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Article

Association between the Mother's Social Cognition and the Child's Social Functioning in Kindergarten: The Mediating Role of the Child's Social Cognition

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Abstract: Children's ability to adjust to the social rules and expectations in the educational environment is of major concern to researchers and practitioners alike. Accordingly, the main purpose of the present study was to examine predictors of children's social functioning in kindergarten with a specific focus on (a) maternal factors; and, (b) children's social cognition. Using a multi-method (self-reports and direct assessments), multi-informant (child, mother, teacher) design, we collected data from 306 kindergarten children and their mothers tapping the mother's social cognitions (general and child-related) and parenting style, and children's social cognition (social information processing) and functioning in kindergarten. We found direct associations between the mother and child's social cognitions, between the mother's authoritarian parenting style and her child's less competent social cognition and behavior, and between the child's social cognition and social functioning. Finally, as hypothesized, we found a number of interesting mediated effects. Most notably, we found that the association between the mother's social cognition (her tendency to attribute hostile intent to unknown others) and the child's social cognition (his/her tendency to generate less competent responses) is fully mediated by the mother's higher levels of authoritarian parenting style. The important theoretical and clinical implications of our findings are discussed.

Keywords: Social cognition; social information processing; mother-child relationships; parenting style; kindergarten; social functioning

1. Introduction

Children's social cognition – their ability to understand and think about others' mental states in social situations - plays an imperative role in the development of their social relationships (e.g., [1–4]) Higher social cognitive capacities are typically associated with prosocial skills whereas difficulties to understand and think about others' mental states can lead to disruptive social functioning and increase risk for major mental health problems [5]. These social cognitive processes are shaped in the context of close relationships across child development and in particular within the context of the child's relationship with his/her main caregivers [5–10]. Accordingly, the main purpose of the current study is to examine the associations between mothers' parenting characteristics and general social cognition and their children's social perceptions and behaviors. More specifically, we are especially interested in the potential mediating role of parenting characteristics on the link between mother and child's social cognitive capacities (i.e., their information processing patterns), and the mediating role of the child's social information processing on the link between the mother's parenting characteristics and the child social functioning in kindergarten. The expectations for significant (direct and indirect) associations between these variables are firmly grounded in two major developmental models/theories: attachment theory [11,12], which attempts to describe the dynamics of long-term interpersonal relationships between humans, particularly in the context of a parent-child relationships; and Crick & Dodge's (1994)[13] social information processing (SIP) model, which focuses on humans' subjective perceptions and interpretations of their social environment and the ways by

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which these subjective assessments guide social behavior. Our conceptual model linking parent and child social cognition and functioning is firmly grounded in these two models.

1.1. Associations between mother and child social cognition via parenting characteristics

A core assumption of attachment theory is that external behaviors are guided by internal mental representations [12,14], which are instrumental in shaping one's state of mind. Thus, social cognition is at the heart of this theoretical model. Accordingly, the theory assumes that a caregiver is more likely to provide positive parenting when her perceptions of the surrounding social world are positive. When a mother's state of mind and perception of her social world is characterized by flexibility and non-defensiveness, it is more likely that she can function reflectively and adjust her behavior based on the correct read of the child's current state of mind. On the other hand, if the caregiver perceives the social world as threatening and hostile, these cognitions are likely to be reflected in a parenting style that is less reflective and more defensive, which, in turn, will affect the child's own social cognitions. Thus, a main assumption of this theory is that parents' own social cognitions affect their children's social cognitions via the quality of parenting.

Fonagy and colleagues' furthered attachment theory's discussion on internal representations by introducing the important theoretical concept of "mentalization" [15]. Mentalization refers to the human ability to create mental representations of self and others and to use these internal concepts in processing information about the self' and the others' states of mind, including thoughts, feelings, and intents. Fonagy and colleagues associate effective mentalization with enhanced ability to regulate affect and higher functioning within one's social world. The inability to mentalize and regulate affect, on the other hand, can lead to impaired social and emotional functioning, and in extreme cases, to severe personality disorder [15,16]. In relation to parenting, Fonagy and colleagues suggested that the inability to mentalize is rooted in experiences that have left the parent unable to effectively interpret her own mind and the mind of the child, and to competently link emotional, cognitive, and behavioral information to current life situations [17,18]. On the other hand, when a parent is able to connect past experiences with internal representations, she can function reflectively and better understand and tolerate current states of mind and maintain satisfactory interpersonal relationships. A parent that is characterized as reflective in the context of her relationship with her child, is able to view the child through his or her own eyes, to effectively interpret situations from the child's perspective, and to imagine and reflect on the child's mental states through observation.

Mitchell (2006)[19] suggests that our understanding of how humans go about making mental state inferences will benefit from treating specific social cognitions such as these primarily as part of a wider information processing system that comprises a set of mechanisms for elaborating more basic social information into an understanding of another's mind. More specifically, Mitchell calls for connecting more specific social cognitions (in this case, for example, parental perception of the relationships with the child) to more general information processing capabilities that guides the parent's behavior in general (i.e., their general view of the social world). Corresponding to this call, the study aims to show a connection between the mother's general SIP patterns (i.e., the way she generally perceives the social world surrounding her) and her relationships-specific social cognitions (i.e., her perception of the relationship with the child). Based on the theoretical path suggested by attachment theory, it is hypothesized that the mother's general SIP patterns will be related to her parenting behaviors and relationship-specific social cognitions (i.e., her perception of the relationships with the child), and via both, to the child's perceptions and behaviors.

