



Salutogenesis: Sense of Coherence in Childhood and Families

15

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Introduction

Infancy and early childhood are distinct developmental periods in which young children differ significantly from older children, adolescents, and adults in terms of cognitive skills, language and communication, self-regulation, and socioemotional functioning (Mowder et al., 2009). The science of early childhood development demonstrates that the foundations for sound mental health are built early in life, as early experiences shape the architecture of the developing brain (Miller & Kinsbourne, 2012). These important experiences include children's relationships with parents, caregivers, relatives, teachers, and peers, which play a critical role in shaping social, emotional, and cognitive development. Recent research indicates that early intervention can have a positive impact on the trajectory of common emotional or behavioral problems as well as on outcomes for children with adversities and disorders (National Scientific Council on the Developing Child, 2012). Adverse experiences early in life, particularly for vulnerable children, have been shown to predict the emergence of later physical and mental health problems (Edwards

et al., 2003). Although mental health challenges for young children share many biological and behavioral characteristics with those of older children and adults, several aspects differentiate early childhood from later developmental stages. First, emotional health for young children is very strongly influenced by their environment and the nature of their relationships and the support or risks these relationships confer. Therefore, it is essential to examine the quality of the children's environments and relationships to tap the risks for adversities and the protective factors that may assist in promoting mental and physical health. Second, cognitive, social, and emotional characteristics are all intertwined within the architecture of the brain, and these capacities vary at different developmental stages. Children understand, manage, think, feel, and talk about their experiences differently at different ages. These developmental differences are important to understanding the behavioral and emotional risks and protective factors involved. Finally, in early childhood, it can be challenging to distinguish temporary deviations in behavior from persistent problems, or typical differences in maturation from developmental delays (Rubin et al., 2006).

From birth, children develop their abilities to experience and express a diverse range of emotions, as well as their capacity to cope with and manage different feelings (Thompson & Lagattuta, 2006). The development of these capabilities occurs at the same time as a wide range of highly visible skills in mobility, cognition, and communication (Thompson, 2001). The foundations of social competence that are developed in the first 5 years are linked to emotional well-being and affect a child's ability to functionally adapt in school later on and form promoting relationships during adolescence and adulthood (Cassidy & Shaver, 1999). Therefore, it is important to address children's affective and cognitive aspects. Failure to address difficulties in the socioemotional domain may result in missed opportunities for interventions at critical periods (National Scientific Council on the Developing Child, 2004).

The emotional experiences of newborns and young infants occur for the most while interacting with their caregivers.

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Associations between positive emotions and the availability of responsive caregivers are strengthened during infancy in both behavior and brain architecture (Cassidy, 1994). Toddlers and preschool children depend on their emerging capacities to interpret their personal experiences and understand what others are doing and thinking, as well as to interpret the distinctions between different responses to them. By the end of the preschool years, children who have acquired emotional regulation skills can use their awareness of their own and others' feelings to interact daily (Thompson & Lagattuta, 2006). Studies on preschool children have shown how the interrelated development of emotion and cognition relies on the emergence, maturation, and interconnection of complex neural circuits in multiple areas of the brain (Davidson et al., 2002). A large-scale study examining a biopsychosocial model of risk and resilience on behavior at pre-adolescence indicated the importance of biological and psychosocial factors, including the SOC, on resilient outcomes and preadolescents' mental health (Agnafors et al., 2017).

Thus, the emotional development of young children is correlated to the characteristics of the environments in which they live, including their families, school, and community (Reid et al., 2002). A Children's Sense of Coherence Scale (CSOC) based on the three components of the SOC construct was developed (Margalit & Efrati, 1995).

Children's Sense of Coherence Scale

The Children's Sense of Coherence Scale (CSOC) (Margalit & Efrati, 1995) is an adaptation of the Antonovsky Orientation to Life (Sense of Coherence—SOC) Scale (Antonovsky, 1987). In line with the sense of coherence construct and the adults' scale, a children's version (CSOC) was developed, field-tested, and revised several times at the Special Education Laboratory in Tel-Aviv University.

Due to the children's young age and reservations regarding the ability of children to comprehend the construct and scale, it was decided to develop a scale that would meet the unique characteristics of the target population. The scale was developed in collaboration with Aaron and Helen Antonovsky. The scale included distractors relating to the children's lives and activities. The CSOC's wording, the order of words, examples, and distractors were examined to ensure the comprehension of young children and the inclusion of age-appropriate content. Since its development, several new versions have been used, such as for junior high school students, omitting the distracter items, for example, "I'm interested in lots of things" and "I'm interested in lots of things in my class" (for school-based research, or "at home"—for family-based research). In general, distractors were coherent with culture.

The children's scale was tested on children of age 5 to adolescents. Comprehension was examined using unstructured interviews; a series of retests verified stability. Conceptually, the items were derived from SOC-29 and the three components of the SOC. This consisted of 16 primary items and 3 filler items on a four-point Likert scale (the range was reduced to 4 from "never" (1) to "always" (4)). Scores ranged from 16 to 64, with items describing the children's feeling of confidence in their world, as expressed in their sense of comprehensibility—understanding their environment (i.e., "I feel that I don't know what to do in class"); sense of manageability—feelings of control, and confidence that when help is needed, it will be available (i.e., "when I want something, I'm sure I'll get it"); and meaningfulness interest in investing efforts in different tasks (i.e., "I'm interested in lots of things") (Alpha = 0.72). Similar to the SOC scoring procedures, a high score reflected a high level of CSOC.

Studies using the CSOC explored children's personal and contextual resources and their ability to perceive family, social, and educational environments as structured and meaningful realities. The following section presents studies that used CSOC.

Studies on SOC During Childhood

A systematic search for studies on children and SOC between the years 2000 and 2019 in online databases (PsychoInfo, Ebsco, Proquest, APApsycnet, SocioFile, SAGE, Web of Science, and PubMed) using keywords (sense of coherence, salutogenesis, children, and family) and Boolean operators, presented 44 studies from 15 countries. Table 15.1 summarizes the studies.

