comparison of native and non-native male and female readers of Spanish**	70 Costa Rican students studying EFL in Costa Rica, (27 males, 43 females)	Cortázar passage on boxing; Poniatowska passage on housewife; written recall and multiple choice questions; questionnaire on global and local strategies	No gender differences in topic familiarity were reported. Results revealed significant main effects of female-oriented passage content by readers' gender on recall only. Costa Rican females outperformed their counterparts on recall for the Poniatowska passage, but they did not differ from males on recall scores for the Cortazar passage. No gender differences were found with strategy use, but results revealed a significant relationship between global strategy use and both comprehension tasks.
Brantmeier 2003d **Beyond linguistic knowledge: Individual differences in second language reading**	86 students (34 males, 52 females) enrolled in intermediate Spanish	Cortázar passage on boxing; Poniatowska passage on housewife; written recall ; questionnaire on enjoyment, interest and topic familiarity	Males indicated they know more about the topic of the boxing passage, and they showed greater interest in and enjoyment of this passage. Similar results were found for the females with regard to the female passage. Males performed better than females on recall for the boxing passage, and females performed better than males on

			recall for the housewife passage. Lack of topic familiarity interfered with recall, but low levels of enjoyment and interest factors did not hinder performance on recalls.
Brantmeier 2004a **Gender and violence-oriented passage content in L2 rding**	68 students enrolled in advanced Spn grammar courses	Short stories by Horacio Quiroga, "The Decapitated Chicken" (DC), and Julio Cortázar, "Slaughter at Naptime" (SN); written recall and multiple choice questions; topic familiarity questionnaire	Men and women reported being equally familiar with both text topics. Results revealed no significant main effects of rdrs' gender and topic familiarity with both passages. Performance by males and females on the recall comprehension task and multiple choice questions was significantly affected by the interaction of DC passage content and rdrs' gender, but not by the interaction of SN passage content and rdrs' gender. For the DC passage, females scored higher than the males on the recall task and multiple choice questions.

(modified from Brantmeier, 2001; 2007)

Figure Two

Average Scores by Gender for Recall across L1 and L2 Data Sets
and Instructional Levels

