Depression symptoms as a mediator between social support, non-suicidal self-injury, and suicidal ideation among Arab adolescents in Israel

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Abstract
The purpose of the current study was to explore whether depression symptoms mediate the relationships between perceptions of social support from three sources; namely parents, teachers, and peers, and non-suicidal self-injury (NSSI) and suicidal ideation. We also tested the interactions between the different sources of support. Focusing on the Arab-Israeli population is unique as it is an ethnic minority characterized with strong familial support, and less access to mental health services compared to the ethnic majority. Adolescents (N = 276; 65.6% girls; mean age 15.1 years) from the...
Arab minority in northern Israel were sampled (74% response rate). Participants were evaluated using validated scales assessing perceived social support, NSSI and suicidal ideation. Path analysis with Bayesian estimation supported the hypothesized model. Depression symptoms fully mediated the relationships between school-related social support (i.e., teachers and peers) and NSSI, and partially between parents’ support and suicidal ideation. Interactions between the social support sources were not significant, and cluster analysis indicated that each source is independently essential to understand NSSI and suicide ideation. This model emphasizes the importance of school-related factors in adolescents’ particular aspects of mental health, and suggests that one source of social support may not compensate for a lack of another.

**Keywords**
self-injury, depression, suicide, social factors, school

Non-suicidal self-injury (NSSI), defined as deliberate damage to a body tissue without an intention to die, is highly prevalent among adolescents. Worldwide studies estimated that 14 to 30 percent engage in NSSI during adolescence (Bresin & Schoenleber, 2015; Muehlenkamp et al., 2012). In addition to the severe physical, mental and interpersonal consequences, NSSI is associated with an elevated risk for suicidal behaviors (Hamza et al., 2012; Plemmons et al., 2018). Various individual characteristics and emotional states have been established as key factors in NSSI, such as emotion regulation strategies (NSSI is negatively related to reappraisal of the situation or problem-oriented approach, and positively related with rumination or emotional suppression; Hasking et al., 2017; Wolff et al., 2019), depression symptoms (Heath et al., 2016; Tuisku et al., 2014), diagnosis of other psychopathologies such as obsessive-compulsive disorder (Albert et al., 2019; Shoval et al., 2006) or alcohol use disorder (Borges et al., 2017; Sher et al., 2007), parental support (i.e., parents’ supportive practices such as expression of positive affection, allowing autonomous choices, and providing help when needed are negatively associated with NSSI; Arbuthnott & Lewis, 2015; Bureau et al., 2010), and childhood abuse or other aversive experiences (Martin et al., 2016).

However, in most modern societies children and adolescents spend a large portion of their waking hours each day within a formal education setting, such as school or other adult-organized activities (e.g., informal education or other afternoon activities, such as organized sports’ teams), which have eminent impact on adolescents’ development and mental health (Kidger et al., 2012). Comprehensive reviews of empirical evidence concluded that prevention and intervention programs within school contexts are highly effective for reducing both NSSI (De Riggi et al., 2017) and suicidal ideation or behaviors (Zalsman et al., 2016).
among adolescents. Nevertheless, schools are more than optimal settings to implement prevention programs, and even without such structured programs the students who feel more socially connected to school are less likely to report depression symptoms and engage in NSSI (Madjar et al., 2020). This can explain why students often perceive school staff as an available and reliable source of support in case of emotional distress. For example, over 43% of students in high risk for emotional difficulties and 28% of students in low risk for emotional difficulties had consulted the school counselor (Pisani et al., 2012). However, schools’ personnel often believe that they are undertrained and lack confidence in their skills to appropriately react to cases of NSSI or suicidal behaviors (Duggan et al., 2011; Evans et al., 2019; Heath et al., 2011). It is therefore important to explore the contextual factors that are associated with students’ NSSI and suicide thought, which are within the scope of teachers’ proficiency. This understanding can contribute both to raising the awareness to the role of school staff in the students’ mental health, and to promoting the practices that can diminish students’ distress. In the current study we focused on such general school factors as perceived by the students, which were not intended to address NSSI and suicidal ideation in particular, but may buffer against NSSI and suicidal ideation through enhancement of students’ general well-being and resilience.