1.2. Associations between quality of parent-child relationships and children's behavior via SIP

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In their formative article presenting a reformulated social information processing model guiding many current studies of SIP (see Figure 1), Crick and Dodge (1994)[13] propose a theoretical path by which the quality of early relationships affects children's social behavior through their SIP patterns. They maintained that early relationships create internal structures that form a database of social knowledge that informs the enactment of a social response. When children encounter new social situations, they access knowledge available to them from previous experiences about the intentions of others in their environment, the meaning of the others' actions, and the best ways to act upon these actions. Especially in young children, the database which guides their behavior is grounded in experiences with other family members, and in particular, with their parents. The model further suggests that mental representations affect social behaviors through on-line social information processes - the mental processes that come into action when a social input is received and before a social output is produced. These mental processes include: (1) encoding of social cues; (2) interpretation of the cue; (3) clarification of goals; (4) response construction; and (5) response decision. The five mental steps are followed by a sixth: the behavioral enactment of a response [13].

Attachment theory [11,12] portrays a similar perspective on the ways by which children form expectations about their social world and act upon them. Bowlby argues that children form internal working models (IWMs) of relationships based on their experiences with their attachment figures, and that these models shape their thought processes and social behaviors. He characterizes internal working models of attachment as mental representations constructed from interaction patterns between individuals and their principal attachment figures. Based on experiences with these figures, representations of the self and others emerge, reflecting the degree to which the individual feels worthy of care and affection from others (model of self) and the degree to which the individual perceives others to be generally available, accepting, and responsive (model of others). Bowlby associates sensitive parenting (which is, in attachment terms, providing secure base from which to explore the world and safe haven in times of distress) with secure attachment and the emergence of positive models of self and others, and insensitive parenting with insecure attachment and the emergence of negative models of self and others. Further, secure attachment is reflected in children's thought processes, which are open, flexible, and non-defensive, whereas insecure attachment is reflected in non-open, distorted, rigid, and defensive processes (Bretherton, 1990). IWMs have been described as structured processes serving to obtain or limit access to information about social relationships [20], thus connecting the IWM construct directly to information processing models. In a comprehensive review of social information processing from the perspective of attachment theory, Dykas and Cassidy (2011) [21] propose that attachment theory provides a useful framework to understand the mechanisms by which early relationships guide more general SIP patterns. They maintain that the caregiver, by providing (or not providing) a secure base, lays the foundation for the child's future processing of information which is manifested in interpretations of an array of social relationships. Thus, the child comes to form expectations for new social interactions that are largely grounded in past experiences with the caregiver. In that sense, these interpretations do not represent an "objective" look of the surrounding social world but are rather a reflection of the child's internal models of self and others.

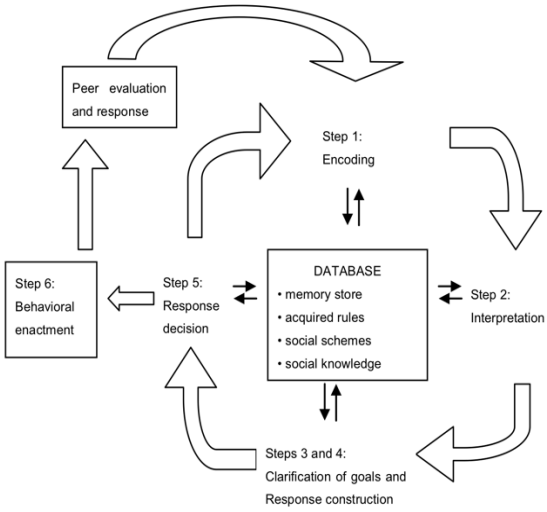

Figure 2: The social information processing model (Based on Crick and Dodge, 1994)

1.3. Direct association between parenting characteristics and children's social perceptions and behaviors

The association between parenting styles and children's social behavior is well-established. For example, less competent parenting styles such as authoritarian or permissive parenting has been frequently linked to higher levels of children's aggressive and withdrawn behaviors in school (e.g., [22,23] , while authoritative (i.e., a parenting style combining structure and sensitivity) parenting has been consistently linked to children's positive social skills and lack of behavior problems (e.g., (Maccoby, & Martin, 1983; Raikes & Thompson, 2008; Rohner, Bourque, & Elordi, 1996). In a secondary-analysis study using the NICHD Study of Early Child Care dataset (NICHD ECCRN, 2001; 2005)(NICHD Early Child Care Research Network, 2005; NICHD Early Child Care Research Network, 2001) Fraley, Roisman, and Haltigan (2013) [29] demonstrated that maternal sensitivity assessed in infancy, preschool, and multiple points during the school years is an enduring predictor of children's social competence measured at multiple time points from infancy to age 15. In another study using the same dataset, early maternal sensitivity was found to be predictive of early school children's social problem solving skills [25]. More specifically, children experiencing sensitive parenting early in their lives were more competent problem solvers when presented with social scenarios and have shown less aggressive tendencies during the school years.

