

Effects of Interviewer Support on Children's Memory and Suggestibility: Systematic Review and Meta-Analyses of Experimental Research

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Abstract

The accuracy of children's reports of abuse has been hotly debated in the press, academia, and the courtroom. Yet, children's accuracy depends, in part, on the context in which children are interviewed. Guidelines often recommend creating a supportive psychosocial context to promote open, honest responding; however, there is also concern that support promotes social desirability and acquiescence to suggestion, leading children to report more of what they perceive adults want to hear than the truth. The question remains as to whether there is a sufficient body of scientific research to determine whether interviewer supportiveness improves interview outcomes while minimizing children's stress or whether it increases suggestibility and impairs accuracy. Using a systematic search strategy and meta-analyses, this study identifies and reviews findings from experimental studies of the effects of interviewer supportiveness on the accuracy of children's reports. Although the number of studies in the evidence base is small ($n = 15$), the studies are of relatively good quality. Results suggest noncontingent interviewer support bolsters children's accuracy. Children are more resistant and less acquiescent to suggestive questions when interviewers are supportive as compared to nonsupportive or neutral. Effects are in the moderate range. Interviewer support is also associated with fewer errors on nonsuggestive questions. Discussion focuses on implications for practice; directions for future research; identifying vulnerable subgroups; and underlying cognitive, social, and emotional mechanisms.

Keywords

interviewer support, child witness, child abuse, suggestibility, forensic interview, child eyewitness testimony

Key Points of Research Review

- *Noncontingent interviewer support bolsters children's accuracy.* Review of evidence suggests children interviewed in supportive contexts provide more accurate reports than those interviewed under neutral or nonsupportive conditions provided supportive behaviors are administered in noncontingent manner. Interviewer support is associated with reduced acquiescence and increased resistance to false suggestion as well as fewer errors on nonsuggestive questions. Across outcome variables, support effects are largely positive or neutral; adverse effects are rare.
- *Studies begin to identify subgroups in need of extra support.* Child factors associated with greater benefit include anxiety, reluctance, or uncooperativeness; insecure attachment histories; poor working memory; acute sensitivity to environmental stressors; or recounting emotional events over long delays.
- *Evidence base insufficient to determine* (a) kind of training necessary to implement support in a nonsuggestive

manner; (b) whether support effects due to changes in children's appraisals, trust, anxiety levels, coping strategies, or attentional control; and (c) whether hypothesized benefits of greater trust, honesty, self-disclosure, and empowerment exist and can be achieved without compromising accuracy.

Millions of children are interviewed each year by legal, social service, and mental health professionals about potentially

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traumatic experiences, such as abuse, neglect, or exposure to violence (e.g., National Court Appointed Special Advocates Association, 2015). The accuracy of their reports has been a controversial and hotly debated topic in the press and in the scientific community (Ceci & Bruck, 1993). Interviewers strive to provide decision makers with the most accurate information from children possible and to balance two compelling interests: safeguarding children from harm and protecting adults from unfair accusation.

Experimental research on child interviewing has burgeoned over the last 30 years, in part driven by the increased reliance on children's reports in courts. Such research is especially relevant in cases where children are the primary source of evidence, as in cases of alleged sexual abuse (Goodman, 2006). The bulk of past research has focused on cognitive factors, for example, how to phrase questions to prompt memory and reduce suggestion (e.g., Bruck, Ceci, Kulkofsky, Klemfuss, & Sweeney, 2008; Lamb, La Rooy, Malloy, & Katz, 2011). Far less is known about the socioemotional factors that also challenge our ability to obtain reliable data from children. It is not clear how to establish an optimal psychosocial atmosphere that is supportive, yet nonsuggestive and unbiased—a context that allows children to function optimally and provides the opportunity to report as much reliable information as possible, despite anxiety, mistrust, fears, ambivalence, threats, and secrets (Saywitz, Larson, Hobbs, & Wells, 2015).

These socioemotional factors may be especially important in cases of child maltreatment. Child witnesses often express real and imagined fears of negative consequences of disclosure (harm to self or loved ones; adult anger or disappointment; Goodman-Brown, Edelstein, Goodman, Jones, & Gordon, 2003; Malloy, Lyon, & Quas, 2007). In cases of sexual assault, for example, fears of retaliation and feelings of shame or self-blame can lead to delays, recantations, and nondisclosure (e.g., Goodman et al., 1992; Lyon, Ahern, Malloy, & Quas, 2010; Malloy et al., 2007; Quas, Goodman, & Jones, 2003). Furthermore, children who have experienced harsh parenting (e.g., emotional or physical abuse) or overly lax parenting (i.e., neglect) may harbor low expectations about adults reacting in a supportive, compassionate, accepting manner or offering help when it is needed (Bowlby, [1969] 1982; Bretherton & Munholland, 2008; Lyon et al., 2010). It is not surprising that maltreated children have had more difficulty establishing alliances with professionals than comparison groups (e.g., Eltz, Shirk, & Sarlin, 1995).

Experts have speculated that a supportive psychosocial context can help children overcome resistance and mistrust, promote self-disclosure, and minimize stress placed on children by the legal system (e.g., Bottoms, Quas, & Davis, 2007; Carter, Bottoms, & Levine, 1996; Hershkowitz, Lamb, & Katz, 2014; Lyon, personal communication, June 1, 2016). Whether such benefits can be achieved without compromising children's accuracy remains unresolved. There is both research and theory to suggest that interviewer supportiveness, or the lack thereof, may have serious effects on children's suggestibility and memory (e.g., Bottoms et al., 2007). However, it is not clear whether

the existing evidence base allows us to draw conclusions regarding the valence and magnitude of support effects on children's memory and suggestibility or to generate evidence-based guidelines for providing interviewer support without jeopardizing accuracy.

Defining Interviewer Supportiveness

Although definitions and measures are diverse, generally speaking, social support is considered the perception and actuality that one is cared for and has assistance from others (Uchino, 2009). Support is present when individuals interpret communications from others to signify that they are valued and that social resources are available to match the needs elicited by a stressful event (Cohen, 2004). In the interview context, Davis and Bottoms (2002) suggest defining interviewer support "as a form of social interaction or communication that fosters a feeling of well-being in the target" (p. 186). In research studies, elements of supportive interviewer behavior have been operationalized as provision of warmth, smiling, friendliness, eye contact, interest, open-body posture, positive feedback, using the interviewee's first name, and so forth (e.g., Davis & Bottoms, 2002; Goodman, Bottoms, Schwartz-Kenney, & Rudy, 1991; Quas, Bauer, & Boyce, 2004).

Effects of Interviewer Support on Memory and Suggestibility

There are a number of ways in which a more supportive psychosocial context might bolster children's overall memory performance, helping children function at a higher level than would otherwise be possible, as predicted by Vygotsky ([1934] 1978) and neo-Piagetian theories (e.g., Fischer, Bullock, Rotenberg, & Raya, 1993). Ample studies demonstrate that social context directly affects children's level of performance in cognition, memory, action, perception, and emotion (e.g., Bronfenbrenner, 1979; Gibson, 1979; Neisser, 1976; Piaget [1936] 1952; Skinner, 1969). In research studies, the effects of social support can be dramatic, producing sharp shifts in competence levels of individual children. Performance can rise sharply with the provision of support and fall sharply when support is removed (see Fischer et al., 1993, for discussion).

In addition, there are reasons to believe that a supportive interviewer may have a calming rather than anxiety-provoking effect, thereby reducing negative emotional states that interfere with cognitive processing and compete for mental resources, as predicted by attentional control and processing efficiency theories (Eysenck & Calvo, 1992; Eysenck, Derakshan, Santos, & Calvo, 2007). Stress and coping theories posit support promotes more adaptive appraisal and coping, reducing the interference of threat-related irrelevant thoughts and feelings that are distracting (Cohen, 2004). Behavioral and neuroimaging studies have shown that anxiety can be associated with adverse effects on cognitive performance, especially on tasks that require attentional focus (see discussion in Derakshan & Eysenck, 2009). Unsurprisingly, maltreatment is a risk factor

for both anxiety symptoms and attentional-related disorders (Krug, Dahlberg, Mercy, Zwi, & Lozano, 2002). In more supportive contexts, anxious children may be better able to regulate emotional states and liberate attentional resources to be deployed for memory retrieval (Derakshan & Eysenck, 2009).

Further, supportiveness is likely to operate along social as well as cognitive routes. Support might lower intimidation, reducing the perceived power differential between children and adults, thereby decreasing expectations of negative adult reactions to disagreement with adult presumptions (e.g., Goodman et al., 1991). Children might appraise more supportive interviewers as open to, if not encouraging, differing viewpoints. The result might be less deference to the adult's presumed superior knowledge and less acquiescence to interviewer suggestion. Similarly, supportiveness may raise a child's sense of confidence and self-efficacy, empowering children to contradict adult suggestion (Davis & Bottoms, 2002).