Recent studies that focused on the school context revealed that adolescents who feel supported by their teachers are less likely to be involved in NSSI (Kidger et al., 2015; Madjar, Shabat, et al., 2017) or report suicidal ideation (Madjar et al., 2018). Exposure to peer rejection or bullying were also found to be related with NSSI (Esposito et al., 2019) and suicidality (i.e., both suicidal ideation and behaviors) (Barzilay et al., 2017; Oppenheimer et al., 2019), as well as school climate (Wang et al., 2018) and absenteeism (Epstein et al., 2019). These findings further emphasize the utility of exploring school-related factors as potential precursors of adolescents’ mental health status. Beyond these contextual factors, depression symptoms play a key role in understanding both NSSI and suicidal ideation (Hankin & Abela, 2011; Knorr et al., 2016). When examining the longitudinal trajectories of depression symptoms over time, conflicts and other difficulties in the relationships with parents and peers emerged as significant factors that predicted stably-high or increasing symptoms of depression (Shore et al., 2018).

The robust associations between social factors and suicidal thought and behaviors are not limited to the school setting. Broad conceptual frameworks, such as the Interpersonal Theory of Suicide (Joiner, 2005), posits that lack of mutual and positive relationships with other and sense of loneliness would constitute thwarted belongingness, which elicit suicidal ideation. NSSI in this case might serve as mal-adaptive coping mechanism that can reinforce the belief in the capability of suicide (Heffer & Willoughby, 2018), which significantly increases the risk of suicide attempts (Chu et al., 2017; Van Orden et al., 2010). During adolescence, school is one of the most dominant social arenas, which further support the rationale to assume that the social interactions and relationships would be associated with students’ mental health. However, as parents’ support has been consistently
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found related to adolescents’ NSSI and suicidal ideation and behaviors (Arbuthnott & Lewis, 2015; Bureau et al., 2010), we included perceptions of parents as additional source of support to ensure that school-related social support from teachers and peers can explain NSSI and suicidal ideation over and above what is explained by parents’ support (i.e., after controlling for the perceptions of the parents).

Based on the current international literature, our first hypothesis (hereafter: H1) was that sense of social support from parents, teachers, and peers would each be negatively associated with NSSI and suicidality (Calati et al., 2019; Quigley et al., 2017); and our second hypothesis (hereafter: H2) was that these associations would be mediated by depression symptoms (Baetens et al., 2015; Plener et al., 2015). The third hypothesis was (hereafter: H3) that each source of support might compensate for the absence of other sources (i.e., high support from one source would moderate the relationships between the other sources with NSSI/suicidal ideation). This assumption was based on other fields of research that explored the interaction between different sources of support, such as school bullying victimization (Miranda et al., 2019) or among suicide attempters (Kidd et al., 2006), as the current literature on NSSI is insufficient to establish clear moderation hypothesis (Valencia-Agudo et al., 2018).

Conceptually, we expected that when one source of support is not sufficiently available, then the other sources can become more important for the individual to rely on. For example, if a child perceives the relationships with her/his parents as close and warm, murky relationships with the teachers might not cause significant harm to her/his mental health. However, in the absence of close and warm relationships with the parent, the teacher can become an alternative for a significant adult, which would intensify impact of the rapport with this teacher – a strong rapport may compensate for the lack of supportive parent (i.e., the association between teachers’ support and students’ mental health would become stronger when parents’ support is low).

In addition to the theoretical novelty of including all three sources of social support and their potential interactions, another unique contribution of the current study is the focus on the Arab minority population in Israel, in which risk factors for suicidal ideation were found similar to other cultural contexts (Hamdan et al., 2011); yet, less is known regarding NSSI behaviors. The importance on focusing on various social and cultural backgrounds is twofold: first, individuals who identify themselves as part of a minority group are generally in higher risk to engage in NSSI (Young et al., 2014). Second, research among Arab minority in Israel has revealed a strong sense of difficulties in accessing professional mental health evaluation and treatment when needed (Daeeem et al., 2019). Therefore, if access to professional mental health practitioners is scarce, the role of other adults and peers might be amplified. Furthermore, to the best of our knowledge, there is no similar study in this population worldwide.
Materials and methods

Participants

High-school students (N = 276; 65.6% girls; mean age = 15.1 years, SD = 1.34) were sampled from three large public schools of the Arab minority population in northern-center of Israel (11 classes; grades 7th to 11th). All schools are supervised and funded by the Israeli Ministry of Education, and Arabic is the official language that is being used. The participating schools are characterized with families from low socioeconomic status background (Israeli Annual Statistical Report, 68, 2017), which are living in an urban area (response rate = 74%).