A multinational longitudinal study with children aged 7-10 [30] examined the effects of both positive and negative parental patterns on children's adjustment to school. Findings showed that negative maternal behaviors predicted more aggression in school whereas positive maternal behaviors (e.g., warmth) predicted less aggressive behavior in school. Other studies have examined the links between various parenting behaviors and children's SIP patterns. Overall, most of these studies highlighted especially the effect of negative parental patterns - negative emotionality, criticism, covert and overt hostility, and other characteristics of authoritarian parenting style - on children's more negative social information processing in social contexts outside the family, particularly in school (e.g., [31–34]. Within this conceptual framework (i.e., the SIP model), only four studies examined the connection between parenting behaviors and children's SIP patterns, as well as children's behavior in preschool or school [35–37]. Using the NICHD ECCRN dataset, McElwain et al. found a direct link between mother-child affective mutuality in kindergarten and fewer hostile attributions and greater peer competence in first grade[38]. Using the same dataset, however, Runions & Keating (2007) [36] reported that parental negative control was only weakly predictive of children's problem behaviors in school and was not predictive of SIP at all [36]. In the two other studies, Ziv and colleagues (2016) [37] reported on significant links between maternal negative control and children's less competent selection and evaluation of responses, and Pettit and colleagues (1991)[35] reported that parent intrusiveness was positively related to children's tendencies to select aggressive responses whereas parental positive involvement was related to children's tendencies to select competent responses.

1.4. Direct association between children's social information processing and their social functioning

Associations between social information processing and social behavior have been reported in numerous studies. Most of these studies have reported on significant associations between negatively biased SIP patterns and maladjusted behavior in school. For example, children who tended to ascribe hostile intents to peers in benign situations (e.g.,[39–42]; to propose aggressive solutions to such situations [42–44]; and to expect positive instrumental and interpersonal outcomes for aggressive responses [42,45], were also more likely to show aggressive behavior in school. Other studies have found significant associations between SIP and other maladjusted social behaviors in school. Burgess and colleagues reported that shy/withdrawn children are more likely to attribute hostile intentions to unfamiliar than to familiar peers [46]. Other researchers found that children characterized as victims tend to avoid challenging social situations while expecting others to be purposefully hostile or ignoring [1,47]. In contrast, prosocial children have been found to exhibit highly competent SIP patterns in all stages of the process (e.g., [48,49]).

Similar trends were found in the small number of studies examining the associations between SIP and social behavior in preschool and kindergarten children. Katsurada & Sguwara (1998) [50] showed that hostile/aggressive preschoolers are more likely than their less aggressive peers to

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attribute hostile intent to another person's actions. Importantly, their results also indicated that preschoolers are capable of distinguishing between intentional and unintentional actions when the stimulus materials are familiar to them thus reinforcing the need to assess SIP in young children. Hart and his colleagues [51] showed that preschoolers engaging in more antisocial/disruptive behavior expect more positive instrumental outcomes for hostile means of conflict resolution than their less disruptive peers and Runions and Keating (2007) [36] showed that hostile attribution measured during the preschool years is a better predictor of problem behavior in first grade than hostile attribution measured concurrently. In more recent studies, Denham and colleagues linked preschoolers' SIP patterns to early social adjustment in school [52]; and more SIP distortions were found among children labeled by their teacher as disruptive, specifically in two SIP stages: response construction and response decision [53]. Finally, in a series of studies, Ziv and colleagues showed that distorted SIP patterns in preschool are positively related to problem behaviors and negatively related to positive social skills [1,37,54,55].

1.6. Hypotheses

Based on the above review, we hypothesize that a complex set of associations exists between the mother's perceptions (general SIP and perception of relationships with the child) and behavior (parenting style) and the child's perceptions (SIP) and behaviors (social functioning). These associations are portrayed in Figure 2 (our conceptual model) and are summed in the following two main hypotheses:

(1) The mother's general SIP patterns will be significantly associated with her child's SIP patterns but this association is expected to be mediated by (a) the mother's parenting style, and, separately, (b) by the mother's perception of relationships with the child.

(2) The mother's perceptions of her relationships with the child will be associated with the child's social functioning but this association will be mediated by the child's SIP patterns.