In contrast, lack of support or unsupportive behaviors (e.g., frustration, distance, disapproval, and contradiction) could have the opposite effect, inhibiting children from telling what they know and promoting denial, acquiescence, or reticence (e.g., Lewy, Cyr, & Dion, 2015; Zajac, O'Neill, & Hayne, 2012). Laboratory and field studies suggest interviewers exhibit unsupportive behaviors, often out of frustration with uncooperative children, and fail to offer support when it is needed (e.g., Lewy et al., 2015; Teoh & Lamb, 2013). Studies of cross-examination style questioning consistently find such unsupportive questioning decreases children's accuracy (e.g., Zajac, O'Neill, & Hayne, 2012).

It is also possible that too much support, or the wrong kinds of support, might heighten children's suggestibility, leading them to tell interviewers more of what they perceive interviewers want to hear than the truth. For example, supportive interviewer behaviors (e.g., friendliness, warmth) may promote social desirability (i.e., wanting to please adults and gain their approval), thus increasing acquiescence and compliance. If support is dispensed in a leading manner, such as providing selective reinforcement of interviewer preconceptions, it could exacerbate children's suggestibility (Bruck et al., 2008). Praise that is contingent on children's responses may act as selective reinforcement of inaccurate content, leading children to report more of what they perceive interviewers want to hear (Billings et al., 2007; Garven, Wood, & Malpass, 2000). Again, it is not clear whether there is sufficient empirical evidence to support these concerns. Hence, a systematic review and meta-analysis of experimental studies is not only warranted, it is a necessary step toward (a) understanding the cognitive, social, and emotional mechanisms driving the effects of supportiveness on memory accuracy and (b) generating evidence-based practice guidelines.

Aims of Present Study

Our first aim is to use a systematic review to identify whether a core body of rigorous experimental research exists examining the effects of interviewer supportiveness on children's reports.

Our goal is to use meta-analyses to draw conclusions regarding the magnitude and valence of potential support effects. Secondly, we plan to examine the evidence base for the following additional objectives: to identify critical elements of supportive and nonsupportive interviewing, to examine mediators between social support and accuracy whenever possible, and to clarify how much and what kind of training interviewers might need to provide support in a nonsuggestive manner.

Method

Data Sources and Search Strategy

Six electronic databases (PsycInfo, PubMed, Sociological Abstracts, Social Services Abstracts, Web of Knowledge, and Cochrane Central) were searched to identify experimental studies published in peer-reviewed journals evaluating the effects of interview strategies on interview outcomes, including accuracy of verbal report. Additional studies were identified by searching the reference lists from 30 authoritative reviews, contacting leading scholars, and from 2 recent scholarly conferences.

Research published between January 1990 and February 2014 was considered. The year of 1990 was selected because of the surge in research since the ratification of the United Nation Convention on the Rights of the Child in 1989. Appropriate filters were added to each search strategy as necessary (publication date, language). Searches were conducted using both subject headings (e.g., interview, psychological; mental recall; questioning; child) and key words (e.g., child*, youth, interview*, question*, reliab*, suggest*, bias, accuracy, memory, recall; where* indicates truncation). Full search strategies are available from the first author upon request.

Study Selection (Exclusion Criteria)

All publications generated by the search of the electronic databases were included unless an article met one of the 12 reasons for exclusion listed in Figure 1. Our focus was on experimental studies of the efficacy of interviewer supportiveness, where at least one outcome measure was related to children's response accuracy. To eliminate confounding factors, we excluded research focused on nonverbal props and aids as well as studies in which participants were recruited on the basis of their medical or psychiatric diagnoses (where symptoms and medications may have affected cognitive and social functioning).

Coding Procedures and Search Results

As seen in Figure 1, our search of six electronic databases produced 2,671 potential articles. Two independent raters applied exclusion criteria 1 through 11 to the titles and abstracts and excluded 2,389 ineligible studies with 99% agreement. Differences were resolved by discussion with a third team member. This resulted in 405 studies that were subsequently reviewed by two independent raters, applying the full set of exclusion criteria and reading the full text of the article as needed. Of these

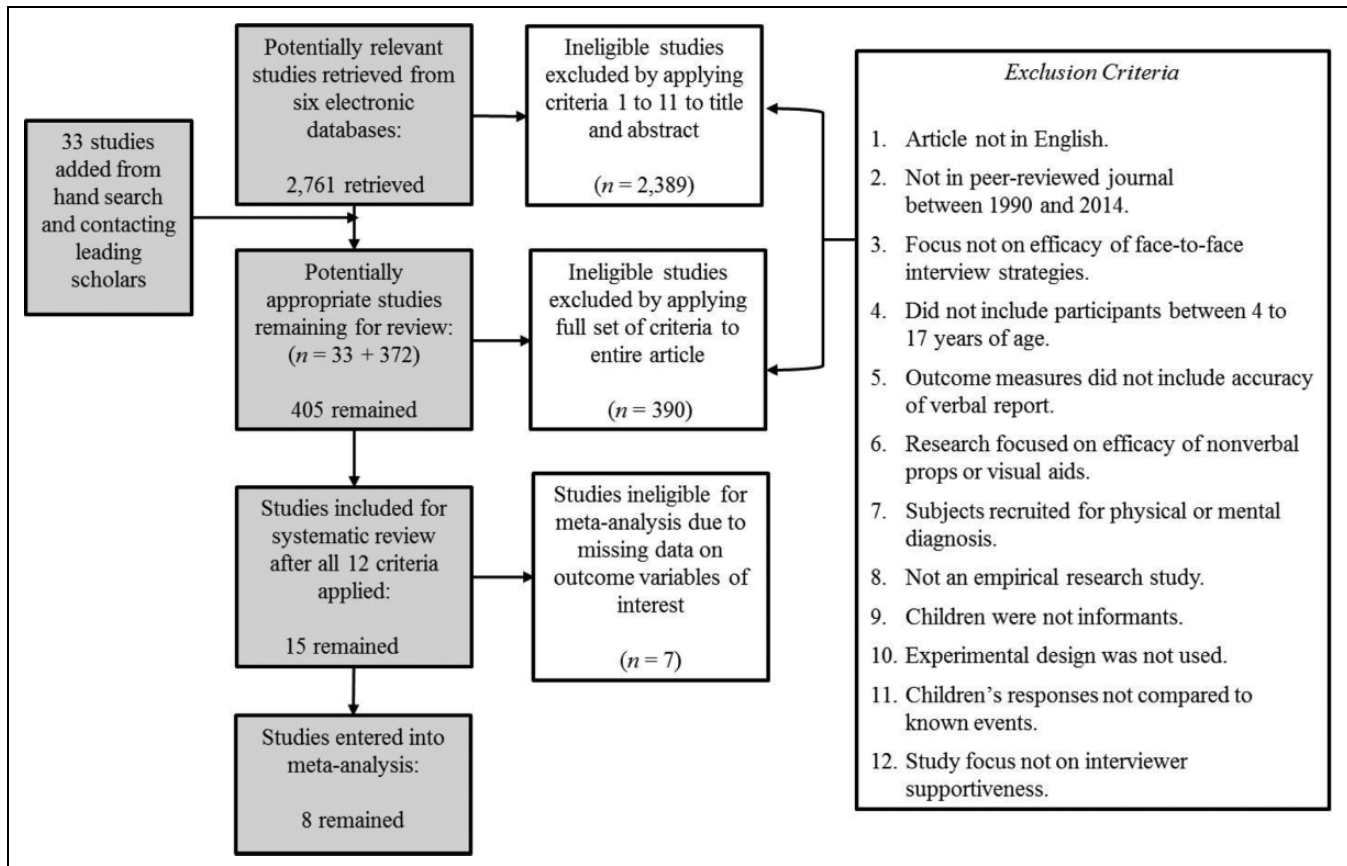


Figure 1. Flowchart of identified studies.

studies, 96% ($n = 390$) were excluded because they did not include a test of interviewer supportiveness on the accuracy of children's reports. Raters achieved 100% agreement. Fifteen articles remained for data extraction and synthesis.

Study Quality Assessment

The *Checklist for Measuring Quality* (Downs & Black, 1998) was used as a descriptive measure of quality for each of the 15 studies.¹ It is a 27-item scale² that assesses both the quality of the research design and the quality of the reporting of the research. Higher scores indicate better quality. Two raters scored 40% of the studies. The interrater reliability was high: $\kappa = .94$ and 97% agreement. Differences were resolved by discussion with a third judge. Then, each rater scored approximately half of the remaining studies. When articles reported limited information, first authors were contacted for missing information.

Data Extraction

Information collected from studies included author, publication date, publication title, research design, sample characteristics, event characteristics, description of supportive and nonsupportive conditions, interviewer training, main variables examined, outcome measures, and key findings.