Instruments

Social support. Perceived social support from parents, teachers and peers was assessed using a scale of positive support (Richards & Branch, 2012). The scale included 5 items for parents’ support (sample item: “My parents often ask me what I am doing in school”), 5 items for perceived teachers’ support (sample item: “My teachers often ask me what I am doing in school”), and 6 items for peers’ support (sample item: “I feel comfortable talking with my friends when I have a problem”). Participants rated their agreement on a scale from 0 = ‘strongly disagree’ to 4 = ‘strongly agree’ on each item, and scales were calculated as arithmetic average to obtain similar range across scales with different number of items.

Depression symptoms. The Children’s Depression Inventory (Kovacs, 1984; Zalsman et al., 2005) was translated to Arabic and was used to assess symptoms of depression. The translation procedure included first a translation of the original scale to Arabic and then back to English by two independent translators. A third researcher compared the two English versions to ensure that the original meaning remained similar (e.g., Chen & Boore, 2010; Maneesriwongul & Dixon, 2004). In this 26-item scale participants are asked to choose the most appropriate statement out of three that describes their feeling within the last two weeks (e.g., I was sad sometime; I was sad most of the time; I was sad all the time).

Non-suicidal self-injury. Based on a scale developed by Gratz (2001) participants were asked to report whether they engaged in deliberate self-harm within the last 12 months (0 = none, 1 = less than 5 times, 2 = more than 5 times) without intention to die, focusing on the three most common methods that were previously found among Israeli adolescents (i.e., cuts to your wrists, arms, legs, torso, or other areas of the body; scratch yourself until its bleeds; punch your head against something that caused a serious wound) (Madjar, Shabat et al., 2017). Participants were classified as engaging in NSSI behaviors if they reported more than 5 days with incidents of self-harm within the last year in at least one method, based on DSM-5 suggested criteria for NSSI (American Psychiatric Association, 2013).

Suicidal ideation. Thoughts about suicide in the last two weeks were evaluated using three items of Paykel Suicide Scale (Meneese et al., 1992; Paykel et al., 1974)
(e.g., “In the last two weeks, have you felt life not worth living”). The scale on each item ranged from 0 = ‘never’ to 5 = ‘all the time’.

Following evaluation, participants were divided to three groups: those who reported that they never had these thoughts in all three items; those who reported at least one item as ‘rarely’ or ‘sometimes’; and those who reported two items or more as ‘sometimes’. This cutoff is equivalent to similar scales that distinguished between none, moderate and frequent suicidal ideation (Van Spijker et al., 2014; Weber et al., 1997), as this scale is highly skewed (i.e., the majority report ‘never’ for most items).

**Procedure**

Ethical approval of the study was obtained from the Head Scientist of the Israeli Ministry of Education, and the Institutional Review Board (ref# A147). Each school management approved the study, the parents were informed about the study at least two weeks before data collection. Information about the study was distributed by the homeroom teachers to all parents of the students, which could choose whether to allow their child to participate or not without any consequences. The students could also decide whether they wish to participate or not, after a short brief about the study by the trained research assistant and with no need to disclose their choice to any of the school personal. Participation was anonymous and no incentives were given for those who agreed to participate, nor any consequences for those who decided to opt out. All students completed the surveys within school hours (approximately 25 minutes), in the presence of a certified educational counselor. The counsellor monitored the students during data collection to address any sign of distress, and all students received individual brochures with contact details of various help-lines, as safety precautions. To strictly follow the guidelines of the ethical approval we could not collect any identifying information of the students, and therefore we applied these safety procedures among all participating classes.

