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Prospective links between difficult temperament and family adversity and internalizing symptoms in early adolescence: protective role of physical activity

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Background theory:

Depressive and anxious symptoms are especially prevalent during the transition from primary to secondary school and are associated with social and academic difficulties (Archambault et al., 2009; Kauten & Barry, 2020). Difficult temperament and family adversity contribute to the emergence of internalizing symptoms (Devenish et al., 2017; Forbes et al., 2017). Often, interventions are offered to youth only *after* the onset of difficulties (Weersing et al., 2017). However, positive and non-stigmatizing approaches can be applied earlier to prevent the negative consequences associated with difficult temperament and family adversity. Physical activity (PA) appears promising given its well-known benefits on physical and psychological health. Therefore, the present study aims to determine whether PA during the primary-secondary school transition can reduce internalizing symptoms in youth with difficult temperament or exposed to family adversity.

Method:

The participants were recruited as part of the Quebec Longitudinal Study of Child Development (QLSCD) which follows a representative sample of children aged from five months to 21 years. The study focused on a sample of 1,312 participants aged 17 months, 12 and 13 years. Using paper and computerized questionnaires, mothers reported children's difficult temperament and family adversity (i.e., income adequacy and family dysfunction) when children were aged 17 months and 12 y.o. respectively. Youth aged 12 and 13 years reported their PA duration, as well as their levels of depressive and anxious symptoms. Linear regression models tested if PA at age 12 y.o. and its change from age 12 to 13 y.o. moderated the associations between difficult temperament, family adversity indicators (income adequacy, family dysfunction) at 12 y.o. and depressive and anxious symptoms at 13 y.o., controlling for sex and baseline internalizing symptoms. Moderation was tested using interaction terms, decomposed using the simple slope approach (Aiken & West, 1991).

Results:

Focussing first on depressive symptoms, we found no direct associations between difficult temperament, income adequacy, and family dysfunction with depressive symptoms (b = 0,02, p = 0,61; b = - 0,02; p = 0,88; b = 0,29, p = 0,12, respectively). An interaction was found between income adequacy and PA at age 12 y.o. in predicting depressive symptoms (b = -0,50, p < 0,01) indicating that youth from families with insufficient income reported lower depressive symptoms when they engaged in low level of PA at age 12 y.o., while youth from families with sufficient income reported higher depressive symptoms (b = 0,49, p < 0,05). The results of the decomposition also showed that youth from families with insufficient income reported higher depressive symptoms when they engaged in high PA at age 12 y.o., whereas youth from families with sufficient income reported lower depressive symptoms (b = - 0,51, p < 0,05). Turning our attention on anxious symptoms, no direct associations was found between difficult temperament, income adequacy, and family dysfunction with anxious symptoms (b = 0,05, p = 0,17; b = - 0,02, p = 0,93; b = 0,20, p= 0,38, respectively). Significant interactions were found between difficult temperament and PA at age 12 y.o. and it's change from age 12 to 13 y.o. (b = - 0,14, p < 0,05; b = -0,12, p < 0,05, respectively), which indicates that youth with a difficult temperament reported higher anxious symptoms when they engaged in low PA at age 12 y.o. and when they decreased their participation in PA from age 12 to 13 y.o. (b = 0,20, p < 0,01; b = 0,18, p < 0,01, respectively).

Discussion:

Results indicate that youth with a difficult temperament who regularly practice PA are protected against anxious symptoms. These results suggest that despite their vulnerability, at-risk youth may benefit from positive experiences such as engaging in PA to deviate from their at-risk developmental trajectory, especially in terms of anxiety. The observed benefits of PA suggest the importance of its promotion to parents and schools, especially during the primary-secondary transition period. However, despite the apparent benefits of PA for these youth and for those from socioeconomically advantaged backgrounds, PA potentially constitutes a risk for youth from socioeconomically disadvantaged backgrounds. Indeed, results show that youth from insufficient income families have higher depressive symptoms when they engaged in high PA at age 12 y.o. Several avenues can explain this result such as the lack of safety and social support in disadvantaged neighborhoods in which these youth reside as well as their lack of accessibility to organized PA associated with the development of social and emotional skills. This highlights the importance of reducing the costs of organized PA in schools and of allocating funds in the creation of PA programs provided by qualified adults in disadvantaged neighborhoods.
