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Introduction

The adolescent, at the very best, can only have gained a tentative strong SOC, which may be useful for a short-range prediction about coping with stressors and health status (Antonovsky, 1987, p. 107).

Adolescence is a period of growth and development between childhood and adulthood. This developmental period involves new demands on the individual. A major task of this period is moving toward independence from dependency on the family; therefore, peers become a crucial socialization circle for the adolescent (Romeo, 2013; Spear, 2013). During this period, a number of physiological and cognitive changes occur while individuals are confronted with developmental tasks and challenges. During the last decade, there has been a marked increase in neurobiological research on the cognitive, emotional, and behavioral changes as well as development that occur during adolescence. These studies have found that cognitively, the adolescents as the adults are capable to suppress responses when no emotional information is provided (Tottenham, Hare, & Casey, 2011). However, it is the avoidance of social

cues during challenging situations in which adolescents have a difficulty to make a proper and rational response (Casey & Caudle, 2013). Thus, it seems that tension between regulation of behavior and sensitivity to positive environmental cues makes the response of the individual during the period of adolescence more complex (Somerville, Hare, & Casey, 2011).

In line with the positive youth development perspectives (Damon, 2004), there is a growing recognition of the individuals who are eager to explore the world, to acquire competence and to struggle with challenges and difficulties. This approach focuses on productive activities rather than on trying to cure and treat maladaptive tendencies. The agenda is to maximize the potential of the individual and by this to reduce the potential of hazardous, destructive, and antisocial behaviors (Lerner & Benson, 2003). The period of adolescence is a particularly important developmental stage, since social, emotional, and cognitive processes are involved in the attempts to navigate the increasingly complex relationships (Blakemore & Mills, 2014). Indeed, it is during these years that abstract thinking and cognitive processing develops along with enhanced moral reasoning and judgment. These positive processes enable the adolescent to explore the world, gain competences, and contribute to the world surrounding him/her (Damon, 2004). As children grow older, their coping repertoire expands and shifts from primarily external, behavior-oriented to more internal, cognitively based strategies (Aldwin, 1994).

The advanced forms of reflection such as the ability to consider things in hypothetical and abstract terms and the ability to monitor one's own cognitive activity during the process of thinking enable adolescents to see from the perspective of other persons, to plan ahead, to anticipate the future consequences of an action, and to offer alternative explanations of events. Cognitive mastery is therefore an important contribution to young people's ability to manage or regulate their feelings and to control their emotions and/or avoid being overwhelmed by them (Garnefski et al., 2001).

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These abilities have also the potential to influence the emotional–motivational and behavioral components of SOC. It is during these years that as young people move from one experience of using certain coping resources to another, different resources can be reviewed and crystallized.

In the following section, we present special adjustments that have been done for the SOC questionnaire along with multitudes studies that focused on this development period and took different directions in the study of salutogenesis during adolescence.

SOC Studies During Adolescence

Since there are hundreds of papers and studies regarding adolescents and SOC, for the purpose of this chapter we decided to narrow down our search and thus the amount of papers included in this review. Our search included sites such as—Ebsco, PsycInfo, PubMed, SocioFile, and GoogleScholar, and in addition we searched the sites of Sage, Springer, and Wiley. We looked at the last decade from 2003 to 2013 and included the search words: adolescs*, youth, sense of coherence, and salutogenesis. We came up with more than 60 articles and research from 18 countries including Scandinavian countries, South Africa, Europe, Middle East, Australia, and the United States. Table 14.1 summarizes these studies.

The following themes emerged from the identified studies:

Adaptations of the Sense of Coherence Questionnaires

Based on the original SOC questionnaire (Antonovsky, 1983), several researchers have examined the adaptability of the questionnaire to adolescent population. For example, the adolescent sense of coherence scale was adjusted to fit adolescents' characteristics—that is, development of self-identity, orientation to one's self-society, confusion, unpredictable changes, close emotional ties with parents for the development of open communication, stability of the community, etc. Thus, several items were removed from the original 29 items scale and other were rephrased to make sure that the adolescents understand the items (Antonovsky & Sagy, 1986), ending up with the final version of 13 items which has been considered a single factor and not the three separate components—meaningfulness, comprehensibility, and manageability (Hagquist & Andrich, 2004). Since the

original use of the updated scale many studies used this version and reliability proved to be very good ($\alpha \approx .80$).

Another approach to the adaptation of the scale to the adolescence age stage was based on the use of the children version (CSOC) without the examples and distractors that were requested for the younger children. The description of the CSOC can be found in the chapter on children. The adolescence adaptation from the CSOC consisted of 16 items (e.g., “When I want something I’m sure I’ll get it”; “When I need help there is someone around to help me”; on a five-point Likert type scale ranging from 1 (never) to 5 (always)). A Cronbach’s alpha of .78 was obtained (Levi, Einav, Ziv, Raskind, & Margalit, 2014).

Sense of Coherence Construct During Adolescence

The stability question regarding SOC accompanied this construct since the beginning of research about it. Antonovsky and Sagy (1986) argued that SOC should be strengthening during adolescence, and stabilized toward the end of this developmental period. However, studies which addressed the issue of age and the stability of SOC revealed inconsistencies (Apres et al., 2013; Ayo-Yusuf, Reddy, & Van Den Borne, 2008; García-Moya et al., 2013; Kristnsson & Ohlund, 2005; Moksnes, Espnes, & Lillefjell, 2012). Indeed, Eriksson (2007) have stated that SOC is likely to vary during adolescence due to developmental changes, transitions, and challenges. While some researchers did not find differences among various age groups (Honkinen et al., 2008) and claimed the existence of SOC stability during adolescence (Kroninger-Jungaberle, 2013), others focused on the variability between groups of adolescents between younger and older adolescents (García-Moya et al., 2013) as well as between groups with high vs. low scores of SOC. The group with lower SOC reported more variability in its SOC scores (Buddeberg-Fischer, Klaghofer, & Schnyder, 2001).

Moreover, during periods of political violence, studies have shed light on the impacts of fragile periods and documented a drop in SOC levels during acute stress situations. However, once the acuteness is over, the SOC gains back its strengths (Braun-Lewensohn, Sagy, Sabato, & Galili, 2013). Nevertheless, when adolescents face chronic states of stress, such as longitudinal missile attacks, the deterioration of the SOC remained stable over time (Braun-Lewensohn & Sagy, 2010).

