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Effects of Sex, Gender Stereotypes and Gender Identity in Male and Female Students' Reading Motivation

Efectos del Sexo, los Estereotipos y la Identidad de Género en la Motivación Lectora de Estudiantes Hombres y Mujeres

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This study aimed to enhance our understanding of the biological sex gap in the reading motivation of students by focusing on the role of gender variables. 303 Chilean secondary students (51% female) completed self-report questionnaires. Structural equation models were employed to assess whether gender identity mediated the relationship between biological sex and reading motivation (reading self-concept and value) and to examine the differential effects of gender identity and reading-gender stereotypes on the reading motivation of male and female students. The results indicated direct effects of biological sex but no indirect effects. Multi-group analysis revealed that for female students, adherence to reading-gender stereotypes positively influenced reading self-concept, whereas for males, it negatively affected reading value. Implications for promoting equity in the teaching and learning of reading in secondary education are discussed.

Keywords: reading motivation, gender stereotypes, gender identity, sex-gaps.

Este estudio buscó contribuir a nuestra comprensión de la brecha del sexo biológico en la motivación lectora del estudiantado, que se centró en el rol de variables relacionadas con el género. 303 estudiantes chilenos/as de enseñanza media (51% mujeres) respondieron cuestionarios de autorreporte. Se utilizaron modelos de ecuaciones estructurales para evaluar si la identidad de género del estudiantado mediaba en la relación entre el sexo biológico y la motivación por la lectura (autoconcepto y valor), así como para evaluar los efectos diferenciales de la identidad de género y de los estereotipos de género asociados a la lectura en la motivación lectora de estudiantes hombres y mujeres. Los resultados revelaron efectos directos del sexo biológico del estudiantado, pero no efectos indirectos. El análisis multigrupo mostró que para las estudiantes mujeres, la adherencia a estereotipos de género asociados a la lectura tuvo un efecto positivo en su autoconcepto lector, mientras que para los estudiantes hombres tuvo un efecto negativo en el valor que atribuyen a la lectura. Se discuten las implicancias de estos hallazgos para la promoción de la equidad en la enseñanza y aprendizaje de la lectura en educación secundaria.

Palabras clave: motivación lectora, estereotipos de género, identidad de género, brechas de sexo.

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Given the wide gaps in students' academic achievement and in their attitudes towards learning (e.g. Educational Quality Agency, 2019, 2024; Mullis et al., 2017), achieving equity in education is a current concern in most of the world's countries (Organization for Economic Co-operation and Development [OECD], 2023a). Socio-economic status (SES) and sex (we used the term sex to refer to the biological difference between men and women, and the term gender, to refer to socially constructed characteristics, expectations and roles for femininity and masculinity, see Lips 2020) are the most relevant variables when it comes to explaining the lack of equity in learning that currently exists in different disciplines (OECD, 2023b). In relation to students' sex, the results of standardized academic achievement tests have shown gaps favoring males in math in recent decades, and favoring females in reading (OECD, 2023a, 2023b). The present study explores one possible source for the sex achievement gap in reading, namely, motivational processes associated with gender stereotypes and identity.

Sex gaps favoring women in reading are observed, with considerable stability, in the results of standardized tests before and after the COVID-19 pandemic. For instance, the Progress in International Reading Literacy Study (PIRLS) results for 2016 reveal that in 48 of the 50 participating countries, fourth-grade girls perform better in reading than boys. In none of the countries did boys obtain a higher achievement than girls. Since this assessment began, this sex gap has been present and has not been reduced in recent years (Mullis et al., 2017). In the Latin-American context, the Third Regional Comparative and Explanatory Study in Latin America and the Caribbean (TERCE) latest results for 2013—which evaluated third and sixth grade students in reading and writing—reveal that female students perform significantly better than male students in third grade in all 15 participating countries; whereas, boys from two countries (Ecuador and Guatemala) have a slight advantage over girls in sixth grade (Gelber et al., 2016). Consistently, results from the Program for International Student Assessment (PISA) for 2018 revealed that there is a reading female-favoring gap of 15-year-olds in the 79 countries evaluated (OECD, 2019). In the case of Chile, the reading sex gap has increased significantly over recent years, especially towards the end of the school trajectory. The main reason for this phenomenon is a reading achievement decrease in high-SES male students in secondary school (Educational Quality Agency, 2019).

Reading comprehension is a fundamental requirement for learning in any domain of knowledge (Connor et al., 2011; Snow, 2002; Snow et al., 1998). Given this, the reading sex gap is concerning, as it may be detrimental to the personal development and academic potential of male students. So, what factors may explain male students' lower reading achievement?.

One possible explanation is males having lower language skills than females because they underlie reading achievement. However, research reveals no substantive sex differences in verbal skills (Hedges & Nowell, 1995; Hyde & Linn, 1988). On the other hand, reading motivation, another determinant of reading success, exhibits large differences favoring females (e.g., Heyder et al., 2017; McGeown, 2015). Motivation predicts achievement because it is associated with learning and engagement behaviors (e.g., Durik et al., 2006). Social and cultural factors such as societal expectations or beliefs are related to the students' motivation to engage in an activity, and this is true also of learning activities. International evidence proves the existence of widespread stereotypes linking certain domains of knowledge—such as math and science—with masculinity (e.g., Cvencek et al., 2011), and others—especially reading—with femininity (e.g., Espinoza & Strasser, 2020; Nowicki & Lopata, 2017). The presence of these stereotypes, together with the observed gaps in reading motivation between males and females, suggest that reading achievement sex gaps could be to some extent explained by the operation of socialization processes that direct male and female students down different paths depending on beliefs about what are adequate activities for each.

A better understanding of the socio-cognitive factors that influence sex gaps in academic achievement could support the development of initiatives promoting greater equity in learning for all students. The present study sought to contribute to this body of knowledge, focusing on the role that reading gender stereotypes (RGS) and gender identity play in the reading motivation of Chilean secondary students. So far, few studies in the Latin American context have delved into the factors affecting the female-favoring sex gap in reading, with a focus on secondary education. Most research on this subject has focused on the academic disadvantage of females in areas such as math, as well as in early and primary school in Chile (e.g., del Río et al., 2021; Espinoza & Taut, 2016, 2020).

Differences in reading motivation between males and females

Although there are many motivation theories (Wigfield et al., 2021), the Expectancy-Value Theory (Eccles, 1983; Wigfield & Eccles, 2000) provides a useful approach for explaining gender differences and their developmental and contextual dynamics in relation to reading motivation (Wigfield et al., 2006, 2021). This theory claims that students' behavior is guided by expectancy beliefs (how competent students think they are in a specific domain), as well as subjective value beliefs (the importance of doing well for personal or instrumental reasons, the intrinsic interest in the task and the cost of participating in the task). The theory predicts that students engage in activities they find valuable and in which they feel they can succeed (e.g., Durik et al., 2006; Eccles, 1994). In the case of reading, the more competent a student feels about reading, and the more they value reading, the greater their inclination towards reading will be.

Consistent with the theory, research has shown that beliefs about one's own competence and the value assigned to the task, do indeed predict academic achievement and choices in domains related to language and reading (Durik et al., 2006; Eccles, 1987, 1994; Spinath et al., 2004; Watt, 2004). In turn, evidence shows that on average, girls have both a better self-concept in language and report higher values about reading than boys (Eccles et al., 1993; Heyder et al., 2017; Jacobs et al., 2002; Kelley & Decker, 2009; Marinak & Gambrell, 2010; OECD, 2010; Wigfield et al., 1997), and these differences intensify with age (Jacobs et al., 2002; Kelley & Decker, 2009; McKenna et al., 2012). These findings suggest that these motivational processes might be behind at least some of the differences between male and female students in reading achievement.

