

Epistemic trust: a comprehensive review of empirical insights and implications for developmental psychopathology

Elizabeth Li,^{1,2} Chloe Campbell,^{1,2} Nick Midgley,^{1,2} Patrick Luyten¹⁻³

¹Research Department of Clinical, Educational and Health Psychology, University College London, United Kingdom; ²Anna Freud Centre, London, United Kingdom; ³Faculty of Psychology and Educational Sciences, University of Leuven, Belgium

LEARNING TO UNDERSTAND: LATEST CONTRIBUTIONS ABOUT EPISTEMIC TRUST AND MENTALIZATION-RELATED CONCEPTS

Guest Editors: *Chloe Campbell, Peter Fonagy, Marianna Liotti, Alberto Milesi*

Correspondence: Elizabeth Li, Research Department of Clinical, Educational and Health Psychology, University College London, United Kingdom.

E-mail: elizabeth.li@ucl.ac.uk

Citation: Li, E., Campbell, C., Midgley, N., & Luyten, P., (2023). Epistemic trust: a comprehensive review of empirical insights and implications for developmental psychopathology. *Research in Psychotherapy: Psychopathology, Process and Outcome*, 26(3), 704. doi: 10.4081/ripppo.2023.704

Contributions: all the authors made a substantial intellectual contribution, read and approved the final version of the manuscript, and agreed to be accountable for all aspects of the work.

Conflict of interest: the authors declare that they have no competing interests, and all authors confirm accuracy.

Ethics approval and consent to participate: no ethical committee approval was required.

Funding: no funding was received for conducting this study.

Availability of data and materials: data and materials are available from the corresponding author upon request.

Received: 7 July 2023.

Accepted: 27 October 2023.

Publisher's note: all claims expressed in this article are solely those of the authors and do not necessarily represent those of their affiliated organizations, or those of the publisher, the editors and the reviewers. Any product that may be evaluated in this article or claim that may be made by its manufacturer is not guaranteed or endorsed by the publisher.

©Copyright: the Author(s), 2023

Licensee PAGEPress, Italy

Research in Psychotherapy:

Psychopathology, Process and Outcome 2023; 26:704

doi:10.4081/ripppo.2023.704

This article is distributed under the terms of the Creative Commons Attribution-NonCommercial International License (CC BY-NC 4.0) which permits any noncommercial use, distribution, and reproduction in any medium, provided the original author(s) and source are credited.

ABSTRACT

Originally rooted in philosophy and sociology, the concept of epistemic trust has recently transitioned to developmental psychopathology, illuminating social-cognitive processes in psychopathology. This narrative review synthesizes empirical evidence on epistemic trust to inform future research. A literature search highlighted 3 areas: i) the development of selective trust in children; ii) epistemic trust in non-clinical adults; iii) its link to mental health. Young children demonstrate selective learning from reliable sources using epistemic cues. Empirical studies beyond childhood were greatly facilitated in the last 2 years with the introduction of the Epistemic Trust, Mistrust and Credulity Questionnaire, a self-report scale measuring epistemic stance. Cross-sectional studies pinpointed dysfunctional epistemic strategies as factors in mental health vulnerability, and some qualitative work offered initial evidence linking restored epistemic trust to effective psychotherapy. For future research, we propose focusing on 3 primary areas. First, empirical investigations in adolescent samples are needed, as adolescence seems to be a pivotal phase in the development of epistemic trust. Second, more experimental research is required to assess dysfunctional and functional epistemic stances and how they relate to vulnerability to mental health disorders. Finally, intervention studies should explore the dynamics of epistemic stances within and between therapy sessions and their impact on therapeutic outcomes.

Key words: epistemic trust, epistemic vigilance, selective trust, review, empirical evidence.

