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Maneuvering through a world of stressors: adolescents' experience of stress, the effectiveness of a psychoeducational program about stress, and the self-perceived need for additional support
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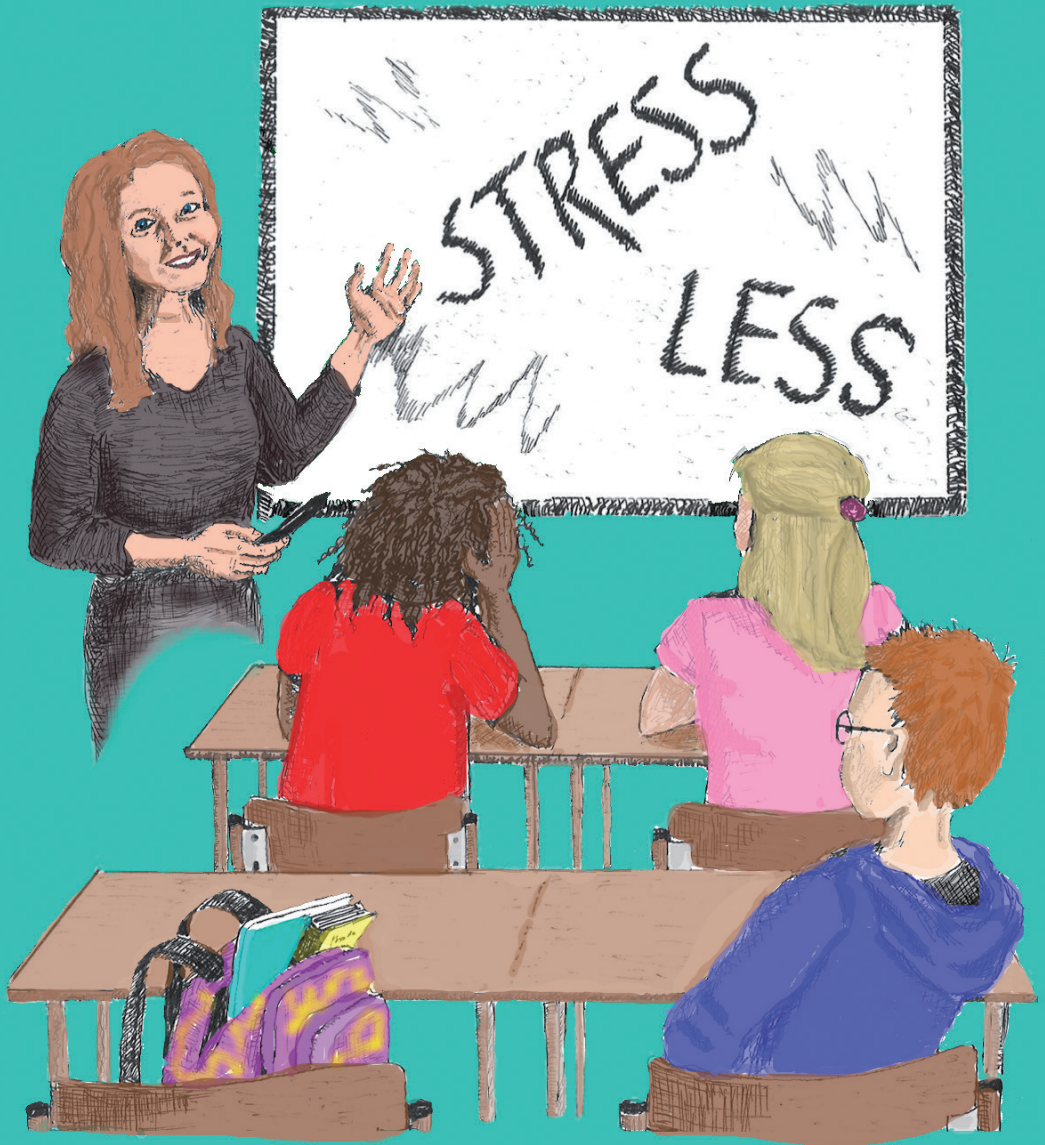
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Chapter 6