Table 14.1 SOC Studies during adolescence

Author	Year	Place	Population	Variables	Results
1. Apers et al.	2013	Belgium	498 14–18 years longitudinal	QoL, SOC, age, gender, educational level, disease complexity, prior surgery	The higher the SOC the higher the perceived health
2. Ayo-Yussuf et al.	2008	South Africa	8th grade, 3 waves (18 months) 970 adol adolescents	SOC, smoking, gingival health, socioeconomic status, age, gender, tooth brushing	Adolescent smoking and SOC levels are independent predictors of self-reported gingivitis. Therefore, in addition to plaque control, smoking prevention and the teaching of stress-coping skills may be important interventions for promoting adolescents' gingival health
3. Ayo-Yussuf et al.	2009	South Africa	8th grade 774 baseline; of those not consistently brushing twice daily 578 were followed after 18 months	Sociodemographic, depression, smoking, dental treatment, SOC, tooth brush motivation	SOC, living with mother, smoking, being depressed vulnerable were associated with the transition to twice daily tooth brushing
4. Ayo-Yussuf et al.	2013	South Africa	1st wave- 13–15 years; 2nd wave after 6 months.; 3rd wave after 1.5 years	SOC, exposure to household smoke	Lower SOC related to use of alcohol and binge drinking at base line; higher SOC linked to more commitment to stay smoke free. SOC better predictor than self-efficacy
5. Baker et al.	2010	Malaysia	439 12 and 13 years	SOC, self-esteem, health locus of control, parents' income and education, oral health status	SOC the most important psychosocial factor for oral health status, better health perception and functioning as well as quality of life
6. Bauminger et al.	2008	Israel	196 12–15 years	SOC, self-disclosure, intimacy, attachment style	SOC, self-disclosure and attachment style predicted intimacy. Self-disclosure predicted intimacy especially at low levels of SOC. While SOC and disclosure had direct effect on intimacy, avoidant and anxious attachment had indirect effect via SOC and disclosure
7. Blom et al.	2010	Sweden	66 nonclinical females (15.9–17.7) 73 clinical f (14.5–18.4)	SOC, anxiety, depression, self-assessed health, physiological parameters, emotional scales	The SOC scale did not appear to be a measure of a distinct salutogenic construct, but an inverse measure of persistent depressive symptoms and generalized social anxiety similar to the diagnostic criteria for major depressive disorder (MDD), dysthymic disorder, generalized anxiety disorder (GAD) or generalized social anxiety disorder (SAD) according to DSM-IV
8. Braun-Lewensohn et al.	2010	Israel	114 (2006); 83 (2009) 12–18 years	SOC, hope, values	SOC, hope, and values decreased following years of political violence
9. Braun-Lewensohn et al.	2011	Israel	230 12–18 years	Anxiety, anger, SPD, SOC, exposure, demographics	SOC mediated the relationships between exposure to missile attacks and stress reactions
10. Braun-Lewensohn et al.	2011	Israel	1609 12–18 years Jews, Druze, Muslims after bush-fire	Personal and community SOC, anxiety, anger, SPD	Personal SOC stronger among majority (Jews); predicted stress in all groups; community SOC strongest among Druze predicted stress only for Druze

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Table 14.1 (continued)

Author	Year	Place	Population	Variables	Results
11. Braun-Lewensohn et al.	2011	Israel	12–18 years	Anxiety, anger, SPD, cognitive appraisal, coping strategies, SOC	SOC was the strongest direct and indirect predictor of stress. Found to be important also in acute stress situation
12. Braun-Lewensohn et al.	2011	Israel	12–18 years Jews—138, Bedouin-Arabs-84 during missile attacks	Anxiety, anger, SPD, SOC, hope	SOC higher among Jews; anger and collective hope higher among Arabs; SOC explained stress among Jews; Hope among Arabs
13. Braun-Lewensohn et al.	2013	Israel	12–18 years 104 during disengagement from Gaza; 77 3 months after disengagement; 115 5 years after disengagement	Anxiety, anger, SOC, sense of community	Levels of anxiety (but not of anger) dropped after 5 years; SOC decreased at 3 months but recovered at 5 years. SOC was the strongest predictor of stress and best predicted anxiety at 3 months and 5 years
14. Braun-Lewensohn	2013	Israel	12–18 years—A year after a natural disaster of bush fire Jew—413, Druze—356, Muslims—374	Personal and community SOC, anxiety, anger, psychological distress, demographics	The Jewish majority had higher personal SOC compared to minority groups. Community SOC was highest among the collectivist Druze culture. Personal SOC had significant contribution to stress reactions in all cultures. Community SOC had contribution to stress only among Druze
15. Broni-kowski	2010	Poland	38 boys and 33 girls—experimental group; 34 boys and 32 girls control (13 years)	SOC, physical fitness, body constituency, frequency of leisure-time physical activity	Boys and girls from intervention groups maintained high level of leisure-time physical activity after the program. No distinctive differences were found in case of body constituency between experimental and control groups except for muscle mass and sum of skinfolds in girls. In sense of coherence, gradual increase was noticed from pretest to follow up in experimental boys, whereas in girls it was increased at posttest but later at follow-up it dropped. In control groups, level of coherence was declining during the whole duration of the study. Confirm effectiveness of a multilevel intervention designed to increase sense of coherence and promote self-responsibility in health-related lifestyle
16. Broni-kowski et al.	2009	Poland	199 13-year boys: experimental vs. nonexperimental group	SOC, cardiorespiratory fitness, physical activity. Intervention: physical education program for responsibility of physical activity	Only experimental group improved SOC and cardiorespiratory fitness
17. Dorri et al.	2010	Iran	1054 6th graders	Sociodemographic, tooth brushing, SOC	Higher SOC more tooth brushing, regardless gender and father's education; boys stronger SOC than girls
18. Edbom et al.	2010	Sweden	312 twins 16 and 21 years	ADHD, SOC (longitudinal)	High SOC protective of ADHD
19. Evans et al.	2010	USA	1619 8th and 10th grade	SOC, protection and risk factors, gender	Multiple ecological domains are useful for understanding SOC

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Table 14.1 (continued)