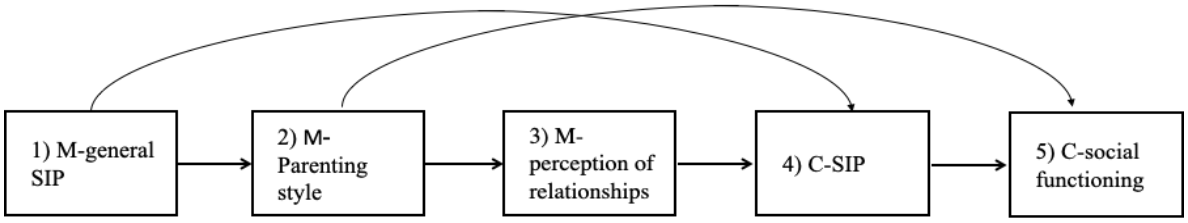

Figure 2. The study's conceptual model

2. Materials and Methods

2.1. Participants and procedure

Three hundred and one children (152 girls; 149 boys; mean age 5.5 years) and their mothers participated in the study. Data were collected between the years 2016 and 2019 in a large metropolitan area in the north part of Israel. A more complete description of the families participating in this study could be found in Table 1 (beginning of results section). After receiving approval for the study's protocol for the University's IRB (approval # 464/16) as well as from the Department of Education chief scientist office (approval # 9312), we contacted the families through fliers distributed in the kindergarten classrooms. After receiving signed consents from parents, we contacted the families to schedule a home visit in which parents completed questionnaires assessing their general SIP patterns, their perceptions of the relationships with the child, and their parenting styles. Additionally, they provided demographic information such as parental level of education, family income, number of children and other family members in the household and so forth. Next, we scheduled classroom visits in which we directly assessed the child's SIP patterns. Finally, the child's teacher completed a questionnaire reporting on the child's social functioning in the classroom. Thus, information collected

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in this study, was obtained from three separate reporters (mother, child, and teacher), in three separate occasions.

2.2. Research Measures

Measures are reported as they correspond to the study's main theoretical constructs: maternal constructs (predictors: general SIP, parenting style, perception of child); child's SIP patterns (mediator/outcome); and, child's social functioning in kindergarten (outcome).

2.2.1. Maternal constructs:

Mothers' ***general SIP*** *patterns* were assessed using a questionnaire that is based on the *Social information processing-attribution and emotional response* [56]. In this questionnaire, the mother is asked to respond to a series of hypothetical scenarios in which other individuals are behaving in ways that could be interpreted as intrusive, rude, and anti-social, however, this interpretation is interrupted by what could be conceived as a strong rationale that justifies this behavior in the particular situation. For example, in one of the scenarios, a person is jumping a line in the supermarket in front of the protagonist but says she's doing it because she is in a hurry to catch a bus (thus, jumping a line could be perceived as anti-social but the person is providing a rationale that could be conceivable). In total, four different scenarios are used. After each scenario, mothers were asked multiple choice questions about the intents of the other person (e.g., is she lying or not), what she (the mother) would do in a situation like this (e.g., will she let the other person pass), will she say anything to that person, and, what she would do in that same situation (e.g., what she would do if she was in the supermarket in a big hurry when there is a big line). Additionally, mothers were asked a series of Likert-like questions about intents and actions in similar situations and asked how much they identify with a specific action/thought (5 points scale: from highly identify to highly do not identify; e.g., I will let the woman pass and act nicely to her; I will ignore the woman and will not let her pass). In the current study, one summary score – mother's hostile attribution bias – was used. The possible range of this score was 0-7 with higher scores representing higher levels of hostile attribution bias.

Mother's parenting style was measured using the Parenting Styles and Dimensions Questionnaire (PSDQ [57]) . The 32-items questionnaire identifies three parenting styles: authoritative (15 items), authoritarian (12-items), and permissive (5 items). An example for an authoritative item is: "I listen to my child when I need to make a decision but I do not make a certain decision just because my child wants me to". An example of an item targeting authoritarian style is: "I slap my child when s/he misbehaves". Finally, an example of an item targeting permissive behavior is: "I allow my child to make his/her own decisions, without a lot of help from me". The questionnaire was reported to have good psychometric properties, including in Israel (e.g., [58]). In the current study, Alpha reliability scores for the authoritative and permissive scales were very low (lower than .50 for both scales) and thus these two scales were excluded from further analyses. Alpha reliability scale for the authoritarian scale was .83 and thus we used this scale as the only marker of parenting style in this study.

Mother's ***perception of the relationships with the child*** was measured using the short-form Child-Parent Relationship Scale (CPRS, [59]. The scale includes two different scales: conflict (e.g., "my child and I always seem to be struggling with each other"), and closeness (e.g., "I share an affectionate, warm relationship with my child"). Each of the 15 items is scored on a 5-point Likert scale (from 0 – definitely does not apply, to 4 – definitely applies). Reliability score (Alpha) for the conflict and closeness scales were 0.72 and 0.65, respectively.

2.2.3. . Child constructs:

Social information processing patterns were measured using the social information processing interview – preschool version (SIPI-P; [55]. This 20-minute structured interview is based on a storybook easel depicting a series of four vignettes in which a protagonist is either being excluded by two peers (the 2 *peer-exclusion* vignettes) or provoked by another peer (the 2 *peer-provocation* vignettes). The