Reading-related Gender Stereotypes (RGS) and their role in Motivation

Gender stereotypes are shared beliefs about the attributes, roles, likings, and behaviors that are typically associated with men and women (Deaux & LaFrance, 1998; Lips, 2020). In the educational context, there are stereotypes about the male and female students' abilities and interests in different areas of knowledge. Studies in primary and secondary education reveal that math and science are associated to a masculine domain by both students (e.g., Cvencek et al., 2011; Cvencek et al., 2014; Guimond & Roussel, 2001; Kessels et al., 2006), and teachers (e.g., Makarova & Herzog, 2015). Other studies have shown that reading is associated to a feminine domain, since both students (e.g., Freedman-Doan et al., 2000; Guimond & Roussel, 2001; Martinot et al., 2012; Nowicki & Lopata, 2017; Steffens & Jelenec, 2011) and teachers attribute more ability and motivation to females than males in reading (Muntoni & Retelsdorf, 2018; Retelsdorf et al., 2015; Wolter et al., 2015).

Students' perception that reading is a feminine domain can affect both their beliefs regarding their own ability as readers (self-concept), and the value they attribute to reading (reading value) (Plante et al., 2013). The way in which this affects their motivation will be different according to the sex of the student. Social Identity Theory (Tajfel, 1974; Tajfel & Turner, 1986) claims that membership in a group provides the basis for self-evaluation, and that intergroup comparisons can also play an important role in that process. Therefore, the stereotype of reading as a feminine domain would have a positive effect on the reading self-concept and value of females, and a negative effect on the motivation of males (Retelsdorf et al., 2015). In this study and consistent with this theory, we test the prediction that female students exhibiting the stereotype that reading is for females would experiment a positive impact in their reading motivation (reading self-concept and value), whereas the effects for male students of adhering to this stereotype would be negative.

Gender Identity as a possible moderator of the effect of reading-related gender stereotypes

Gender identity is defined as the feeling that a person has about being a man or a woman (Egan & Perry, 2001; Wood & Eagly, 2009). It is linked to gender stereotypes, in the sense that it is related to the degree to which a person identifies with the characteristics and social roles assigned to men and women, which varies from one person to another (Rocha-Sánchez, 2009).

There are various theoretical perspectives on the development of gender identity (Rocha-Sánchez, 2009). The Multifactorial Theory of Gender Identity (Spence, 1993) postulates that gender identity is developed through a continuous process of socialization, in which the stereotypes and gender roles prevailing in a society are internalized.

This translates into behaviors and cognitions, as well as in personal identification with different traits. Thus, gender identity would imply differential traits and roles that give meaning to someone's sense of self in a specific cultural context.

In psychology, regarding research on gender identity, two traditions are identified. The first approach focuses on identity content using communal measures and agentic traits and interests. The second focuses on social identity and self-categorization using identification measures with the man-or-woman social category. By informing about the relations between social gender roles and people's cognitions, emotions and behaviors, research from both approaches have made contributions, despite differences in the measurement focus. However, the measurement of gender identity through identification with masculine and feminine traits and roles allows a better prediction of individual differences (Vantieghem et al., 2014). Therefore, since we seek to find the reading motivation individual variations, in this study, in accordance with the first approach, a gender identity measure is used.

As part of this early tradition in gender identity research, identity has four different but interrelated components according to the Multifactorial Theory: 1) masculine and feminine traits, referring to the each person's identification with instrumental (masculine) or expressive (feminine) characteristics; 2) masculine and feminine roles, referring to the adoption of social positions or tasks assumed to be predominant or exclusive to each sex); 3) attitudes towards gender roles; and 4) general gender stereotypes. In research carried out in Mexico, this theoretical proposal was empirically corroborated by Rocha-Sánchez and Díaz-Loving through a principal component analysis with data from adult population (2011).

Regarding the influence of gender identity in school achievement, the Interests as Identity Regulation Model (IIRM) (Kessels et al., 2014) suggests that individuals are more likely to get involved in those domains that fit their gender identity, and to abstain from those they consider different from themselves. Thus, the development of values regarding a school domain would at least partially respond to the need of students to develop and demonstrate their gender identity. Given the existence of gender stereotypes that associate reading with femininity, the traits that are usually associated with a person who does well in reading would not match those that are usually associated with a typically masculine male. Consistently, an investigation with Canadian university students revealed that traditional masculine gender roles may lead some men to avoid feminine-typed domains, such as a foreign language due to feeling a "masculinity threat" (Chaffee et al., 2019). Additionally, a study by Lagaert et al. (2017) with Flemish 7th graders showed that among students who report higher levels of gender typicality (identification as a typical male or female), as well as pressure to conform to gender stereotypes, males present lower levels of interest than females in arts, theater, and literature-related activities. These results are consistent with the idea that avoiding the feminine is a central aspect of the masculine gender role (Bosson & Michniewicz, 2013).

Not all males identify with typically masculine traits and roles, and the same is true for females. Thus, the gender identity of students may influence their reading motivation beyond their sex. In fact, several studies suggest that gaps in students' attitudes towards reading are explained more widely by gender identity than by their biological sex (McGeown et al., 2012; Vantieghem et al., 2014). Specifically, a recent study shows that the extent to which children (9 to 11 year-olds) identified with feminine traits was a stronger predictor of their reading and writing motivation than their sex (McGeown & Warhurst, 2019).

Considering background, it becomes relevant to explore whether part of the effect of the students' sex on their reading motivation is in fact explained by the effect of their gender identity. This could account not only for differences between males and females in reading motivation, but also for differences within each sex group.

Gender Socialization Processes and differentiated Learning Opportunities

While stereotypes and gender identity—which are the central variables in this study—may explain to some extent about the sex differences in students' reading motivation, it is also important to consider other possible effects of the gender socialization processes. Socialization processes may mean not only internalization of stereotypes and development of a gender identity, but also exposure to differential learning opportunities. Gender stereotypes of adults translate into different expectations and practices towards children (e.g., Muntoni & Retelsdorf, 2019), which influence their attitudes, behaviors, and academic achievement (e.g., Gunderson et al., 2012; Hochweber & Vieluf, 2018).

Regarding the role of parents, the classic research by Tiedemann (2000a) in primary schools in Germany revealed that parents' math-related gender stereotypes (math being perceived as a masculine domain) predict their evaluation of the math ability of their sons and daughters. Parents with higher levels of belief in these stereotypes assigned girls lower math skills than boys. Likewise, the findings revealed a relationship between parents' stereotypes and children's self-perception of math ability. The latter has also been reported by other studies in primary and secondary school (e.g., Eccles et al., 1990, 1982; Jacobs, 1991), as well as by more recent studies in primary education in math (e.g., Tomasetto, et al., 2015). A recent study has also shown that parents' reading-related gender stereotypes favoring girls was negatively associated with boys' motivation (Muntoni & Retelsdorf, 2019). Based on this, the suggested model claims that gender stereotypes influence parents' beliefs regarding the academic abilities of their sons and daughters, which in turn impacts their children's competence beliefs and values, and subsequently, their level of academic achievement (Gunderson et al., 2012; Muntoni & Retelsdorf, 2019).