Author	Year	Place	Population	Variables	Results
20. Feldt et al.	2005	Finland	202 8, 9, 14, 27, 36, and 42 years longitudinal	Child-centered parenting, parental SES, school success in adolescence, education, career stability, adult SOC	Child-centered parenting, high parental SES, school success at 14 years were indirectly associated with SOC via education and career stability
21. Fried et al.	2010	Israel	1069 16–19 years	Gamboling, temperament, SOC, exposure to advertising, emotionality, activity, sociability	No relationships between SOC and gamboling behavior or problems
22. García-Moya et al.	2012	Spain	7580 13–18 years	Family dimensions, gender, age, SOC	No gender difference on SOC; younger adolescents—higher SOC; family var. (easy communication and parental knowledge) accounted for 18 % of SOC
23. García-Moya et al.	2013	Spain	7580 13–18 years	Health behavior, school factors, SOC	Supportive school climate and SOC are relevant to adolescent health; SOC most significant in predicting school demands stress. High SOC students reported less school stress
24. García-Moya et al.	2013	Spain	5475 15–18 years	SOC, alcohol consumption, tobacco use, life time drunkenness	Higher SOC linked to reduced involvement in tobacco use and drunkenness. It was not associated with current drinking. SOC had effect on most groups but not on those who consume illegal drugs
25. García-Moya et al.	2013	Spain	4943 13–18 years	SOC, parent–child relationships, teacher and classmates support, behavior in peer group, neighborhood assets	Parent–child relationships emerged as the main contributor to SOC in all sample; also the other contextual factors had significant contribution to SOC
26. García-Moya et al.	2013	Spain	7580 13–18 years	SOC, neighborhood risk and assets	Neighborhood risks were negatively associated with SOC; neighborhood assets especially relationships with significant adults positively associated with SOC
27. Gauffin et al.	2010	Sweden	97 epilepsy 13–22 1st wave, 18–27 2nd wave	Self-esteem, SOC, medical condition	SOC and self-esteem decreased in the 2nd wave; those who were free of seizures had higher SOC; no association between seizure frequency and SOC
28. Geckova et al.	2010	Slovak	1992 14–23 years—secondary schools	SES, school factors, perceived social support, SOC, health	Association between: educational aspiration, parental education level, father unemployment, school atmosphere, attitudes toward school, social support from father and SOC; SOC contributes to reporting of educational aspiration to all students
29. Glanz et al.	2005	USA	3438 7th grade	Ethnicity, SOC, tobacco use	Ethnic differences in smoking; higher SOC lower risk for smoking in all groups
30. Gustafsson et al.	2010	Sweden	15 adolescents exposed to child abuse	SOC, externalizing, internalizing symptoms, trauma symptoms	SOC correlated mostly to externalizing and internalizing symptoms but not to trauma symptoms

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Table 14.1 (continued)

Author	Year	Place	Population	Variables	Results
31. Hagquist et al.	2004	Sweden	889 18 years	SOC	The questionnaire could separate the adolescents from general population. The SOC scale should be dealt with as a measure of one global factor
32. Hansson et al.	2004	Sweden	186 (around 14–15 at intake) adolescents with conduct disorder and juvenile delinquency (at least 20 at follow-up after intervention)	SOC, life satisfaction, symptoms checklist, antisocial behavior, global functioning, social functioning, social belonging	SOC is low at follow-up and symptoms are higher compare to regular population
33. Honkinen et al.	2008	Finland	846 15 years. 792 at follow-up 18 years	SOC	Overall, there were no changes in SOC scores in the entire sample
34. Honkinen et al.	2009	Finland	12, 15, 18 years longitudinal 15 years follow-up	Psychological symptoms in childhood, SOC in adolescence	Destructive behavior at 3 years, attention problems at 12 years, anxiety delinquency, somatization at 15 years predicted poor SOC at 18 years; problems reported by adolescents explained better poor SOC than problems reported by parents
35. Honkinen et al.	2005	Finland	1231 12 years	Health behavior, SOC, school marks	Physical exercise most strongly associated with health; SOC and social support also associated with health
36. Idan et al.	2013	Israel	856 10th–12th grade 529 achieving students; 327 LD students	SOC, psychological needs, loneliness, family climate, hope, academic and self-efficacy, effort, grades	SOC positively correlated: competence/autonomy, relatedness, self-efficacy, family cohesion, hope, effort. Negatively correlated: loneliness. SOC contributed to psychological processes of all students
37. Jaakkola et al.	2013	Finland	777 18 years old	SOC, dental fear-anxiety, gender, education	High fear lower SOC also when controlling for gender and education
38. Koushede et al.	2009	Denmark	1393 7th–9th grade	Demographics, medicine use, psychosocial aspects, SOC	More medicine use linked to lower SOC; frequency of headaches modifies association between SOC and medicine use
39. Kopusov et al.	2003	Russia	14–19 years court ordered juvenile detention center	Exposure to community violence, SOC, psycho pathology, problem behavior	SOC partially mediated victimization and psychopathology. Higher SOC potentially reduced psychopathology
40. Kristensson et al.	2005	Sweden	253 16–21 years	SOC, coping resources, aggression teacher evaluation, school marks, gender, age	SOC and coping resources positively correlated with school marks; aggression negatively correlated with school marks; females higher on coping resources but lower on SOC and aggression
41. Kroninger-Jungaberle et al.	2013	Germany	155 16 years and 19 years (longitudinal)	SOC, self-efficacy, mental health symptoms	SOC and self-efficacy predicted negative symptoms at 16 years and at 19 years. Resilience and symptoms at time 1 predicted resilience and symptoms at time 2. SOC at age 16 predicted mental health at 19. SOC is already stable at adolescence

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Author	Year	Place	Population	Variables	Results
42. Lackaye et al.	2006	Israel	571 7th grade with and without LD	Grades from school records, gender, age, leisure activity, satisfaction from these activities, academic help school or private, diagnosed LD, effort, academic self-efficacy, loneliness, mood, SOC, hope	Achievement, academic self-efficacy, negative mood, hope and SOC predicted effort investment for students with LD. The importance of SOC and hope in this context is highlighted
43. Levi et al.	2013	Israel	289 10th grade students	SOC, hope, academic expectations, grades, self-efficacy	SOC and emotional self-efficacy contributed to hope which in turn had a significant effect on grade expectation that predict academic achievement
44. Luyckx et al.	2012	Belgium	380 14–18 years (other older groups)	SOC, heart disease	Adolescents' SOC lower than young employed adults; heart disease correlated higher SOC
45. Mattila et al.	2011	Finland	15 years	SOC, QoL, health behavior, social competence	Higher SOC related to lighter use of alcohol, no smokers, better oral care, and better social competence
46. Modin et al.	2011	Sweden	7930 9th graders	Subjective health, school working conditions, school SOC	High levels of control and a strong school-related sense of coherence can protect against the more detrimental effects on health that high demands at school may cause
47. Marsh et al.	2007	USA	1619 middle school	SOC, risk and protective factors	Social support, anger expression, family conflict, neighborhood cohesion all were predictors of SOC; gang membership predictor of SOC for boys; age predictor of SOC for girls
48. Myrin et al.	2008	Sweden	383 14–15 years	SOC, psychosocial factors	Girls negative outcomes on psychosocial factors: depression, life satisfaction, worries about family member, poor psychosomatic health; all these related to low SOC
49. Myrin et al.	2006	Sweden	383 14–15 years	Socioeconomic, SOC, health behavior—tobacco use, alcohol consumption, eating habits	SOC lower among girls; Low SOC girls have more health behavior problems; high SES with low SOC adolescents related to
50. Moksnes et al.	2013	Norway	1183 13–18 years	Stress, SOC, emotional symptoms	Girls higher on: stress, peer pressure, home life, school performance, school leisure, conflict, emotional symptoms; boys higher on SOC; SOC moderated the association between stress-related peer pressure and depression symptoms for both genders
51. Moksnes et al.	2011	Norway	1183 13–18 years	Stress, subjective health complaints, SOC, peer pressure, home life, school attendance	Girls higher stress than boys; boys higher SOC than girls; SOC inversely related to health complaints and stress; peer pressure, home life, and school attendance higher stress. No moderation of SOC
52. Moksnes et al.	2012	Norway	1209 13–18 years	Depression, anxiety, SOC, gender, age	Girls more anxious and depressed; boys higher SOC; Higher SOC less anxiety and depression—the association is stronger for girls