Instructional level
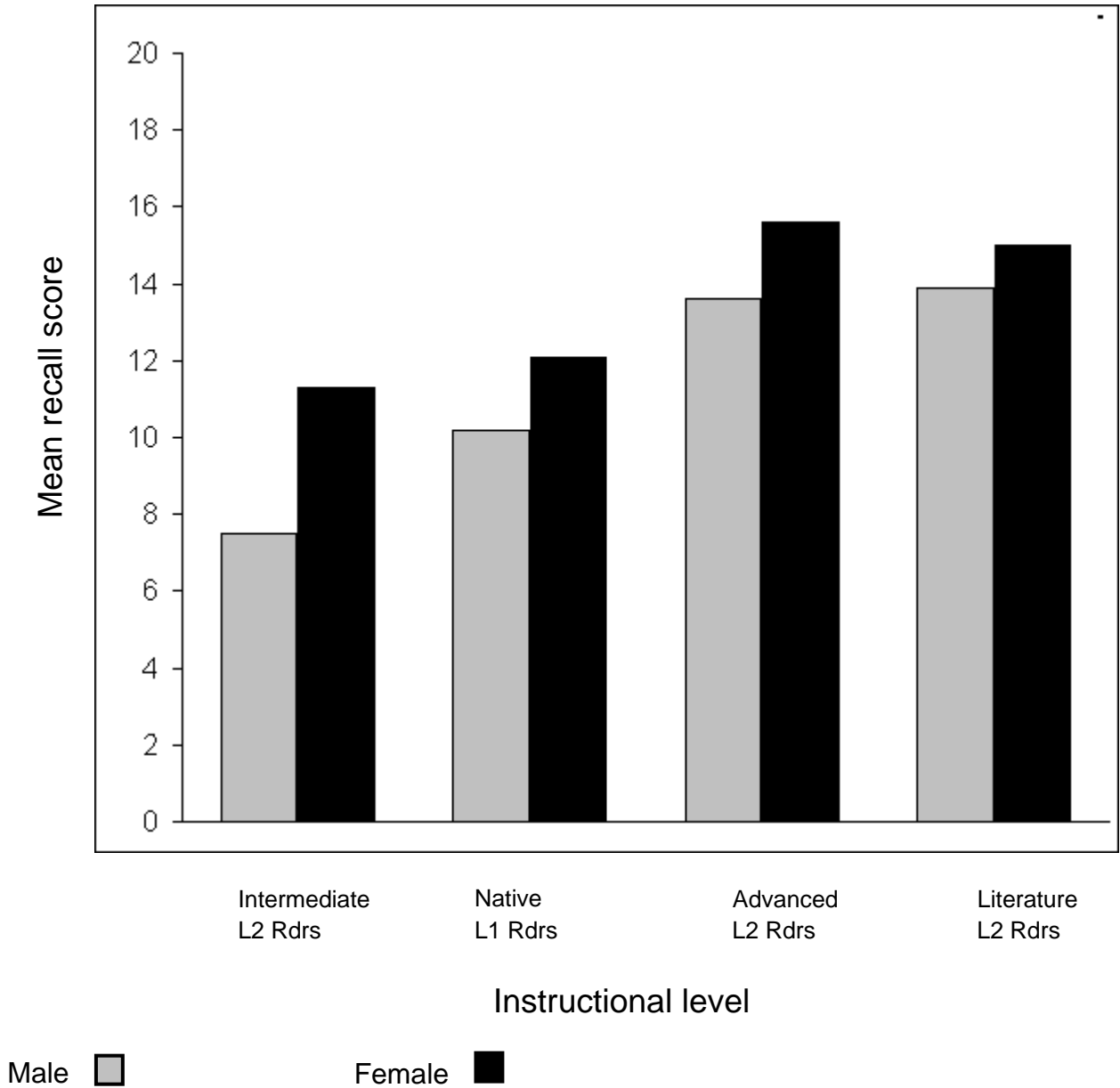
Male ▢   Female ■

Figure Three
Average Scores by Gender for MC across L1 and L2 Data Sets
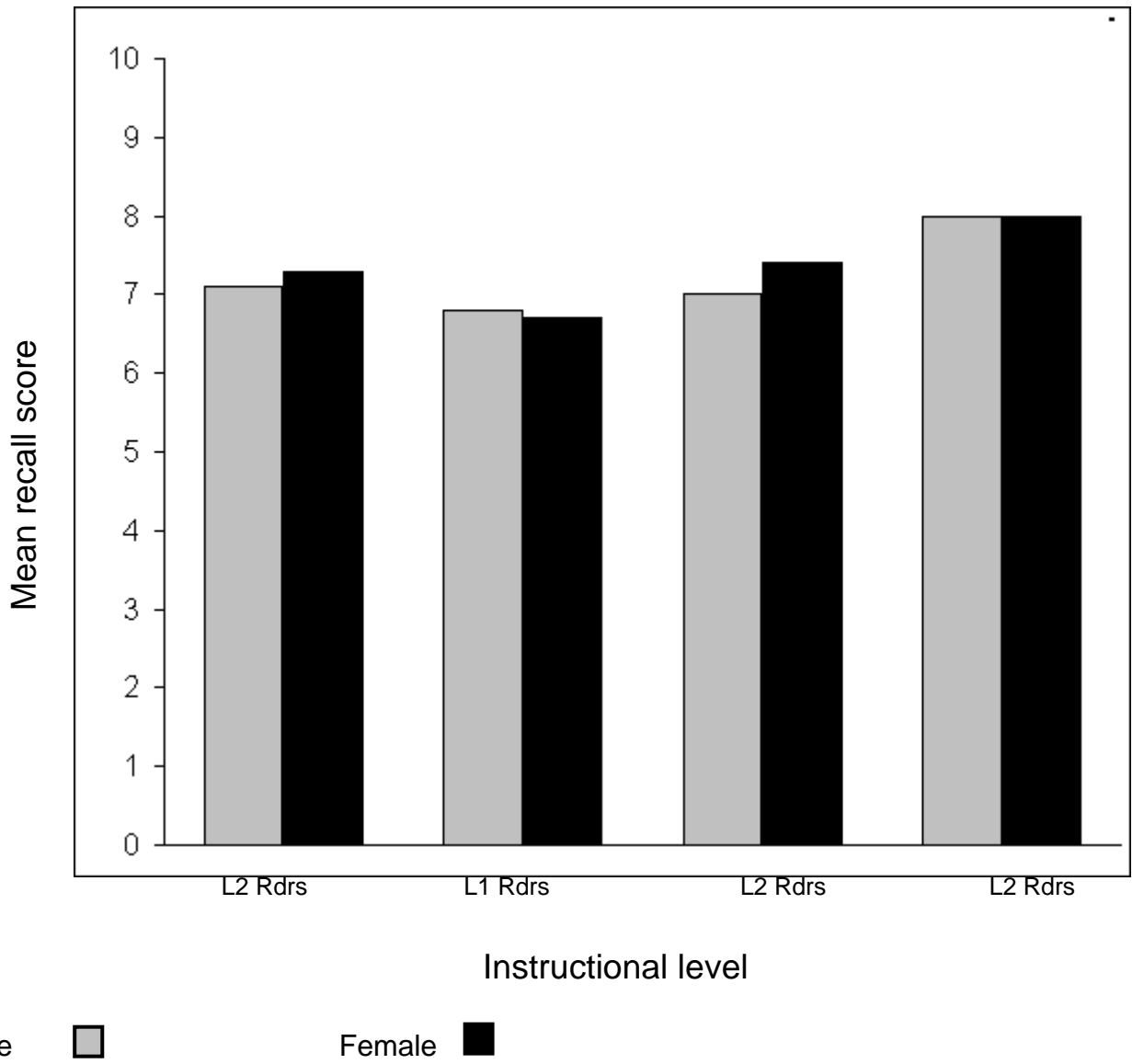and Instructional Levels

Figure Four
Combined Scores across Data Sets for MC and Recall with Male and Female Readers