Regarding socialization in the school context, some studies show that teachers expect different things from male and female students, and that these expectations are consistent with the dominant gender stereotypes in society (Eccles, 1989; Jussim & Eccles, 1992; Li, 1999; Muntoni & Retelsdorf, 2018; Retelsdorf, 2015; Tiedemann, 2000b, 2002; Wolter., et al., 2015) and are expressed in different beliefs about ability and male and female's causal attributions of achievements and failures (Fennema et al., 1990; Tiedemann, 2000b, 2002). Furthermore, the literature reveals that teachers tend to act in classrooms according to their beliefs (Auwarter & Aruguete, 2008; Espinoza & Taut, 2016; Palardy & Rumberger, 2008), and that the way in which they interact with their students can influence students' academic self-concept and learning expectations (Kuklinski & Weinstein, 2001). Finally, this amounts to teachers offering boys and girls different learning opportunities in stereotyped domains such as reading, which could—with the passing of time—create actual ability and motivational gaps. These socialization processes that occur in the family and school contexts may influence the sex differences observed on the students' reading motivation to some degree. However, the present study will not evaluate these variables, although it might be useful to understand the variables findings, namely, the differential effect of reading-related gender stereotypes and gender identity on male and female's reading motivation in secondary school students in Chile.

The Current Study

This study continues a previous research line (Espinoza & Strasser, 2020) and expands it with a larger sample of secondary education students seeking to identify if social constructions around gender have a differential effect on the reading motivation of males and females. Specifically, the study evaluates, separately in different statistical models, whether gender identity and Reading Gender Stereotypes (RGS) have an effect on the relationship between the sex of the students and their reading motivation.

Specific Goals

1) To test whether students' gender identity (roles and traits) has a mediating effect on the relationship between student's sex and reading motivation (reading self-concept and value).

2) To test whether RGS and gender identity have a differential effect on the reading motivation of male and female students (reading self-concept and value).

Hypotheses

Derived from the first specific goal we expected and consistent with extant literature, female students are favored in a direct sex effect on both reading self-concept and value associated with reading (hypothesis 1). The direct sex effect on reading motivation is expected to be mediated by the four components of the students' gender identity: their identification with gender roles and traits (hypothesis 2).

Derived from the second specific goal, we hypothesize differential effects of RGS adherence and gender identity for male and female students. For females, we expected RGS adherence to have a positive effect on their reading motivation (reading as a feminine domain), while the opposite effect was expected for males (hypothesis 3). Regarding gender identity, we expected a similar sex effect.

In the first place, feminine gender roles and expressive traits are expected to be positively associated with reading motivation, but this positive effect is expected to be stronger for females. Conversely, masculine gender roles and instrumental traits are expected to have a negative effect on the two motivational variables, and this should be a more pronounced effect for males than females (hypothesis 4).

Method

Design

We have both a mediational and a moderation hypothesis regarding sex, and in order to increase the clarity of the analysis and interpretation of results, we tested two separate models, one for the mediation hypotheses and one for the moderation hypotheses. In the mediation model, students' sex was used as a predictor, while the moderation hypothesis was tested using a multi-group model with students' sex as a grouping variable (Balluerka & Vergara, 2002). Student SES was controlled by design, since all participants belong to medium-low SES schools. The Chilean educational system is one of the most socioeconomically segregated school systems in the world, and therefore there is very little SES variability within each type of school (Valenzuela, et al., 2013). It is necessary to control SES, as it has been found to be associated with the level of expectations and gender roles that families present (e.g., Entwisle et al., 2007), as well as with the students' academic expectations and general school achievement (e.g. Brenøe & Lundberg, 2018; Figlio et al., 2019). Therefore, this variable was controlled on the study findings by including a homogeneous sample in order to reduce the possible influence of other variables.

Participants

There were 303 participants, 9th to 12th grade students (51 % female), from three urban and voucher schools[2] in Región Metropolitan in Chile, serving a medium-low SES population. That SES category indicates that the social vulnerability of the students lies between 79.01 % and 89 %. The schools were selected through personal contacts with teachers and schools' administrators through a similar procedure to that of our previous study (Espinoza & Strasser, 2020). Students' average age was 15.72 years (*SD*= 1.17), 14-19 years range. Students' individual socio-economic status (SES) was not available, although not necessary, since the schools presented a very homogeneous SES composition.

Instruments

Reading Motivation

We used an adapted version of the Motivation to Read Profile (Gambrell et al.,1996), specifically aimed at adolescent sampling, which was developed based on modifications from the revised version of the original instrument (Malloy et al., 2013), validated version in Chile (Navarro et al., 2018) as well as from adolescents' version (Pitcher et al., 2007). The final self-report questionnaire contains 20 four-point items measuring two dimensions of the Expectancy-Value Theory (Eccles, 1983; Wigfield & Eccles, 2000). The first scale, "Reading self-concept", contains 10 items about the perception students have about their reading skills and how they think it is perceived by significant others (e.g., "I am: —A bad reader; —An ok reader; —A good reader; —A very good reader). The second scale called "Value associated with reading" contains 10 items regarding the importance that students attribute to reading, as well as their commitment to this activity (e.g., "Reading a book is something that I like to do: —Never; —Almost never; —Sometimes; —Frequently (see Appendix A). A detailed description of this instrument and its components can be found in Espinoza & Strasser, 2020.

Reading-Gender Stereotypes (RGS)

Explicit gender stereotypes regarding reading were measured using a questionnaire created for a previous study (Espinoza & Strasser, 2020), which contained two scales. The first scale, "Gender Stereotypes about Reading Skills" (9 items), need participants to indicate which group—men or women—or equally both groups, has more of the necessary skills to engage in different reading activities (e.g.: "In your opinion, comparing men and women, who has the ability to read complex texts?").

2 Voucher schools are private administrators to receive state funding. Vouchers are not directly given to the families but are transferred to schools according to their enrollment rates.

The second scale, "Gender Stereotypes about Reading Motivation" (9 items), need participants to indicate which group—men or women—or equally both groups, are more inclined to have reading preferences and values (e.g.: In your opinion, comparing men and women, who thinks reading is interesting?"). Each item is scored in a seven-point scale: 1: men much more than women; 2: men more than women; 3: men a little more than women; 4: men and women alike, 5: women a little more than men; 6: women more than men; 7: women much more than men (see Appendix A and details in Espinoza & Strasser, 2020).

Gender Identity

We used an adaptation of feminine and masculine gender roles scales as well as expressive (feminine) and instrumental (masculine) traits scales from the Gender Identity Inventory developed by Rocha-Sánchez and Díaz-Loving (2011) on adult Mexican population. In this inventory and in accordance with Multifactorial Theory of Gender Identity proposal by Spencer (1993), different aspects of this general construct are measured. The two gender roles scales include three statements about how often traditionally feminine behaviors are performed (e.g. Regarding your relationship with people close to you, indicate the degree to which you perform the following actions: "I talk to them and listen to their problems to help them"), and four items referring to traditionally masculine behaviors in the relationship with others (e.g. "I make the most important decisions in the relationship"), which are answered in a five-point Likert format (1: never/almost never; 5: always/almost always). The scales of two traits include a total of 12 items, each of them consisting on a trait. Participants were asked to evaluate the degree to which each trait was an attribute of themselves, in a five-point Likert scale. For the present study, we used the six instrumental (masculine) traits, and the six expressive (feminine) traits outlined in the proposal of the Bem Sex Role Inventory's short form (BSRI; Bem, 1974). That version of the questionnaire has demonstrated strong psychometric properties, in some cases better than the original BSRI (for a review see Vafaei et al., 2014), and there is also a validated Spanish version (Mateo & Fernandez, 1999). Instrumental traits were: Aggressive, Competitive, Strong, Bossy, Dominant and Assertive. The expressive traits were: Warm, Affectionate, Tender, Gentle, Sensitive to others' needs, Emotional (see Appendix A).