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Table 14.1 (continued)

Author	Year	Place	Population	Variables	Results
53. Nilsson et al.	2007	Sweden	4305 16 and 19 years	SOC, alcohol-related behavior problems, alcohol intoxication, alcohol consumption	SOC and alcohol intoxication were related to alcohol problems. SOC despite intoxication protect from alcohol-related problems
54. Nielsen et al.	2007	Denmark	3258 13–18 years	SOC, health reported by teachers and school doctor (illness symptoms), stress	SOC and stress were associated with health; girls who report low SOC and exposure to stress had more illness symptoms; this diminished in high SOC girls
55. Nio et al.	2010	Japan	12–18 years cardiac disease = 534; healthy = 406	SOC, disease, background factors	Boys had higher SOC than girls; sick adolescents higher SOC than healthy; lower on illness condition scale higher on SOC
56. Neuner et al.	2011	Germany	770 14–17 years longitudinal	SOC, QoL, heart defects, well-being, self-esteem	SOC correlated with all QoL, well-being scales in both times. The strength of the relationships differed
57. Peled et al.	2013	Israel	284 12–18 years	Anger, hope, type of community, community perceptions based on personal SOC components	Type of community and community perceptions explained anger and hope
58. Ristkari et al.	2009	Finland	2314 boys 18 years	Psychopathology, teachers and parents reports, self-report, depression, SOC	Low parental level of education (at age 8) and non-two biological parents at home predicted lower SOC; internalizing symptoms at 8 years (parents report) and depression symptoms at 8 years (self-report) predicted lower SOC; comorbidity of internalizing and conduct problems had strongest association with low SOC
59. Sagy et al.	2009	Israel	303 Northern- acute stress; 114 South—chronic stress 12–18 years	Anxiety, SPD, SOC, family SOC, sense of community	Higher anxiety in acute stress group; higher SPD in chronic stress group; SOC and family SOC had better predictive power in chronic stress group (political violence)
60. Simonsson et al.	2008	Sweden	3998 16 and 19 years	Psychosomatic complaints SOC	Correlations between psychosomatic symptoms and SOC. Weak SOC higher symptoms
61. Sollerhed	2005	Sweden	301 16–19 years	SOC, attitudes to physical education, exercise in leisure time, GPA, PE grade, subjective health, feeling in school, allocated time to PE	Variables related to attitudes to PE: strong SOC, high physical capacity, high leisure time, physical activity, high grades in PE, and little time spent watching TV. Variables related to strong SOC: positive attitudes to PE, high grades in PE, very good subjective health, and feeling comfortable in school
62. Togari et al.	2012	Japan	1505 adolescents 989 legal guardians	Adolescents: SOC, positive life experience at home. Guardians: SOC, family relations	Boys: mothers' SOC directly related to boys' SOC regardless family relations and participation in decisions at homes; Girls: mothers' SOC indirectly related to girls' SOC through participation in decision making at home

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Table 14.1 (continued)

Author	Year	Place	Population	Variables	Results
63. Wang et al.	2012	Australia	119 12–20 years with heart disease	Anxiety, depression, optimism, social support, SOC	Relatively high anxiety and depression; optimism, social support and SOC predicted anxiety, and depression (in this order)
64. Winding	2013	Denmark	3058 14–15 years	SOC, school performance, health, vulnerability	Low grades when completing compulsory school predicted not having completed a secondary education by age 20/21. Low sense of coherence in childhood was associated with dropping out from a vocational education. Low general health status was associated with dropping out or never attaining a secondary education and overweight was associated with never attaining a secondary education
65. Woolley	2006	USA	2099 middle and high school students	School safety, teacher's support, neighborhood satisfaction and safety, neighborhood peer culture, family satisfaction, family integration, family support, home academic culture, problem behavior, school coherence, academic performance	Family with cooperative and supportive interactions such as work together to solve problems, provide each other with loving support, talk about things youth study in school, and encourage youth to do well in school contribute to stronger school coherence is strongest among their youth. Also teacher's support is an important factor for school coherence
66. Zimprich et al.	2006	Switzerland	1107 7th–9th graders	Examination of the factorial structure of SOC 13	For both younger and older adolescents two factors emerged: one factor reflected manageability and comprehensibility and the other reflected meaningfulness

Box 1: Coping Strategies as Mediators of the Relationship Between Sense of Coherence and Stress Reactions: Israeli Adolescents Under Missile Attacks

Orna Braun-Lewensohn, Shifra Sagy, Guy Roth—Anxiety, Stress & Coping, 24(3), 327–341: 2011.

Studies on adolescents have indicated that during adolescence SOC may play a protective role similar to that of the mature adult SOC (e.g., Braun-Lewensohn & Sagy, 2010). However, in several studies conducted during acute stress situations (such as wars, terror, and evacuations), SOC was found weaker effect of explanation of the variance of stress reactions than in chronic stress situations (e.g., Sagy & Braun-Lewensohn, 2009). Thus, the present study sought to explore the contribution of SOC in an acute stress situation by trying to find other mediating factors

which could explain the outcomes of stress reactions. Employing the interactionist cognitive approach (Lazarus & Folkman, 1984), we considered two variables that could be significant in mediating the relationship between the personal SOC and stress reactions: cognitive appraisal and coping strategies. The importance of this study is in its being a field research carried out in the midst of the stressful situation of war and severe missile attacks. Although previous studies indicated SOC as a weak factor in explaining stress reactions during acute stressful situations, the present study highlights the possibility that, through the mediating process of coping strategies, SOC could still have high explanatory effect on stress reactions not only in chronic states. The results of this study have drawn attention to the importance of SOC as a resilience factor during an acute stressful situation.

