

Chapter #17

SCHOOL TRANSITION STRESS: GENDER AND AGE DIFFERENCES¹

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ABSTRACT

Introduction: Transitional periods within compulsory education are capable of causing stress, which can compromise children's physical and psychosocial development. Method: A longitudinal study with data collection at three moments – first, fifth and sixth years. Objective: To monitor symptoms of stress during two transition periods (first and sixth year), focusing on changes in age and gender differences. The sample consisted of 25 boys and 27 girls, with a mean age of 6.8 years at the time of the first data collection. They responded to the Child Stress Scale (CSS). Results: They suggest that the year of school transition had a significant effect on stress symptoms. Higher values were found in the first series, and no significant differences were found between Grades 5 and 6. The girls had higher stress symptoms in the first and sixth years, while the boys presented higher stress symptoms only in the first grade. Conclusion: The results pointed to the presence of stress in periods of school transition, with girls and boys reacting differently according to age. More research is needed on gender and school transitions, as well as studies on the effectiveness of interventions aimed at reducing stress in childhood.

Keywords: school transition, children's stress, school development, gender, age.

1. INTRODUCTION

In the Brazilian school system, all children should study from four to 17 years of age. The education system is organized into three levels: infant education, lasting two years, elementary school, lasting nine years (subdivided into two cycles – elementary school I, for five years, and elementary school II, for four years), and high school, lasting three years. Thus, until compulsory education has been completed, children undergo three level changes, which involve substantial changes in school routine: these are characterized as school transitions (Law No. 9.394; Brazil, 1996). Due to the increased unpredictability and uncontrollability in children's daily lives, school transitions are seen as times when they are particularly vulnerable to stress (Elias, 1989; Lipp, Arantes, Buriti & Witzig, 2002; Marturano, 2008). Their entry into primary school, just as their passage to the second cycle of this level, or high school, are marked by various changes – among them, the transfer to a

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new school, affecting the social network formed among their classmates (Eccles, 1999; Prati & Eizirik, 2006), and a different teaching system, with new teachers and more demanding demands. The transition between the first and second cycles of primary education also involves an increase in the number and rates of teacher turnover. Taken together, these changes can be considered as sources of daily hassles (Byrne, Thomas, Burchell, Olive & Mirabito, 2011). There is evidence that school-related daily hassles are the precursors of psychosomatic complaints, expressed through symptoms such as nervousness, sleep problems, headaches or stomach pains (Eriksson, & Sellström, 2010; Hesketh, et al., 2010). These complaints have been recognized and evaluated as stress symptoms (Lipp & Lucarelli, 1998) and recurrent exposure of children to daily annoyance predicts anxiety, assessed up to two years later (Byrne et al., 2011). This chapter focuses on stress in elementary school children, at times of school transition, in the context of the Brazilian public school system.

2. BACKGROUND

Stress symptoms may be defined as a set of reactions by the body to exposure to any stimulus that irritates it, or that makes a person fearful or unhappy (Lipp & Lucarelli, 1998): that is to say, any stimulus that demands adaptation. Recent studies of stress reactions in children of school age have indicated association with factors of risk to development, such as an unhealthy lifestyle (Michels et al., 2015), symptoms of anxiety (Laurent, Gilliam, Wright, & Fisher, 2015) and poor peer relationships (Sbaraini & Schermann, 2008).

Individual differences related to sex have been investigated and there is no consensus in the literature concerning differences between boys and girls. Investigating a sample of over 8,000 Swedish schoolchildren from 11 to 15 years old, Eriksson and Sellström (2010) identified more subjective health complaints in girls (nervousness, sleep problems, headaches, or stomach aches). Two Brazilian studies with the Child Stress Scale (CSS) (Lipp & Lucarelli, 1998) obtained similar results in children in the age-range from six to 12 years (Lipp et al., 2002; Sbaraini & Schermann, 2008). However, using the same scale, Lemes et al. (2003), and Pacanaro and Nucci (2005), found no difference between the sexes in the same range. Correia-Zanini and Marturano (2015), observing children from six to eight years old, found differences only in the CSS psychophysiological reactions: boys presented higher levels of symptoms such as stuttering and finding it difficult to breathe when they were nervous.