General Discussion

Overview

This dissertation aimed to contribute to the literature by comprehensively investigating adolescents' perceptions of what makes them stressed, whether they profit from a psychoeducation course about stress, and whether they need guidance in dealing with stressful situations. Another aim was to examine whether adolescents from different demographic groupings vary in their experience of stressors and their need for guidance. Therefore, a large and heterogeneous sample was recruited from schools with variation in educational tracks and ethnic backgrounds. The sample consisted of 1613 predominantly young adolescents with an average age of 13 years old. The dissertation entailed four different studies. **Chapter 2** examined whether the Adolescent Stress Questionnaire – Short (ASQ-S) can be used in a diverse population. The ASQ-S is a commonly used questionnaire that assesses overall stress and experienced stressors in the lives of adolescents (Anniko et al., 2018). Specifically, we examined the measurement invariance, which refers to the stability of the factor structure (Lee, 2018), of the ASQ-S across gender, educational track, and ethnic background groups. In **Chapter 3**, we examined what kind of stressors adolescents generally experience and whether there are differences in the extent of overall stress and salient stressors between adolescents from different educational tracks and ethnic backgrounds.

In **Chapters 4 and 5**, we aimed to gain insight into whether adolescents benefit from a universal psychoeducational program about stress, called the Stress Lessons. Moreover, we examined to what extent adolescents feel the need for additional guidance in how to manage their stress experiences. For this purpose, a randomised controlled trial including a pre-test – post-test design was performed. In the experimental condition the Stress Lessons were provided for every adolescent in the classroom during school hours between the pre-test and post-test. Adolescents in the control condition received the Stress Lessons after the post-test. During post-test, all adolescents were asked whether they wanted to self-refer to an available

school-based targeted mental health intervention. The school-based targeted intervention is more intensive and given in groups of maximum 8 students, which are smaller groups compared to the Stress Lessons. After a short introduction regarding the content of the interventions, adolescents were able to choose between the Tier 2 school-based targeting reduction of performance anxiety or a school-based intervention targeting improvement of social skills. In **Chapter 4**, we examined whether the Stress Lessons led to an increase in knowledge about stress and a change in reported stress levels and whether this effect was the same across gender, educational track, and ethnic background groups. **Chapter 5** aimed to examine to what extent young adolescents self-refer to a (specific) targeted school-based skills intervention program and whether this was influenced by having received the Stress Lessons, demographic (i.e., their gender, educational track, and ethnic background), intrapersonal factors (i.e., various self-reported mental health indicators and skill), and combinations of intrapersonal factors and having received the Stress Lessons or demographic factors.

Summary of findings

In **Chapter 2**, the psychometric properties of the ASQ-S were analysed. Previous studies showed contradictory findings regarding the number of stressor subscales. Moreover, previous studies had not examined whether a second-order factor can be identified that underlies the individual subscales for the ASQ-S. Our results indicated that the ASQ-S with nine subscales showed a statistically adequate fit. We also found one second-order factor that underlies the nine subscales, that is, adolescent stress. This indicates that a total stress score can be calculated across all items. Two previous studies found measurement invariance for gender and educational track (Anniko et al., 2018; McKay et al., 2019). No study had investigated the stability of the factor structure across ethnic backgrounds. We found invariance across gender, educational track, and ethnic background groups (Dutch versus non-

Dutch versus mixed). Thus, the ASQ-S can be considered a useful instrument to measure overall stress and salient stressors in adolescents across gender, different educational track, and ethnic background groups.