Introduction

Epistemic trust refers to trust in communicated knowledge; by contrast, epistemic mistrust is defined by an inability to trust others as a source of knowledge about the world. Sperber *et al.* (2010) set out a sophisticated position in relation to epistemic trust in psychology in their argument that humans operate within a position of epistemic trust, but this stance is necessarily tempered by a capacity for epistemic vigilance. Epistemic vigilance is the set of cognitive tools humans have evolved to discern and block false or harmful information (Sperber *et al.*, 2010). Fonagy *et al.* (2015) elaborated on these views in the context of a broader developmental psychopathology approach and conceptualized epistemic trust as an individual's capacity to acquire and accommodate new knowledge in a way that supports resilient social functioning.

Fonagy and colleagues believe that epistemic trust develops first in relation to primary caregivers in early attachment relation-

ships (Fonagy and Allison, 2014; Fonagy *et al.*, 2015; Fonagy *et al.*, 2017a, 2017b). More recently, they have suggested that the early primary care contexts need to be understood alongside wider social experiences in understanding an individual's epistemic stance (Fonagy *et al.*, 2022), arguing that it is *via* the mechanism of epistemic trust that experiences of social isolation and alienation generate vulnerability (Campbell & Allison, 2022). From a broader social-communicative perspective, attachment styles are seen not just as individual traits but as reflective of the type of social interactions and contexts individuals experience, emphasizing the role of wider social contexts and cultural norms (Luyten *et al.*, 2020). This perspective shifts the understanding of insecure attachment, viewing it and related psychopathological concepts as communicative strategies rooted in social learning, that is, epistemic stance. The developmental psychopathology framework posited by Fonagy and colleagues suggests that epistemic trust allows flexibility arising from openness to social learning and thus constitutes a source of resilience through increasing the individual's capacity to benefit from social relationships. Such "learning" is quite broadly defined as cultural knowledge, ranging from how to use a complicated-looking tool through learning one's culture's origin myths to how to best navigate complex social relationships and benefit from the cooperation, consolations, and shared thinking provided by other minds. A child exposed to early adversity, in particular complex trauma, may experience increased epistemic vigilance, which, in combination with genetic vulnerability (whether in the form of heightened temperamental emotional sensitivity or conversely callous-emotional traits) and on-going experiences that undermine social agency, become entrenched as epistemic mistrust.

An entrenched position of epistemic mistrust is likely to become maladaptive when it comes to different developmental stages where others who could provide relevant and useful knowledge appear. For example, if a maltreated young person is adopted by a new family and receives good parenting or enters a school where there are friendly teachers and/or peers but retains a mental representation of the world as harmful and distrusts others as a source of knowledge about themselves and the world, inhibiting real understanding of themselves and others, there is likely a chance of developing psychopathology. Fonagy and colleagues proposed that such individuals will require experiences of richly mentalizing social interactions that serve as ostensive cues to prime the emergence of epistemic trust. Feeling understood by someone can foster a predisposition to learn from them, encompassing self-awareness, insights into others, and a broader comprehension of the surrounding world (Fonagy *et al.*, 2022). In relation to particular diagnoses, several personality disorders, such as paranoid personality disorder (PPD) and borderline personality disorder (BPD), are characterized by pervasive, enduring, and inflexible patterns of oversensitivity to social stimuli, negative assumptions about relationships, and mistrust (*e.g.*, Bach & Farrell, 2018; Berenson *et al.*, 2018; Lee, 2017). These patterns that constitute personality disorders may be developed within certain contexts and temporarily function as an adaptive mechanism to cope with threats in the environment and regulate the self, but are likely to become maladaptive in a broader social environment that rewards cooperation and flexibility in social relationships.