**Statistical analyses**

To ensure that the data fit the factorial structure of the three sources of social support, we first conducted a confirmatory factor analysis (CFA). Following common guidelines, we focused on indices that indicate adequate fit to data when meet the following criteria: (1) the ratio of the chi square to its degrees of freedom (CMIN/DF) that should be smaller than 3; the comparative fit index (CFI) which should be close to .95 or higher, but not smaller than .90; and the root mean square error of approximation (RMSEA), which should be smaller than .08 (Hu & Bentler, 1999; Schreiber et al., 2006). The distributions of NSSI and suicidal ideation by gender and age were first tested using chi-square statistics (using SPSS25).
We then tested the model in which depression symptoms mediates the relationships between social support and NSSI/suicidal ideation using Structural Equation Modeling (SEM) with Bayesian estimation (Byrne, 2013; Tomarken & Waller, 2005) (using AMOS25). This method tests the overall fit of the data to the hypothesized model (posterior predictive $p$ close to 0.50 indicates good fit), and estimates the lower and upper bounds of each coefficient (equivalent to 95% Confidence Intervals) that should be both either below or above zero to imply significant association (Scheines et al., 1999). Furthermore, this analytical approach is less susceptible to violation of common statistical assumption of other regression-based analyses, such as normal distribution or heterogeneity of variance (e.g., Ansari et al., 2002; Muthén & Asparouhov, 2012; Scheines et al., 1999). We concluded the path analysis by stratifying the sample based on gender and age groups (below and above the median of 15 years old) using Multiple-group SEM, to ensure that the findings remain robust.

To analyze whether teachers’ or peers’ support can interact with parents’ support we first tested the interactions between sources of social support in predicting depression, NSSI and suicidal ideation with regression analyses using PROCESS macro with bootstrap estimation for confidence intervals (Hayes, 2012; Hayes & Rockwood, 2017). We then conducted cluster analysis with Ward’s method to create groups based on their combined perceptions of all three social support sources. This method classifies groups according to similarity between participants on all selected indicators in order to create the most homogeneous clusters (Kaufman & Rousseeuw, 2009). The students are first coupled with the student who is most similar across all indicators, and then hierarchically combined with the most similar couple, and these group again combined in multiple steps. Each step yield ‘fusion coefficient’, which indicates the amount of quantitative information that was lost at each step as result of reducing the variance between participants within each group (Aldenderfer & Blashfield, 1993; Garcia et al., 2015). The fusion coefficient then used to determine the number of clusters by considering the most parsimonious solution (i.e., the smallest number of clusters with a minimal fusion coefficient and yet sensible theoretically). This approach enables to capture more complex relationships between variables that might not be identified by linear interaction analyses; for example, if one source of support (e.g., parents) can compensate for the lack of only one of the other sources (e.g. teachers, but not peers), whereas that other source (e.g. teachers) only compensate in cases were the third source also available (e.g., peers). For this unique advantage this approach was implemented frequently in studies that focused on person-centered analyses of self-reports among adolescents (e.g., Bjarehed et al., 2012; Levy-Tossman et al., 2007; Madjar, Weinstock et al., 2017). To finalize, we compared differences in symptoms of depression between these clusters using analysis of co-variance (ANCOVA) to control for gender and age. None of the items included more than 1% of missing data and scales were calculated based on arithmetic average for each participant (i.e., if a single item was missing the mean was calculated based on the other items).
Therefore, missing data was not estimated and after pairwise deletion only 2 participants (0.7%) were not included in the final analyses.

## Results

The preliminary analyses that included a confirmatory factor analysis of the three sources of social support, supported the structural validity of the scale and yielded adequate fit to data (CMIN/DF = 2.68, CFI = 0.915, RMSEA = 0.078). This indicated that the participants differentiated between their perceptions of parents’, teachers’ and peers’ support.

The overall prevalence of NSSI in the sample was 21.3% with at least one of the three methods of injuries. High suicidal ideation (above 1 on the suicidal ideation scale) was measured for 32.7% of the sample, 16.7% had moderate ideation (between 0 and 1) and the rate for 50.5% was very low (below 1). These rates are similar to previous findings of NSSI and suicidal ideation among adolescents, and were not significantly different between genders ($\chi^2(1) = 1.51, p = ns$; $\chi^2(1) = 0.47, p = ns$; respectively) or age groups ($\chi^2(1) = 2.73, p = ns$; $\chi^2(1) = 1.65, p = ns$; respectively, Table 1).