Chapter 3 demonstrated that predominantly young adolescents reported relatively high stress from school performance, school / leisure conflict, health, and future uncertainty, while reporting relatively low stress from social media, romantic relationships, financial pressure, and peer pressure. In terms of differences between demographic groupings few studies examined overall stress levels and experienced salient stressors in adolescents from different educational tracks and ethnic background. Our results also showed that the overall stress levels did not differ for either educational track subgroups, nor for ethnic background subgroups. This indicates that every group experiences the same degree of overall stress. Regarding stressors, we found that adolescents who followed academic education reported higher stress levels about school performance and school / leisure conflict than adolescents in vocational education. Adolescents with a mixed ethnic background reported higher stress levels about school attendance and teacher interaction than adolescents with a Dutch ethnic background. Taken together, the results were remarkably similar across educational track and ethnic background groupings.

In **Chapter 4**, the effectiveness of the Stress Lessons was examined in terms of knowledge about stress and experienced stress. No study examined whether adolescents profit from a short psychoeducational program about stress in an adolescent sample with an experimental vs control design. Our results showed that adolescents who received the Stress Lessons gained more knowledge about stress compared to adolescents who had not yet received the Stress Lessons, indicating a positive effect of the program. Regarding experienced stress, we found that adolescents who received the Stress Lessons showed stable levels of self-reported stress, whereas these levels declined in the group who had not received

the Stress Lessons. Regarding demographic variables, studies have examined gender differences in knowledge gain and experienced stress, but not in an adolescent sample and with an experimental vs control design. We could not determine from previous literature if there are differential effects for educational tracks and self-perceived ethnic backgrounds. Our results showed increased knowledge for boys and girls, for adolescents in academic and vocational education, as well as for adolescents from Dutch, non-Dutch, and mixed ethnic backgrounds. Moderator effects revealed that on average, girls who received the Stress Lessons gained more knowledge in comparison to boys. On average, adolescents who followed academic education and who received the Stress Lessons gained more knowledge than adolescents who followed vocational education. Ethnic background did not moderate program effectiveness, indicating that adolescents from different ethnic background did not differ in terms of their gained knowledge after the Stress Lessons. This indicates that the Stress Lessons were equally effective for each ethnic background group in terms of gained knowledge. The findings for experienced stress were not influenced by any of the demographic groupings. Overall, the results show that a brief psychoeducation program leads to a better understanding of stress for all demographic groupings.

Chapter 5 examined the self-perceived need for additional guidance. No study has examined whether adolescents are willing to self-refer to an available school-based targeted intervention and what predicts their decision to self-refer. Results demonstrated that more than half of the adolescents (51%) self-referred to an intervention, regardless of whether they had received the Stress Lessons. Of the adolescents who were willing to self-refer, 42% self-referred to a school-based intervention targeting reduction of performance anxiety, 25% to a school-based intervention targeting improvement of social skills, and 33% to the no preference intervention. The results showed that adolescents who received the Stress Lessons were less likely to self-refer to a social skills intervention than those who had not received the

Stress Lessons. Girls compared to boys and adolescents reporting higher stress and test anxiety scores were more willing to self-refer to a targeted intervention. We also found that adolescents who received the Stress Lessons and reported higher self-reported social phobia were more willing to self-refer to a performance anxiety intervention and less to the no preference intervention than those who had not received the Stress Lessons. Lastly, adolescents who reported higher social phobia and either followed academic education or perceived themselves as non-Dutch were more likely to self-refer to an intervention than adolescents from vocational education or adolescents who perceived themselves as Dutch. Overall, our findings indicate that self-referral at school after a psychoeducational program about stress may be a suitable way to offer low-threshold interventions to adolescents in need of preventative support for most adolescents.