There is also no consensus concerning the incidence of stress over the course of school years. Brazilian cross-sectional studies with the CSS presented divergent results. Lipp et al. (2002) found more symptoms of stress in schoolchildren in the first grade of primary school, in comparison with second- to fourth-grade schoolchildren. In contrast, the findings of Lemes et al. (2003) suggested that the level of stress increases from the first through to the fourth grade. Recently, a longitudinal study using CSS found a high level of stress intensity in first-graders, increasing in the second grade and falling in the third grade (Correia-Zanini, Marturano & Fontaine, 2016).

The disparity between the results can be attributed to several factors; however, it is necessary to take into account the moment of the school transition, because, theoretically, transition periods, such as Grades 1 and 6 of primary school, should be potentially more stressful (Marturano, 2008). Given that the school transitions involve an increase in demand, it could be asked whether and to what extent they differentially affect the manifestations of stress in boys and girls at different points in their school life (Chung, Elias & Schneider, 1998).

In an attempt to offer answers to these questions, a longitudinal study was conducted with the purpose of verifying the symptoms of stress in two transition periods in the Brazilian school system (first and sixth grade), with a focus on changes over the course of time, and differences between boys and girls. Four hypotheses were tested. The first was that children would report more stress in post-transition school years: that is, in the first and sixth grades. The second, derived from theoretical considerations about developmental trends, was that the stress levels in 6th grade would be lower than they were in the first grade, given the cognitive and socio-emotional development that could contribute to increasing children's capacity to deal with daily hassles. The other hypotheses, related to differences in sex at post-transition times, were derived from sparse empirical evidence. Thus, the third hypothesis was that in the first grade, the boys would report more stress symptoms (Correia-Zanini & Marturano, 2015), given that between six and eight years of age they present a larger number of externalizing behaviors in comparison with girls (Fanti & Henrik, 2010) and less developed social skills (Matthews, Kizzie, Rowley & Cortina 2010), with greater probability of involving themselves in adverse interpersonal situations, which are precursors of stress. The fourth hypothesis was that in the sixth grade, girls would report more stress symptoms. This hypothesis was based on the finding of Eriksson and Sellström (2010) that in the age-range from 11 to 15 years, girls were more susceptible to school stressors, and responded to these with more health complaints than boys did.

3. METHODS

3.1. Ethical considerations

This research involved the carrying out of two studies approved by the Research Ethics Committee of the School of Philosophy, Science and Literature of Ribeirão Preto, University of São Paulo, Brazil. The study complied with the rules and guidelines stated in Resolution No.196/96, of CONEP, and those in Resolution No. 016/2000 of the Federal Council of Psychology. Before starting data collection, one of the persons responsible for the participating child signed the Free and Informed Consent form and the participants gave their prior verbal consent.

3.2. Study design

The study had a longitudinal design, with three episodes of data collection when the participants were in the first grade (after the first school transition), the fifth grade (before the school transition) and the sixth grade (after the second school transition) of elementary school.

3.3. Participants

The sample was intentional, and was selected for convenience among participants in two longitudinal studies: one study which followed children from first to third grade and another which followed children in the sixth and sixth years, which included some children who participated in the previous study (from first to third grade). For the investigation, 62 children who participated in both studies were selected: 27 boys and 35 girls, with initial ages of from 5.8 years to 7.5 years, mean (M) = 6.8 years and standard deviation (SD) = 0.4. All the children attended the nine-year elementary school in municipal public schools in a city in the interior of the state of São Paulo, with approximately 111, 000 inhabitants.

3.4. Instrument

CSS – Developed and validated by Lipp and Lucarelli (1998). Its purpose is to identify the frequency with which children from six to 14 years of age experience stress symptoms, and at which stage they are found (without stress, warning stage, resistance stage, almost exhausted or exhaustion). This Likert-type scale is composed of 35 items that are grouped into four factors: physical reactions (nine items – for example, “I have stomach ache”); psychological reactions (nine items – for example, “Everything makes me nervous”); psychological reactions with a depressive component (nine items – for example, “I want to disappear from life”); and psychophysiological reactions (eight items – for example, “When I get nervous, I stutter”). The children were instructed to use colored pencils to color in a circle to show how often the event described in each question happens to them. If it never happens, they were asked not to color in the circle (0 point); if it happens a few times, they were asked to color in a part (1 point); if it happens sometimes, they were asked to color in two parts (2 points); if it almost always happens, they were asked to color in three parts (3 points); and if it always happens, they were asked to color in four parts of the circle (4 points). The sum of the points resulted in a gross CSS score.