Humans use epistemic trust to learn from, respond to, and adapt to their social environment; not being able to do so leaves the individual unable to benefit fully from cooperative processes and from being a full member of a community. Epistemic mistrust developed within certain contexts is likely to become mismatched to new conditions and impede the capacity for salutogenesis. Fon-

agy and colleagues argued that disruptions of epistemic trust may capture an underlying propensity for any kind of psychopathology (Fonagy and Allison, 2014; Fonagy *et al.*, 2015; Fonagy *et al.*, 2017a, 2017b), and in accordance with this, generating epistemic trust in individuals to enable them to benefit from benign aspects of social communication may be a generic mechanism for change in effective psychotherapy. While Fonagy's theory of epistemic trust widens the lens of the role of attachment and mentalizing in developmental psychopathology, to consider social communicative inflexibility to be key in understanding psychopathology, the assumptions require empirical investigations before any conclusions can be drawn.

The present study

This study employs the method of integrative narrative review (Torraco, 2005; Whittemore & Knafl, 2005) to identify, critically appraise, and synthesize existing empirical evidence relevant to the developmental psychopathology account of epistemic trust. Unlike systematic reviews, which focus on a relatively narrow topic and adhere to an extensive and exhaustive screening process, narrative reviews typically adopt less formalized approaches. They aim to provide in-depth, critical, and reflective appraisals of the literature, primarily for theory development (Greenhalgh *et al.*, 2018). Consequently, this study uses a narrative review to summarize the evidence pertinent to the rapidly evolving field of the epistemic trust model in developmental psychopathology, offering insights for future research.

Methods

To identify studies producing empirical evidence relevant to the developmental psychopathology account of epistemic trust, published in English in peer-reviewed journals, a literature search with the key words "(epistemic) AND (trust OR vigilance)" was conducted in January 2020 across 5 electronic databases: PsycARTICLES, PsycINFO, Web of Science, MEDLINE, and Applied Social Sciences Index & Abstracts. Given the rapid evolution of this field, another search was conducted in May 2023 to capture recent studies. Two additional studies (Bincoletto *et al.*, 2023; Locati *et al.*, 2023) were identified in September 2023 and included in the review. An examination of reference lists of retrieved papers and a forward search was carried out in addition to the database searches to look for relevant studies investigating psychological processes that are similar but use alternative terms. For example, developmental psychology research often utilizes "selective trust" or "selective learning" as alternative terms for "epistemic trust" to refer to children's capacity to select the most reliable others to trust for communication (where they can learn new knowledge from). This selective trust is considered by us to be an openness to communicated knowledge with active epistemic vigilance, as opposed to blind trust. The extended search yielded over half of the retrieved studies. Studies that employed the term "epistemic trust" but had a focus irrelevant to our project were excluded from our review. For example, Sjöberg & Herber (2008) considered epistemic trust as a specific trust in science and technology. In addition, theoretical or case studies that used the theory of epistemic trust to explain their findings (Byrne, 2020; Folmo *et al.*, 2019; Kamphuis & Finn, 2019; Knapen *et al.*, 2020; Sprecher *et al.*, 2022) were not included in the review as they did not produce direct empirical evidence. Finally, in the process of screening, we discovered a substantial number of studies on related concepts,

such as interpersonal trust in social psychology and persuasive communication in cognitive psychology. However, it was beyond the scope of this study to review all neighboring concepts or speculate on how they each associate with epistemic trust. For synthesis and comparison, key data such as participants, study design, and relevant findings were extracted and tabulated.