Two major foci emerged from the review of the studies: Children's SOC within the family, school, peer group, and community environments and CSOC as a predictor of children's health and health behavior. The studies relating to CSOC and different contextual environments may be divided into three age groups/developmental stages: the preschool age stage, the elementary school-age stage, and a prolonged stage from infant to adolescence/adulthood focusing on families of children with special needs.

SOC and the Child's Environments: Family, School, Peers, and Community

The salutogenic paradigm focuses on promoting growth and adjustment. The following research deals with the contributions of children's environments: families, friends, and school systems, to the adjustment of children with typical development and children with special needs. The resilience

Table 15.1 Studies (2000–2019) on SOC during childhood

Author	Year	Place	Population	Variables	Results
1. A. Gagnafors et al.	2017	Sweden	889 children and mothers from a birth cohort	Maternal symptoms of depression, psychological risk, children's experiences of life events, genetic polymorphisms, child temperament, social functioning, maternal sense of coherence	The 11 genotype of the serotonin-transporter-linked polymorphic region was associated with lower internalizing scores, but not mainly related to the level of adversity. An easy temperament was associated with resilience for children exposed to high adversity. Social functioning was found to be promotive independent of the risk level
2. Al-Yagon	2003	Israel	145 mother-child dyads of 5–6.5-year-old kindergartners with/without mild developmental delays	Children: developmental delay status, temperament, gender, loneliness, SOC, friendship nomination, attachment security style; mother's SOC, family cohesion and adaptability	Child's SOC demonstrated that the attachment pattern mediator variable significantly explained 15% of the variance among children with developmental delays. Children with secure attachment reported higher levels of SOC than children with insecure attachment
3. Al-Yagon	2007	Israel	110 mother-child dyads of 8–11-year-old schoolchildren with/without LD	Children: LD and non-LD group, gender, loneliness, SOC, attachment security style, hope; mothers: coping, affect, experience in close relationships, child behavior	Mothers' low use of avoidant coping strategies and less avoidance in close relationships with significant others were found to moderate the effect of children's disabilities on children's levels of loneliness, hope, and secure attachment
4. Al-Yagon	2008	Israel	58 mother-child dyads of 8–11-year-old schoolchildren	Children: loneliness, SOC, mother-rated behavior; mothers: SOC, attachment style, loneliness	Maternal SOC significantly contributed to all child socioemotional adjustment measures and attachment scores
5. Al-Yagon	2010	Israel	205 mother-child dyads of 8–12-year-old schoolchildren with/without LD	Children: LD and non-LD group, gender, SOC, attachment security style, hope, effort; mothers: experiences in close relationships, affect, child behavior	Children's adjustment and SOC mediated associations between maternal emotional resources and children's well-adjusted functioning. The significantly lower SOC among children with LD emphasized this coping resource
6. Al-Yagon	2011	Israel	205 father-child dyads of 8–12-year-old schoolchildren with/without LD	Children: LD and non-LD group, gender, SOC, loneliness, attachment security style, hope, effort; fathers: coping, SOC, child behavior	The mediating role of CSOC emerged for both groups in the association between fathers' resources and children's well-adjusted functioning. The significantly lower SOC among children with LD emphasized this coping resource
7. Al-Yagon	2012	Israel	312 8–12-year-old schoolchildren with/without LD and their parents	Children: LD and non-LD group, gender, SOC, loneliness, attachment security style, hope; parents: child behavior	Children who felt securely attached to both parents reported a higher global orientation or enduring tendency to see the world as comprehensible, manageable, and meaningful than children who felt securely attached to only one parent or neither parent. In contrast, children who exhibited insecure attachment to both parents appeared to be the most vulnerable in forming coping resources

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Author	Year	Place	Population	Variables	Results
8. Al-Yagon	2014	Israel	107 children with LD and 98 children with typical development ages 8–12 years	Children's attachment with father and mother, loneliness, SOC, hope, effort, internalizing behavior syndrome	Results indicated the unique and complementary roles played by children's attachment with the father and with the mother for explaining children's internalizing socioemotional variables. The LD group's heightened vulnerability to insecure attachment relationships with significant others was revealed
9. Al-Yagon	2015	Israel	107 parent couples with LD children and 98 couples with typically developing children, ages 8–12 years	Parents' low anxious/avoidance attachment, low/high negative affect, active/avoidant coping, SOC	Results revealed the contribution of fathers' high attachment anxiety to their greater use of active coping strategies; a lower effect of avoidant attachment than anxious attachment in discriminating between individuals' coping strategies was found; higher levels of positive affect significantly contributed to parents' higher SOC level for groups of fathers and mothers of children with LD
10. Al-Yagon and Cinamon	2008	Israel	96 mother-child dyads of 8–12-year-old schoolchildren with/without LD	Children: LD and non-LD group, gender, attachment security style; mothers: experiences in close relationships, affect, work-family relations, SOC, family cohesion, and adaptability	Higher maternal perceptions of the world as comprehensible, manageable, and meaningful contributed significantly to children's secure attachment and level of connection, closeness, and involvement between the family members
11. Al-Yagon and Margalit	2006	Israel	266 third graders with/without reading difficulties	Loneliness, SOC, children's appraisal of the teacher as a secure base	Children's perception of their teacher as their secure base correlated significantly with higher levels of SOC and lower levels of loneliness
12. Al-Yagon and Mikulincer	2004	Israel	196 8–11-year-old schoolchildren with/without LD; 23 homeroom teachers	Children: LD and non-LD group, gender, loneliness, SOC, attachment security style; teachers: ratings of children's academic functioning	Secure attachment classification correlated significantly with higher levels of SOC and lower levels of loneliness
13. Berman and Gustafsson	2000	Sweden	1163 7–12-year-old schoolchildren	Psychosomatic complaints, mental stability, family activities, parents' health status, gender, parents' social class, education, income, ethnicity, employment, and family structure	Predictors of psychosomatic complaints were mother's health, child's mental stability, contacts with peers, long-term illness, and via other factors, parents' SOC, social competence, and school satisfaction
14. Bonanato et al.	2009	Brazil	546 mother-child dyads of 5-year-old preschool children	Mothers' SOC, oral health status, social class	Mothers with lower levels of SOC were more likely to have children with decayed teeth or filled teeth regardless of the child's social class and gender
15. Dabrowska	2003	Poland	77 parents of children with cerebral palsy (CP) and 62 parents of typically developing children	Coping, stress, SOC	Parents of children with cerebral palsy, reporting higher levels of SOC, less often used avoidance, wishful thinking, and resignation as coping strategies than parents reporting lower levels of SOC