Results of Systematic Review

Overview of Studies

After application of the exclusion criteria, 15 articles were located: 13 articles describing experimental studies and 2 articles describing exceptional field studies using quasi-experimental designs.³ Study characteristics are summarized in Table 1. Samples ranged from 3 to 14 years of age and from low to high levels of socioeconomic status. Participants in the experimental studies were recruited from the general population (e.g., classrooms, newspapers, and marketing firms). In the field studies, child forensic interview transcripts and audiotapes were selected from large databases of suspected cases of maltreatment. Operationalized definitions of supportive and nonsupportive conditions varied widely across studies and are depicted in Table 2. It is important to note that in a majority of studies, support was employed randomly or at proscribed times to avoid distorting children's responses.

In the experimental studies, children participated in objectively known events and were interviewed later in either a supportive or nonsupportive context. Accuracy and/or quality of children's reports were compared across support conditions. In all experimental studies, children's reports were compared to videotapes, transcripts, or adult witness reports of the target event to determine children's accuracy. The two field studies used a scheme for estimating ground truth in actual cases (e.g.,

Table 1. Descriptive Characteristics of Studies in Systematic Review.

Authors, Year	<i>n</i>	Age Range (yrs)	Event Type	Delay	Interviewer Identity and Training	Interview ^a
Almerigogna, Ost, Akehurst, and Fluck, 2008 (Study 2)	86	8–10	Classroom event	1 Week	Female	Specific Qs: NS, S
Almerigogna, Ost, Bull, and Akehurst, 2007	69	8–11	Film clip	None	Female	Specific Qs: NS, S
Carter, Bottoms, and Levine, 1996 ^b	60	5–7	Scripted play activities	None	Trained by experienced therapist	FR; specific Qs: NS, S
Davis and Bottoms, 2002 ^b	81	6–7	Scripted play activities	None	Male	FR; specific Qs: NS, S
Goodman, Bottoms, Schwartz-Kenney, and Rudy, 1991	70	3–7	Inoculation	2 and 4 weeks or 4 weeks	Unable to determine	FR; specific Qs: NS, S
Goodman, Sharma, Thomas, and Considine, 1995	40	3–5	Scripted play activities	None	Mother or unfamiliar female	FR; specific Qs: NS, S
Hershkowitz, Lamb, Katz, and Malloy, 2015	200	4–13	Suspected abuse in highly credible cases	Unclear	Forensically trained child interviewers	NICHHD, NICHHD-R: quality, volume
Hershkowitz, Orbach, Lamb, Sternberg, and Horowitz, 2006	100	4–13	Suspected abuse in highly credible cases	Unclear	Forensically trained youth investigators	NICHHD: quality, volume
Imhoff and Baker-Ward, 1999 ^b	64	3–4	Classroom event	2 Weeks	Female undergrads	Specific Qs: NS, S
Klemfuss, Milojevich, Yim, Rush, and Quas, 2013	162	7–14	Trier Stress Test	2 Weeks	Unfamiliar female	FR: quality, volume
Peter-Hagene, Bottoms, Davis, and Nysse-Carris, 2014 ^b	72	7–8	Scripted play	1 Year	Unclear	FR; specific Qs: NS, S
Quas, Bauer, and Boyce, 2004 ^b	63	4–6	Stress reactivity protocol	2 Weeks	Female	FR; specific Qs: NS, S
Quas and Lench, 2007 ^b	100	5–6	Film clip	1 Week	Unfamiliar female	FR; specific Qs: NS, S
Quas, Rush, Yim, and Nikolayev, 2014 ^b	73	7–14	Trier Stress Test	2 Weeks	Unfamiliar female	FR; specific Qs: NS, S
Quas, Wallin, Papini, Lench, and Scullin, 2005 ^b	106	5–6	Stress reactivity protocol	1 Week	Unfamiliar female	FR; specific Qs: NS, S

Note. NICHHD = National Institute of Child Health and Human Development.

^aQs = questions; NS = nonsuggestive; S = suggestive; FR = free recall. ^bStudy included in meta-analyses.

medical evidence, eyewitness accounts, suspect confessions, and physical evidence) described by Lamb, Sternberg, Esplin, Hershkowitz, and Orbach (1997).

The typical interview began with a free recall task followed by a set of direct questions⁴ comprised of those that were not intentionally leading (i.e., nonsuggestive) and those that were misleading/suggestive. In all studies, both nonsuggestive and suggestive questions were comprised of both closed (e.g., yes/no) and open-ended formats. Responses were coded as correct, incorrect, or don't know/remember.

Across the evidence base, a number of individual difference factors were examined; however, except for anxiety/distress, none were investigated by more than one or two studies, limiting our ability to draw inferences. The list includes temperament, attachment status, social reserves, resistance efficacy, language ability, parenting attitudes, task engagement, suggestibility trait, working memory capacity, and reluctance. In contrast, five studies were located investigating the association between anxiety, support, and memory accuracy. Children's

anxiety during the target event and/or the interview were measured by heart rate, cortisol level, autonomic reactivity, or a self-report state and trait anxiety questionnaire.

Quality Assessment Results

The mean score on the *Checklist for Measuring Quality* (Downs & Black, 1998) was 19.13 ($SD = 2.47$, range = 14–23). Five papers reached or exceeded 70% (19.6 points out 28). The checklist highlighted areas of neglect in the literature. Researchers were lax sometimes in reporting basic study characteristics, such whether coders were blind to study hypotheses and condition assignments and whether random assignment was employed. Excluding the two field studies, only eight of the remaining 13 articles reported random assignment, one study stated that it was not used, and the remaining four studies did not report whether it was used or not. Contact with first authors resolved the issue for several studies; however, in the future,

Table 2. Operationalization of Supportive (Gray Columns) and Nonsupportive (White columns) Conditions.

	Introductions	No Introductions	Simple Rapport	No Rapport	Open Posture	Closed Posture	Warm, Friendly, Smiling	Formal, Stern, No Smiling	Formal, Smiling	Minimal Eye Contact	Casual Clothing	Formal Clothing	Warm Voice	Monotone Voice	Sit Near Face	Sit Away From Child	Positive Feedback, Praise	Neutral, No Feedback	Negative Consequences	Used Child Name	Rarely Used Child Name	No Eyeglasses	No Eyeglasses	No Fidgeting	Fidgeting	Empathy, Interest	Confrontation, Criticism	Comprehension Inquiry	No Comprehension Monitoring
Almerigogna et al., 2008 (Study 2)							X	X																X					
Almerigogna et al., 2007			X	X	X	X	X	X	X	X	X											X							
Carter et al., 1996 ^a	X						X	X					X																
Davis and Bottoms, 2002 ^b			X	X	X	X	X	X							X														
Goodman et al., 1991 ^b			X	X	X	X	X	X							X														
Goodman et al., 1995							X	X									X												
Hersikowitz et al., 2015							X	X									X			X									
Hersikowitz et al., 2006			X	X	X	X	X	X							X						X								
Inhoff and Baker-Ward, 1999 ^{a,b}							X	X							X														
Klenfuss et al., 2013	X						X	X			X	X					X												
Peter-Hagene et al., 2014 ^a	X		X	X	X	X	X	X			X	X			X														
Quas, Bauer, and Boyce, 2004 ^a			X	X	X	X	X	X			X	X			X														
Quas and Lench, 2007 ^b							X	X							X														
Quas et al., 2014 ^a	X						X	X			X	X			X														
Quas et al., 2005 ^b			X	X	X	X	X	X			X	X			X														

Note. X indicates that the study included the behavior(s) named at the top of the column.

^aStudy included in meta-analyses. ^bChildren in the supportive condition were given juice and cookies before interview.

higher reporting standards should be required by scholarly journals.

Key Findings

In this section, we review findings gleaned from the entire evidence base located. In a subsequent section, we present the results of meta-analyses conducted on the subset of studies for which all of the necessary statistics were available. First, the review located 15 articles describing studies of relatively good quality based on scores from the *Checklist for Measuring Quality*. This evidence base involves a wide age span (3–14 years) and retention intervals ranging from immediate recall (e.g., Almerigogna, Ost, Bull, & Akehurst, 2007) to a one year delay (Peter-Hagene, Bottoms, Davis, & Nysse-Carris, 2014). Methods included a variety of to-be-recounted experiences. Some studies involved activities not intended to be stressful, such as a play event in an unfamiliar laboratory (Almerigogna, Ost, Akehurst, & Fluck, 2008; Almerigogna et al., 2007; Carter et al., 1996; Davis & Bottoms, 2002; Goodman, Sharma, Thomas, & Considine, 1995; Imhoff & Baker-Ward, 1999; Peter-Hagene et al., 2014). Some studies utilized mildly stressful events, such as an unexpected fire alarm (Klemfuss, Milojevich, Yim, Rush, & Quas, 2013; Quas et al., 2004; Quas & Lench, 2007; Quas, Rush, Yim, & Nikolayev, 2014; Quas, Wallin, Papini, Lench, & Scullin, 2005). One study employed a moderately stressful event involving inoculations at a medical clinic (Goodman et al., 1991). The topics under discussion in the two field studies (Hershkowitz, Lamb, Katz, & Malloy, 2015; Hershkowitz, Orbach, Lamb, Sternberg, & Horowitz, 2006) were incidents of alleged abuse in highly credible cases, presumably constituting highly stressful events. Still, a majority of studies were focused on young children, relatively mild manipulations of nonsupport conditions, recounting of nontraumatic events, and short delays.