Other demographic characteristics, apart from age, have significant roles in the determination of the SOC levels. Gender differences were examined, and many studies showed that the SOC scores of boys were higher than the scores of girls (Apres et al., 2013; Dorri, Sheiham, Hardy, & Watt, 2010; Evans, Marsh, & Weigel, 2010; Kristensson & Öhlund, 2005; Moksnes, Rannestad, Byrne, & Espnes, 2011; Moksnes et al., 2012; Nio, 2010). In addition, socioeconomic status plays an important role in the SOC prediction. Thus, higher levels of parents' education (Feldt, Kokko, Kinnunen, & Pulkkinen, 2005; Geckova, Tavel, van Dijk, Abel, & Reijneveld, 2010; Ristkari et al., 2009), higher economic status (Geckova et al., 2010), and living with two parents (Ayo-Yusuf, Reddy, & Van Den Borne, 2009) have been important indicators of stronger SOC. Lastly, membership in a minority group in different cultures around the world predicted lower SOC than the majority counterparts members (Braun-Lewensohn, 2014; Braun-Lewensohn & Sagy, 2011a, 2011b; Glanz, Gertraud, & Carlin, 2005).

SOC, Health, Mental Health, and Psychosocial Behavior

Examining the various studies, we found that the relations of health, mental health, and psychosocial behaviors with SOC were explored. More specifically, researchers investigated the SOC as a predictor of health outcomes, mental health, and diverse health promoting behaviors during adolescence.

Several studies examined the relations between the SOC and general health. They reported that higher SOC has been related to a better perceived health while lower SOC was related to greater amounts of medication usage. Moreover, SOC was negatively related to reported health problems (Blom, Serlachius, Larsson, Theorell, & Ingvar, 2010; García-Moya et al., 2013; Geckova et al., 2010; Honkinen, Suominen, Välimaa, Helenius, & Rautava, 2005; Koushede & Holstein, 2009; Mattila et al., 2011; Modin, Östberg, Toivanen, & Sundell, 2011; Myrin & Lagerström, 2006; Moksnes et al., 2011).

Other examinations related to health focused on groups with specific health problems. For example, surprisingly, adolescents with heart problems were found to have higher SOC compared to healthy adolescents. These results were explained by the fact that youngsters with such chronic disease have learned to cope with their problem which increased their manageability, besides having high existential implications that increases their meaningfulness. Moreover, a supportive home environment experienced by these adolescents emphasize specific life events as being more comprehensible, manageable, and meaningful hence, nurtured feelings of SOC (Luyckx, Missotten, Goossens, & Moons, 2012). More expected results were found for

adolescents with epilepsy where decreased SOC was found in the long run, reflecting the experience of losing control during seizures and difficulty in assessing when to expect the next seizure. Following this line, those adolescents with no seizures had higher SOC (Gauffin, Landtblom, & Rätty, 2010).

Mental health has been the focus of numerous studies that examined diverse outcomes. Stress-related outcomes such as anxiety, anger, depression, psychological distress, and other emotional and internalizing or externalizing problems were examined in the context of political violence (Braun-Lewensohn & Sagy, 2011a, 2011b, 2010; Braun-Lewensohn & Sagy, 2010; Sagy & Braun-Lewensohn, 2009) and with regard to challenging and extreme life events such as child abuse (Gustafsson et al., 2010) or juvenile delinquency (Koposov et al., 2003). However, adolescents were also examined during regular daily life with 'normal' life stressors, such as academic, school, or peer pressure as well as family conflicts (Moksnes et al., 2012; Moksnes, Espnes, & Haugan, 2013; Nielsen & Hansson, 2007; Ristkari et al., 2009; Simonsson, Nilsson, Leppert, & Diwan, 2008). All these studies confirm that the SOC can be considered a resilient factor. It can be concluded that a strong SOC predicts reduced stress and decreased internalizing or/and externalizing problems.

Moreover, examining the relationships of SOC with psychosocial behaviors even strengthens the consideration of SOC as a resilient factor. Accordingly, results of various studies showed that adolescents with higher SOC reported a more healthy life style, a better quality of life, and well-being (Honkinen et al., 2009; Neuner et al., 2011). The healthy lifestyle related on one hand to physical activities and exercises (Bronikowski, 2010) and on the other hand to smoking habits, alcohol abuse (García-Moya et al., 2013, 2013a; Myrin & Lagerström, 2006; Nielsen & Hansson, 2007), and eating habits (Myrin & Lagerström, 2006). Similarly, the relations between SOC and oral behavior were reported. Higher SOC was linked to lower gingivitis, more willingness to change tooth brush habits, and especially increased tooth brushing (e.g., Ayo-Yusuf, Reddy, & Van Den Borne, 2008, 2009; Dorri et al., 2010).

Ecological Contexts: Family, School, Peers, and Community

Ecological contexts (Bronfenbrenner, 1977, 1979; Bronfenbrenner & Morris, 2006) extend the consideration from a focus on personal levels to awareness and sensitization to contextual characteristics and systemic consideration such as the families, schools, and communities. Several, family-related factors were examined in relation to SOC. For example, open family communication (García-Moya

et al., 2013; Marsh et al., 2007) focused parenting style (García-Moya et al., 2013) and parents' knowledge regarding their children activities (García-Moya et al., 2013) were considered positive contributors to the development of a strong SOC. In addition, child-centered parenting during adolescence (examined within a longitudinal paradigm) predicted a stronger SOC at adulthood (Feldt et al., 2005).

In addition to examining family contexts and factors which could enhance or reduce personal SOC, few studies also related to family sense of coherence as another source to rely on when facing difficulties and/or stressful situations. Likewise, the personal SOC it was found that also family SOC is a resilient factor, and adolescents with stronger family SOC reported reduced stress (Sagy & Braun-Lewensohn, 2009; Sagy & Dotan, 2001).

Another important ecological system is the school. While the family dimension produced mainly studies that pinpointed attention at the contribution of family characteristics to the development of SOC, studies of schools focused attention on outcomes, examining the adolescents' achievement and adjustment, and their relationship to SOC as a mediation factor. Within the educational systems, a stronger SOC predicted high grades, enhanced academic motivation, and success. A lower stress levels were also reported as related to stronger SOC (Honkinen et al., 2005; Kristensson & Öhlund, 2005; Lackaye & Margalit, 2006). Moreover, stronger SOC was linked to social competence (Mattila et al., 2011; Moksnes et al., 2011).

The school system provides a unique opportunity to look at special populations with regard to SOC. Adolescents with learning disabilities are an additional example to the importance of the SOC (Idan & Margalit, 2014; Lackaye & Margalit, 2006). These youngsters are identified by their chronic academic challenges emerging from neurodevelopmental difficulties. Their difficulties at school systems remain a continuous source for increased stress, endless day-to-day struggling with age-appropriate academic roles, and with social and emotional consequences. Indeed, their sources of stress are not dramatic, but their chronic impact are expressed in lower SOC. Studies placed the SOC as a mediator of hopeful thinking, predicting adjustment and effort investment in school. The adolescents' systems, such as families, schools and communities, may further clarify the important role of the SOC and the factors that predict its development.