Procedure

Following the approach of our preceding research (Espinoza & Strasser, 2020), we extended invitations for participation via direct contact and email to the principals in each school, requesting their authorization through a signed letter. Subsequently, an invitation was extended to secondary school students, highlighting participation on a voluntary basis and the confidentiality of all shared information. Consent was obtained from the students, who signed a minor's assent form; their parents received an informed consent letter. The data collection process was carried out in classroom settings during the school day, through surveys that required approximately one hour to complete. Adherence to ethical guidelines was ensured, with all procedures receiving the Ethics Review Board for Social Sciences and Humanities' approval at the lead author's institution.

Data Analysis

First, the measurement model was tested including the eight latent variables derived from the used instruments (1: Reading self-concept; 2: Value associated with reading; 3: Feminine gender roles; 4: Masculine gender roles; 5: Expressive traits; 6: Instrumental traits; 7: Gender Stereotypes about Reading Skills; and 8: Gender Stereotypes about Reading Motivation). A Confirmatory Factor Analysis (CFA) was performed using Mplus 8.3 (Muthén & Muthén, 1998-2017).

We then performed structural equation models using the latent variables derived from the measurement model. As we have both a mediational and a moderation hypothesis regarding sex and we could not test both hypotheses in the same model, we tested two separate models: one for the mediation hypotheses and one for the moderation hypotheses.

The mediation model included the sex variable, the four gender identity variables (masculine and feminine roles as well as instrumental and expressive traits), and the two motivational variables (reading self-concept and value). Confidence intervals (95 %) were estimated using bootstrapping (5000).

To test the moderation hypothesis, we carried out a multi-group structural model, restricting the measurement model to stay invariant on male and female samples, in order to evaluate the gender identity differential effect (masculine and feminine roles as well as instrumental and expressive traits) and the RGS (RGS about skills and RGS about motivation) in students' reading motivation.

In all models we used a Maximum Likelihood [ML] estimator. To test the model's goodness of fit four indices were used: Chi square statistics, standardized root-mean-square residual (SRMR), root-mean-square error of approximation (RMSEA), and comparative fit indexes (CFI and TLI; see Hu & Bentler, 1999, Schumacker & Lomax, 2016).

Results

Preliminary Analyses

Before testing the measurement model with the eight latent variables corresponding to the scales of the instruments used, we analyzed the adequacy and adjustment of each of them separately. For this purpose, we performed Confirmatory Factor Analysis (CFA) for each latent variable, in order to assess the extent of their representation by the observed variables. We retained the items that had equal or greater 0.4 factor loadings (Tinsley & Brown, 2000) to ensure that they were representative of the latent variable. For both reading self-concept and value associated with reading, 7 items were retained for each variable (see Appendix A). The CFA model with both latent reading motivation variables showed reasonable fit indices ($\chi^2(76)=193.498$, $p< .000$; *SRMR*= .054; *CFI*= .934; *TLI*= .921; *RMSEA*= .071, $p= .003$ [90% CI: .059– .084]).

For the latent variable Feminine Gender Roles and Masculine Gender Roles, 3 items per each variable were retained. The Expressive Traits variable, meanwhile, was constructed with 6 items, while for Instrumental Traits variable 4 items were retained (following the theoretical proposal of the BSRI-12) (see Appendix A). The CFA model presents reasonable fit indices with 4 gender identity latent variables ($\chi^2(98)=244.202$, $p< .000$; *SRMR*= .074; *CFI*= .911; *TLI*= .891; *RMSEA*= .070, $p= .002$ [90% CI: .059– .081]).

Finally, for both the Gender Stereotypes about Reading Skills latent variable and Gender Stereotypes about Reading Motivation latent variable, 6 items were retained per each variable (see Appendix A). The CFA model with both RGS latent variables present reasonable fit indices ($\chi^2(53)=122.653$, $p< .000$; *SRMR*= .047; *CFI*= .944; *TLI*= .930; RMSEA= .066, $p= .043$ [90% CI: .051– .081]).

Measurement Model

After modeling each latent variable, we evaluate the measurement model with the eight latent variables for the complete students' sample, namely, 1) Reading self-concept (7 items); 2) Value associated with reading (7 items); 3) Feminine Gender Roles (3 items); 4) Masculine Gender Roles (3 items); 5) Expressive Traits (6 items); 6) Instrumental Traits (4 items); 7) Gender Stereotypes about Reading Skills (6 items); and 8) Gender Stereotypes about Reading Motivation (6 items). The measurement model consists, thus, in 8 latent factors and 42 observed variables (see Appendix A). The initial measurement model reveals that, according to the criteria established in the literature (e.g. Hu & Bentler, 1999; Schumacker & Lomax, 2016), there are reasonable levels of adjustment of the proposed model to the data in most indices ($\chi^2(791)=1250.395$, $p< .000$; *SRMR*= .064; *CFI*= .904; *TLI*= .896; *RMSEA*= .044, $p= .989$ [90% CI: .039– .048]). All the factor loadings for the indicators on the latent variables were significant ($p< .005$), indicating that all the latent variables were well represented by their respective observed variables. The factorial loads of the items of each latent variable are high and balanced, and in all the factors there is some item with a load greater than 0.7. Table 1 shows averages, standard deviations, sex differences and correlations between all latent variables of the model.

Table 1
Descriptive statistics and Pearson's r correlation of the latent variables

	Males Mean (SD)	Females Mean (SD)	Total Mean (SD)	1	2	3	4	5	6	7	8
1. Reading self-concept	2.788 (.543)	2.932* (.550)	2.860 (.550)	1							
2. Value associated with reading	2.623 (.614)	2.975** (.619)	2.799 (.640)	.600**	1						
3. Expressive traits	3.543 (.826)	3.662 (.857)	3.603 (.842)	.113	.102	1					
4. Instrumental traits	2.398 (.821)	2.178* (.743)	2.288 (.789)	.041	-.094	-.001	1				
5. Feminine gender roles	3.987 (.868)	4.477 (.593)	4.233 (.781)	.147*	.144*	.494**	-.023	1			
6. Masculine gender roles	2.638 (.780)	2.459* (.769)	2.549 (.778)	.120*	-.029	.157**	.362**	.239**	1		
7. RGS about Skills	4.291 (.410)	4.280 (.445)	4.286 (.427)	.132*	-.007	.055	.136*	.069	.032	1	
8. RGS about Motivation	4.458 (.510)	4.470 (.517)	4.464 (.513)	.063	-.085	.039	.066	.009	-.073	.640**	1

Note. Variables 1 and 2: range 1-4. Variables 3, 4, 5 and 6: range 1-5. Variables 7 and 8: range 1-7. SD: Standard Deviation, p< .05, ** p< .01.