Memory Accuracy

For the purposes of this review, the effects of supportiveness on memory (absent false suggestion) are reflected in children's responses to free recall tasks and specific nonsuggestive follow-up questions (i.e., questions not intended to be misleading or suggestive).

Free recall. Nine experimental studies examined effects of supportiveness on accuracy of free recall (Carter et al., 1996; Davis & Bottoms, 2002; Goodman et al., 1991, 1995; Peter Hagene et al., 2014; Quas et al., 2004, 2005, 2014; Quas & Lench, 2007). In six of the nine studies, there were no significant effects of supportiveness on free recall (Carter et al., 1996; Davis & Bottoms, 2002; Quas et al., 2004, 2005; Quas & Lench, 2007). Some researchers noted that free recall was highly accurate in both supportive and nonsupportive conditions (e.g., Carter et al., 1996; Davis & Bottoms, 2002). This may be due to short delays between the target event and interview (Davis & Bottoms, 2002) or weak manipulations when

compared to the conditions faced by children in the legal system (Carter et al., 1996).

When significant effects of support on free recall were located, two experimental studies showed positive and two showed negative effects. It is interesting to note that the two studies showing positive effects were the experimental studies with the longest delays (1 year and 1 month, respectively; Goodman et al., 1991; Peter-Hagene et al., 2014). Future researchers will want to investigate the hypothesis that support effects on free recall are stronger at longer delays when the memory trace is weakest. It is also possible that effects on free recall are greater for younger or more vulnerable children (e.g., slow-to-warm-up temperament, resistant, uncommunicative). Davis and Bottoms (2002) found support reduced children's anxiety during the interview, and for younger children, anxiety was associated with decreased free recall accuracy.

Two studies reported a negative effect of supportiveness on free recall (Goodman et al., 1995; Quas et al., 2014). Both research teams explained these results as a function of the bidirectional nature of the interview. The first study was unique in that researchers correlated supportiveness of spontaneous interviewer comments with accuracy (Goodman et al., 1995). Given that these were correlational data, the authors conducted further analyses, suggesting interviewers may have become more supportive to engage uncooperative, and possibly more inaccurate, children. The second study found a small novel effect of children reporting more factual details during free recall in nonsupportive conditions (Quas et al., 2014). This was explained as a possible effort to impress the interviewer and to elicit more support from nonsupportive interviewers.

Responses to nonsuggestive questions. When looking at the entire evidence base of 15 studies, results of support effects on correct and incorrect responses to nonsuggestive questions appear to be mixed. Conclusions were obscured by the fact that authors often failed to report needed statistics when differences failed to reach statistical significance, when there were significant interactions, or when responses were analyzed by type of error (commission, omission) or question content (abuse related, central, peripheral) rather than total scores. Often findings were study specific. For these reasons, the direction and magnitude of support effects on nonsuggestive questions were difficult to discern, suggesting meta-analyses would provide greater clarity. Consequently, in a subsequent section, we report results of meta-analyses conducted on responses to nonsuggestive questions for the subset of studies where authors provided all the necessary statistics.

Suggestibility

Responses to suggestive questions. For the purposes of this review, suggestibility was defined as children's responses to misleading/suggestive questions. Correct responses represent resistance to false suggestion; errors represent acquiescence. A clear and consistent pattern emerged: Interviewer support was associated with significantly less suggestibility in every

experimental study except one, where effects were nonsignificant (Imhoff & Baker-Ward, 1999). In this study, lack of significance was likely due to minimal differences between supportive and nonsupportive conditions (i.e., interviewers smiled and complimented children even in the nonsupportive condition). In all other studies, children provided significantly more correct responses (greater resistance) and/or fewer incorrect responses (less acquiescence) to suggestive questions when interviewed in supportive as compared to neutral or nonsupportive conditions.⁵ This was true for reports of events not intended to be stressful (e.g., Carter et al., 1996) and reports of events that were clearly stressful for children (e.g., Goodman et al., 1991). This pattern applied to studies with both short and long delays (e.g., immediate recall, 1 week, and 1 year). In a subsequent section on meta-analytic results, we examine the magnitude of support effects on responses to suggestive as well as nonsuggestive questions.

Reluctance and Completeness

Results of field studies extended the benefits of noncontingent support beyond reduced suggestibility. Hershkowitz, Orbach, Lamb, Sternberg, and Horowitz (2006) found children suspected of having been abused were less reluctant in more supportive interviews than in less supportive interviews. Hershkowitz, Lamb, Katz, and Malloy (2015)⁶ reported that children in more supportive interviews provided more detailed and fewer uninformative responses than children in less supportive interviews.

Child Anxiety/Stress

Five studies examined the association between interviewer support, anxiety, and memory accuracy (Almerigogna et al., 2007; Davis & Bottoms, 2002; Quas et al., 2004, 2014; Quas & Lench, 2007). These studies are a heterogeneous group. Highly variable methods and metrics made it difficult to draw firm conclusions. First, the ways in which anxiety was measured varied from self-report (Almerigogna et al., 2007; Davis & Bottoms, 2002) to physiological factors like heart rate (Quas & Lench, 2007), multidimensional autonomic reactivity (Quas et al., 2004), and cortisol levels (Quas et al., 2004, 2014). Moreover, two studies measured anxiety at encoding (Goodman et al., 1991; Quas et al., 2004), one study measured it at retrieval (Davis & Bottoms, 2002), and three measured it during both encoding and retrieval (Almerigogna et al., 2007; Quas & Lench, 2007; Quas et al., 2014). Only one study manipulated anxiety at encoding (Quas et al., 2014).

Despite this heterogeneity, there was emerging evidence to corroborate the hypothesis that supportiveness is linked to reduced anxiety and to memory improvement. Three studies found main effects, suggesting that interviewer supportiveness was associated with reduced self-reported anxiety and better memory performance (Almerigogna et al., 2007; Davis & Bottoms, 2002; Quas et al., 2014). Almerigogna, Ost, Bull, and Akehurst (2007) found that children's anxiety, which

was associated with susceptibility to suggestion, decreased with supportive interviewing but increased with nonsupportive interviewing. Davis and Bottoms (2002) found that supportive interviewing decreased anxiety, and for younger children, higher levels of anxiety were associated with decreased free recall accuracy. Quas, Rush, Yim, and Nikolayev (2014) found that children in the nonsupportive condition rated the interview as more stressful and were more susceptible to adult suggestion, although they failed to find a similar pattern using cortisol levels as a measure of stress arousal. These studies involved school age children 6–14 years of age.

The remaining two studies demonstrated interactive effects and involved considerably younger children who were 4–6 years of age (Quas et al., 2004; Quas & Lench, 2007). Quas, Bauer, and Boyce (2004) assessed 4–6 year olds on a multidimensional index of physiological reactivity in order to determine whether supportiveness differentially affects reactive and nonreactive children's memories. They found that in the high support condition, autonomic reactivity (perhaps indicative of a biologically based heightened sensitivity to environmental stress) was positively associated with correct responses to direct questions, whereas in the low support condition, autonomic reactivity was negatively related to correct responses to direct questions. This finding highlights a group of children whose reports are especially sensitive to both supportive and unsupportive environments. Additionally, Quas and Lench (2007) found that when 5–6 year olds were interviewed in the nonsupportive condition, higher heart rates during retrieval (indicative of a stress response) were associated with poorer memory (i.e., more error on direct questions), but this was not the case in the supportive condition where heart rate was unrelated to memory. This finding highlights the need to focus on potential harmful effects of nonsupportive environments as well as benefits of supportive environments.

In summary, the number of studies located were few, the methods diverse, and the findings complex (e.g., sometimes different measures of anxiety failed to operate in unison; Quas et al., 2014). Looking at the studies in aggregate, the bulk of support effects on anxiety was either positive or nonsignificant. In no case did interviewer support increase anxiety. Nonsignificant effects might be due to the fact that experimental studies involved relatively weak manipulations, such that children were not all that stressed and were not recalling particularly traumatic events over long retention intervals. Hence, effects may be stronger in studies with greater ecological validity. The available research falls short of proving that supportive interviewing reduces anxiety which in turn improves memory by liberating cognitive resources for attention and retrieval, as predicted by attentional control and efficiency theories (e.g., Eysenck et al., 2007). Still, taken together, these studies demonstrate preliminary evidence for the notion that supportive interviewing reduces self-reported anxiety and improves memory accuracy, especially for younger children (Davis & Bottoms, 2002; Quas et al., 2004; Quas & Lench, 2007),

children who are highly reactive (Quas et al., 2004), and children who self-report high levels of anxiety (Almerigogna et al., 2007; Davis & Bottoms, 2002; Quas et al., 2014). Further research is needed to unravel questions of mediation, causality, and moderating individual differences. Given the small number of studies combined with the heterogeneity introduced by diversity in methods, measures, and metrics, meta-analyses on this issue were not possible.