The focus on peer relations and community atmosphere produced studies which explored these factors as predictors to SOC development. An additional group of studies explored SOC as a collective construct contributing to the mental health of adolescents. Exploring SOC as dependent variable, it seems that social support (Marsh et al., 2007) neighborhood or community cohesion (García-Moya et al.,

2013; Marsh et al., 2007; Peled, Sagy, & Braun-Lewensohn, 2013) and success in school (García-Moya et al., 2013) are all constructive in the development of strong SOC.

In a different vein, and as an experience to expand SOC from personal to collective level an adjusted instrument, sense of community coherence, that includes Antonovsky's components of personal SOC—comprehensibility, manageability, and meaningfulness (Braun-Lewensohn, 2014; Braun-Lewensohn & Sagy, 2011b; Peled et al., 2013) was developed. Comprehensibility refers to the sense of predictability, safety, and security felt by members of the community and the extent to which that community is understandable. A community's manageability expresses its ability to assist its members, via treatment providers and group programs, among others, in times of crisis and distress. Lastly, the higher the level of meaningfulness among the members of a community, the more able they are to express themselves and the greater the likelihood that they will feel satisfied with and challenged and interested by what the community has to offer them (Braun-Lewensohn & Sagy, 2011b; Sagy & Dotan, 2001). Recent studies showed that indeed sense of community coherence is another source of support to effective coping during adolescence when facing acute or chronic types of stress especially among collectivist cultures (Braun-Lewensohn, 2014; Braun-Lewensohn & Sagy, 2011a, 2011b; Peled et al., 2013).

Conclusions, Implications, and Future Research Directions

This chapter focused on sense of coherence and salutogenesis during the developmental period of adolescence. As noted earlier in this chapter, the uniqueness of this developmental stage is the many challenges and changes which individuals are going through during these years. While in many ways the adolescents appear to function similar to adults, there are numerous cognitive, biological, and behavioral processes which are being formed and shaped during these years in the paths to maturity and normative adulthood.

A recent review on salutogenesis and the concept of SOC examined the influence of different factors such as gender and age as well as different developmental contexts (family, school, peers, and neighborhood) on the development of SOC (Rivera et al., 2013). In our current review, we extended conceptualization and research results regarding SOC during this important developmental period of adolescence within a different orientation. Mainly we addressed the way in which the SOC questionnaire was adopted to fit adolescent populations, as well as, the clarifying ways how SOC is linked to different health, mental health, and psychosocial behavior in different ecological contexts. We

conclude that the review of studies from around the world in the last decade demonstrated that personal and systemic (i.e., family and community) SOC are meaningful resources for effective coping with a wide variety of stressful situations. The survey of the studies shows that the SOC may be considered as a protective factor for adolescents in different cultures. During adolescence, the SOC may contribute to moderating and mediating stress experiences and may also play a protective role similar to that of the mature adult SOC.

The educational and community implications of the current consideration of the SOC as a critical resource, calls for the sensitizing educators and community workers to the importance of the salutogenic construct. Future empowering programs should be guided by this construct, leading to the development of prevention/inoculation to stress planning as well as programs promoting positive psychosocial and healthy behaviors and academic success.

Our review raises several directions for future research in the field of salutogenesis and sense of coherence during adolescence. In spite of the many studies that have been conducted and published in the last decades and the important developments in this field, there are still some venues that have been neglected. First, the role of family coherence as a protective factor for health and mental health as well as relationships with success in school and other psychosocial behaviors should be further explored. Moreover, non-Western cultural groups were less studied in this context. When studied, some questions regarding the universality of the concept of SOC were raised (Braun-Lewensohn & Sagy, 2011a, 2011b). Thus, it seems important to further examine this issue. We should focus on the meanings of sense of coherence in such cultures as well as the understanding of the questionnaire and the implication of SOC in such societies.

Box 2: Coping Resources and Stress Reactions Among Three Cultural Groups One Year After a Natural Disaster

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A year after a huge bush fire, adolescents from three cultures—Jews, Muslims, and Druze—located in the Carmel district (the area of the fire) were asked to report their personal and community sense of coherence (SOC) as well as their stress reactions of anxiety, anger, and psychological distress. We wanted to examine Antonovsky's conviction (1987) that sense of coherence (SOC) is a cross-cultural concept by comparing adolescents belonging to the majority group, an

individualistic culture (Jews), to members of two minority groups which are collectivistic cultures (Muslim and Druze), in terms of personal and community SOC as well as on stress reactions. We also wanted to determine whether the coping resources explained similarly or differently the stress reactions which were examined. Results show that although levels of personal SOC varied significantly across the groups, with the majority group having the strongest sense of coherence, personal SOC had a strong protective effect against stress reactions in all groups. Community SOC, in turn, had a protective effect only for members of collectivist culture. We can cautiously conclude, therefore, that it may be possible for different cultures to have their own, culturally relevant translations for SOC so that it becomes a meaningful protective factor when confronting stressful situations.

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References

- Aldwin, C. M. (1994). *Stress, coping, and development: An integrative perspective*. New York: Guilford Press.
- Antonovsky, A. (1987). *Unraveling the mystery of health: How people manage stress and stay well*. San Francisco: Jossey-Bass.
- Ayo-Yusuf, O. A., Reddy, P. S., & Van Den Borne, B. W. (2008). Adolescents' sense of coherence and smoking as longitudinal predictors of self-reported gingivitis. *Journal of Clinical Periodontology*, 35(11), 931–937.
- Antonovsky, A. (1993). The structure and properties of the sense of coherence scale. *Social science & medicine*, 36(6), 725–733.
- Antonovsky, H., & Sagy, S. (1986). The development of a sense of coherence and its impact on responses to stress situations. *Journal of Social Psychology*, 126(2), 213–226.
- Apers, S., Moons, P., Goossens, E., Luyckx, K., Gewillig, M., Bogaerts, K., et al. (2013). Sense of coherence and perceived physical health explain the better quality of life in adolescents with congenital heart disease. *European Journal of Cardiovascular Nursing*, 12(5), 475–483.
- Ayo-Yusuf, O. A., Reddy, P. S., & Van Den Borne, B. W. (2009). Longitudinal association of adolescents' sense of coherence with tooth-brushing using an integrated behaviour change model. *Community Dentistry and Oral Epidemiology*, 37(1), 68–77.