This pattern of the correlations aligned with the theoretical expectation that adaptive factors (e.g., social support) would be positively associated with each other, while negatively associated with maladaptive factors (e.g., depression symptoms) and vice versa. Both NSSI and suicidal ideation were highly correlated with depression symptoms (Table 2), and negatively associated with social support. Correlations between social support sources (i.e., parents, teachers and peers) were moderate, and negatively correlated with depression symptoms.

The entire model in which depression symptoms mediate the relationships between social support, NSSI and suicidal ideation was tested using Structural Equation Modeling with Bayesian estimation (Figure 1), and yielded adequate fit to data (posterior predictive $p = .47$). The results indicated that social support

### Table 1. Distribution of suicidal ideation and NSSI by gender and age groups.

| Gender  | Age group | Boys n (%) | Girls n (%) | Under 15 n (%) | Above 15 n (%) |
|---------|-----------|------------|-------------|----------------|---------------|
| suicidal ideation | | | | | |
| 0       |           | 50 (52.6)  | 90 (49.4)   | 49 (51.7)      | 89 (49.2)     |
| 1       |           | 14 (14.7)  | 32 (17.8)   | 13 (14.1)      | 36 (19.8)     |
| 2+      |           | 31 (32.4)  | 59 (32.8)   | 33 (34.2)      | 56 (31.0)     |
| NSSI    | | | | | |
| No      |           | 79 (83.3)  | 138 (76.4)  | 79 (82.8)      | 134 (73.9)    |
| Yes     |           | 16 (16.7)  | 43 (23.6)   | 16 (17.2)      | 47 (26.1)     |

Note: Suicidal ideation – severity of suicidal ideation based on scale from 0 (no suicidal ideation) to 5 (consistent suicidal ideation); NSSI – non-suicidal self-injury in at least one method of self-injury.
is negatively associated with depression symptoms, which in turn are positively associated with both NSSI and suicidal ideation. The indirect effects of parental support were significant for NSSI (−.17, 95% CI = −.28, −.08) and suicidal ideation (−.42, 95% CI = −.58, −.28), the indirect effects of teacher support were significant for NSSI (−.09, 95% CI = −.16, −.03) and suicidal ideation (−.22, 95% CI = −.34, −.11), and the indirect effects of peers support were significant for NSSI (−.07, 95% CI = −.14, −.02) and suicidal ideation (−.19, 95% CI = −.30, −.07).

For sensitivity analyses we stratified the model by gender and age groups. There were no significant differences in any of the paths in the model between boys and girls.
girls, and the model had good fit to data when structural means were constrained to be equal (CMIN/DF = 1.49, CFI = 0.974, RMSEA = 0.042). When comparing the age groups, two paths were significantly different. The relationships between teacher support and depression symptoms was stronger for participants in the younger group (below 15 years old) compared to the older group ($\beta = -0.36$ vs. $\beta = -0.10$, respectively; $\chi^2(1) = 7.44, p < .01$), and the relationships between depression symptoms and NSSI was also stronger within the younger group ($\beta = 0.53$ vs. $\beta = 0.24$, respectively; $\chi^2(1) = 9.73, p < .01$). We further tested an alternative model, in which the relationships are reversed (i.e., suicidal ideation and NSSI are associated with depression symptoms, which in turn associated with social support). This alternative model yielded poor fit to data (posterior predictive $p = 0.20$).

When analyzing interaction between sources of support, interactions between parents’ and teachers’ support were not significant in predicting NSSI ($\beta = -0.05$, $p = 0.76$), suicidal ideation ($\beta = 0.15$, $p = 0.84$), and depression ($\beta = 0.02$, $p = 0.19$). Interactions between parents’ and peers’ support were also not significant for NSSI ($\beta = 0.18$, $p = 0.39$), suicidal ideation ($\beta = 0.26$, $p = 0.77$), and depression ($\beta = 0.02$, $p = 0.23$). Interactions between teachers’ and peers’ support were not significant for NSSI ($\beta = 0.02$, $p = 0.23$) and depression ($\beta = 0.02$, $p = 0.23$), and the interaction in predicting suicidal ideation was significant ($\beta = 0.26$, $p < 0.01$). When examining the simple slopes at $-1$, 0, and 1 standard deviations (SD), only the slope at the -1SD was significant ($\beta = -0.37$, $p < 0.01$). This indicates that although the negative correlation between teachers’ support and suicidal ideation intensify as peers’ support increases, the effect is small and was the only significant effect among nine interaction effects. We therefore continued with the cluster analyses to examine whether more complex relationship between the sources of support will be found.