Interviewer Identity and Training

Unfortunately, the available evidence base is insufficient for determining how much training or monitoring is necessary to implement support in a nonsuggestive manner. Investigators rarely described their training in depth. This is especially problematic because a majority of studies did not address interviewer identity in any detail other than to mention gender (e.g., Almerigogna et al., 2008; Klemfuss et al., 2013; Quas & Lench, 2007) or familiarity (e.g., Goodman et al., 1995). Yet, it was clear that interviewers varied substantially in terms of their prior experience from seasoned professionals with specialized training and ongoing supervision in the field (e.g., Hershkowitz et al., 2015) to untrained undergraduates (e.g., Imhoff & Baker-Ward, 1999). In the future, researchers need to carefully outline training procedures and level of experience required to achieve the desired result of nonsuggestive support.

Individual Differences

Although quite a few individual difference factors were investigated, typically results were study specific, highlighting the need for additional research. Still, there was evidence to suggest that support may be most helpful to children who (a) possessed exaggerated, prolonged physiological reactions to stress (Quas et al., 2004); (b) possessed insecure or disrupted attachment histories (Peter-Hagene et al., 2014); (c) were more reluctant, uncooperative, or uncommunicative (Hershkowitz et al., 2006); (d) demonstrated poorer executive functioning and working memory (Peter-Hagene et al., 2014); and (e) those who were most anxious during the interview (Davis & Bottoms, 2002; Quas et al., 2004). Further, there were some benefits to more supportive conditions when children recalled emotional and arousing events (Quas et al., 2014). Replication and extension studies are clearly needed.

Bidirectional Nature of Interview

Although there were few sequential analyses performed to examine dynamic and bidirectional processes, there were instances where researchers employed bidirectional explanations to understand mixed or unexpected effects (Goodman et al., 1995; Hershkowitz et al., 2006, 2015; Quas et al., 2014). For example, several researchers reported that counterproductive patterns arose as interviewers encountered difficult

children (resistant, uncooperative) and children encountered nonsupportive interviewers (Goodman et al., 1995; Hershkowitz et al., 2006; Quas et al., 2004). Hershkowitz and her colleagues (2006) reported that although support had a positive effect on the amount of information children provided overall, when children expressed reluctance, interviewers responded in a counterproductive fashion with fewer supportive comments, fewer open-ended questions, and more closed-ended questions, perhaps out of frustration with uncooperative children. As a result, children's reports deteriorated (see Teoh & Lamb, 2013, for similar findings also in a field study). Future researchers will want to consider sequential analyses that might illuminate the degree to which supportive and nonsupportive behaviors occur in reaction to situational or individual differences.

Meta-Analytic Results

To determine the direction and strength of support effects, we planned to perform meta-analyses on all studies located by the search. However, some studies contained missing data on outcome variables of interest that could not be retrieved even after contact with the authors. This is not surprising, given that some studies were conducted 25 years ago. As a result, meta-analyses could not be performed on free recall because only two articles reported the descriptive statistics needed. As described below, we conducted meta-analyses on correct and incorrect responses to direct questions; however, consistent with previous studies, we found infrequent usage of the "I don't know" response, prohibiting meta-analyses of this response type (see Lyon, 2014, for discussion).

As discussed below, four random-effects meta-analyses⁷ were performed on eight studies⁸ identified in Table 1. All eight studies investigated outcome variables derived from the number or proportion of correct and incorrect responses to nonsuggestive and suggestive interview questions. Given the relatively small sample sizes in each of the studies, Hedges's correction for small sample bias was used.⁹ Each of the meta-analyses yielded a pooled standardized mean difference (SMD) score, which represents the effect size comparing supportive and nonsupportive conditions.

Potential Sources of Nonindependence

There were three potential sources of nonindependence in our data set. First, Quas et al. (2014) included separate analyses for children aged 7–8 and 12–14 years. Hence, this study occupied two rows in the data set. Second, studies included in these meta-analyses were conducted by a relatively small number of laboratories. Third, two sets of studies involved overlapping samples. The design effect was therefore calculated to test for potential nonindependence.¹⁰ Steps to address nonindependence need not be taken if the design effect is less than 2 (Muthen & Satorra, 1995). The design effect was less than 2 for all outcomes, suggesting that any nonindependence

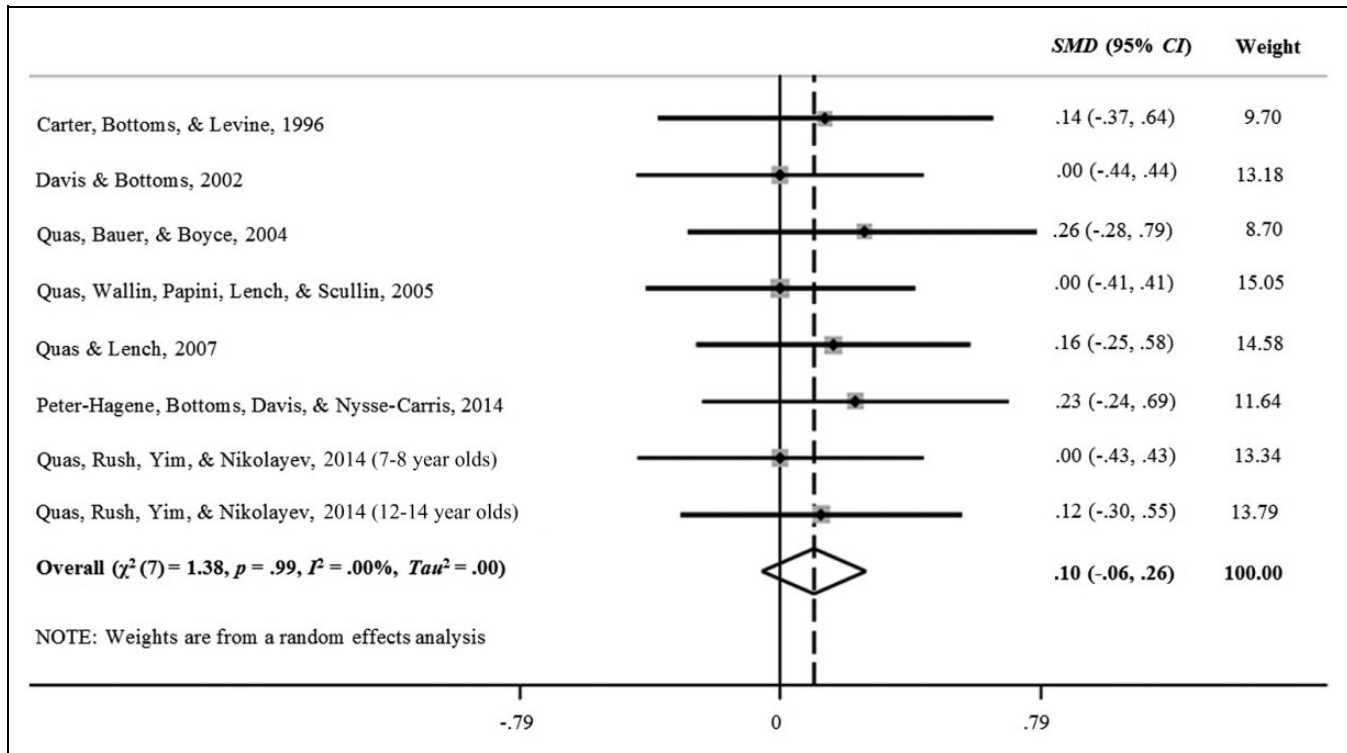


Figure 2. Forest plot of correct responses to specific nonsuggestive questions.

introduced into the data set was not substantial enough to warrant further steps.

Potential Sources of Bias

To assess potential sources of bias, the regression asymmetry test for publication bias (Egger, Davey Smith, Schneider, & Minder, 1997) was performed on all four meta-analysis data sets. All results were statistically nonsignificant ($p > .1$). Also, the “trim and fill” method of detecting publication bias was employed (Duval & Tweedie, 2000).¹¹ Contour-enhanced funnel plots showed no evidence of publication bias. Additional analyses examining small sample bias were also statistically nonsignificant.

Heterogeneity in the Meta-Analyses

Three statistics related to heterogeneity were generated by the meta-analyses (Figures 2–5). First, the heterogeneity χ^2 assessed whether the observed differences in effect sizes were due to chance alone. Second, I^2 (i.e., the ratio of the between-study variance to the total variance multiplied by 100) was computed. I^2 provides a “signal-to-noise” ratio and measures the total variation in effects likely due to heterogeneity between studies (Borenstein, Hedges, Higgins, & Rothstein, 2009; Cochrane Collaboration, 2011). Last, τ^2 assesses the variance in the true effect sizes. For each of the four meta-analyses conducted, the heterogeneity χ^2 was statistically nonsignificant ($p > .10$), and both I^2 and τ^2 indicated minimal heterogeneity in the effect size estimates across studies. Thus, although we

collected data on participant age, delay, event arousal level, and quality checklist scores to conduct planned meta-regressions, we did not have the opportunity to test for these effects due to minimal heterogeneity.