- Blakemore, S. -J., & Mills, K. L. (2014). Is adolescence a sensitive period for sociocultural processing? *Annual Review of Psychology*, 65(1), 187–207. doi:10.1146/annurev-psych-010213-115202
- Blom, E. C. H., Serlachius, E., Larsson, J. O., Theorell, T., & Ingvar, M. (2010). Research low sense of coherence (SOC) is a mirror of general anxiety and persistent depressive symptoms in adolescent girls—a cross-sectional study of a clinical and a non-clinical cohort. *Health and Quality of Life Outcomes*, 8, 58.
- Braun-Lewensohn, O. (2014). Coping resources and stress reactions among three cultural groups one year after a natural disaster. *Clinical Social Work Journal*, 42, 366–374.
- Braun-Lewensohn, O., & Sagy, S. (2010). Sense of coherence, hope and values among adolescents under missile attacks: A longitudinal study. *International Journal of Children's Spirituality*, 15(3), 247–260.
- Braun-Lewensohn, O., Sagy, S., Sabato, H. & Galili, R. (2013). Sense of coherence and sense of community as coping resources of religious adolescents before and after the disengagement from the Gaza Strip. *Israeli Journal of Psychiatry and Related Sciences*, 50(2), 110–117.
- Braun-Lewensohn, O., & Sagy, S. (2011a). Salutogenesis and culture: Personal and community sense of coherence among adolescents belonging to three different cultural groups. *International Review of Psychiatry*, 23(6), 533–541.
- Braun-Lewensohn, O., & Sagy, S. (2011b). Coping resources as explanatory factors of stress reactions during missile attacks: Comparing Jewish and Arab adolescents in Israel. *Community Mental Health Journal*, 47(3), 300–310.
- Bronfenbrenner, U. (1977). Toward an experimental ecology of human development. *American Psychologist*, 32(7), 513.
- Bronfenbrenner, U. (1979). Contexts of child rearing: Problems and prospects. *American Psychologist*, 34(10), 844.
- Bronfenbrenner, U., & Morris, P. A. (2006). The bioecological model of human development. In R. M. L. W. Damon (Ed.), *Handbook of child psychology: Vol. 1, Theoretical models of human development* (6th ed., pp. 793–828). Hoboken, NJ: Wiley.
- Bronikowski, M. (2010). Is sense of coherence needed to keep youth physically active? *MEDICINA DELLO SPORT*, 63(4), 465–483.
- Buddeberg-Fischer, B., Klaghofer, R., & Schnyder, U. (2001). Sense of coherence in adolescents. *Social and Preventive Medicine*, 46(6), 404–410.
- Casey, B. J., & Caudle, K. (2013). The teenage brain: Self control. *Current directions in psychological science*, 22(2), 82–87.
- Damon, W. (2004). What is positive youth development. *Annals of the American Academy of Political and Social Science*, 591, 13–30.
- Dorri, M., Sheiham, A., Hardy, R., & Watt, R. (2010). The relationship between Sense of Coherence and toothbrushing behaviours in Iranian adolescents in Mashhad. *Journal of Clinical Periodontology*, 37(1), 46–52.
- Eriksson, M. (2007). *Unravelling the mystery of salutogenesis: the evidence base of the salutogenic research as measured by Antonovsky's Sense of Coherence Scale*. Turku, Finland: Folkhälsan Research Centre.
- Evans, W. P., Marsh, S. C., & Weigel, D. J. (2010). Promoting adolescent sense of coherence: Testing models of risk, protection, and resiliency. *Journal of Community & Applied Social Psychology*, 20(1), 30–43.
- Feldt, T., Kokko, K., Kinnunen, U., & Pulkkinen, L. (2005). The role of family background, school success, and career orientation in the development of sense of coherence. *European Psychologist*, 10(4), 298–308.
- García-Moya, I., Jiménez-Iglesias, A., & Moreno, C. (2013). Sense of coherence and substance use in Spanish adolescents. Does the effect of SOC depend on patterns of substance use in their peer group? *Adicciones*, 25(2), 109.
- García-Moya, I., Moreno, C., & Braun-Lewensohn, O. (2013). Neighbourhood perceptions and sense of coherence in adolescence. *The Journal of Primary Prevention*, 34(5), 371–379.
- García-Moya, I., Moreno, C., & Jiménez-Iglesias, A. (2013). Understanding the joint effects of family and other developmental contexts on the sense of coherence (SOC): A person-focused analysis using the classification tree. *Journal of Adolescence*, 36(5), 913–923.
- García-Moya, I., Rivera, F., & Moreno, C. (2013). School context and health in adolescence: The role of sense of coherence. *Scandinavian Journal of Psychology*, 54(3), 243–249.
- Garnefski, N., Kraaij, V., & Spinhoven, P. (2001). Negative life events, cognitive emotion regulation and emotional problems. *Personality and Individual Differences*, 30(8), 1311–1327.
- Gauffin, H., Landtblom, A. M., & Rätty, L. (2010). Self-esteem and sense of coherence in young people with uncomplicated epilepsy: A 5-year follow-up. *Epilepsy & Behavior*, 17(4), 520–524.
- Geckova, A. M., Tavel, P., van Dijk, J., Abel, T., & Reijneveld, S. (2010). Factors associated with educational aspirations among adolescents: Cues to counteract socioeconomic differences? *BMC Public Health*, 10(1), 154.
- Glanz, K., Gertraud, M., & Carlin, L. (2005). Ethnicity, sense of coherence, and tobacco use among adolescents. *Annals of Behavioral Medicine*, 29(3), 192–199.
- Gustafsson, P. E., Nelson, N., & Gustafsson, P. A. (2010). Diurnal cortisol levels, psychiatric symptoms and sense of coherence in abused adolescents. *Nordic Journal of Psychiatry*, 64(1), 27–31.
- Hagquist, C., & Andrich, D. (2004). Is the sense of coherence-instrument applicable on adolescents? A latent trait analysis using Rasch-modelling. *Personality and Individual Differences*, 36(4), 955–968.
- Honkinen, P. L., Aromaa, M., Suominen, S., Rautava, P., Sourander, A., Helenius, H., et al. (2009). Early childhood psychological problems predict a poor sense of coherence in adolescents a 15-year follow-up study. *Journal of Health Psychology*, 14(4), 587–600.
- Honkinen, P. L., Suominen, S., Helenius, H., Aromaa, M., Rautava, P., Sourander, A., et al. (2008). Stability of the sense of coherence in adolescence. *International Journal of Adolescent Medicine and Health*, 20, 85–91.
- Honkinen, P. L. K., Suominen, S. B., Välimaa, R. S., Helenius, H. Y., & Rautava, P. T. (2005). Factors associated with perceived health among 12-year-old school children. Relevance of physical exercise and sense of coherence. *Scandinavian Journal of Public Health*, 33(1), 35–41.
- Idan, O., & Margalit, M. (2014). Socioemotional self-perceptions, family climate, and hopeful thinking among students with learning disabilities and typically achieving students from the same classes. *Journal of Learning Disabilities*, 47(2), 136–152.
- Koposov, R. A., Ruchkin, V. V., & Eisemann, M. (2003). Sense of coherence: A mediator between violence exposure and psychopathology in Russian juvenile delinquents. *The Journal of Nervous and Mental Disease*, 191(10), 638–644.
- Koushede, V., & Holstein, B. E. (2009). Sense of coherence and medicine use for headache among adolescents. *Journal of Adolescent Health*, 45(2), 149–155.
- Kristensson, P., & Öhlund, L. S. (2005). Swedish upper secondary school pupils' sense of coherence, coping resources and aggressiveness in relation to educational track and performance. *Scandinavian Journal of Caring Sciences*, 19(1), 77–84.
- Kröninger-Jungaberle, H., & Grevenstein, D. (2013). Development of salutogenetic factors in mental health Antonovsky's sense of coherence and Bandura's self-efficacy related to Derogatis' symptom check list (SCL-90-R). *Health and Quality of Life Outcomes*, 11(1), 1.