Educational track

Throughout the dissertation, students from two educational tracks were studied: academic education (i.e., senior general and pre-university education) and vocational education (i.e., practical and pre-vocational education). **Chapter 3** showed that in terms of overall stress, adolescents from different educational tracks did not differ. However, differences were found for the stressors school performance and school / leisure conflict. Adolescents following academic education showed higher stress levels regarding school performance and school / leisure conflict than adolescents following vocational education. Therefore, intervention programs should not be specifically addressed to adolescents with specific educational tracks. Nevertheless, more attention could be given about how to cope with stress from school performance and school / leisure conflict in school classes with adolescents following academic education. Moreover, we found that adolescents following both academic education and vocational education gain knowledge about stress after receiving the Stress Lessons, but adolescents following academic education showed a larger knowledge

increase (**Chapter 4**). The content of the Stress Lessons or the way the Stress Lessons were presented may have matched more with what is learned normally at school in the academic track than the vocational track. It is therefore possible that the Stress Lessons did not sufficiently address the needs of adolescents who followed vocational education, even though language use, amount of theory related to activities, homework, and difficulty of the topics were adjusted. Likewise, we found that adolescents who reported higher social phobia and followed academic education were more likely to self-refer than adolescents following vocational education (**Chapter 5**). Overall, even though adolescents following vocational education may need more help deciding whether they need additional guidance and that they might benefit from a program more adaptive to their needs, adolescents from different educational tracks reported the same amount of overall stress and benefitted from the Stress Lessons.

Ethnic background

As 28 percent of adolescents between the 10 and 15 years old has a migration background (Central Bureau of Statistics, 2023), adolescents with many ethnicities are present in the classroom. The differences in values, norms, and habits between the culture of the country of origin and the culture of the country they live in can be large (Stevens et al., 2017), which may lead to cultural misunderstandings within the classroom (Thijs et al., 2012). Hence, studying stress levels across ethnic background groups is important. Differences were found across ethnic background groups concerning stress levels. We found that adolescents with a mixed ethnic background reported higher stress levels about school attendance and teacher interaction than adolescents with a Dutch ethnic background (**Chapter 3**). Therefore, interventions should not be specifically addressed to adolescents with specific ethnic backgrounds. Nevertheless, more attention could be given about how to cope with stress from teacher interaction and school attendance in school classes with predominantly adolescents

with mixed ethnic backgrounds. Moreover, we also found that adolescents who perceived themselves as Dutch, non-Dutch, or mixed did not differ in knowledge gain and change in overall stress levels after following the Stress Lessons (**Chapter 4**). Regarding self-referral, we found that adolescents who reported higher social phobia as well as perceived themselves as non-Dutch were more likely to self-refer than adolescents who perceived themselves as Dutch (**Chapter 5**). Overall, even though adolescents who perceive themselves as Dutch may need more help deciding whether they need additional guidance, adolescents from different ethnic backgrounds reported the same amount of overall stress and benefitted equally from psychoeducational programs about stress.

Health and social media stressors

Chapter 3 introduced two additional stressors, social media and health, to the ASQ-S stressors. Although the ASQ-S covers a broad range of domains, two currently important categories of stressors are not included in the ASQ-S. First, social media is a relevant stressor in contemporary society and specifically to adolescents. Stevens and colleagues (2017) found that 22 percent of 12-year-old and 38 percent of 15-year-old participants communicated via social media throughout the day. In a systematic review by Keles and colleagues (2020) it was reported that social media use was related to psychological distress in adolescents between 13 and 18 years. Regarding health, studies have found that many adolescents experience stress related to their own (Compas et al., 2012) and their parents' health (Pedersen & Revenson, 2005). Kleinjan and colleagues (2020) found that 14 percent of adolescents in secondary education are not satisfied with their own health.

Chapter 3 showed that health is an important stressor in adolescent life and therefore, we suggest that this subscale should be included in the ASQ-S in future studies. It is important to note that the data collection was completed prior to the worldwide COVID-19 pandemic, indicating that adolescents felt stressed about health before the pandemic. When

adolescents are dealing with illness of a family member, they experience stress about the change in daily functioning, the treatment, uncertainty about the illness (Compas et al., 2012), and the potential death associated with the illness (Stiffler et al., 2008). Adding the subscale health gives a more complete overview of stressors that adolescents experience. Despite our expectations, social media stress did not appear to be a significant stressor in our sample. However, the social media items that were added to the ASQ-S for this research were formulated in a rather general way. It might be helpful to specify and distinguish between different behaviours and actions that may cause stress on social media in future versions of the questionnaire (e.g., receiving mean messages, public shaming, and feeling smothered by the amount of contact; Weinstein & Selman, 2016). This can ensure that adolescents interpret the items in the same way. This may give the opportunity to investigate whether specific social media characteristics are stressful.