Effects of Support on Memory Accuracy: Responses to Nonsuggestive Questions

Correct responses. Seven studies were used to compare children’s correct responses to nonsuggestive questions in supportive versus nonsupportive conditions (Figure 2).¹² Effect sizes ranged from $<.01$ to $.26$ across studies. There was a small effect suggesting that children provided more correct responses in supportive compared with nonsupportive conditions; however, the difference between conditions was not statistically significant, $SMD = .10$ (confidence interval [CI] = $[-.06, .26]$), $z = 1.27$, $p = .20$. Tests for detecting outliers were conducted (Viechtbauer & Cheung, 2010) and were statistically nonsignificant.

Incorrect responses. Effect sizes comparing incorrect responses to nonsuggestive questions ranged from $-.33$ to $.12$ across studies (Figure 3). Overall, children in supportive conditions provided significantly fewer incorrect responses than those in nonsupportive conditions, $SMD = -.18$ (CI = $[-.34, .02]$), $z = 2.21$, $p = .03$. One outlier was identified, which was the data line for the 12–14 year old children in the Quas et al. (2014) study. As a result, a sensitivity analysis excluding this study

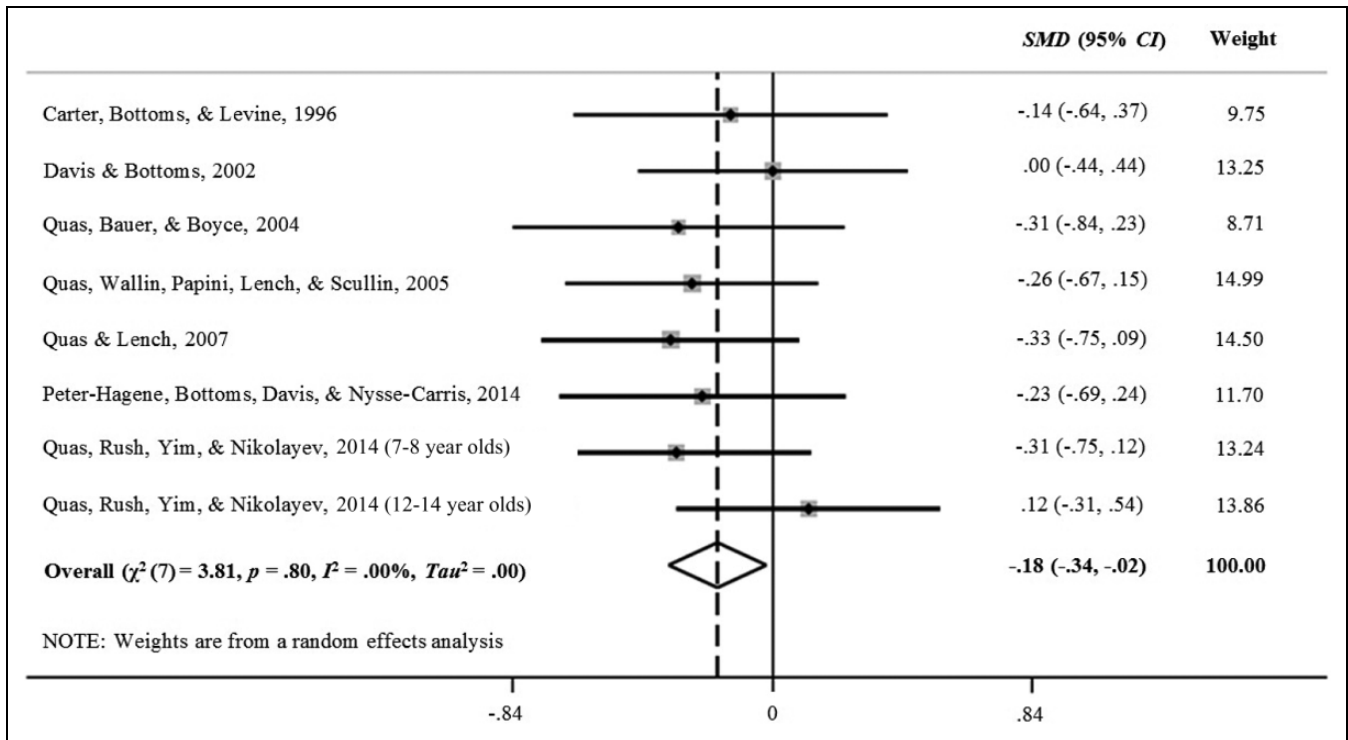


Figure 3. Forest plot of incorrect responses to specific nonsuggestive questions.

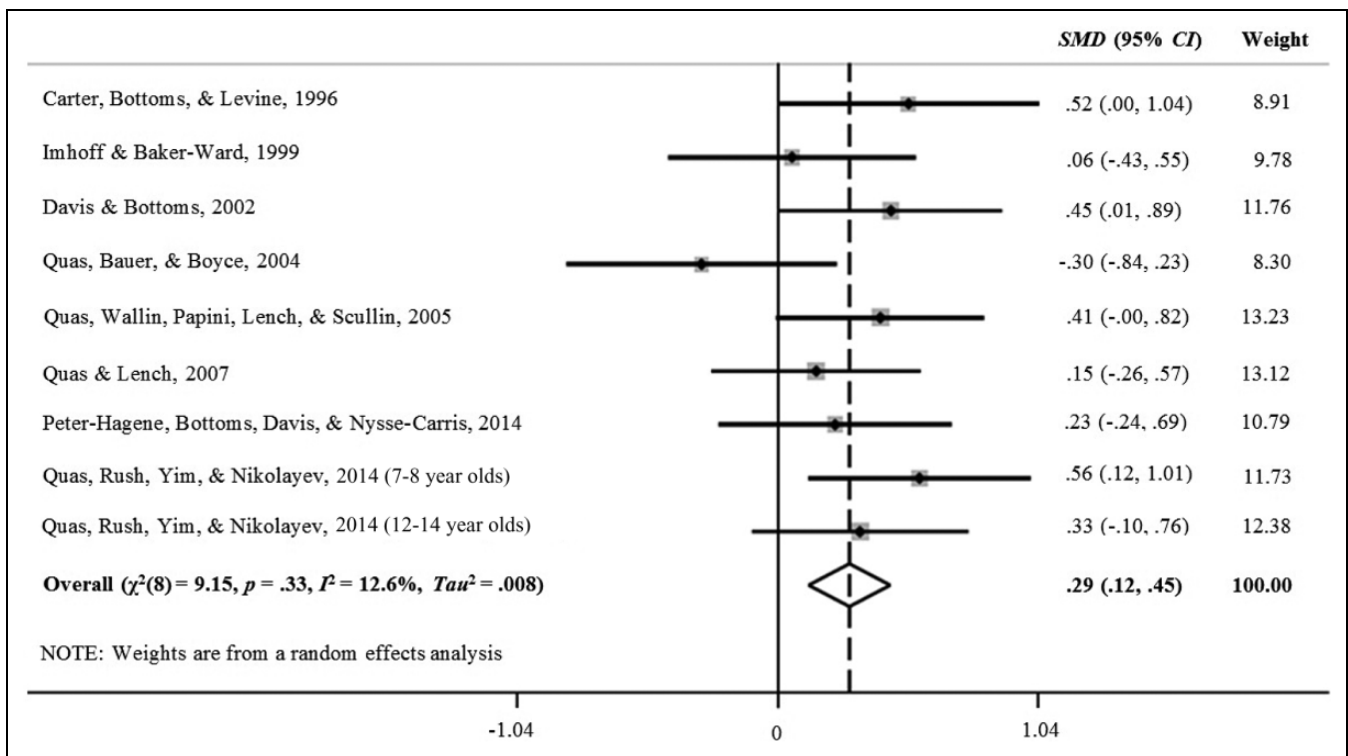


Figure 4. Forest plot of correct responses to misleading/suggestive questions.

was conducted; however, the results remained significant. The *t*-value for this study was not far beyond the cutoff range of ± 1.96 (i.e., 2.09) to be identified as an outlier, and because we

could find no reason to think that this study was substantively or qualitatively different from the others, we included it in our analyses.