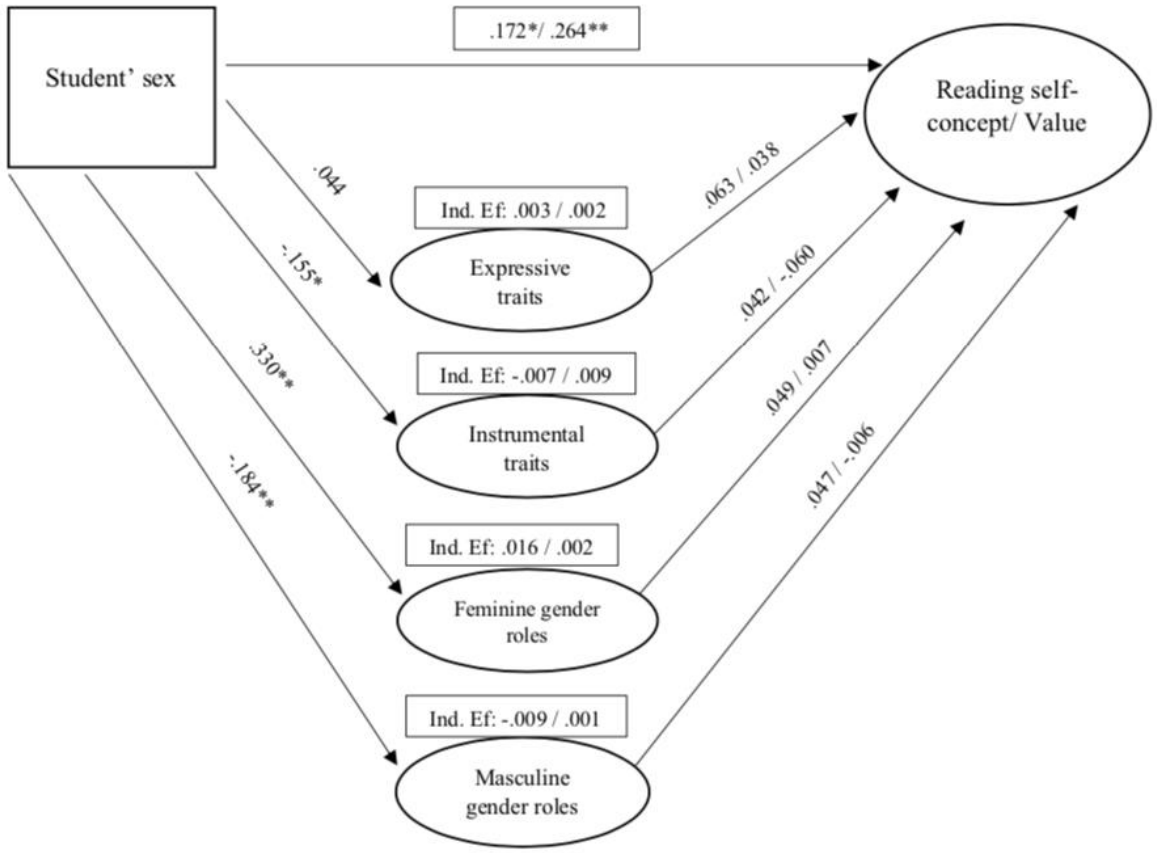
Test of the Mediation Model

The results of the structural model reveal that the model proposed presents reasonable fit in most indices ($\chi^2(418)=828.269$, $p< .000$; *CFI*= .896; TLI= .893; *RMSEA*= .057, $p= .023$ [90% CI: .051- .063]; *SRMR*= .073). We evaluated the mediation effect of students' gender identity (roles and traits) on the relationship between sex and reading motivation (reading self-concept and value).

The results of the direct effects reveal that the students' sex has a significant positive effect in favor of female students in both reading self-concept ($\beta= .172$, $p= .011$; [95% CI: 0.027- 0.310]), and value associated with reading ($\beta= .264$, $p< .000$; [95% CI: 0.135- 0.389]) (hypothesis 1). However, when evaluating the possible mediations of the gender identity latent variables included (traits and roles) on the relationship between the students' sex and their reading motivation, we did not find any indirect effect (see Figure 1). Therefore, the results indicate that the direct effect of sex on reading motivation is not mediated by any of the four components of the students' gender identity included in the model (their identification with gender roles and traits), neither in the reading self-concept ($\beta= .004$, $p= .905$; [95% CI: -0.068- 0.077]) nor in the value associated with reading ($\beta= .014$, $p= .651$; [95% CI: - 0.048- 0.077]) (hypothesis 2) (see Appendix C).

Figure 1

Mediation Model of students' gender identity (roles and traits) on the relationship between sex and reading self-concept and value



Note. The values of the standardized coefficients are indicated. Ind. Ef= Indirect Effects. The value on the right of the / corresponds to Reading self-concept and the value on the left corresponds to the Value associated with reading.

* p< .05, ** p< .01

Sex Differences

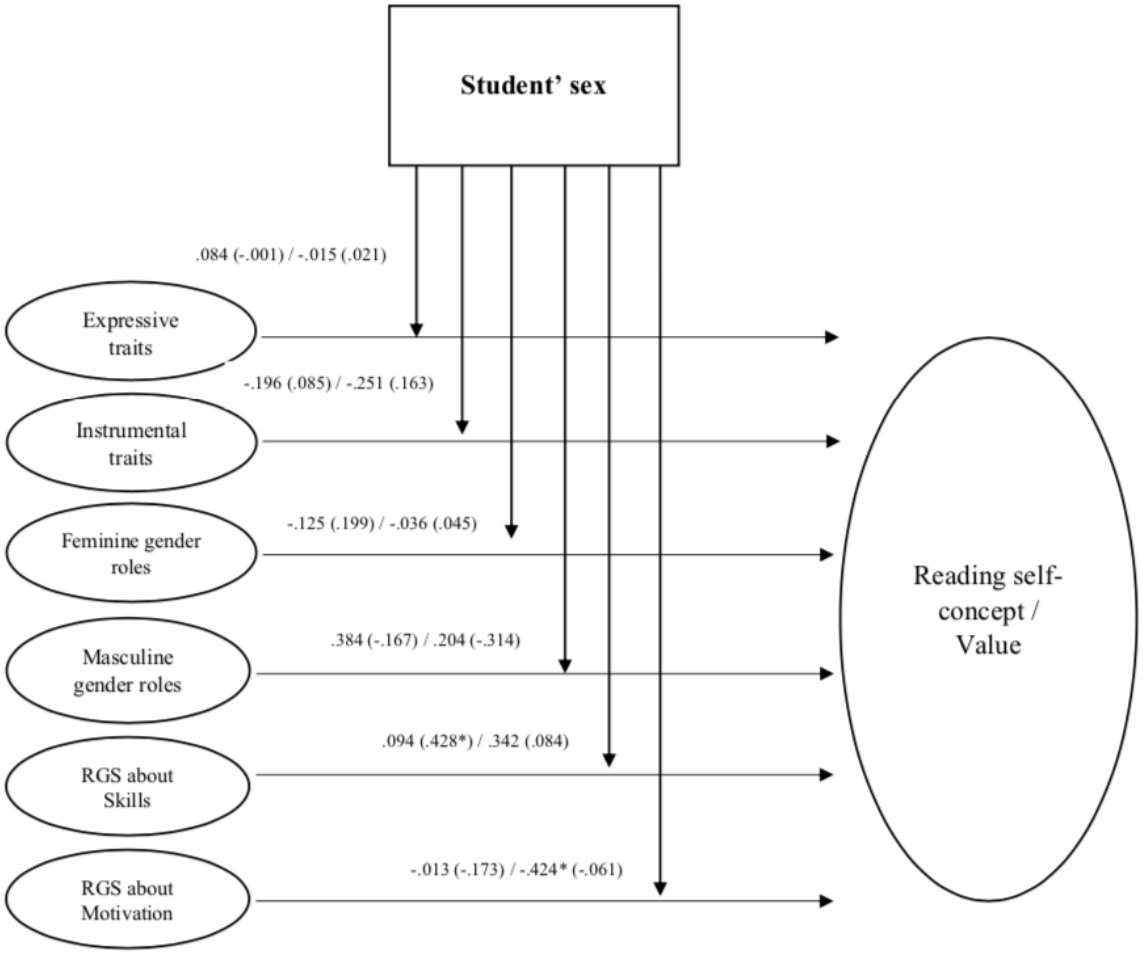
A restricted multi-group analysis was carried out to identify whether the path coefficients differ significantly between male and female students (see Appendix B). Factor loadings were restricted to be invariant between groups in order to carry out the model in Mplus and test differences in the structural model (Muthén & Muthén, 1998-2017). The multi-group model has reasonable levels of fit in most indices (χ^2(1568)=2329.669, p< .000; *CFI*= .892; *TLI*= .899; *RMSEA*= .057, p= .013 [CI 90%: .052- .061]; *SRMR*= .079).