16. Dabrowska	2008	Poland	128 fathers of children with and without developmental disabilities	SOC, coping	Fathers of children with developmental disabilities reported lower levels of SOC more frequently and used strategies of avoidance compared to fathers with higher levels of SOC that used confrontation more frequently and positive reappraisal and problem-solving behavior
17. Efrati-Virtzer and Margalit	2009	Israel	337 schoolchildren grades 3–6 with/without behavior difficulties (BD); 47 teachers	Children: SOC, loneliness, peer nominations; teachers: hyperactive behavior, aggressive behavior, academic achievements	Teachers evaluated students with BD as achieving lower academic grades and displaying higher levels of hyperactive behavior and aggression. Children with BD were less accepted by their peers, reported lower levels of SOC and higher levels of loneliness. Students who were rated by their teachers as revealing higher levels of hyperactive and aggressive behavior experienced lower levels of personal coherence
18. Einav et al.	2012	Israel	111 mother-child dyads of infants ages 3–24 months with developmental delays	SOC, family cohesion and adaptability, coping, hope	Mothers with high levels of SOC and with high coping strategies felt more hopeful. In families characterized by flexibility and open to changes, mothers reported higher levels of coping that contributed to their hope measure. Family cohesion was interrelated with mothers' SOC, but not directly related to coping or hope. Cohesion was related to hope only indirectly, mediated through mothers' SOC
19. Eli et al.	2016	Sweden	565 mothers of 4-year olds	SOC, maternal and child characteristics, pressuring or restrictive feeding practices	Child gender, age, and BMI were not associated with SOC. Lower SOC was associated with controlling practices and with concern about child weight and eating
20. Feldman et al.	2018	Israel	1719 fifth and sixth graders from 29 schools	SOC, hopeful thinking, loneliness, family cohesion, effort, success in school	The results support the distinctive contribution of family cohesion and the mediating roles of sense of coherence and hope (as protective factors) as well as loneliness (as a risk factor) in predicting students' school effort
21. Forinder et al.	2005	Sweden	52 patients ages 9–22 years (at least 3 years following stem cell transplant (SCT))	Late effects in each of eight predefined problem categories, patient activity, SOC, quality of life	SOC scores for younger children (ages 9–12 years) showed that the SCT group was on par with that of both the norm groups and other chronically ill children. The mean value for the younger children in the SCT group was on par with that of the norm group
22. Groholt et al.	2003	The five Nordic countries	9524 2–17-year-old children of which 35% were co-responders (with their parents), 2% children	Parental SOC, parental health, marital status, education, socioeconomic status, income, child chronic health condition, child gender	Compared to the higher social classes, low levels of SOC were more common in the lower classes. The association of child health with parental SOC was found to be disability-specific (diabetes, epilepsy, psychiatric problems)

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Author	Year	Place	Population	Variables	Results
23. Hedov et al.	2002	Sweden	207 parents of children (ages 3.5–7 years) with down's syndrome (DS), 237 parents of healthy children	Parents' groups, SOC, parental self-perceived stress, frequency of gainful employment, amount of time spent on child care	Mean SOC scores of the parents of children with DS did not differ from those of the control group. Parents from both groups who experienced lower stress in parenthood had a stronger SOC
24. Hintermair	2004	Germany	235 mothers of children ages 1–13 years with hearing impairments	SOC, stress, life satisfaction, social support, age, gender, education, means of communication with children	Mothers with a stronger SOC had an advantage in coping with the experience of raising a deaf and hard of hearing child over mothers with lower SOC scores. SOC was of greater importance than experienced social support
25. Honkinen et al.	2005	Finland	1231 12-year-old schoolchildren	Profession of parents, gender, SOC, physical activity, weight, academic achievements, social support, class climate, psychosomatic symptoms	SOC and variables of social support were found significantly associated with perceived health. Physical exercise and SOC were associated with perceived health and father's occupation, and low SOC was found to be independently associated with relatively poor health
26. Jellesma et al.	2006	Netherlands	153 8–13-year-old schoolchildren at three levels of somatic complaints	Groups: Low somatic complaints, many somatic complaints, clinical group; happiness, anger, fear, sadness, depressiveness, emotion awareness, SOC	The clinical group and the children with many somatic complaints reported more negative moods on the anger, sadness, and fear scale, more difficulty differentiating emotions, and a lower SOC
27. Kan et al.	2015	Japan	1497 men and 1764 women from the Stratification, Health, Income, & Neighborhood Study (J-HINE)	Mastery, SOC, childhood SES, self-related health, psychological distress	Mastery and SOC significantly and independently mediated the association between childhood SES and current health in the total sample after adjusting for age, gender, and respondent education, regardless of the type of SES or health outcome indicators. SOC significantly mediated the association between parents' education and current health only among women, and it mediated the association between perceived childhood SES and current health only among men
28. Krause	2011	Germany	226 5–10-year-old schoolchildren; longitudinal	Health promotion by self-worth reinforcement program, SOC, feeling of self-worth, sense of belonging	Developing sense of coherence in promoting mental health in schoolchildren was perceived fundamental and most effective in the early years of childhood, requiring training of professionals within the school
29. Liberman et al.	2013	Israel	50 5–6-year-old schoolchildren with/without developmental coordination disorder	Gender, mother education, family income, place of living, movement, children's partaking (completed by parents for ages 4–6.5), performance skills, SOC, hope, effort	Levels of SOC, hope, and effort in children with DCD were lower than their typically developing peers. The explanatory variables (SOC, hope and effort, motor skills, and processing skills) did not predict either the diversity or the frequency measures of participation