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peers' intent is portrayed as either ambiguous or non-hostile/accidental (never intentionally hostile). The illustrations in the storybook are of cartoon bear characters and there are parallel picture books for boys and girls. As the child hears the story, the interviewer stops at scripted points and poses questions addressing the hypothesized information processing steps. Eight main scores are initially derived from the SIPI-P: (1) *efficient encoding* (α = .84), which is a summary score of the child responses to the question (asked once for each of four stories): "what happened in the story, from the beginning to the end" with higher scores representing better recollection; (2) *hostile attribution bias* (α = .69), which is a frequency count of the number of times the child describes the other child/ren as having hostile intents across the four stories (based on the question: "were the other child/ren mean or not mean?"). Thus, the range for this score is 0 to 4 with higher scores representing higher tendency to attribute hostile intent to peers; (3) *competent response generation;* (4) *aggressive response generation;* and (5) *inept response generation*. Each of these three scores represents a summary of the child's responses to the question: "what would you do if this (whatever happened in the said story) happened to you?" The possible range of each of these scores is 0-4 with higher scores representing higher levels of competent/aggressive/inept response construction, respectively; (6) *competent response evaluation* (α = .87); (7) *aggressive response evaluation* (α = .80); and, (8) *inept response evaluation* (α = .86). Each of these three scores represents a summary of the children's evaluation of a response (i.e., competent, aggressive, or inept) presented to them (e.g., the child is shown an aggressive response, for example, the child ruins the other children's game, and is asked three questions: "was this a good thing or a bad thing to do?"; "if you had done this, will the other children love you?"; "if you had done this, will the other children let you play?). The possible range of each of these scores is 0-12 with higher scores representing higher levels of competent/aggressive/inept response evaluation, respectively (For more information about this measure see [55].

Children's social functioning were measured using the Strengths and Difficulties Questionnaire – teacher version (SDQ; [60]). The SDQ is a short behavioral screening questionnaire that is designed to assess the behaviors of children ages 4-16 years old focusing on five main attributes: *emotional symptoms* (e.g., Often complains of headaches, stomach-aches, or sickness); *conduct problems* (e.g., Often fights with other children or bullies them); hyperactivity/inattention (e.g., Restless, overactive, cannot stay still for long); *peer relationship problems* (e.g., Picked on or bullied by other children), and, *prosocial behavior* (e.g., Considerate of other children's feelings). Each of the five scales include five items for a total of 25 item, all rated on a 3-point likert scale: "not true" (scored '0'), "somewhat true" (scored '1') and "certainly true" (scored '2'). Thus, the possible score range for each of the five scales is 0-10 (with the possibility of combining the four "problems" scales into one 0-40 "problem behaviors" score). The questionnaire was reported to have adequate reliability and validity, with Cronbach α for all scales ranging from 0.69 to 0.84 (e.g., [61,62]). In the current study, Alpha reliability scores ranged from 0.52 (peer problems) to 0.81 (hyperactivity and prosocial scales) for the individual scales. The alpha for the combined negative scale (combining the four negative scales) was 0.84.

3. Results

3.1. Analytic strategy

To test our hypotheses, we conducted path analysis in Mplus Version 7 [63]. Indirect effects were tested with bootstrap method with 95% confidence intervals. All models ran as saturated. Mediation effect sizes were calculated as the relative magnitude of the indirect to the total effect. We tested the potential contribution of background covariates that associated significantly with the specific outcome (SIP or social functioning). Specifically, in the prediction of child's SIP patterns, ethnicity (sector) and mother education were tested. In the prediction of child's social functioning, child's sex and the mother's education levels were tested. If including those covariates did not change the patterns of significance or magnitude of effects they were excluded from the model for parsimony [64].

Our model includes five different levels of data: (a) the mother's general SIP patterns, (b) the mother's parenting style, (c) the mother's perception of relationship with the child, (d) the child's SIP, and, (e) the child's social functioning. Because each of these levels included multiple observed

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variables, we ended up using the variables from each level that corresponded best with our hypotheses and showed good reliability (see measures section above). We ran a number of models with different predictors and outcomes and present here the models that showed the highest promise. Accordingly, our final operational model include the following five variables: level 1 = Mother's *hostile attribution bias* (M-HAB); level 2 = Mother's *authoritarian parenting style* (M-Authoritarian); level 3 = Mother's *perception of her relationship with the child as conflictual* (M-conflict); level 4 = child *incompetent response generation* (a reversed competent response generation score - C-ICRG, to match the direction of the other 4 variables in the model, i.e., higher scores=more negative behaviors and perceptions); and, level 5 = Child's *total problem behaviors* (C-PB). The conceptual model portrayed in Figure 2, is portrayed again in Figure 3, this time with the actual observed variables used in our main analyses.