The results reveal that in the structural model for the male students' sample, none of the predictors has a significant effect on reading self-concept. However, for the variable value associated with reading, a significant negative effect of the RGS about Motivation was observed (β= -.424, p= .023). That is, the greater adherence of male students to the stereotype that relates reading motivation to females, the lower value they place on reading. The other predictors do not show significant effects (see Figure 2). The model explains 9.06% of the variance of reading self-concept (R^2= .096) and 12.9% of the variance of value associated with reading (R^2= .129).

On the other hand, the results of the structural model for the female students' sample show that for reading self-concept, the RGS about Skills present a significant positive effect (β= .428, p= .008). That is, the greater adherence of female students to the stereotype that women have greater reading skills, the greater their self-concept in this discipline. Other predictors do not present significant effects. For the dependent variable value associated with reading, no significant effects of the predictors included in the model were observed (see Figure 2 and Appendix D). The full model explained 11.4% of the variance of reading self-concept (R^2= .114) and 5.8% of the variance of value associated with reading (R^2= .058).

Figure 2

Multi-group Model with students' sex as a grouping variable: Effect of students' gender identity (roles and traits) and reading gender stereotypes on their reading self-concept and value



Note. The values of the standardized coefficients are indicated. The value on the right of the / is associated to Reading self-concept and the value on the left corresponds to the Value associated with reading. The values in parentheses belong to the coefficients of the female students' sample.

*p < .05, **p< .01.

Discussion and Conclusions

This study sought to contribute to the knowledge of the psychosocial factors explaining the wide sex gaps favoring females in reading both in Chile and in different parts of the world. In line with those reported by prior studies, we found a direct effect of students' sex in their reading self-concept and value associated with reading (Espinoza & Strasser, 2020; Eccles et al., 1993; Heyder et al., 2017; Jacobs et al., 2002; Kelley & Decker, 2009; Marinak & Gambrell, 2010; OECD, 2010; Wigfield et al., 1997). Females present significantly higher levels than male in their beliefs about their reading ability and in their value of this activity, supporting our hypothesis 1 (sex differences). However, the data does not support hypothesis 2 (mediation), since there are no indirect effects on the sex of students going through students' gender identity in reading motivation. This indicates that, for our sample, within-group differences are not explained by identification with expressive or instrumental traits, or by adherence to feminine or masculine gender roles. These findings regarding sex differences in reading motivation can be understood considering the possible effects of gender socialization processes. Consistent with the existing literature based on gender stereotypes, males and females because they belong to one or another sex are socialized in different ways both in family (e.g. Gunderson et al., 2012; Muntoni & Retelsdorf, 2019; Tomasetto, et al., 2015) and school context (e.g. Jussim & Eccles, 1992; Li, 1999; Muntoni & Retelsdorf, 2018; Retelsdorf et al., 2015; Tiedemann, 2000b, 2002; Wolter et al., 2015) and this may create different learning opportunities for each. This supports the idea that gender-differentiated socialization, regardless of how much males and females identify with traditionally masculine and feminine traits and roles, may influence their motivation by an area stereotyped as feminine such as reading (e.g. Gunderson et al., 2012; Kuklinski & Weinstein, 2001; Muntoni & Retelsdorf, 2019).

On the other hand, the results of the multi-group model reveal that when we analyze the samples of male and female students separately, a differential effect of RGS on reading motivation is observed. Specifically, we found that for the females' sample, RGS about Skills have a significant positive effect on their reading self-concept. That is the greater the adherence of female students to the stereotype that women have greater reading skills than men, the greater their reading self-concept. On the other hand, in the males' sample, we found a negative effect of RGS on the value attributed to reading. This indicates that the more they adhere to the stereotype that females have greater reading motivation than males, the less value they attribute to activities associated with reading. This supports our hypothesis 3 and indicates that RGS have a detrimental effect on male students' motivation, keeping them away from reading, and could be a possible explanatory factor for the reported sex gaps in reading achievement (e.g., Educational Quality Agency, 2019, 2024; Gelber et al., 2016; Mullis et al., 2017; OECD, 2019, 2023b). These results, in broad terms, would support the expectancy-value theory proposal regarding that both expectancy and task value beliefs are influenced by gender stereotypes (Eccles, 1987, 1994; Wigfield et al., 2006). Additionally, these findings could be understood from the stereotype threat process (e.g., Steele, 1997). Males belong to a negatively stereotyped group regarding reading, whereby when the stereotype is present or activated (due to the adherence of students to that stereotype), their reading motivation is reduced. This is consistent with the results of previous studies that reveal that the stereotype threat phenomenon not only influences academic performance but also academic motivation (e.g., Fogliati & Bussey, 2013; Spencer et al., 2016; Thoman et al., 2013). As a whole, these results show us that, as proposed by the Social Identity Theory (Tajfel & Turner, 1986), belonging to a social group influences the evaluation that people make of themselves. While females experience a positive effect of RGS in their self-perception of ability, males probably experience a "social identity threat" (e.g., Dutro, 2003; Logel et al., 2009) that makes them decrease their commitment and involvement with reading. Finally, contrary to hypothesis 4, the results reveal that controlling for adherence to RGS, no effect of gender identity was observed in students' reading motivation, neither males nor females.

The results of this study must be interpreted considering its limitations. One of them is the relatively small size of the comparison groups. Larger samples would not only give more robustness to the results, but also allow an inclusion of other variables of interest. One aspect which is considered very important is the construction of masculinity and femininity scales that not only include traits and roles self-identification, but also with the masculine/feminine and man/woman social categories, as well as the importance attached to this identification (Wood & Eagly, 2015). Relevant social changes have occurred in recent years which have plausibly influenced younger people's gender identity construction, especially women. In particular, the recent feminist movement in Chile and other parts of the world may have contributed to disassociating some traditionally feminine traits from the woman category, rendering our scales somewhat obsolete to properly measure gender identity.