30. Løndal	2010	Norway	36 8–9-year-old children participating in an after-school program; 4 months, qualitative	Play, SOC	Play in the ASP had considerable potential for promoting the children's SOC. Most of the children in the study experienced their world as comprehensible, manageable, and meaningful. Negative thoughts and feelings were reduced during bodily play. Play offered particularly strong opportunities for the children themselves to shape outcomes and interact with children
31. Mak et al.	2006	Hong Kong	157 mothers of children with autism (ages 1–28)	Severity of autistic symptoms, SOC, parenting attitudes, parenting stress, age, education, marital status, income	Mothers with a higher level of SOC reported less stress than those with a lower level. SOC had a moderating effect on the association between symptom severity and parenting stress
32. Margalit et al.	2006	Israel	80 mothers of children ages 2–39 months exhibiting delayed development	SOC, family cohesion and adaptability, mood, coping, parenting stress	Mothers from noncohesive families with lower SOC experienced higher levels of stress than mothers from cohesive families with higher SOC. Mothers from noncohesive families with lower SOC experienced lower levels of positive mood than mothers from cohesive families with high SOC
33. Most et al.	2000	Israel	98 5–6.4-year-old preschool children with/without risk for developing LD	Groups (at risk and not at risk), gender, phonological awareness skills, loneliness, SOC, peer acceptance	Children at risk scored lower on phonological awareness, loneliness, SOC, peer acceptance. The largest group of children at risk had the lowest levels of SOC and phonological awareness skills
34. Nammontri et al.	2013	Thailand	257 10–12-year-old schoolchildren; 133 intervention group	Clinical variables, oral health-related quality of life, SOC, oral health beliefs	Greater SOC predicted positive health beliefs and fewer symptoms. Intervention provided evidence that SOC influences oral health-related quality of life
35. Natvig et al.	2006	Norway	4116 schoolchildren age 11, 13, and 15 years.	Age, gender, SOC, supportive school climate, learning conditions, school-related stress	In analyses of all resources and stress factors, the strongest and most adverse associations with the SOC were seen with feeling pressured by schoolwork. Among girls, this association was strongest for the youngest group. School-related factors represent both resource and stress factors of importance for the SOC
36. Neves et al.	2019	Brazil	769 5-year-old preschoolers from public and private schools	Parental/caregiver SOC, SES, untreated dental caries,	The prevalence of clinical consequences of untreated dental caries was low in the present sample and was associated with socio-demographic factors (type of preschool, caregiver's age, and the number of children in the family) and SOC
37. Oelofsen and Richardson	2006	United Kingdom	104 fathers and mothers of preschool children (average age 43.8 months) with/without developmental disabilities	Family structure, parental age, socioeconomic classification, child gender, child age, SOC, parenting stress, parental health status, parental social support	Parents of children with DD reported parenting stress within the clinical range, weaker SOC, and poorer health than parents of children without DD. Mothers of children with DD reported poorer health, higher levels of parenting stress, and weaker SOC than their partners

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Author	Year	Place	Population	Variables	Results
38. Olsson and Hwang	2002	Sweden	429 fathers and mothers of children ages 0–16 years with/without intellectual disability	Parental group, SOC, depression	Parents of children with ID who reported low levels of SOC were more depressed than control parents with low levels of SOC. No relation was found between the age of the child and SOC levels in parents of children with ID
39. Pisula and Kossakowska	2010	Poland	45 couples of parents to children ages 3–7 years with/without autism	Parental gender, education, employment, time spent caring for the child, SOC, ways of coping	Parents of children with autism had lower total SOC, meaningfulness, and manageability, compared with controls, and used escape avoidance coping more often. SOC level was positively associated with seeking social support and self-controlling and negatively with accepting responsibility and positive reappraisal
40. Ray et al.	2009	Finland	772 parent-child dyads of 10–11-year-old schoolchildren	Children: meal patterns, food frequency intake; parents: SOC, eating patterns	A weaker parental SOC was associated with children's irregular meal patterns, more frequent intake of energy-rich foods, and less frequent intake of nutrient-rich foods
41. Sharabi et al.	2012	Israel	287 10–11.6-year-old schoolchildren	Loneliness, SOC, hope, effort, family cohesion, and adaptability	Four family profiles were identified: Children in the two cohesive families' clusters reported the lowest levels of loneliness and the highest levels of personal strengths. Children within noncohesive family clusters reported the highest levels of loneliness and the lowest levels of SOC
42. Sivberg	2002		37 families, 66 parents of children with and without autism	Coping, coping behavior, strain, SOC	Parents of children with autism reported low levels of SOC. Lower levels of coping were associated with higher levels of strain on the family system, and the level of strain on the family system was higher in the families with a child with an autism spectrum disorders (ASD)
43. Svavarsdottir et al.	2005	Iceland	76 American families (75 mothers and 62 fathers) and 103 Icelandic families (103 mothers and 74 fathers)	Family adaptation, family hardness, SOC, caregiving demands, family demands, severity of illness	SOC and family hardness predicted family adaptation. Icelandic mothers perceived their family's adaptation more favorably than American mothers. Regarding fathers, family demands predicted adaptation. SOC moderated the effect of family demands on adaptation for both parents
44. Torsheim et al.	2001	Norway	1592 grade 6, 1534 grade 8, 1605 grade 10 children	Health complaints/symptoms, school-related stress, SOC	Age group comparisons revealed that the association between SOC and stress weakened with age. Association between SOC and health complaints grew stronger

approach defines assumptions about the critical predictors of the full potential of children to learn and to thrive in diverse settings regardless of personal and environmental challenges and risk factors (Damon, 2004). A major role of resilient research is to identify the complex transactions and processes among internal and external (risk and protective) factors that affect children's resilience and sense of coherence (Margalit, 2003).