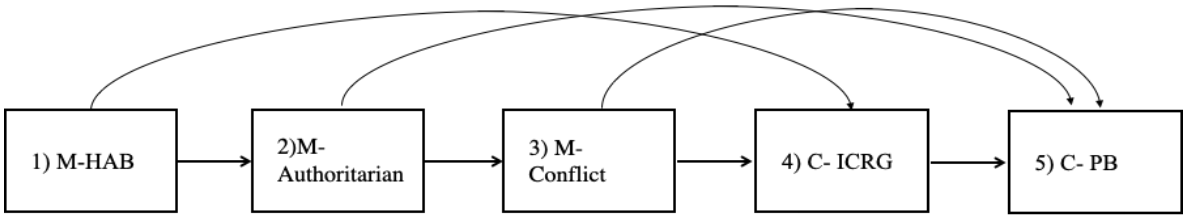

Figure 3. The study's operational model and expected effects

3.2. Descriptive statistics and intercorrelations

Table 1 presents the means, standard deviations, and bivariate correlations among the study's five main variables and a number of potential background moderators: child age and sex, mother education, family income, and sector (Jewish or Arabs). Child mean age was 5.72 years (*SD*= .53), and 152 of 301 participants (50.5%) were girls. About 80 of mothers were college-educated and all were married. Mothers had on average 2.83 (*SD*= 1.11) children. Family income was rated on a 5-point scale. The question about income included the average monthly income in Israel per family (about $4,000 as of 2014) and parents were asked whether their income is much below this mean (1); below the mean (2); about equivalent to the mean (3); above the mean (4); or much above the mean (5). Thus, the mean score in the study of 3.54 suggests that the mean family income in this sample was slightly above the country's average. As can be seen in the table, two background variables were particularly associated with the study's main variables: mother education and sector, and more sporadic associations were found for the other background variables. As for the associations between the study main variables, the mother's hostile attribution bias was positively associated with authoritarian parenting style and with higher levels of conflict, as well as with higher levels of incompetent response generation by the children. The mother's authoritarian style was strongly associated with the level of conflict in the relationships; and positively associated with incompetent response generation and the child's problem behavior. The mother conflict was positively associated with incompetent response generation and with the child's problem behavior. Finally, the child's incompetent response generation and total problem behavior were positively associated. Thus, all the preliminary conditions for examining the mediations in our main analyses were fulfilled.

Table 1. Descriptive Statistics and Correlations for Person-Level Averages of All Study Variables and Covariates.

Variable	1	2	3	4	5	6	7	8	9	10
1. MHAB	-									
2. Author.	.32***	-								
3. Conflict	.18*	.57***	-							
4. C-ICRG	.17*	.27**	.18**	-						

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5.	C-PB	.02	.21***	.20**	.17**	-					
6.	Child age	.20**	.05	.001	-.09	.03	-				
7.	Income	-.16*	-.23**	-.25*	-.12	-.07	.11	-			
8.	MEDUC	-.23**	-.31***	-.34***	-.25**	-.29**	-.05	.35***	-		
9.	Sector	-.45***	-.42***	-.26**	-.23***	-.07	-.29***	.12	.31***	-	
10.	Child' sex	.03	-.10	.02	.02	.17**	-.03	.09	.08	.06	-
		M (SD)	M (SD)	M (SD)	M (SD)	M (SD)	M (SD)	M (SD)	M (SD)	%	%
		1.82 (1.68)	1.17 (.48)	2.90 (.47)	2.64 (1.34)	6.12 (5.19)	5.72 .53	3.54 1.27	4.64 1.37	61.5% (Jews)	50.5% (girls)

Note. MHAB = Mother hostile attribution bias; Author. = Authoritarian parenting style; Conflict = mother's perception of the relationship with the child as conflictual; C-CRG = Child-Incompetent response generation; C-PB = child-problem behavior. In all scores, higher scores represent more negative attributions/behaviors. Sex (girls= 0, boys = 1). Sector (Arabs=0, Jews= 1).

*p < 0.05. **p < 0.01. ***p < 0.001.

3.3. Main analysis

3.2.1. Hypothesis 1: Parenting factors mediate the effect of mother's SIP on child's SIP

We tested the indirect effect of the mother's hostile attribution bias on the child's incompetent response generation through the mother's authoritarian parenting style and separately through her positive perception of the relationship with the child. As shown in Figure 4, authoritarian parenting style fully mediated the association between the mother's hostile attribution bias and the child's incompetent response generation. Specifically, the mother's hostile attribution bias had a positive total effect on the child's incompetent response generation (*B*= .17, *SE*=.05, *p*=.04, CI [.01, .21]) and predicted higher authoritarian parenting style (*B*= .32, *SE*= .06, *p*<.001, CI [.21,.43]). Higher authoritarian parenting style, in turn, predicted the child's incompetent response generation (*B*=.24, *SE*= .06, CI [.07, .33]). The indirect effect between the mother's hostile attribution bias and the child's incompetent response generation through authoritarian parenting style was significant (*B*=.06, *SE* =.03, CI [.02,.12]). Finally, after adjusting for authoritarian parenting style, the direct effect of the mother's hostile attribution bias on the child's incompetent response generation was no longer significant, (*B*=.09, *SE* =.06, CI [.04,.21]). The indirect effect through authoritarian parenting style accounted for 35% of the total effect of mother's hostile attribution bias on the child's incompetent response generation. When we controlled for child's ethnicity or mother's education the indirect effect remained significant, (*B*=.03, *SE* =.02, CI [.00, .06]).

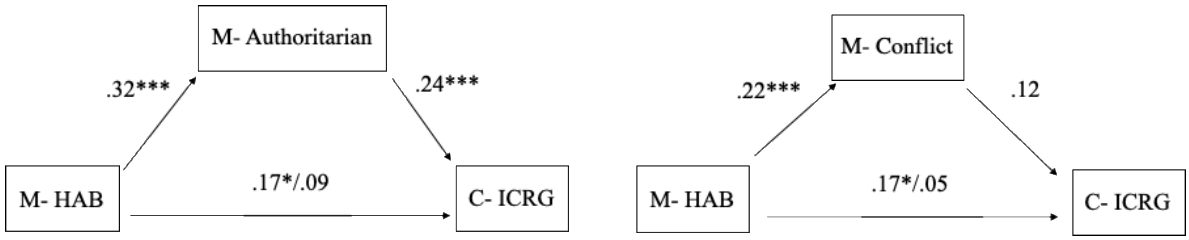

Figure 4. Mother authoritarian parenting style (a) and mother perception of conflict (b) mediate associations between mother hostile attribution and child competence generation response. Standardized coefficients are presented. Indirect effect for mother authoritarian parenting style; *B* = .08, *SE*= .02, *p*= .002, for mother perception of conflict, *B* = .02, *SE*= .02, *p*= .09. Mediation model for mother perception of conflict is adjusted for mother education and ethnicity.