Since the contents of identity traditionally associated with male and female are changing, identification with gender category would be a better measure to assess the effect of gender identity in academic motivation, for example (Tajfel & Turner, 1986), somewhat akin to asking: "how much do you identify with the man/woman category", in accordance with the gender self-categorization approach in psychology research (Wood & Eagly, 2015). On the other hand, it is relevant to consider that because the present study analyses were carried out on models that used latent variables, instead of scale scores based on observed variables, the comparison with the pilot study is limited, if we compare our findings to those of the previous study carried out with a similar characteristics sample (Espinoza & Strasser, 2020).

One limitation of the study is that all participants had a similar SES. In samples with greater SES variability, different results may be found from those reported here. In relation to this, previous studies show that factors such as SES interact with sex, since in families with lower SES there are higher gender differentiated expectations, and students are socialized based on more differentiated gender roles in comparison with families with higher SES (Entwisle et al., 2007). Therefore, future studies with larger and more diverse student samples could also evaluate the interaction effect of the SES and students' sex on their reading motivation, including an intersectionality perspective (Shields, 2008), and evaluated whether SES is a variable that increases the disadvantage of male students regarding reading motivation and achievement in Chile. In addition, to increase the robustness of the model, an evaluation of the direct and indirect effects of the RGS and gender identity on reading academic achievement may result relevant. Finally, future research could continue the study on this topic, evaluating possible gender gaps and their link with psychosocial variables related to gender, considering the update of the Expectancy-Value Theory (Eccles, 1983; Wigfield & Eccles, 2000) suggested in recent approaches to Situated Expectancy-Value Theory (SEVT; Eccles & Wigfield, 2020). Specifically, an interesting investigation may arise on whether certain situations increase or reduce gender gaps in reading motivation, in order to contribute to the development of initiatives which allows progress in gender equity in learning environments.

The findings of this study stress the importance of moving towards a gender-fair and non-sexist education, without gender stereotypes, to allow males and females to develop their full potential. Increasing reading motivation, especially for the adolescent population, is necessary since various studies have revealed that motivation related to different domains, including reading, declines as school progresses (e.g., Jacobs et al., 2002; Kelley & Decker, 2009; McKenna et al., 2012). Reading skills, as well as math, are important for learning in other domains (Connor et al., 2011; Snow, 2002; Snow et al., 1998). However, while the math sex gap tends to remain stable during adolescence, there is evidence that the sex gap favoring female students in reading tends to increase during this life stage (e.g., Jacobs et al., 2002), which emphasizes the relevance of striving for equity in the teaching of reading. Increasing the number of books, and classroom libraries, time devoted to reading, and improving teacher training are highly relevant cross-cutting measures. However, interventions in this area should also include actions to challenge social constructions of gender. It is essential to make stereotypes visible and to question the reading-related gender stereotypes that may be impacting negatively on the academic motivation and achievement of males and females. Offering models of male readers; highlighting the possibilities that reading opens in terms of acquiring knowledge; and promoting high learning expectations towards males and females, in teachers, parents, and society are some actions that may help and could be included in initiatives that seek to promote equal literacy opportunities for males and females. All this can result in reducing the gaps not only in the students' school trajectories, but also in the wide sex differences in the choice of study fields and trades that are observed after the end of the school period (National Council of Education, 2023; UNESCO, 2012).

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Appendices

Appendix A

Standardized Measurement Model Results complete sample. (N=303)

Latent variable	Reading self-concept	Estimate	S.E.	Est./S.E.	P-Value
Item code	Item statement				
ML_AC_1R	My friends believe I am:	0.773	0.028	27541	0.000
ML_AC_3	I read:	0.609	0.041	14987	0.000
ML_AC_5R	When I read and I find a word that I do not know:	0.505	0.047	10689	0.000
ML_AC_7R	When I read alone, I understand:	0.463	0.050	9275	0.000
ML_AC_9	I am:	0.862	0.022	39669	0.000
ML_AC15R	Reading is:	0.618	0.040	15468	0.000
ML_AC_19	When I read aloud, I am a:	0.485	0.048	10081	0.000
Latent variable	Value associated with reading				
ML_VA_2	Reading a book is something that I like to do:	0.856	0.020	42679	0.000
ML_VA_6	I tell my friends about good books that I read:	0.594	0.040	14760	0.000
ML_VA_8R	People who read a lot are:	0.546	0.044	12506	0.000
ML_VA10R	I believe that libraries are:	0.690	0.033	20630	0.000
ML_VA_14	I think reading is:	0.840	0.021	39671	0.000
ML_VA_16	When I am an adult:	0.769	0.027	28453	0.000
ML_VA20R	If someone gave me a book for my birthday, I would feel:	0.545	0.043	12551	0.000
Latent variable	Expressive traits				
ID_II_36	Warm	0.774	0.028	27625	0.000
ID_II_15	Affectionate	0.858	0.022	39293	0.000
ID_II_8	Tender	0.814	0.025	32823	0.000
ID_II_7	Gentle	0.532	0.046	11620	0.000
ID_II_47	Sensitive to others need	0.522	0.047	11042	0.000
ID_II_54	Emotional	0.619	0.040	15611	0.000
Latent variable	Instrumental traits				
ID_II_3	Aggressive	0.536	0.055	9708	0.000
ID_II_4	Competitive	0.416	0.059	7014	0.000
ID_II_38	Bossy	0.531	0.054	9795	0.000
ID_II_49	Dominant	0.753	0.048	15756	0.000
Latent variable	Feminine gender roles				
ID_I_3	I talk to them and listen to their problems to help them.	0.722	0.033	21.916	0.000
ID_I_4	I am always morally with them.	0.875	0.024	36.486	0.000

ID_I_5	I give them advice when they have problems.	0.837	0.026	32.471	0.000
Latent variable Masculine gender roles					
ID_I_6	I make the most important decisions in the relationship.	0.465	0.059	7.911	0.000
ID_I_7	I have control over them.	0.778	0.051	15.116	0.000
ID_I_8	I have the last word in the activities we carry out.	0.612	0.050	12.135	0.000
Latent variable Gender Stereotypes about Reading Skills					
EGL_EX4	They get better grades in reading.	0.607	0.042	14.335	0.000
EGL_EX5R	They are often wrong in reading comprehension tasks.	0.786	0.030	26.249	0.000
EGL_EX6R	They need help to understand complex texts.	0.641	0.040	15.957	0.000
EGL_EX7R	They struggle to read well.	0.606	0.042	14.330	0.000
EGL_EX8R	They find reading difficult.	0.629	0.041	15.438	0.000
EGL_EX9	They have the facility to read complex texts.	0.578	0.044	13.129	0.000
Latent variable Gender Stereotypes about Reading Motivation					
EGL_MT10	They like to read.	0.669	0.039	17.348	0.000
EGL_MT12	They participate in activities that involve reading.	0.567	0.044	12.741	0.000
EGL_MT13	They think that reading is interesting.	0.736	0.033	22.602	0.000
EGL_MT14	They worry if they do not do well in reading.	0.596	0.043	13.943	0.000
EGL_MT16	They read many books.	0.739	0.032	22.827	0.000
EGL_M17R	They find reading boring.	0.726	0.033	21.823	0.000

Note. S.E.: Standard Error.

Appendix B

Standardized Multi-group Model Results: Measurement models in male and female simples.