Sense of coherence at the preschool age stage Children of various ages, with a strong sense of coherence, may perceive their day-to-day experiences as comprehensible and manageable. To compare the sense of coherence of typically developing preschool children with preschool children having special needs, studies have examined children and their parents in various social contexts (Al-Yagon, 2003; Margalit, 1998; Most et al., 2000). In a sample of 187 preschool children ages 4.9–6.3 years, children who were identified as at risk for developing learning disabilities (LD), even before they were formally diagnosed and labeled, had a weaker sense of coherence, had fewer friends, and were less accepted by their peers. The sense of coherence assessment revealed the children's heterogeneity, and even among the group of typically developing children, a small subgroup could be defined with a very low sense of coherence and many social challenges. Also, in line with the salutogenic paradigm, special attention was given to a small subgroup of children within the group of children at risk whose sense of coherence was high. The relatively small extreme groups may add to the understanding of the development of coherence from early developmental stages (Margalit, 1998).

The children with a risk for developing learning disabilities received tutoring on an individual and small group basis during school time by the special education teachers. The focus was on language enrichment and basic learning skills. The sense of coherence of a subgroup of these preschool children ($N = 67$) was tested. Significant differences were noted in the comparisons between the sense of coherence scores at the beginning of the intervention and at the mid-year evaluation. However, no significant differences were found between mid-year and the end of the year. The correlations between the first and the second assessments of children's sense of coherence were significant (0.34) and between the second and the third assessments (0.32) as well. It can be concluded that at this age, there was some level of flexibility in the children's sense of coherence. Remedial training on delayed academic, language, and cognitive functioning was related to an increased sense of coherence and a narrowing of the gap with the typically developing group (Margalit, 1998).

Language difficulties and social-emotional challenges are often considered as two separate risk factors at the preschool

age stage. A study of preschool children explored the relations between children's sense of coherence, loneliness, and phonological awareness. Phonological awareness consists of language skills such as awareness of the structure of sounds in words and sentences. Research reports that they predict reading acquisition (Most et al., 2000). The study examined the phonological awareness skills, loneliness, sense of coherence, and peer acceptance among 98 children ages 5.0–6.4 years. Children at risk had lower achievements as a group on the phonological awareness measures, reported weaker CSOC, viewed themselves as lonelier, and were less accepted by their peers.

Family ecology is comprised of parental, familial, and environmental characteristics that may affect the capacity of the family to provide optimal care (Greenberg et al., 1993). Olson (2000) identified cohesion and adaptability as two major parameters for evaluating the functioning of a family. Cohesion refers to the extent of connection, closeness, and involvement between the family members. Adaptability reflects the family's capability to change as an adaptation to developmental and external pressures (Olson, 1986, 2000). A family system has been considered balanced when it demonstrates moderate scores on these two dimensions. In a study examining SOC, attachment security style, loneliness, and temperament of 145 children ages 5–6.5 years with and without developmental delays, and their mothers' SOC and family cohesion and adaptability, children having a secure attachment to their mothers reported a stronger SOC than children having an insecure attachment (Al-Yagon, 2003).

In summary, the studies on preschool children identified SOC as an important protective factor that differentiated children with typical development and high-risk children, even before their formal assessment and measurable academic challenges.

Sense of coherence at the elementary school-age stage The transfer to elementary schools expands the variability of the factors that affect and are affected by the children's sense of coherence. Children's academic success, social competence, and coping capabilities contribute to their well-being and adjustment during that period, while academic, social, and behavior difficulties may be considered risk factors. Interactions with teachers and peers have a profound impact on children's life quality. Multiple studies examined the relations between children's sense of coherence and their family; their perceptions of teachers' support, peer friendships, and their overall school experience, revealing the complex and multivariate interactions at the elementary school-age stage (Al-Yagon, 2007, 2008, 2010, 2011, 2012; Al-Yagon & Cinamon, 2008; Al-Yagon & Margalit, 2006; Al-Yagon & Mikulincer, 2004; Efrati-Virtzer & Margalit, 2009; Liberman et al., 2013; Sharabi et al., 2012).

To further clarify the role of teachers in understanding children's sense of coherence, the attachment conceptualization (that was developed for children–mothers' relations) was adapted to schools' relationships. Children's perceptions of the teachers as a secure base were examined, and the results revealed that secure attachment patterns expressed in the development of close relationships with teachers predicted children's SOC and loneliness (Al-Yagon & Margalit, 2006; Al-Yagon & Mikulincer, 2004). Children, who felt that their teachers were more available to them and more accepting, reported a stronger SOC and less feelings of loneliness.

In another study (Efrati-Virtzer & Margalit, 2009), the characteristics of children with behavior difficulties were examined (behavior difficulties included verbal and physical aggression toward children and objects). The age range of these children was 9–12 years, and they were compared with children with no adjustment problems from the same classes. Results revealed that the behavior difficulties contributed to the explanation of social and academic functioning and were linked to social difficulties—in terms of lower peer acceptance and increased rejection by children in their classes, as well as to lower academic achievement. Children with disruptive behavior also reported weaker levels of CSOC. Those children with stronger CSOC revealed emotional self-regulation and participated in fewer behavior conflicts at school. It is not clear whether a weaker SOC was the outcome of the multiple academic, social, and behavior difficulties or predicted them. Students with a weaker SOC were less accepted by their peers and rated as more rejected by them.

The study of social relations at school provided additional validation to the complexity of the interacting variables. The most common approach for identifying a child's status in class is done by asking the children to state the names of their best friends (and those that they do not like) as measures of social acceptance and rejection. The construct of reciprocal positive nomination (mutual friendship) attracted increased research attention since it provided information on mutual perceptions, reflecting the interpersonal attraction and liking where within a pair of children, each one selected the other as a friend (Yugar & Shapiro, 2001). If the positive nomination was an important indicator in reflecting friendship and explaining decreased alienation experience in schools, the reciprocal negative nomination (mutual selection within a dyad of children of the least liked child in the class) extended the understanding of the increased experience of social isolation, identified enemies in classes and enhanced feelings of social exclusion and loneliness. It is not surprising that they were related to a weaker SOC (Efrati-Virtzer & Margalit, 2009).

Research on elementary schoolchildren with and without developmental delays and their families identified SOC as playing a significant protective role during the first year at school. In a study on 50 schoolchildren ages 5–6 years with

and without developmental coordination disorder (DCD), levels of CSOC, hope, and effort in children with DCD were lower than their typically developing peers. Significant correlations were found between CSOC to the children's involvement in daily activities in a variety of environments. The CSOC was related to the children's independence and enjoyment from participation in age-appropriate social and leisure activities (Lieberman et al., 2013).