Next, we tested the indirect effect of the mother's hostile attribution bias on the child's incompetent response generation through the mother's perception of the relationship with the child as conflictual. The indirect path was found significant (*B*=.03, *SE* =.02, CI [.004, .05]), explaining about 17% in link between mother and child SIP. However, after we adjusted the models for child's ethnicity and mother education the mediation effect became null, (*B*=.02, *SE* =.02, CI [-.001, .05]).

3.2.2. Hypothesis 2: Child SIP mediates the effect of mother's parenting factors on child's functioning

In two parallel models we tested the mediating role of child SIP in the link between mother perception of the relationship with the child's social functioning, and separately between mother parenting style and child social functioning. The mediation effect of SIP on the link between authoritarian parenting style and child functioning approached significance (*b*=.03, *SE* =.06, CI [-.004, .07]) and became null once we adjusted the models for youth sex and the mother education. Similar results emerged for the mediating effect of SIP on the link between conflict and child's functioning, which approached significance, (*b*=.03, *SE* =.02, CI [-.006, .01]), and became null when we adjusted for youth sex and the mother education.

4. Discussion

Children's ability to adjust to the social rules and expectations in the educational environment is of major concern to researchers and practitioners alike. This is especially true in the preschool and kindergarten transition years when children are about to enter the much more demanding primary school system and the types of behaviors they demonstrate could strongly affect their ability to transition successfully. On the other hand, these early years are also an opportunity as the earlier specific social adjustment difficulties are detected, the chances of successful intervention increase. So that such interventions are successful, it is critical to understand the antecedents that contribute to more or less successful social functioning. Accordingly, the main purpose of the present study was to examine predictors of children's social functioning in kindergarten with a specific focus on (a) maternal factors; and, (b) children's social cognition. We posed two main hypotheses: First, we hypothesized that the association between mother and child's general social cognition will be mediated by the mother's parenting style and by her perception of relationship with the child. Second, that parenting factors (style and perception of the relationships with the child) will be associated with the child's social functioning in school through the child's social cognition. These hypotheses were partially confirmed in this study: authoritarian parenting style indeed fully mediated the association between mother and child's SIP but the other hypothesized mediated paths became null when other background factors (sector, maternal education, and child sex) were entered into the equation. These findings have both theoretical and clinical implications that are discussed next.

4.1. Theoretical implications

Our findings generally support the two theoretical paths presented at the onset of this article. In these hypothesized paths, (a) the mother's SIP patterns affect the child's SIP patterns through her parenting behaviors and perceptions, and, (b) the quality of the parent-child relationship contributes to the explained variance in the child's mental representations of the social world (SIP patterns) which, in turn, contributes to the explained variance in the child's exhibited behaviors in school. Further, our findings highlight the specific components of these hypothesized paths, which in our sample, like in most previous studies on these links, are more strongly related to negative behaviors and perceptions of the mother and child rather than to positive ones. It is especially notable that these strong links were found while using data from multiple independent sources representing different measurement approaches. Information on maternal perceptions and behaviors were obtained through the mother's self-report; information on SIP was obtained by means of direct interview with the child; and information on the child's behavior at school was obtained from his/her teacher's

report. This multi-method approach constitutes a major strength of the present study and underscores the validity of its findings.

The strong indirect link between the mother and child's SIP through parenting style is especially notable. To remind the reader, information about the mother and child's SIP were obtained by asking the members of the dyad questions that are not directly related to the other member. Mothers were asked about their interpretations of hypothetical common scenarios in the adult world (e.g., someone they do not know is trying to skip a line), and children were asked to respond about hypothetical scenes in the kindergarten environment (e.g., other children do not let the protagonist child join them in a game). Thus, the direct link found between the two is not trivial. It suggests that by some means, the general perception of the parent about the social world is transferred to the child such that the child's view of his/her social world resembles the parent's. The current study provides indications about the means by which this intergenerational transference occurs. Most notably, it seems that the mother's general perception of the social world affects her parenting style. In particular, it seems to be especially noticeable in the case of authoritarian parenting style. In our study, mothers who viewed the social world more suspiciously (i.e., attributed more hostile intents to unknown individuals), also seemed more comfortable reporting on being harsher with their child (and therefore receiving higher scores on the authoritarian scale). This, in turn, affected the child's perception of his/her own social world as children with authoritarian mothers were less inclined to generate competent social solutions to complex and challenging social situations. The mediation analysis revealed that the previously significant association between the mother and child's SIP is no longer significant when authoritarian parenting style is entered into the equation and that more than a third of the link between mother and child's SIP is explained by this parenting style. Thus, one mean by which the parent general perception of her social world is transferred to the child is through the mother's behavior toward the child and this transference is apparent only in the case of negative perceptions of the world (by both members of the dyad)

Second, the same link (mother to child SIP) was also mediated by the way the mother perceived her relationship with the child. Mothers who tended to attribute more hostile intents to unknown others also tended to view their relationships with their children as more conflictual than mothers who did not have the same tendency. In turn, their children's SIP patterns were less competent. Although the indirect effect in that case did not held after entering background factors into the equation, the mediation analysis still revealed that a significant portion of the link between mother and child SIP is explained by the mother's perception of her relationship with the child thus providing evidence for another mean by which the parent general perception of her social world is transferred to the child - the mother's perception of her relationship with the child as conflictual.