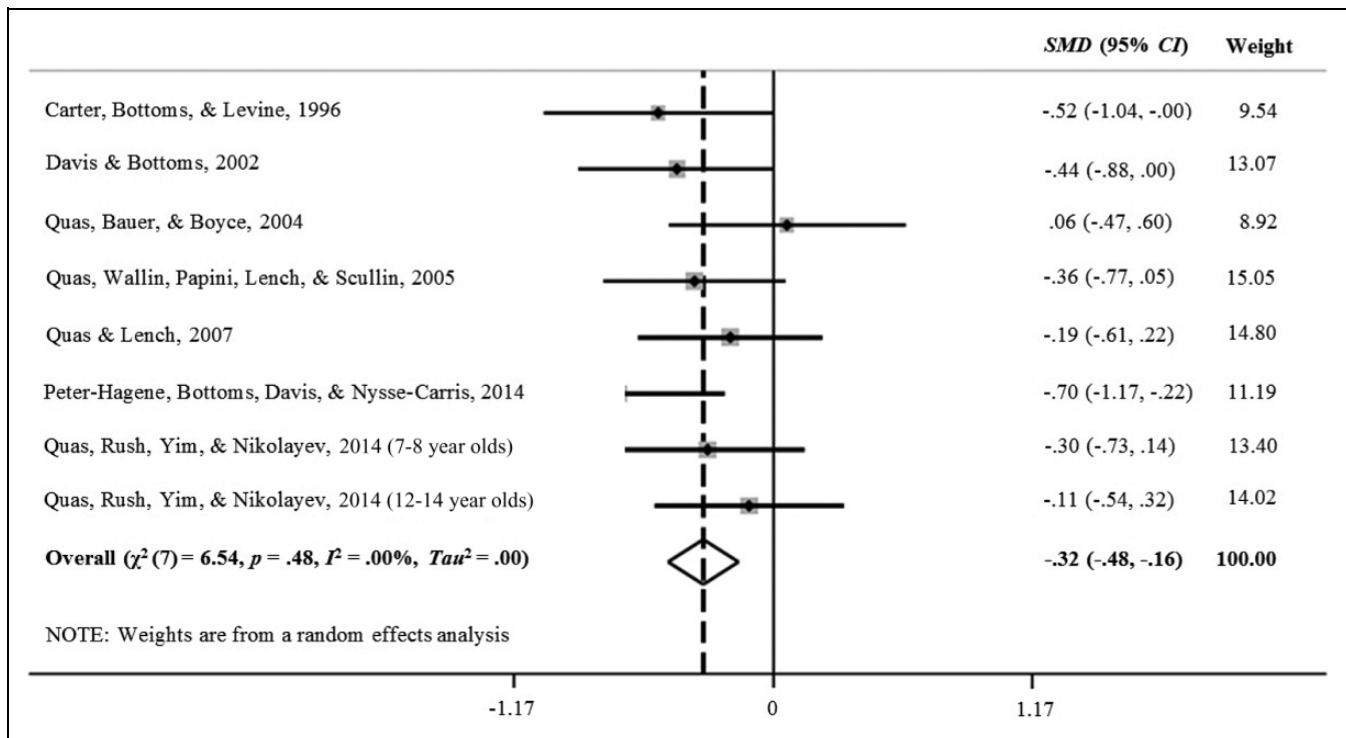


Figure 5. Forest plot of incorrect responses to misleading/suggestive questions.

Effects of Support on Suggestibility: Responses to Suggestive Questions

Correct responses (resistance). Eight studies were used to compare children's correct responses to suggestive questions in supportive versus nonsupportive conditions (Figure 4). Effect sizes ranged from $-.30$ to $.56$ across studies. Overall, there was a moderate effect, suggesting that supportive conditions led to significantly more correct answers than nonsupportive conditions, $SMD = .29$ ($CI = [.12, .45]$), $z = 3.44$, $p = .001$. One study, Quas et al. (2004), was identified as an outlier. A sensitivity analysis excluding this study did not change the results. Again, given that the t -value for this study was not far beyond the range of ± 1.96 (i.e., -2.36), and because we could find no reason to think that this study was substantively or qualitatively different from the others, we included it in our analyses.

Errors (acquiescence). Effect sizes comparing children's errors on suggestive questions ranged from $-.70$ to $.06$ (Figure 5). Overall, the pooled SMD comparing supportive and nonsupportive conditions was $-.32$ ($CI = [.48, -.16]$), $z = 3.90$, $p < .001$. There was no evidence that supportiveness raises children's acquiescence to false suggestion by increasing their errors on suggestive questions. Instead, there was a moderate effect of the opposite—supportive conditions lowered children's errors on suggestive questions. No studies were identified as outliers.

Limitations of the Review and Meta-Analyses

Before discussing our conclusions, we remind readers that our generalizations are limited by the utilized search strings,

databases, and exclusion criteria in this particular search. For example, we excluded studies in which children were recruited for their medical or psychiatric diagnoses in order to avoid confounding effects of symptoms and medications on cognitive functioning. However, medically vulnerable children are at higher risk for abuse (e.g., Wissink, van Vugt, Moonen, Stams, & Hendriks, 2015). In addition, studies investigating effects of nonverbal aids (e.g., dolls, drawings) were excluded, although nonverbal aids are sometimes used in child interviews (Patterson & Hayne, 2011). Also, our objective was to identify experimental studies where at least one of the outcome variables was the accuracy of the information children provided about a known event. As a result, several excellent field studies were excluded because accuracy could not be ascertained.

General Discussion

Returning to the original aims of our study, first we asked whether a core body of rigorous research exists regarding the effects of interviewer supportiveness on the accuracy of children's reports. Our systematic review located 15 studies of good quality. Second, we examined the evidence base for the valence and magnitude of support effects on children's reports. Both our review of the entire evidence base and the results of our meta-analyses on a subset of studies suggest noncontingent interviewer support bolsters children's accuracy. There was no evidence for the hypothesis that interviewer support, when provided in noncontingent manner, promotes suggestibility. In fact, the opposite was true. Children in supportive conditions produced more correct responses (greater resistance; see Figure

4) and fewer incorrect responses (decreased acquiescence; see Figure 5) on suggestive questions than children in nonsupportive conditions. Meta-analyses revealed moderate effects of supportiveness on reducing suggestibility.

Also, support was associated with memory improvement unrelated to suggestibility. Meta-analyses show children in supportive conditions made significantly fewer errors on nonsuggestive questions (see Figure 3) than children in nonsupportive conditions. Still, the effects were small (and in the case of correct responses to nonsuggestive questions, the effects were marginal). One explanation for stronger support effects on suggestive questions than on nonsuggestive questions is that supportiveness operates through social processes—reducing the power of adult suggestion (e.g., lowering social desirability and social compliance, increasing expectations of positive interviewer reaction to disagreement with adult suggestion)—rather than by raising overall cognitive performance alone.

In this evidence base, effects of supportiveness on free recall were often nonsignificant. However, there were hints to suggest that these effects might be stronger in situations where delays are longer and memory traces are weaker (Goodman et al., 1991; Peter-Hagene et al., 2014) or where studies include the explicitly unsupportive behaviors (e.g., disapproval, frustration, contradiction) found in field interviews or cross examination (Teoh & Lamb, 2013; Zajac & Hayne, 2012). In fact, there were a few clues across the literature suggesting that sometimes findings may reflect the detrimental effects of unsupportive or nonsupportive behaviors (e.g., failure to make eye contact or develop rapport, inattentiveness, distance) rather than the benefits of support, at least for some children (Davis & Bottoms, 2002; Hershkowitz et al., 2006, 2015; Imhoff & Baker-Ward, 1999; Quas & Lench, 2007). Future researchers will want to investigate whether children interviewed under nonsupportive conditions perceive the social resources necessary to cope with stress to be less available (Cohen, 2004), whether children feel less empowered to disagree with adults asking suggestive questions, and whether they anticipate more negative adult reactions. When children in nonsupportive conditions feel intimidated or anxious, they may divert resources needed for attention and retrieval to regulate negative emotional states, decreasing memory performance, as predicted by the attentional control and efficiency theories (Eysenck et al., 2007).

Additionally, there are clues in the literature to suggest that effects of support may be stronger among children who are anxious (Davis & Bottoms, 2002; Quas et al., 2004), reluctant, or uncooperative (Hershkowitz et al., 2006) and who possess insecure attachment histories (Peter-Hagene et al., 2014), poor executive functioning and working memory skills (Peter-Hagene et al., 2014), and acute sensitivity to environmental stressors (Quas et al., 2014). While most of these individual difference findings were study specific, highlighting pathways for future research, there were multiple studies examining the role of anxiety/stress. Taken together, their results begin to suggest that supportive interviewing reduces self-reported anxiety and memory error, at least for some children, especially

younger children (Davis & Bottoms, 2002; Quas et al., 2004; Quas & Lench, 2007), children who are highly reactive to the environment (Quas et al., 2004), and children who self-report high levels of anxiety (Almerigogna et al., 2007; Davis & Bottoms, 2002). Still, additional research is necessary to elucidate issues of mediation and causality and to demonstrate that benefits are due to changes in children's appraisals, anxiety levels, coping strategies, and attentional control. There is much to be learned about the interplay of cognitive, social, and emotional factors from future research before we understand the underlying mechanisms and the critical elements of support needed to drive theory and practice forward.