The Relations Between Children's SOC and Families' Characteristics

Several studies have shown that maternal coping resources moderated the effect of children's learning disabilities on secure attachment, levels of loneliness, feelings of hope, and future expectations. The degree to which the learning disability affected the children's socioemotional academic competence and social interrelations was related to the type of coping their mothers employed and their reliance on social support (Al-Yagon, 2007, 2008, 2010, 2011, 2012, 2014, 2015; Al-Yagon & Cinamon, 2008). Maternal SOC significantly enhanced the child's socioemotional adjustment measures and attachment scores (Al-Yagon, 2008); children's adjustment and SOC mediated associations between maternal emotional resources and children's well-adjusted functioning. The significantly weaker SOC among children with learning disabilities (LD) emphasized this coping resource (Al-Yagon, 2010); studies also recognized the significance of children's relations not only with mothers but also with fathers. The mediating role of CSOC emerged for children with and without learning disabilities in the association between fathers' resources and children's well-adjusted functioning (Al-Yagon, 2011); children who felt securely attached to both parents reported a higher global orientation or enduring tendency to see the world as comprehensible, manageable, and meaningful than children who felt securely attached to only one parent or neither parent. In examining the differences in the role of attachment with fathers and mothers, Al-Yagon (2014) reported that in the model modified for elementary schoolchildren with severe learning disabilities (SLD), a higher number of significant paths emerged between child–mother attachment relationships and internalizing measures than for child–father attachment. Data also showed that attachment with fathers contributed mainly to children's coping resources (i.e., SOC, hope, and effort), whereas attachment with mothers contributed to a broader range of internalizing adjustment measures including not only SOC but also self-reported loneliness and parent-rated internalizing problems. In investigating the coping resources of parents of children with LD and children with typical development, Al-Yagon (2015) highlighted the potential role of parents' affect. Specifically, higher levels of positive affect

significantly contributed to parents' stronger SOC for fathers and mothers of children with LD. However, greater negative affect contributed to greater utilization of active and avoidance coping strategies only for mothers of children with LD. Furthermore, children who exhibited insecure attachment to both parents appeared to be the most vulnerable in forming coping resources (Al-Yagon, 2012; Al-Yagon & Cinamon, 2008).

Parents comprise only in part family cohesion. In a study on 287 schoolchildren ages 10–12 years, four family profiles were identified: children in the cohesive families' clusters reported the lowest levels of loneliness and the strongest levels of CSOC, whereas children within noncohesive family clusters reported the highest levels of loneliness and the weakest levels of CSOC (Sharabi et al., 2012). Additionally, the degree of cohesion within families was found to predict effort investment and success in school. Feldman et al. (2018) revealed that family cohesion and the mediating roles of SOC and hope (protective factors), as well as loneliness (risk factor), contributed significantly in predicting school effort among elementary school pupils.

In conclusion, during elementary school, children acquired basic learning skills, established positive and negative relations with teachers and peers, and their functioning predicted their life quality, as well as presenting special academic and behavior challenges. At this age stage, SOC was shown to provide a unique and relatively stable index of children's social and emotional adjustment and well-being. The entrance to high schools and the adolescence age stage not only provided extended opportunities but also revealed continued difficulties and new challenges. A study of the Norwegian education system explored elementary through junior high schoolchildren focusing on age and gender comparisons concerning school-related stress and resources and their relations to the SOC construct. The sample consisted of 4116 schoolchildren ages 11, 13, and 15 years. SOC was related to feeling pressured by schoolwork, social support from peers, and expectations. Among girls, this association was strongest for the youngest group. School-related factors were shown to represent both resource and stress factors related to the SOC (Natvig et al., 2006).

From infancy to adolescence/adulthood: Families of children with special needs Children with special needs are considered a source of distress to their families. Their increased levels of stress reflect their emotional reactions to the unexpected and challenging reality of having children with developmental disabilities and behavior challenges. The fathers' and mothers' SOC reflects the impacts of the prolonged stress but at the same time reveals their parental resources that may be conceptualized as resources that serve as protective factors (Margalit, 1994).

Research on infants and preschool children with developmental delays and their families (Einav et al., 2012; Hedov et al., 2002; Margalit et al., 2006; Oelofsen & Richardson, 2006; Pisula & Kossakowska, 2010) identified the parents' SOC as meaningful for the development of their children. In a study of 111 mother–child dyads of infants ages 3–24 months with developmental delays, mothers with strong levels of SOC and with high coping strategies felt more hopeful. The family cohesion (the mothers' perceptions that their family members were close to one another and provided support when needed) was interrelated with mothers' SOC. Cohesion was related to hopeful thinking only indirectly, mediated through mothers' SOC. Only for mothers who reported strong levels of SOC was the family support meaningful in the prediction of hopeful thinking (Einav et al., 2012).

Mothers from noncohesive families with weaker SOC experienced higher levels of stress than mothers from cohesive families with stronger SOC in a study examining SOC, family cohesion and adaptability, mood, coping, and parenting stress of 80 mothers of children ages 2–39 months exhibiting delayed development. Furthermore, mothers from noncohesive families with weaker SOC experienced lower levels of positive mood than mothers from cohesive families with a strong SOC (Margalit et al., 2006). Oelofsen and Richardson (2006), studying fathers and mothers of preschool children with developmental disabilities (DD), found that parents of children with DD reported parenting stress within the clinical range, weaker SOC, and poor health than the comparison group—parents of children without DD. The study's results focused the attention on the mothers who, as the major caregiving parent, experienced more stress than the fathers and reported more health problems, and weaker SOC than the fathers.

Studies focusing on parents to children with special needs emphasized the significance of SOC with parenting stress: parents of children with cerebral palsy, reporting a stronger SOC, less often used avoidance, wishful thinking, and resignation as coping strategies than parents reporting a weaker SOC (Dabrowska, 2003); parents of children with Down's syndrome as well as the comparison group had a stronger SOC when their stress level was lower (Hedov et al., 2002); and fathers of children with developmental disabilities reported a weaker SOC more frequently and used strategies of avoidance compared to fathers with a stronger SOC that used confrontation more frequently and positive reappraisal and problem-solving behavior (Dabrowska, 2008).