Results

Three types of relevant research were identified: i) studies of the development of selective trust in young children (n=101); ii) studies relevant to epistemic trust in non-clinical adults (n=16); iii) studies of epistemic trust in relation to mental health (n=15). Thus, the majority of empirical evidence was about the development of children's selective trust, and only a small number of studies have so far investigated epistemic trust in adult populations or in relation to mental health. Studies were categorized and synthesized based on the area of topic, and the category was appraised as a whole. The resulting synthesis is displayed in Table 1. See *Supplementary Table 1* (Barth *et al.*, 2014; Bascandziev & Harris, 2014, 2016; Baumann *et al.*, 2023; Bernard *et al.*, 2012; Bernard *et al.*, 2014; Bernard *et al.*, 2016; Bincoletto *et al.*, 2023; Birch *et al.*, 2008; Bo *et al.*, 2017; Boseovski & Thurman, 2014; Bridgers *et al.*, 2016; Brink & Wellman, 2020; Brosseau-Liard & Birch, 2010, 2011; Brosseau-Liard *et al.*, 2015; Brosseau-Liard, *et al.*, 2018; Butler *et al.*, 2018; Campbell *et al.*, 2021; Castelain *et al.*, 2016; Chan & Tardif, 2013; Clegg *et al.*, 2019; Clément *et al.*, 2013; Corriveau *et al.*, 2009; Corriveau *et al.*, 2011; Corriveau *et al.*, 2013; Corriveau & Harris, 2009a, 2009b; Corriveau & Kurkul, 2014; Danovitch & Alzahabi, 2013; Danovitch & Mills, 2014; Ding *et al.*, 2022; Doebel *et al.*, 2016; Durkin & Shafto, 2016; Echterhoff *et al.*, 2017; Einav, 2014; Einav *et al.*, 2020; Einav & Robinson, 2010; Elashi & Mills, 2014; Fedra & Schmidt, 2019; Fitneva & Dunfield, 2010; Frenken & Imhoff, 2022; Fusaro & Harris, 2008; Giether & Bromme, 2020; Gilbert *et al.*, 1990; Gilbert *et al.*, 1993; Ghossainy *et al.*, 2021; Guerrero *et al.*, 2017; Guerrero *et al.*, 2019; Guerrero *et al.*, 2020; Gweon *et al.*, 2014; Gweon *et al.*, 2018; Hagá & Olson, 2017; Hasson *et al.*, 2005; Imhoff *et al.*, 2018; Jaffer & Ma, 2015; Jaffrani, *et al.*, 2020; Jaswal *et al.*, 2008; Jaswal & Neely, 2006; Johnston *et al.*, 2015; Kampling *et al.*, 2022; Kinzler *et al.*, 2011; Koenig, 2012; Koenig *et al.*, 2004; Koenig & Harris, 2005; Koenig & Jaswal, 2011; Konrad & Jaswal, 2012; Kotaman & Aslan, 2021, 2023; Kushnir *et al.*, 2013; Kushnir & Koenig, 2017; Landrum *et al.*, 2013; Lane

& Harris, 2015; Lane *et al.*, 2013; Lane *et al.*, 2014; Lawson, 2018; Li *et al.*, 2022; Li *et al.*, 2022; Li & Yow, 2018; Liotti *et al.*, 2023; Liu *et al.*, 2013; Locati *et al.*, 2022; Locati *et al.*, 2023; Lucas *et al.*, 2013; Lucas *et al.*, 2017; Luu *et al.*, 2013; MacDonald *et al.*, 2013; Mascaro & Sperber, 2009; McDonald & Ma, 2015; Mercier *et al.*, 2014; Nimbi *et al.*, 2023; Nurmsoo & Robinson, 2009; Orme *et al.*, 2019; Palmquist & Jaswal, 2015; Palmquist *et al.*, 2022; Pasquini *et al.*, 2007; Poulin-Dubois & Chow, 2009; Pozzi & Mazzarella, 2023; Rakoczy *et al.*, 2009; Reyes-Jaquez & Echols, 2013; Riedl *et al.*, 2023; Robinson *et al.*, 2013; Ronfard & Lane, 2018, 2019; Sampaio *et al.*, 2019; Schillaci & Kelemen, 2014; Schröder-Pfeifer *et al.*, 2022; Scofield *et al.*, 2013; Sobel & Macris, 2013; Stengelin *et al.*, 2018; Tanzilli *et al.*, 2022; Tenney *et al.*, 2011; Terrier *et al.*, 2016; Thomas & Jenkins, 2019; Tong *et al.*, 2020; Vanderbilt *et al.*, 2018; Vanderbilt *et al.*, 2018; Varró-Horváth *et al.*, 2017; Venta, 2020; Wang *et al.*, 2019; Wiebe *et al.*, 2022; Wu *et al.*, 2014; Yang *et al.*, 2023; Zhang & Sylva, 2021) for an overview of each individual study.