Response to Intervention Model

In order to improve the connection between education and mental health care, we implemented the Response to Intervention (RtI) Model. In **Chapter 4 and 5**, we examined the effectiveness of the Tier 1 Stress Lessons and whether adolescents were willing to self-refer to one of the Tier 2 interventions. In **Chapter 4**, we indeed found that adolescents benefitted from the Tier 1 Stress Lessons in terms of knowledge about stress, which is as intended in a Tier 1 intervention (Searle, 2010). The Tier 2 intervention is for adolescents who do not benefit enough from the Tier 1 intervention (Searle, 2010). **Chapter 5** demonstrated that adolescents who followed the Tier 1 intervention and reported more social phobia were less likely to self-refer to the intervention targeting reduction of performance anxiety and the no preference intervention. A possible reason for these results is that adolescents may have received enough support during the Stress Lessons how to cope with stressful situations. For the other Tier 2 intervention, intervention to improve social skills, we did not find evidence

that self-referral worked. Therefore, adolescents in need for a social skills intervention should be detected through screening tools instead of self-referral.

Implications and practical value

Most adolescents experience stress, which can be both functional by making an individual more alert and motivated (Kumari & Gartia, 2012) and detrimental when experienced for too long and at a high intensity (Dhabhar, 2009). This underlines the importance of examining adolescents' own reports of what makes them stressed. **Chapter 3** indicates that academic and health stressors stand out from the other ASQ-S stressors as the most stressful for young adolescents, while stress from social media, social relationships, and financial pressure are least stressful. This finding is found across all educational tracks and ethnic backgrounds. As the mean stress levels for academic and health corresponds with slightly to moderately stressed, most adolescents will not experience the detrimental effects of stress. Nevertheless, a small group of adolescents will experience the detrimental effects, for example emotional problems (Compas et al., 2012; Kim et al., 2003). Furthermore, it is important for teachers and parents to be aware of the signs of heightened stress levels and after which they can discuss this with the adolescents; teachers and parents can help them accordingly. This seems particularly crucial because adolescents are often not aware of how to recognize symptoms of mental health issues (Gulliver et al., 2010). A universal psychoeducational program about stress increases adolescents' knowledge about stress' (**Chapter 4**). Gaining more knowledge (Rickwood et al., 2007) as well as recognition of mental health issues (Cauce et al., 2002) can be considered as a first step towards seeking help for their mental health issues, if adolescents are not able to handle the stressors themselves. Untreated mental health issues can worsen which might eventually lead to adolescents needing intensive, specialized treatment (Zwaanswijk et al., 2011), underlining the importance of early intervention programs.

Social stressors, that is, romantic relationships and peer pressure, were experienced as less stressful than academic stressors (**Chapter 3**). These findings were in line with the findings of De Vriendt and colleagues (2012). The participants in our study, and in the study of De Vriendt and colleagues (2012) were predominantly young adolescents; hence they might experience less stress from romantic relationships than older adolescents. Previous studies found that peer pressure is a salient stressor to young adolescents (Kleinjan et al., 2020; Núñez-Regueiro & Núñez-Regueiro, 2021). Núñez-Regueiro and Núñez-Regueiro (2021) also found that academic stressors and health stressors were salient to stressors but they did not make a ranking of how salient the stressors were.