In a study on parents of children with autism, the parents reported a weaker SOC than the comparison group and used avoidance coping more often. Among parents of children with autism, the SOC level was positively associated with seeking social support and self-controlling and negatively with accepting responsibility and positive appraisal. The

results demonstrated that the frequency of using accepting responsibility strategy increased with decreasing levels of SOC among the parents. This may suggest that one of the consequences of low SOC may be a self-blame tendency for the occurrence of stressful situations related to parenting a child with special needs (Pisula & Kossakowska, 2010). This confirms earlier findings of a weaker SOC among parents of children with autism (Olsson & Hwang, 2002; Sivberg, 2002).

Several studies explored SOC in families of children with developmental disorders from birth to adolescence (ages 1–13, 0–16 years) and/or adulthood (ages 1–28 years). Hintermair (2004) studied 235 mothers of children ages 1–13 years with hearing impairments and found that mothers with stronger SOC had an advantage in coping with the experience of raising a deaf and hard of hearing child over mothers with weaker SOC scores. SOC was of greater importance than experienced social support. Similarly, Olsson and Hwang (2002) studied 429 fathers and mothers of children from birth to 16 years of age with and without intellectual disability (ID). They found that parents of children with ID who reported low levels of SOC were more depressed than control parents with low levels of SOC. No relation was found between the age of the child and the levels of SOC in parents of children with ID. In a study of children, adolescents, and young adults with autism, Mak et al. (2007) reported that mothers with a strong SOC reported less stress than those with a weak SOC. SOC had a moderating effect on the association between symptom severity and parenting stress.

In summary, the studies on families of children with special needs identified SOC as a significant protective factor related to effective coping and hopeful thinking that differentiated between families of children with typical development and families of children with special needs. Understanding the relationship between SOC and coping among parents of children with special needs provides insight into the mechanisms involved in parental adjustment and effective coping outcomes.

SOC as Predictor of Health and Health Behavior

In the past decade, research has shown the relationship between social factors, health, and disease, focusing attention on salutogenic models, concentrating on personal control. This trend followed former studies that revealed that persons with a strong SOC tended to manage stress better, whereas persons with a weak SOC tended to be more sensitive to health challenges and illness (Lundberg & Nystrom, 1994). Recent multiple pieces of research on SOC and health

have identified SOC as a predictor of health and health behavior (Berntsson & Gustafsson, 2000; Bonanato et al., 2009; Forinder et al., 2005; Groholt et al., 2003; Honkinen et al., 2005; Jellesma et al., 2006; Kan et al., 2015; Krause, 2011; Løndal, 2010; Nammontri et al., 2013; Ray et al., 2009; Torsheim et al., 2001).

Studies examined the determinants of psychosomatic complaints in children. They found that the predictors of psychosomatic complaints were the mother's health, child's mental stability, contacts with peers, long-term illness, and, via other factors, parents' SOC, social competence, and school satisfaction (Berntsson & Gustafsson, 2000). Furthermore, in an attempt to understand the relationship between poor perceived health during childhood and an individual's well-being throughout life, 1231 12-year-old schoolchildren in Finland were studied. SOC and variables of social support were found significantly associated with perceived health. Physical exercise and SOC were associated with perceived health and father's occupation, and weak SOC was found to be independently associated with relatively poor health (Honkinen et al., 2005). Kan et al. (2015) demonstrated the mediating role of SOC on the association between childhood economic status and health in the community adult population of Japan. SOC significantly mediated the association between parents' education and current health among women and mediated between perceived childhood socio economic status (SES) and current health among men.

Studies focusing on the relation of somatic complaints and emotional functioning of children pinpointed attention to the existence of emotional problems in children who reported somatic complaints. Jellesma et al. (2006) studied 153 schoolchildren ages 8–13 years at three levels of somatic complaints (few, many, and clinical). The results showed that the clinical group and the children with many somatic complaints reported more negative moods on the anger, sadness, and fear scale, more difficulty differentiating emotions, and a weaker SOC than the group with fewer complaints. Torsheim et al. (2001) studied 1592 sixth-grade children, 1534 eighth-grade children, and 1605 tenth-grade children in an attempt to tap the role of SOC and school-related stress as predictors of health complaints. Age group comparisons revealed that the association between SOC and stress grew weaker with age, whereas the direct association between SOC and health complaints grew stronger. Fifty-two patients aged 9–22 years, who had stem cell transplant at least 3 years before the study, participated in a study of health and quality of life. The scores obtained on SOC for younger children (ages 9–12 years) showed that children in the SCT group have a SOC level equal to that of both the norm groups and other chronically ill children. The mean value for the younger children in the SCT group was in line with that of the norm group of children age 9 (Forinder et al., 2005).

Parents' SOC and Children's Health

The parents' role in predicting their children's health and health behavior was examined based on the salutogenic model. The relation between parental SOC and child health was explored in a large-scale study (Groholt et al., 2003) in the five Nordic countries, which included 9524 children ages 2–17 years, of which 35% co-responded with their parents due to their young age. Compared to the higher social classes, low levels of SOC were more common in the lower socioeconomic classes. The association of child chronic health complaints with weak parental SOC was found to be disability-specific (diabetes, epilepsy, and psychiatric problems). Parents of children with diabetes, epilepsy, or psychiatric problems had 2–5 higher odds of having weak SOC compared to parents of children without a specific diagnosis.

Ray et al. (2009) studied 772 parent–child dyads of 10- to 11-year-old schoolchildren to find the relationship between food intake and parents' SOC. Weaker parental SOC was associated with children's irregular meal patterns, more frequent intake of energy-rich foods, and less frequent intake of nutrient-rich foods. Eli et al. (2016) found that mothers who had a stronger SOC were less likely to engage in pressuring or restrictive feeding practices. Resilience to stress reduced counterproductive practices, even in the presence of concern about the child's weight.