Cluster analysis using Wards’ method with squared Euclidean distances yielded five distinct clusters, which we ranked according to the general level of social support (Figure 2): (1) Cluster 1 had high levels of all social support sources

![Figure 2. Standardized values of perceived support by clusters.](image-url)
(HHH); (2) Cluster 2 had medium levels of parent support, low levels of teacher support and high levels of peer support (MLH); (3) Cluster 3 had medium levels of parent and teacher support, with low levels of peer support (MML); (4) Cluster 4 had medium levels of parent support, and low levels of teacher and peer support (MLL); and (5) Cluster 5 had low levels of parent and teacher support, with medium levels of peer support (LLM).

Analysis of variance controlling for gender and age (ANCOVA) yielded significant differences between the clusters ($F(4, 275) = 15.09, p < .001$, Partial $\eta^2 = .19$). Pairwise comparisons with Bonferroni correction indicated that HHH cluster was significantly lower on depression symptoms comparing with all other clusters, and that LLM cluster was also significantly higher comparing to MLH and MML clusters (all other comparisons were not significant after the correction; Figure 3).

Discussion

The findings of the current study supported the first hypothesis regarding the relationships between social support, NSSI and suicidal ideation. Consistent with previous research, perceived support from parents (Hamza & Willoughby, 2014), teachers (Madjar et al., 2018; Madjar, Zalsman et al., 2017), and peers (Calati et al., 2019), was associated with lower rates of NSSI and suicidal ideation. The effects of each source of social support remained significant across genders (Kirkcaldy et al., 2004) and after controlling for the other sources. These finding corroborate theoretical frameworks on suicide that emphasized the importance of social aspects in suicidal thoughts and behaviors, such as Interpersonal Theory of Suicide (Chu et al., 2017; Stewart et al., 2015; Van Orden et al., 2010). Research on

![Figure 3. Mean levels of depression symptoms by clusters.](image)

Note: After Bonferroni correction differences between clusters 2, 3 and 4 are not significant, as well as between clusters 4 and 5. All other pairwise comparisons are significant at $p < .01$ (controlling for gender and age).
NSSI that emphasized the importance emotion regulation strategies has also asserted that the environmental stimuli is a major antecedent in emotional reactivity (Hasking et al., 2017; Plener et al., 2015; Wolff et al., 2019), which can lead to NSSI in cases of maladaptive emotional regulation. For adolescents, schools should be considered as an important social context, in which the beliefs about the quality of their social connectedness with peers and teachers can inform mental health practitioners in regard to the risk of emotional distress. When adolescents feel lack of social support within school, the risk of suicide ideation and NSSI is elevated regardless of their supportive environment at home, and therefore, we should not undermine the meaning of such feeling and perceptions.

The relationships between perceived social support and suicidal ideation and NSSI were mediated by depression symptoms, supporting our second hypothesis (Baetens et al., 2015; Cho & Glassner, 2019; Plener et al., 2015). Previous studies indicated that adolescents who report being hassled by their peers on a daily basis have more depression symptoms, which enhance the risk of NSSI (Xavier et al., 2018). Similarly, depression symptoms were found to mediate the relationships between suicidal ideation and academic stress (Ang & Huan, 2006) or perceived social support (Shilubane et al., 2014) among adolescents. Thus, social support is among the important factors in understanding depression symptoms, which in turn are associated with NSSI and suicidal ideation. This empirical model is aligned with the theoretical approaches that emphasize interpersonal factors as eminent determinants of suicidal ideation and behaviors (Richie et al., 2019; Turner et al., 2016).

In contrast, our third hypothesis suggesting that one source of support may compensate for the lack in other sources was not supported. It is reasonable to expect that although social support may not buffer against depression resulting from aversive experiences (i.e., interaction between social support and stressful life-events) (Rueger et al., 2016), one source of support would moderate the direct negative effects when other sources are not available (i.e., interaction between various sources of social support). Moreover, one study indicated that the association between suicide risk and quality of relations with parents was stronger when relations with peers were poor (Kidd et al., 2006). Unfortunately, such interactions were not reported or examined in most of the published studies (Valencia-Agudo et al., 2018).