Our findings showed that the type of stressors differed for educational tracks. More specifically, adolescents from academic education experience more stress from school performance and school / leisure conflict than adolescents from vocational education (**Chapter 3**). The same finding was also found in other studies (Kleinjan et al., 2020; Stevens et al., 2017). This indicates that in particular adolescents from academic education may benefit from interventions to target academic stressors. Moreover, based on our results, we know that adolescents with a mixed ethnic background experience more stress about the interaction with the teacher and school attendance than adolescents with a Dutch ethnic background (**Chapter 3**). It is important that teachers are trained to be culture responsive during their teacher education to ensure a better interaction with adolescents from different cultures in the classroom (Theeuwes et al., 2019; Thijs et al., 2012), especially in schools with adolescents from various ethnic backgrounds. For example, during teacher training, teachers may receive hypothetical cases about adolescents with different ethnic backgrounds (Theeuwes et al., 2019). Teachers could then discuss how they would react and why, which will stimulate a conversation about how to react in a culture responsively way (Theeuwes et

al., 2019). Moreover, adolescents with a mixed ethnic background may benefit from interventions targeting stress from interaction with teachers and school attendance.

This dissertation investigated the effectiveness of the Stress Lessons. The Stress Lessons aimed to help students gain more knowledge about stress and become aware of different ways in which stress can be experienced, to learn how to cope with stress, and to motivate adolescents to seek help if needed. Indeed, the findings show that the Stress Lessons lead to a better understanding of stress for adolescents (**Chapter 4**). This finding held for girls and boys, adolescents following academic and vocational education, as well as for adolescents who perceive themselves as Dutch, non-Dutch, and from a mixed ethnic background. We did find that the strength of the knowledge effect was larger for girls than for boys and for adolescents following academic education compared to their peers in vocational education. In order to make the Stress Lessons more effective for boys and for adolescents following vocational education, the Stress Lessons could add for example more game-based learning (e.g., using Virtual Reality (VR)). Previous studies indicated that boys might be more motivated by competition and girls by social stimuli (de Witte & Haan, 2013; Driessen & van Langen, 2013) and another study indicated that adolescents from vocational education prefer learning via technologies that they are familiar with (Schmitz et al., 2015). Another option could be to divide the components of the Stress Lessons across four or five lessons instead of three lessons. Adolescents who follow vocational education may have received too much information at once in the three hour Stress Lessons that were implemented for this project. Based on our findings, we cannot surmise whether the Stress Lessons helped adolescents to cope with stress, as the overall stress levels did not decline after the Stress Lessons (**Chapter 4**). We did find a decline in stress levels for the group who had not received the Stress Lessons. The decline in overall stress in adolescents who had not received the Stress Lessons from pre- to post-test might be due to the repeated administration of the same test without an

intervention in between. This spontaneous improved adjustment has been found in multiple studies using mental health questionnaires (e.g., Arrindell, 2001; Choquette & Hesselbrock, 1987; Ormel et al., 1989). Overall, schools should be aware that the goal of the Stress Lessons is for adolescents to gain more knowledge about stress and to become more aware of different ways in which stress can be experienced but not necessarily to reduce stress levels.

In **Chapter 5**, we examined the self-perceived need for additional guidance. The results showed that adolescents with more self-reported stress and test anxiety are interested in a school-based performance anxiety intervention, indicating that adolescents, regardless of whether they received the Stress Lessons, are willing to self-refer to the school-based performance anxiety intervention. In contrast, often, parents or teachers may not recognize that an adolescent is in need of professional help (Heiervang et al., 2007; McGinnis et al., 2021; Philipp et al., 2018). Therefore, we recommend that schools ask adolescents to self-refer to a performance anxiety intervention. However, the willingness to self-refer to the social skills intervention was only predicted by whether adolescents attended the Stress Lessons. Therefore, we would recommend schools to detect adolescents who lack social skills in another way than by self-referral, for example by their teacher and parents, because the social skills are observable behaviours (Merrell, 2001). Moreover, we found that adolescents who received the Stress Lessons and who self-reported more social phobia were less likely to self-refer to the performance anxiety intervention than adolescents who had not received the Stress Lessons. A possible reason for this result is that adolescents may have received enough support during the Stress Lessons how to cope with socially anxious situations. Adolescents with higher levels of social phobia may therefore be less inclined to follow a targeted program after the Stress Lessons. Overall, using the RtI model including self-referral is thus a good way to make mental health programs accessible to those in need of help.