In another study, mothers with weaker levels of SOC were more likely to have children with decayed teeth or filled teeth regardless of the child's social class and gender (Bonanato et al., 2009). In contrast, the prevalence of clinical consequences of neglected dental caries was low among children attending public and private preschools in Brazil. It was associated with stronger levels of parental/caregiver SOC (Neves et al., 2019).

In a study identifying the predictors of adaptation and assessing potential moderating effects of parents' sense of coherence and family hardiness on the relationship of severity of illness of a child with asthma, SOC and family hardiness predicted family adaptation. Icelandic mothers perceived their family's adaptation more favorably than American mothers. Regarding the fathers, family demands predicted adaptation. SOC moderated the effect of family demands on adaptation for both parents (Svavarsdottir et al., 2005).

Intervention programs promoting children's health In addition to identifying SOC as a significant protective factor related to effective coping, the contribution of the salutogenic paradigm in explaining successful coping with stressors and health promotion has guided the development of intervention programs promoting health and health behavior. The following studies are examples of such intervention programs involving children and their families.

An intervention program based on the salutogenic model promoting oral health resulted in improved oral health. The intervention provided evidence that SOC influenced the oral health-related quality of life (Nammontri et al., 2013). Positive health beliefs and a stronger SOC were found to predict positive health beliefs and fewer symptoms. An additional intervention program focused on promoting play in an after-school program (ASP) had considerable potential of promoting the children's SOC. Most of the children in the study experienced their world as comprehensible, manageable, and meaningful. Negative thoughts and feelings were reduced during play. Play offered particularly strong opportunities for the children themselves to shape outcomes and interact with children, promoting their SOC (Løndal, 2010).

In another intervention program that aimed to promote health resources in children, 226 schoolchildren ages 5–10 years participated in a longitudinal self-worth reinforcement program. The results showed that developing SOC as a part of promoting mental health in schoolchildren is most effective during the early years of childhood. This finding emphasized the need to train professionals within the school (Krause, 2011).

Conclusions and Future Research Directions

The results of the surveyed studies support the conceptualization of the SOC construct as an important personal resource that develops during childhood. Stresses and challenges are a part of children's lives. However, most children who have a strong SOC can transform their potential resources into actuality, thereby promoting well-being. Children and adolescents with a strong SOC may have a good comprehension of most of their contextual conditions, situational demands, and personal experiences. They may feel relatively in control of their lives and may consider most of their tasks and participation in age-appropriate activities as meaningful, significant, and worth of investing the effort. When they face a stressful situation, they can select the appropriate strategies to cope effectively with the stressors. Thus, acquiring a wide range of coping strategies, alongside an emphasis on collaborative activities, developing social partnerships that respect different voices and self-reliance, may enhance the youngsters' resilience and motivation to invest effort to reach their preferred goals (Margalit, 1998). Consistency, a special cognitive challenge for children, may strengthen comprehensibility; an overload–underload balance, a special risk for children who struggle with school demands, may affect manageability; and the participation in socially valued decision-making may strengthen meaningfulness (Margalit, 2008).

The results of these studies have clear educational implications for school systems at various age groups in terms of

prevention and intervention planning. The early manifestations of the developing SOC, as a personal resource, and the results that indicate that stresses and difficulties are disclosed in weaker levels of SOC, call for early awareness and empowering programs within educational systems. In addition, the results that show the impact of effective intervention not only on better academic functioning but also on friendship development and significant growth incoherence justify focused attempts on early intervention before SOC is structured and stabilized. The studies demonstrated the importance of early comprehensive intervention, as well as the significant value of preventive measures through sensitizing teachers not only to meet crises and difficulties but also especially to provide attentive support to the children's experiences. Preventive programs that empower children's abilities to integrate their thinking and learning skills with the abilities to regulate their feelings (emotion regulation) and actions (behavioral competence) promote growth, effort, and motivation (Idan & Margalit, 2011). School-based intervention programs and teachers' training promoting salutogenic approaches in class are required, alongside family-based interventions and parents' training, to promote salutogenic approaches in the home.

In the reviewed studies, children with typical development and children with developmental disabilities, learning disabilities, and various additional adjustment challenges were included. Most children who reported higher levels of loneliness also experienced a weak sense of coherence. In several studies, the weak sense of coherence was related to children's current distress, as well as to early expressions of adjustment difficulties and family climate. Mothers' sense of coherence was found as an important personal resource that enabled successful attachment relations and was related to children's sense of coherence (Al-Yagon & Mikulincer, 2004). Special attention was provided to groups of children with developmental or contextual challenges that reported levels of sense of coherence compatible with their typically developing peers. Thus, the awareness of the fact that difficulties never appeared in isolation, encouraged the multidimensional prevention and intervention approaches that treated not only academic or behavior challenges, but supported the whole child who had been developing satisfactory social relations while struggling with difficulties, to support coping and celebrate success and competencies. The salutogenic paradigm provides a structure to this planning, by emphasizing comprehensibility (explaining and clarifying the goals and the procedures), manageability (teaching the required skills to reach these goals), and meaningfulness (enhancing motivation and involvement in the effort).

Research presented in this review demonstrated the importance of the salutogenic approach in developmental research of children and adolescents and its potential for educational planning. The studies emphasized the interact-

ing role of academic demands and social challenges with the SOC, clarifying the dynamic interactions between academic and socioemotional factors and children's readiness to treat their difficulties as challenges worthy of effort investment. These findings emphasized the major role of resilience approaches, considering SOC as a predictor in explaining well-being and adjustment, and calling for the future development of comprehensive educational intervention programs (Idan & Margalit, 2011).

To benefit schools and children from the salutogenic approach, two future research directions are needed. First, there is a need for longitudinal studies that will document changes and stabilities in the development of CSOC. Through longitudinal studies, we can clarify the interactions between the stabilization and the flexibility of children's SOC within different contextual conditions. Second, research calls for cross-cultural comparisons of the sense of coherence development. There is a need for a coordinated international collaboration for longitudinal research to explore the interactions of SOC between cultures, families, schools, communities, and children's different growth paths.

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