Consistent with the results of the regression analyses, our cluster analysis approach also indicated that each of the social support sources is independently negatively associated with depression symptoms, NSSI, and suicidal ideation. Therefore, mental health professionals should consider multiple contexts of interpersonal relationships, and be cautious about the assumption that one context would necessarily buffer against the negative consequences of the other. It is important to note that the intuitive conception that different resiliency sources are complementary and therefore can compensate for the lack of one or the other, might be misleading in the case of NSSI and suicidal ideation.

These findings support the notion that school is a pivotal context in which NSSI and suicidal ideation should be considered (Benbenishty et al., 2018; Whitlock
NSSI is often highly socially effected (Brown et al., 2018), and empirical evidence repeatedly demonstrated the important role of teachers and school personnel as facilitators of mental health and wellbeing (Kidger et al., 2012). Their training should include increasing awareness to this role and mastering practical techniques to provide effective psychological support (De Riggi et al., 2017; Lewis et al., 2019).

The current study had focused on population of Arab ethnic minority in Israel. Cross-cultural comparison has revealed a wide variety of suicidal ideation (Page et al., 2013), and being affiliated with minority groups, such as racial (Lindsey et al., 2019) or sexual identity (Thoma et al., 2019) minorities, has been found associated with higher risk of NSSI and suicidality. However, studies within the Arab population in Israel revealed high communal and traditional attitudes (Al-Krenawi, 2010; Sharabi, 2014), which had been established as substantial protective factors (Foster et al., 2017; Kuentzel et al., 2012; Martin et al., 2016). These complex features may interact and explain why the prevalence of NSSI and suicidal ideation was relatively similar to other population-based studies that reported the prevalence worldwide (Muehlenkamp et al., 2012) and particularly in Israel (Madjar et al., 2018), and that the general hypothesized model fit the data within this particular population.

The relationship between NSSI and suicidality has been established in previous research (Hamza et al., 2012). Yet, there are major differences in aspects such as the goals, methods used, emotional state during the self-injury, and social reactions to these behaviors (Whitlock et al., 2015). Our findings indicated that NSSI and suicidal ideation are related, while the relationships with social support and depression symptoms are different. Parental support had a direct link to suicidal ideation that was not mediated by depression symptoms, which indicates that the nature of the relations with parents can elicit suicidality regardless of negative affect state (Liang et al., 2014). Depression symptoms were a stronger predictor of suicidal ideation compared to NSSI, suggesting that NSSI can be explained by additional intrapersonal factors that were not included in the current study, such as emotion regulation strategies (Hasking et al., 2017).

Limitations of this study include the cross-sectional design, which does not support causality. Our hypothesized model was empirically supported by the data, and the alternative models (i.e., reverse order of the variables) had not fit the data well, yet future research should also implement a longitudinal approach to explore this model over time. Furthermore, the data are based on self-report measures that might be subject to report-bias, such as the tendency to comply with social norms and response more positively when the thought or behavior is believed to be acceptable or desirable within a particular social context (Huang et al., 1998; Zalsman et al., 2005). Therefore, while it was demonstrated that focusing on individual perceptions of the social context is highly important in understanding NSSI (Madjar, Shabat et al., 2017) and suicidal ideation (Madjar et al., 2018) in adolescents, future research might also use additional methods of assessment – particularly for social support – as well as controlling for other social
aspects that are related to suicidal ideation and behaviors, such as exposure to detailed suicide cases on the media (Niederkrotenthaler et al., 2019; Shoval et al., 2005). Lastly, these findings should be replicated among additional populations, to consider the role of diverse cultural backgrounds and developmental stages. For instance, it is possible that support from peers would compensate for the lack in other sources of support among young adults, as they become less dependent on their parents (Bucx et al., 2012).

Despite these limitations, the current study provides empirical support to the notion that each and every social support source (i.e., parents, teachers and peers) is essential to understand the relationship between depression symptoms, NSSI and suicidal ideation among adolescents. These findings also emphasize that the effect of each source is independent from the others, and that mental health professionals should target all social arenas that might shape individual sense of well-being, particularly school.

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