Children's selective trust

Relevant investigations in the field of developmental psychology mainly focus on the development of selective trust in young children. This line of research typically adopts an experimental approach and aims to understand what factors influence a child's decision to trust new knowledge conveyed by others. Children around 4 years of age start to develop the ability to reason about others' mental states, including desires, intentions, knowledge, and beliefs, which is called "theory of mind" (Nelson *et al.*, 2008). Based on our review, resistance to being misled by others was shown as early as 3 years old (Ding *et al.*, 2022); and, on average, children become capable of inferring what others know and evaluating different cues depending on what information they are seeking from 3 to 4 years of age. It is consistently found that young children have the intent and capacity to evaluate an informant's trustworthiness in the process of social learning, and the evaluation is based on epistemic cues (*i.e.*, indicators of an informant's knowledge) and social markers (*i.e.*, demographic, social, or cultural characteristics) of the informants.

Past accuracy, informativeness, relevant expertise, good reasoning, and a majority opinion are typical epistemic cues for children's selective trust. Past accuracy refers to a history of making accurate claims or good performances in tasks. It was found that children can track an informant's record of past accuracy and use it as a cue to current reliability across experimental variations (Barth *et al.*, 2014; Brink & Wellman, 2020; Brosseau-Liard *et*

Table 1. Category of retrieved studies.

Category	Study approaches	Synthesis and appraisal
Children's selective trust (n=101)	Experimental studies	Epistemic trust is typically studied as selective trust or selective learning in children. There is robust evidence that young children learn from others in an active, flexible manner and decide whom they should invest trust in based on epistemic cues (<i>e.g.</i> , past accuracy, informativeness, relevant expertise) and social markers (<i>e.g.</i> , prosocial behaviors, familiarity, similarity)
Epistemic trust in non-clinical adults (n=16)	Experimental studies	Adults, possibly in a similar way to young children, are in general open to communicated knowledge and can use cues to decide whether or not to trust others and whom to trust for new knowledge. However, no measurement of individual differences in epistemic trust was established beyond childhood until recently, which limited direct investigations and conclusions
Epistemic trust in relation to mental health (n=15)	Quantitative and qualitative studies	Direct empirical evidence for the theoretical associations between dysfunctional epistemic strategies, adverse childhood experiences, insecure attachment, poor mentalization, and psychopathology. Preliminary evidence was found for the associations between restoring epistemic trust and effective psychotherapy