- Lackaye, T. D., & Margalit, M. (2006). Comparisons of achievement, effort, and self-perceptions among students with learning disabilities and their peers from different achievement groups. *Journal of Learning Disabilities, 39*(5), 432–446.
- Lazarus, R. S., & Folkman, S. (1984). *Stress, appraisal, and coping*. New York: Springer.
- Lerner, R. M., & Benson, P. I. (2003). *Developmental assets and asset-building communities: Implications for research, policy, and practice*. New York: Kluwer Academic/Plenum.
- Levi, U., Einav, M., Ziv, O., Raskind, I., & Margalit, M. (2014). Academic expectation and actual achievement: The roles of hope and effort. *European Journal of Psychology of Education, 29*(3), 367–386.
- Luyckx, K., Missotten, L., Goossens, E., & Moons, P. (2012). Individual and contextual determinants of quality of life in adolescents with congenital heart disease. *Journal of Adolescent Health, 51*(2), 122–128.
- Marsh, S. C., Clinkinbeard, S. S., Thomas, R. M., & Evans, W. P. (2007). Risk and protective factors predictive of sense of coherence during adolescence. *Journal of Health Psychology, 12*(2), 281–284.
- Mattila, M. L., Rautava, P., Honkinen, P. L., Ojanlatva, A., Jaakkola, S., & Aromaa, M., et al. (2011). Sense of coherence and health behaviour in adolescence. *Acta Paediatrica, 100*(12), 1590–1595.
- Modin, B., Östberg, V., Toivanen, S., & Sundell, K. (2011). Psychosocial working conditions, school sense of coherence and subjective health complaints. A multilevel analysis of ninth grade pupils in the Stockholm area. *Journal of Adolescence, 34*(1), 129–139.
- Moksnes, U. K., Espnes, G. A., & Haugan, G. (2013). Stress, sense of coherence, and emotional symptoms in adolescents. *Psychology & Health, 29*(1), 32–49.
- Moksnes, U. K., Espnes, G. A., & Lillefjell, M. (2012). Sense of coherence and emotional health in adolescents. *Journal of Adolescence, 35*(2), 433–441.
- Moksnes, U. K., Rannestad, T., Byrne, D. G., & Espnes, G. A. (2011). The association between stress, sense of coherence and subjective health complaints in adolescents: Sense of coherence as a potential moderator. *Stress and Health, 27*(3), e157–e165.
- Myrin, B., & Lagerström, M. (2006). Health behaviour and sense of coherence among pupils aged 14–15. *Scandinavian Journal of Caring Sciences, 20*(3), 339–346.
- Neuner, B., Busch, M. A., Singer, S., Moons, P., Wellmann, J., Bauer, U., et al. (2011). Sense of coherence as a predictor of quality of life in adolescents with congenital heart defects: A register-based 1-year follow-up study. *Journal of Developmental & Behavioral Pediatrics, 32*(4), 316–327.
- Nielsen, A. M., & Hansson, K. (2007). Associations between adolescents' health, stress and sense of coherence. *Stress and Health, 23*(5), 331–341.
- Nio, K. (2010). Sense of coherence in adolescents with congenital cardiac disease. *Cardiology in the Young, 20*(5), 538.
- Peled, D., Sagy, S., & Braun-Lewensohn, O. (2013). Community perception as coping resource among adolescents living under rockets fire: A salutogenic approach. *Journal of Community Positive Practices, 4*, 681–702.
- Ristkari, T., Sourander, A., Rønning, J. A., Piha, J., Kumpulainen, K., Tamminen, T., et al. (2009). Childhood psychopathology and sense of coherence at age 18: findings from the Finnish from a boy to a man study. *Social Psychiatry and Psychiatric Epidemiology, 44* (12), 1097–1105.
- Rivera, F., García-Moya, I., Moreno, C., & Ramos, P. (2013). Developmental contexts and sense of coherence in adolescence: A systematic review. *Journal of Health Psychology, 18*(6), 800–812. doi:10.1177/1359105312455077.
- Romeo, R. D. (2013). The teenage brain: The stress response and the adolescent brain. *Current Directions in Psychological Science, 22*, 140–145.
- Sagy, S., & Braun-Lewensohn, O. (2009). Adolescents under rocket fire: When are coping resources significant in reducing emotional distress? *Global Health Promotion, 16*(4), 5–15.
- Sagy, S., & Dotan, N. (2001). Coping resources of maltreated children in the family: A salutogenic approach. *Child Abuse & Neglect, 25* (11), 1463–1480.
- Simonsson, B., Nilsson, K. W., Leppert, J., & Diwan, V. K. (2008). Psychosomatic complaints and sense of coherence among adolescents in a county in Sweden: A cross-sectional school survey. *BioPsychoSocial Medicine, 2*(4), 8.
- Somerville, L. H., Hare, T., & Casey, B. J. (2011). Frontostriatal maturation predicts cognitive control failure to appetitive cues in adolescents. *Journal of Cognitive Neuroscience, 23*, 2123–2134.
- Spear, L. (2013). The teenage brain: Adolescents and alcohol. *Current Directions in Psychological Science, 22*, 152–157.
- Tottenham, N., Hare, T. A., & Casey, B. J. (2011). Behavioral assessment of emotion discrimination, emotion regulation, and cognitive control in childhood, adolescence, and adulthood. *Frontiers in Psychology, 2*, 39. doi:10.3389/fpsyg.2011.00039.