	Measurement Model Male Group				Measurement Model Female Group			
Reading self-concept BY	Estimate Males	S.E. Males	Est./S.E. Males	P-value Males	Estimate Females	S.E. Females	Est./S.E. Females	P-value Females
ML_AC_1R	0.766	0.036	21.376	0.000	0.778	0.035	22.164	0.000
ML_AC_3	0.569	0.052	10.949	0.000	0.621	0.046	13.608	0.000
ML_AC_5R	0.422	0.051	8.355	0.000	0.550	0.053	10.403	0.000
ML_AC_7R	0.378	0.052	7.303	0.000	0.505	0.055	9.160	0.000
ML_AC_9	0.837	0.030	27.624	0.000	0.886	0.026	34.595	0.000
ML_AC15R	0.566	0.050	11.291	0.000	0.644	0.044	14.503	0.000
ML_AC_19	0.445	0.054	8.260	0.000	0.498	0.053	9.409	0.000
Value associated with reading BY								
ML_VA_2	0.833	0.029	28.326	0.000	0.859	0.025	34.818	0.000
ML_VA_6	0.586	0.049	12.067	0.000	0.579	0.045	12.734	0.000
ML_VA_8R	0.514	0.052	9.869	0.000	0.534	0.048	11.095	0.000
ML_VA10R	0.613	0.043	14.364	0.000	0.757	0.036	21.269	0.000
ML_VA_14	0.817	0.031	26.251	0.000	0.841	0.027	31.639	0.000
ML_VA_16	0.717	0.037	19.506	0.000	0.800	0.032	24.811	0.000
ML_VA20R	0.521	0.048	10.874	0.000	0.543	0.051	10.709	0.000
Expressive traits BY								
ID_II_36	0.767	0.036	21.522	0.000	0.773	0.035	21.810	0.000
ID_II_15	0.838	0.031	27.261	0.000	0.878	0.026	34.092	0.000
ID_II_8	0.796	0.032	25.136	0.000	0.843	0.030	27.837	0.000
ID_II_7	0.538	0.053	10.150	0.000	0.533	0.050	10.604	0.000
ID_II_47	0.557	0.056	9.929	0.000	0.510	0.050	10.245	0.000
ID_II_54	0.641	0.046	13.923	0.000	0.588	0.047	12.413	0.000
Instrumental traits BY								
ID_II_3	0.562	0.065	8.588	0.000	0.526	0.061	8.593	0.000
ID_II_4	0.507	0.070	7.251	0.000	0.378	0.057	6.628	0.000
ID_II_38	0.571	0.063	9.030	0.000	0.439	0.065	6.756	0.000
ID_II_49	0.763	0.055	13.981	0.000	0.693	0.067	10.320	0.000
Feminine gender roles BY								
ID_I_3	0.741	0.038	19.363	0.000	0.647	0.046	14.029	0.000
ID_I_4	0.874	0.030	29.285	0.000	0.850	0.036	23.628	0.000

ID_I_5	0.836	0.032	26.287	0.000	0.761	0.040	19.040	0.000
Masculine gender roles BY								
ID_I_6	0.495	0.061	7.995	0.000	0.483	0.053	7.783	0.000
ID_I_7	0.748	0.071	10.460	0.000	0.736	0.069	10.682	0.000
ID_I_8	0.639	0.063	10.208	0.000	0.642	0.070	9.171	0.000
RGS about Skills BY								
EGL_EX4	0.584	0.052	11.222	0.000	0.633	0.048	13.310	0.000
EGL_EX5R	0.738	0.040	18.590	0.000	0.839	0.035	24.117	0.000
EGL_EX6R	0.607	0.051	11.813	0.000	0.662	0.045	14.612	0.000
EGL_EX7R	0.602	0.048	12.539	0.000	0.596	0.053	11.298	0.000
EGL_EX8R	0.629	0.047	13.303	0.000	0.644	0.049	13.253	0.000
EGL_EX9	0.549	0.059	9.335	0.000	0.590	0.048	12.359	0.000
RGS about Motivation BY								
EGL_MT10	0.649	0.049	13.157	0.000	0.689	0.043	15.988	0.000
EGL_MT12	0.518	0.050	10.302	0.000	0.609	0.051	11.975	0.000
EGL_MT13	0.745	0.040	18.526	0.000	0.739	0.040	18.683	0.000
EGL_MT14	0.608	0.049	12.412	0.000	0.587	0.050	11.657	0.000
EGL_MT16	0.699	0.041	17.102	0.000	0.782	0.039	20.246	0.000
EGL_M17R	0.725	0.042	17.257	0.000	0.726	0.040	18.011	0.000

Note. S.E.: Standard Error.

Appendix C

Total, indirect, and direct sex effects to reading motivation.

Students' sex effects to reading self-concept				
	Estimate	S.E.	Confidence Intervals 95%	P-Value
Total effect	0.176	0.060	0.051 - 0.290	**0.003**
Total indirect effect	0.004	0.033	-0.068 - 0.077	0.905
Specific indirect effect 1				
Expressive traits				
Students' sex	0.003	0.005	-0.010 - 0.020	0.597
Specific indirect effect 2				
Instrumental traits				
Students' sex	-0.007	0.017	-0.061 - 0.037	0.694
Specific indirect effect 3				
Feminine gender roles				
Students' sex	0.016	0.029	-0.042 - 0.076	0.574
Specific indirect effect 4				
Masculine gender roles				
Students' sex	-0.009	0.020	-0.060 - 0.044	0.662
Direct effect				
Students' sex	0.172	0.068	0.027 - 0.310	**0.011**
Sex effects to value associated with reading				
Total effect	0.278	0.056	0.167 - 0.383	**0.000**
Total indirect effect	0.014	0.031	-0.048 - 0.077	0.651
Specific indirect effect 1				
Expressive traits				
Students' sex	0.002	0.004	-0.009 - 0.017	0.688
Specific indirect effect 2				
Instrumental traits				
Students' sex	0.009	0.016	-0.030 - 0.054	0.566
Specific indirect effect 3				
Feminine gender roles				
Students' sex	0.002	0.028	-0.049 - 0.054	0.938
Specific indirect effect 4				
Masculine gender roles				
Students' sex	0.001	0.018	-0.043 - 0.047	0.954
Direct effect				
Students' sex	0.264	0.064	0.135 - 0.389	**0.000**

Note. S.E.: Standard Error.

Appendix D

Standardized Multi-group Model Results.

	Structural Model Group Male Students			Structural Model Group Female Students		
Reading self-concept	Estimate Males	S.E. Males	P-value Males	Estimate Females	S.E. Females	P-value Females
Expressive traits	0.084	0.129	0.516	-0.011	0.106	0.914
Instrumental traits	-0.196	0.172	0.254	0.085	0.206	0.680
Feminine gender roles	-0.125	0.139	0.371	0.199	0.112	0.075
Masculine gender roles	0.384	0.190	0.073	-0.167	0.191	0.382
RGS about skills	0.094	0.195	0.630	**0.428**	**0.160**	**0.008**
RGS about motivation	-0.013	0.196	0.947	-0.173	0.166	0.299
Expressive traits	-0.015	0.126	0.907	0.021	0.109	0.847
Instrumental traits	-0.251	0.164	0.127	0.163	0.213	0.443
Feminine gender roles	-0.036	0.137	0.792	0.045	0.116	0.701
Masculine gender roles	0.204	0.186	0.274	-0.314	0.199	0.114
RGS about skills	0.342	0.191	0.093	0.084	0.186	0.651
RGS about motivation	**-0.424**	**0.189**	**0.023**	-0.061	0.170	0.718

Note: S.E.: Standard Error.

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