Importantly, authoritarian parenting style was also strongly related to the mother's perception of the relationship as conflictual. Mothers who reported to behave harsher with their children also reported on more conflict in the relationship. Whereas this association is important on its own merit, it also suggest that an alternative path to the one suggested in our theoretical model is possible, i.e., that the high level of conflict leads the parent to behave more harshly towards the child and not the other way around: that authoritarian parenting style leads to more conflict in the relationship.

Our second hypothesis was partially confirmed as well. Both parenting factors (authoritarian parenting style and the mother's perception of the relationships as conflictual) were positively associated with the child problem behavior in school and this association was mediated by the child's social cognition. Like in the previous case, however, these mediations was not held after background factors were entered into the equation. The links we found were associated with a less positive maternal factor: authoritarian parenting style and higher perception of conflict were linked to the child's less adaptive social perceptions: lower levels of competent response generation, which, in turn, was linked to the child's less adaptive behaviors in school. Hence, our findings contribute significantly to the limited available information about the associations between negative parental behaviors and children's negative perceptions and behaviors ([22,23,32–34,36,39]).

4.2. Clinical implications

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Our findings may have implications for early intervention aiming to reduce children's maladaptive behavior. As children's social adjustment is an important indicator of difficulties in later life [65], the investigation of the cognitive processes facilitating social behavior in childhood should support efforts to prevent children's maladaptive behavior. Moreover, because the social information processing model describes specific processes that can be taught to children through practice and demonstration, these processes could be targeted in interventions with socially maladjusted children. Such initiatives already exist with elementary school-age children (e.g., Conduct Problems Prevention Research Group, [66–68]) but are less common in preschool.

Our findings on the association between response generation and less adaptive social and learning behaviors in kindergarten suggest that this particular social information processing step could be explicitly targeted in interventions with kindergarten children. For example, teachers could create role-play activities in which children are asked to generate responses to challenging social scenarios. Teachers could provide feedback, correcting misguided/non-competent suggestions and encouraging social decision-making processes that suggest common social knowledge. Programs such as Making Choices: Social Problem Solving Skills for Children (MC; [68]) offer specific intervention goals, such as the identification of relational goals and the design and selection of prosocial goals. These steps could be adapted for kindergarten children; they seem particularly relevant to the correction of biases in the ability to the ability to generate responses that are appropriate in a specific social situation.

4.3. Study limitations and future directions

Even though this study includes many methodological advantages, some methodological limitations should be noted. First, data were collected at only one time point. Therefore, we cannot at this point empirically confirm a theoretically justified causal model that maternal general SIP predicts parenting factors that in turn predict the child's SIP, it is entirely possible that these links occur in reverse order, especially, as noted before, in the association between authoritarian parenting style and the perception of the relationship with the child as conflictual. Additionally, we cannot confirm a causal link between parenting factors to child's SIP, which, in turn, predicts maladaptive behavior. Alternative models in which, for example, the child's status in school affects the relationship with the parent and her parenting style are also possible. To account for this limitation, future research may employ a longitudinal design in which, for example, the parent-child behavior would be assessed at the earliest point, Child's SIP would be evaluated at a middle point, and the child's behavior would be measured at the final point. We are in the process of designing such a study in which the families participating in the current study will be followed into adolescence. Second, our measurement battery does not include measures of important constructs that may shed further light on our findings. For example, measures of parental psychological factor seem particularly important to more clearly understand the antecedents of parental behavior, child's SIP and maladaptive behavior. In addition, measures of a child's psychological outcomes, such as self-esteem, and SIP variables that are not so heavily connected to maladjusted behavior are crucial if we are to have a better understanding of the types of perceptions and behaviors that could be predicted from more positive parental behaviors, such as parental positive perceptions of the relationships with the child. Adjusting for these limitations in future research may further advance our understanding of the possible links between parental perceptions and behaviors and children's perceptions and behaviors.

5. Conclusions

As both attachment theory and social information processing model suggest, there is a link between the quality of the parent-child relationship and the child's social behavior in school and this link is indeed partially mediated by the child's social information processing patterns. Additionally, for the first time, we were able to confirm an association between the parent and child SIP via parenting factors. The implications of these findings are both theoretical and clinical. From a theoretical standpoint, it shows the utility of a social information processing approach to establish a more complete and succinct understanding of the links between a parent's perceptions (general and

child concrete) and behaviors with her child and that child's behavior in a different social setting. From a clinical point of view, it supports intervention approaches that seek to children's thought processes as an effective mean to change their behaviors.

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