Methodological Strengths, limitations, and suggestions for future studies

A major strength of the current dissertation is that we recruited a large and heterogeneous sample was recruited from schools with variation in educational tracks and ethnic backgrounds, even though the recruitment of an ethnically diverse sample was difficult. The recruitment was difficult due to the language barriers and the mistrust of the research topic. To overcome this challenge, schools were actively involved in giving information to students and parents, because parents and students rely on, and trust in, their school. Information about the Stress Lessons was given during a parents' evening, during classes, written information, e-mails, and phone calls.

There were also several methodological limitations to the research, such as the used questionnaires, the implementation of the Stress Lessons, and self-referral to a targeted intervention. First, our results were based on self-report data. A multi-informant (e.g., parents, teachers, and adolescents) and multimethod approach (e.g., physiological indicators of stress and semi-structured interviews) would have added to the methodological rigor. Future research should aim to use multiple informants and methods. For example, we asked adolescents to self-refer to a targeted school-based intervention. Yet, we missed the perspective of the professional working at the school. Their perspective may give an insight whether adolescents with more mental health issues were willing to self-refer to a targeted intervention. In future research, it would be useful to ask the school professionals who would benefit from an intervention to be able to examine whether self-referral is better than other-referral or via screening. Moreover, to examine self-perceived ethnic background, we asked adolescents with which cultural background they felt most connected. However, it would also be interesting to take into account their sense of belonging to an ethnic background, the positive ethnic attitudes, ethnic identity achievement, and ethnic behaviours (Phinney, 1992). Adolescents' stress may for example differ based on sense of belonging, as a previous study

found that people who experience a conflict in deciding with which ethnicity they feel most connected experienced more emotional distress and psychopathological symptoms (Rahim et al., 2021). Therefore, in future research another questionnaire could be used to ask these questions with the Multigroup ethnic identity measure (Phinney, 1992), as this is a commonly used questionnaire and showed good psychometric properties. Furthermore, we did not collect possible acculturative stressors from our sample, such as experienced discrimination (e.g., Szalacha et al., 2003; Viruell-Fuentes, 2007), immigrant status (Gonzales et al., 2013), and potential conflicting expectations from home and school (Stevens et al., 2017). Future research could add more acculturative stressors to better understand young adolescents from cultural ethnic backgrounds.

Including a questionnaire to measure self-awareness and stigma could have given us more insight into the underlying mechanisms of why adolescents self-referred to a targeted intervention after the Stress Lessons. In the study of Skre and colleagues (2013), the authors found that adolescents were better able to recognize symptoms of mental disorders after a school program for mental health literacy. Another study found that stigma was reduced after a psychoeducational program about mental health (Milin et al., 2016). By adding these questionnaires, we could have examined whether self-awareness increased and stigma declined due to the Stress Lessons and whether they contributed to self-referral.

Conclusion

In conclusion, most adolescents have to manoeuvre through a world of stressors. Even though most adolescents experience stressors, psychoeducational programs in schools are relatively uncommon in the Netherlands. Yet, developing adaptive coping strategies to manage stressors is very important, as this decreases the chance of developing mental health issues and the need for intensive treatment later in life (Zwaanswijk et al., 2011). Therefore, we recommend that schools implement the RtI model with a Tier 1 psychoeducational

program about stress for all students as a possible prelude to a Tier 2 training program if the student feels the need for subsequent support. This procedure could help to detect adolescents with mental health issues as early as possible and prevent more serious mental health complaints later in life.