3.5. Procedure

Data collection periods occurred in the second semester of the years 2010, 2014 and 2015, during school hours, and in spaces designated by the schools. In the first grade, the children responded to the CCS individually. In the fifth and sixth grades, the CCS was collectively applied, in a session that included other instruments not used in this investigation. In the collective applications, the children answered together with their classmates, the participants are the second project previously mentioned.

3.6. Analyses

The data analyses were processed in the SPSS Statistics program, version 22. For mixed repeated measures ANOVA was applied to verify the effects of time (first, sixth and sixth grades of elementary school), sex, and interaction between time and sex, on the dependent variable symptoms of stress. The presuppositions of this statistical method, namely the normality of distribution and the sphericity of the variance-covariance matrix, were verified by means of the Kolmogorov-Smirnov test with Lilliefors correction, and with the Mauchly test, as instructed by Marôco (2014). When the Mauchly test found violation of the presupposition of sphericity, Statistics F with the Greenhouse-Geisser correction was used. In all analyses, a level of significance of 0.05 was adopted. The differences between the means of the samples were found by means of the Bonferroni post hoc test. To evaluate the magnitude of differences, the effect was considered small when $\eta^2_p \leq 0,05$; medium, when η^2_p ranged from 0.051 to 0.25; elevated for η^2_p between 0.26 and 0.50; and very high when $\eta^2_p > 0.50$ (Cohen, 1992; Marôco, 2014). As the effect of the interaction between time and sex was significant, two additional analyses were conducted: repeated measures ANOVA separately for boys and girls; and the comparison between sexes, year by year, with the students²- t test.

3.7. Results

Repeated measures ANOVA showed that time had an effect of a medium magnitude on stress symptoms [$F(1.707, 102.406) = 4.258$; $p = 0.022$, $\eta^2_p = 0.066$]. Of the three time intervals compared, first grade showed a higher mean ($M = 46.40$; $SD = 21.3$); followed by sixth grade ($M = 42.34$; $SD = 20.9$) and fifth grade ($M = 38.48$; $SD = 19.9$). There were

significant differences between first grade and fifth grade. There was no significant difference between the first and sixth grades, and between the fifth and the sixth.

There was no effect of gender on stress symptoms [$F(1,60) = 1.004, p = 0.320, \eta^2_p = 0.016$], but significant effect was observed due to the interaction between time and gender, with medium magnitude [$F(1,707, 102,406) = 5.203; p = 0.010, \eta^2_p = 0.080$]. In the repeated measures analysis by gender, the authors observed that the girls presented a peak of stress symptoms in the first and sixth grades, with both measures differing significantly [$F(1, 34) = 282.291; p < 0.001, \eta^2_p = 0.893$] in comparison with the fifth grade; the boys showed significant reduction in stress symptoms [$F(1.508, 39.201) = 6.704; p = 0.003, \eta^2_p = 0.205$] in the fifth and sixth grades, in comparison with the first grade. The means are presented in Table 1, in which the results of the comparisons of sex year by year are also shown.

Table 1.
Stress symptoms reported by boys and girls in each school year.

School year	Boys M (SD)	Girls M (SD)	<i>t</i>	<i>d</i>
1st Year	49.33 (24.69)	44.14 (18.48)	0.947	0.237
5th Year	36.52 (19.64)	40.00 (20.29)	-0.679	-0.174
6th Year	34.59 (16.08)	48.31 (22.42)	-2.689**	-0.703

Note Boys, $n = 27$ Girls, $n = 35$

4. CONCLUSION/DISCUSSION

The research reported in this chapter followed schoolchildren in the Brazilian public primary school system during the course of their schooling, at three points in time related to changes in cycle. Stress symptoms were evaluated in two post-transition points in time (first and sixth grades) and in one pre-transition point in time (fifth grade). Four hypotheses were tested.