al., 2015; Corriveau *et al.*, 2011; Gweon *et al.*, 2014; Kushnir & Koenig, 2017; Li & Yow, 2018; Liu *et al.*, 2013; Pasquini *et al.*, 2007; Poulin-Dubois & Chow, 2009; Ronfard & Lane, 2018; Vanderbilt *et al.*, 2018). For example, Poulin-Dubois and Chow (2009) found that 16-month-old infants were able to encode and recall the accuracy and inaccuracy of adults' searching behaviors in a task, and this record influenced how much attention the infants paid to those adults' searching behaviors in a subsequent task. Li & Yow (2018) found that 3- and 4-year-olds were more willing to override their initial judgments and endorse an unexpected testimony from a previously accurate informant than from someone who had consistently made errors. Children also preferably learn from an individual who is more informative than others (Brosseau-Liard & Birch, 2011; Brosseau-Liard *et al.*, 2018; Fedra & Schmidt, 2019; Nurmsoo & Robinson, 2009; Terrier *et al.*, 2016; Wiebe *et al.*, 2022; Zhang & Sylva, 2021). For example, Fedra & Schmidt (2019) found that 3- and 4-year-olds rejected knowledge from a communicator who lacked perceptual access and accepted claims from another who had visual access to the target object. In addition, children are more trusting of claims made by informants with relevant, as opposed to irrelevant, expertise (Boseovski & Thurman, 2014; Koenig & Harris, 2005; Koenig & Jaswal, 2011; Kushnir *et al.*, 2013; Lane & Harris, 2015; Lucas *et al.*, 2017; Vanderbilt *et al.*, 2018;). For example, Kushnir *et al.* (2013) reported that 3- to 4-year-olds selectively directed requests for new labels to a known "labeler" and directed requests to fix new broken toys to a known "fixer", indicating a preference for learning knowledge from an expert in a related domain. Moreover, children prefer to acquire information from an informant who shows good reasoning (Bernard *et al.*, 2014; Castelain *et al.*, 2016; Clegg *et al.*, 2019; Corriveau & Kurkul, 2014; Doebel *et al.*, 2016;). For example, Doebel *et al.* (2016) found that, presented with 2 speakers who expressed logically consistent or inconsistent claims, 4- and 5-year-olds were able to detect inconsistencies and demonstrated skepticism toward testimony from sources with inconsistencies. Finally, children are prone to seek and endorse information from someone who belongs to the majority (Bernard *et al.*, 2016; Corriveau *et al.*, 2009; Corriveau & Harris, 2009a; Einav, 2014; Fusaro & Harris, 2008; Guerrero *et al.*, 2017; Morgan *et al.*, 2015). For example, Corriveau *et al.* (2009) found that 3- and 4-year-olds were sensitive to group consensus and sided with the majority rather than the dissenter, and they remained mistrustful of the dissenter in a subsequent task.

When there is a conflict between epistemic cues, children tend to prioritize the cues that indicate a higher degree of certainty and actively monitor the reliability of the informant's knowledge claims. It was found that they normally consider past accuracy more important than other epistemic cues. For example, 3- to 6-year-olds were more likely to endorse claims from someone who has proven accurate in the past, even if the claims conflicted with those of the majority (Einav, 2014; Sampaio *et al.*, 2019; Scofield *et al.*, 2013). However, children do not always treat a previously inaccurate informant as unreliable. They appropriately excuse past inaccuracies arising legitimately from the informant's inadequate access to information (Kondrad & Jaswal, 2012; Kushnir & Koenig, 2017; Nurmsoo & Robinson, 2009). Children's capacity to flexibly monitor the reliability of the informant's knowledge claims is also shown in their sensitivity to under-informativeness and over-informativeness and their understanding of the trade-off between informativeness and efficiency. Gweon *et al.* (2018) reported that 5- to 7-year-olds preferred teachers who gave exhaustive demonstrations when learners were naïve but preferred teachers who gave selective demonstrations when learners were

already knowledgeable, given their prior experience. Moreover, 6- and 7-year-olds could accurately evaluate informants who omit information and adjust their exploratory behavior to compensate for under-informative testimony when an informant's credibility is in doubt (Gweon *et al.*, 2014). Together, there is robust evidence that quite young children make epistemic-based judgments to decide whether or not to learn from others and in whom they should invest trust in an active, flexible manner.