Implications for Future Research

Generalizability from this evidence base to real-world cases is limited by the fact that this literature is heavily focused on young children recounting nontraumatic events over short delays, and relatively mild manipulations of nonsupport conditions, despite a few efforts to the contrary (e.g., Goodman et al., 1991; Hershkowitz et al., 2006, 2015; Peter-Hagene et al., 2014; Quas et al., 2014). In designing future analogue studies, greater ecological validity is required. Nonetheless, the consistent and significant effects of social context on children's suggestibility and memory that emerge from this evidence base suggest we may want to reconsider some of the inferences drawn from past research on the malleability of children's memory. If previous research on memory malleability is at times conducted under what amounts to low support conditions, this could contribute to inflated inferences about memory effects, when in fact results might be due in part to social factors instead.

There were a number of notable gaps in the literature. First, few studies examined age differences in support effects. This is an important gap for a number of reasons. First, different variables may mediate support effects at different age levels (Davis & Bottoms, 2002). Second, not all support behaviors will be interpreted similarly by children of varying ages (Rotenberg et al., 2003). Third, existing studies focus on younger children while little is known about what behaviors are most effective with adolescents; yet, field investigators report uniquely negative experiences developing rapport with adolescents (Collins, Doherty-Sneddon, & Doherty, 2014).

Second, support was operationalized by overt interviewer behaviors (actual support), but few, if any, attempts were made to assess what role children's perceptions (perceived support) play. This is somewhat surprising given that in the social support literature generally, perceived support is often a stronger predictor of outcomes than received support (e.g., Chu, Saucier, & Hafner, 2010). To delineate theories of causality, methodologies need to be expanded to include children's appraisals of interviewer trustworthiness and likability, their perceptions of interviewer openness to differing viewpoints and contradiction, or child expectations of the likelihood interviewers will provide help sufficient to cope with stress should it arise.

Third, studies failed to identify the critical elements of supportive and nonsupportive conditions that make independent contributions to support effects. This gap impedes our ability to fully articulate evidence-based guidelines. Additionally, greater definitional clarity is sorely needed. For example, when mentioned, empathy was poorly defined. Support and rapport, two distinct concepts, were often conflated (see Saywitz et al., 2015, for further discussion).

Fourth, opportunities to test relevant theory were often neglected. Given the relational revolution in psychology as a whole and the prominence of attachment theory in child psychology, it is surprising that child interview studies rarely conceptualize support in terms of transactions between children and interviewers coregulating each other's affect states, thoughts, behaviors, goals, and words. Given the bidirectional nature of the interview, researchers will want to consider sequential analyses to illuminate the degree to which supportive and nonsupportive behaviors are provided in reaction to situational or individual differences.

Finally, conventional wisdom suggests that interviewer support reduces mistrust, enhances honesty and self-disclosure, promotes feelings of empowerment and self-worth, and might even further coping and recovery from the adverse events that bring children in contact with the legal system. However, the evidence base says little about whether these assumptions are true or if such benefits can be achieved without jeopardizing children's accuracy.

Implications for Practice

The bulk of the evidence suggests that interviewers can be supportive without being suggestive and that supportive interviewing aids children's accuracy and productivity, provided it is not contingent on the content of children's responses. In studies showing beneficial effects, interviewers in high support conditions used a warm, friendly, positive approach, administered supportive behaviors in ways that were not contingent on the content of children's responses, and avoided nonsupportive and unsupportive behaviors. Overlap across studies suggests that supportive interviewers showed interest in what children had to say and made eye contact. In many of these studies, supportive interviewers also introduced themselves, developed simple rapport, used the child's first name, and provided positive feedback on children's effort. In field studies, interviewers responded with empathy, acceptance, reassurance, and encouragement when children expressed difficulties (Hershkowitz, 2011). In contrast, nonsupportive interviewers tended to elicit less accurate reports and were formal, cold, stern, did not smile, and made minimal eye contact. Frequently, they failed to introduce themselves, made no attempt to develop rapport, and sat away from the child, remaining distant and inattentive. In field studies, interviewers demonstrated instances of frustration, criticism, coercion, and contradiction.

Equally important, in the majority of studies showing beneficial effects, interviewers were careful to administer supportive behaviors independent of the content of children's

responses, either randomly or at proscribed times. Instead of praising children for the content of their answers, interviewers addressed neutral capabilities like effort (e.g., "Thank you for trying your hardest.") or cooperation (e.g., "Thanks for listening carefully."). In field studies, expressions of empathy were restricted to children's expressed feelings regarding the interview itself, but not past experiences. These findings highlight the need for interviewers to adopt a neutral, nonjudgmental stance toward the veracity of children's statements and strive to be perceived as genuinely curious about what children have to say rather than presumptive. In fact, it might behoove interviewers to revisit the concept of unconditional positive regard developed in the 1950s by humanistic psychologist Carl Rogers (1956).

Finally, it is worth noting that although experimental studies employed supportive behaviors randomly or at proscribed times to insure behaviors were not biasing, it is not clear that this approach translates into the best advice for practitioners. A child's need for support may vary over the course of the interview as anxiety and resistance wax and wane from getting-to-know-you questions to questions about sensitive topics of personal significance. Results of the field studies emphasize that when supportive behaviors are matched to children's fluctuating needs, children exhibit less reluctance and greater productivity (Hershkowitz et al., 2006, 2015). Further research on the bidirectional aspects of the interview process is needed to fully elucidate evidence-based guidelines.

Conclusions

Often, the forensic interview is a child's first point of contact with the legal, social service, or mental health systems. There is no doubt that such interviews must be conducted in ways that avoid distorting children's reports and creating false accusations. However, the available research suggests that supportive interviewers will provide higher quality evidence to decision makers than neutral or nonsupportive interviewers. This is especially important because studies suggest jurors are more skeptical of children's reports when provided in more socially supportive contexts (Bottoms et al., 2007).

Even though interviewers are temporary figures in children's lives, they are present at pivotal moments. The effect of a positive interview experience, where children feel they have been treated as respected, competent sources of important information, may have profound consequences, affecting their attitudes toward the system, themselves, and their adjustment to case outcomes. Failing to respond to children's statements about abuse or violence in a supportive manner may constitute a missed chance for positive effect at a critical window of opportunity.

Implications for Practice, Research, and Policy

- Sufficient rigorous scientific research exists to recommend interviewers adopt supportive approach to interviewing child victim/witnesses, but supportive

behaviors should be administered in ways that are not contingent on the content of children's responses.

- Interviewers practicing noncontingent support will provide higher quality evidence to decision makers than neutral or nonsupportive interviewers, despite juror skepticism of children's reports when provided in more socially supportive contexts and defense arguments to the contrary.
- Where previous research is conducted under what amounts to low support conditions, researchers should reconsider inferences drawn regarding the malleability of children's memory, as results could be inflated due to unexamined social factors.
- Further research sorely needed on the independent effects of support elements, training, age differences, bidirectional influences, support effects on nonmemory outcomes (e.g., trust, self-disclosure) and on the role of perceived support (which is generally a better predictor of support outcomes than received support).
- Noncontingent interviewer support may be key to promoting (or impeding) children's perceptions that trustworthy adults are listening, helpful, and perceive children as competent sources of valuable information. Future research is needed to determine whether such perceptions affect subsequent courtroom testimony, children's attitudes toward the system and themselves, or adjustment to case outcomes. Failure to offer child victim/witnesses, supportive interview atmosphere may be a missed chance for positive effect at a critical window of opportunity.

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Notes

1. We altered the scoring of Item 27, such that a score of 0 or 1 was given depending on whether or not the authors mentioned conducting a power analysis before collection of the data.
2. Possible values range from 0 to 28 because one item is scored 0-to-2 instead of 0-or-1.
3. The results of one study were described in two separate articles (Klemfuss et al., 2013; Quas et al., 2014).
4. It is important to note that some studies interspersed free recall prompts with direct questions.

5. In a couple of instances, the effect was present on commission but not omission errors (e.g., Davis & Bottoms, 2002).
6. This study was first available online in 2013 and thus could be included in the systematic review.
7. A fixed-effects meta-analysis assumes that there is one true effect size and that observed differences in effect sizes are due solely to sampling error. This does not seem plausible. Rather, we assume that the "true" (i.e., unobserved) effect size is similar in all of the studies, but that it is slightly different in each study given participants came from slightly different populations.
8. Number of studies in meta-analyses met conventional standards (Valentine, Pigott, & Rothstein, 2010).
9. Cohen's *d* can overestimate the population value in small samples, so a correction factor is used (Borenstein et al., 2009).
10. Design effect = 1 + (average cluster size - 1) × intraclass correlation.
11. Only one study was found to be "missing" in one analysis: correct responses to nonsuggestive questions.
12. Due to missing data, Imhoff and Baker-Ward (1999) could not be entered into all of the meta-analyses.

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