The first hypothesis, that children would report more stress in the post-transition school grades, was partially confirmed. The authors found that the first school year was more stressful for all the children, corroborating the literature that pointed to this first year as a potentially more stressful transitional period (Correia-Zanini, 2013; Lipp et al., 2002; Marturano & Trivellato-Ferreira, 2016). Unfortunately, there was no data collection before the first school transition, which would have made these results more robust. Differently from that which was expected, the sixth grade – also characterized as a transition – presented a result similar to that for the fifth grade. The authors speculate that in the initial years, the children could not yet count on sufficient resources to deal with the stressful situation they experienced as a result of changes in the transition period: such resources were subsequently acquired throughout their development and in their day-to-day school experience. However, the second hypothesis, formulated on the basis of this reasoning, was not confirmed because the stress levels in the sixth grade were not lower than they were in the first grade. Nevertheless, the grading observed in the mean stress values was compatible with what was expected, considering that the highest mean value occurred in the first

transition and the lowest in the pre-transition year/grade. This gradient not only reaffirmed the stressor effect of school transitions, but suggested that the first transition, when the children were younger, would also have more of an impact.

Concerning the two hypotheses related to differences between the sexes, the authors note that in the comparisons between the sexes there was statistically significant difference only in the sixth grade, with an elevated effect size, when the girls presented a higher level of stress symptoms. On the other hand, although the absolute differences between boys and girls were not significant, as occurred in the studies of Lemes et al. (2003) and Pacanaro and Nucci (2005), the results suggested that the trajectory of stress differed for boys and girls. The boys presented more stress in the first grade and important reduction in the stress rates in the subsequent years: a result similar to that obtained by Lipp et al. (2002) in a cross-sectional study from the first to the fourth grades, which indicated a lower percentage of stress at the more advanced levels of schooling. However, regarding the girls' trajectory of stress, the authors observed more stress in the school transition periods, as hypothesized by Marturano (2008).

In addition to not confirming the hypothesis of greater vulnerability of boys in the first school transition, the results suggested a reduction in the boys' susceptibility over the years, which may be related to the developmental trend toward the reduction in externalizing behaviors (Fanti & Henrik, 2010), a source of stressors related to school. However, the girls continued to be susceptible to school stressors, increasing the symptoms at the times of transition, when there was a greater accumulation of academic and interpersonal demands. These findings are compatible with the observations of Eriksson and Sellström (2010) for adolescents from 11 to 15 years of age exposed to school stressors. They are also coherent with the findings regarding a higher number of internalizing symptoms in girls during the years of primary schooling (Fanti & Henrik, 2010).

Despite the limitations mentioned above, and the possibility of expanding the study of stress in the school trajectory, this research revealed the potentially stressful character of entry into elementary schooling in all children, as well as the differential impact of the transition periods in boys and girls, giving clues regarding possible interventions with children in the school context.

5. LIMITATIONS/FUTURE RESEARCH DIRECTIONS

The sample presented at least two limitations. The first was its composition. Within the universe of public (municipal or state) and private schools, only public schools are included in this study. Public schools are known to have different characteristics from those of private schools (school and class size, school infrastructure, teaching methods), and are more available to researches. The second limitation relative to the sample concerns the localization of the research. As the study occurred in a municipality in the interior of the state of São Paulo, the sample was not representative of Brazil, given the diversity among Brazilian states.

In addition to the limits of the sample, another limitation of the method was the use of information obtained by self-reporting, with children as the only source of information.

For future research, we suggest including private schools; replication in other cities or states, for better understanding of this even in order to represent Brazil; as well as extension of the data sources (parents or guardians and teachers), to obtain more accurate information about children. In addition to this triangular source of information, the type of school

transition must be taken into consideration. In Brazil, schoolchildren that conclude elementary school I (fifth grade) leave their school of reference – which is almost always municipal – and begin to attend a different school, generally at the state level, according to the manner in which the educational policy of the country is organized, thereby changing not only the form in which the content is organized, but also undergoing important changes within the school context. Different forms of school transition are present (change of school, or not; type of teaching establishment; localization and size of the school), in addition to different qualities of teaching institution that may be verified by means of the Elementary Education Development Index (EEDI). Other suggestions for future research include verifying the association of schoolchildren's stress symptoms with variables of the family context, such as mother's educational level and parental monitoring. Moreover, as a priority stage for elucidating stress in transition, it is recommended to amplify data collection to include years prior to and after school transitions, so that the effect of these transitions may be observed throughout the course of schooling.

With the inclusion of these data of the family and school context, future research could provide a broader understanding regarding which personal and family characteristics, and which characteristics within the school context, could be related to the symptoms of stress during school transition. Research with this type of information may favor the creation and application of programs of intervention to help parents, teachers and schoolchildren during school transition.

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