When there is a lack of epistemic cues, children attend to the social markers of informants to judge the reliability of communicated knowledge. Social markers typically include prosocial behaviors, familiarity, similarity, age, and appearance. Toddlers as young as 2 years old exhibit an understanding of intentionality (Luchkina *et al.*, 2018). The intentionality of the informants can powerfully influence whether children trust the knowledge communicated. Children expressed a greater tendency to learn from someone who displays prosocial behaviors (Johnston *et al.*, 2015; Landrum *et al.*, 2013; Lane *et al.*, 2013; Liu *et al.*, 2013; Stengelin *et al.*, 2018; Vaish *et al.*, 2010). It was found that 12- to 15-month-old infants were able to discriminate between adults' reliable actions and deceptive actions when looking for reliable sources of information (Varró-Horváth *et al.*, 2017). Moreover, 3- to 5-year-olds would rather endorse claims from an agreeable informant who had no expertise than a disagreeable informant with relevant expertise (Landrum *et al.*, 2013). Children also prefer to trust information communicated by a familiar person over that by an unfamiliar person (Corriveau & Harris, 2009b; Danovitch & Mills, 2014; Reyes-Jaquez & Echols, 2013;). They tend to seek and value knowledge from those they perceive as similar to themselves, based on factors such as gender, native accent, and group affiliation, more than from those they perceive as dissimilar (Elashi & Mills, 2014; Kinzler *et al.*, 2011; Ma & Woolley, 2013; MacDonald *et al.*, 2013;). They also prefer to learn about novel things from adults rather than other children (Jaswal & Neely, 2006). Finally, children are more likely to endorse the information provided by people on the basis of appearance, such as facial attractiveness, a stronger and healthier body, or formal dress (Bascandziev & Harris, 2014, 2016; Brosseau-Liard *et al.*, 2015; Jaffer & Ma, 2015; MacDonald & Ma, 2015;).

When there is a conflict between the 2 types of cues, most studies found that children rely more on epistemic cues than social markers to guide their decisions of trust (Baumann *et al.*, 2023; Corriveau *et al.*, 2013; Corriveau & Harris, 2009b; Jaswal & Neely, 2006; Liu *et al.*, 2013; MacDonald *et al.*, 2013; Ronfard & Lane, 2018; Terrier *et al.*, 2016; Vanderbilt *et al.*, 2018; Yang *et al.*, 2023). For example, a non-native-accented informant with a history of past accuracy was favored in comparison to a native-accented informant with a history of inaccuracy (Corriveau *et al.*, 2013). It was found that in 4- to 7-year-olds, the relation between the informant's pattern of accuracy and children's trust was so robust that it could not be moderated by children's inferences about their intents or traits (Ronfard & Lane, 2018). However, epistemically relevant considerations do not always override appraisals based on social markers. Bascandziev & Harris (2016) reported that 4- and 5-year-olds did not appear to prefer the more accurate but less attractive informant over the more attractive but less accurate informant. Danovitch & Mills (2014) found that 4-year-olds endorsed claims made by a familiar character more often than those made by an unfamiliar character, even in situations where they had evidence that the familiar character was unreliable. Moreover, MacDonald *et al.* (2013) found that 4-year-olds failed to trust reliable outgroup members over unreliable ingroup members. The inconsistency in literature can be explained by the find-

ings of Brosseau-Liard and Poulin-Dubois (2015), who reported that pre-schoolers with more advanced theory of mind preferred to learn from more accurate informants rather than from physically stronger informants. Palmquist *et al.* (2022) also found that children with better theory of mind ability were more likely to defer to an unfamiliar informant, in comparison to a previously inaccurate informant, on the selective trust task. It thus seems likely that children with more advanced theory of mind tend to heavily weigh epistemic cues over social markers.

In sum, this line of research shows that young children can selectively trust communicated knowledge based on epistemic cues (*e.g.*, past accuracy, informativeness, relevant expertise, good reasoning, and a majority opinion) and social markers (*e.g.*, prosocial behaviors, familiarity, similarity, age, and appearance). When there is a conflict between different cues, children tend to prioritize epistemic cues over the informant's social characteristics to decide whom they should invest trust in. A meta-analytic study on the development of children's selective trust (Tong *et al.*, 2020) was found in our second round of literature searches. Their meta-analyses of 51 studies generated conclusions consistent with ours, namely that children favor trusting informants who are knowledgeable or show positive social characteristics, and with age, children prioritize epistemic cues over social characteristics. With the majority of studies investigating how epistemic cues or social markers influence children's selective trust, one study examined how children's attachment styles influence their development of selective trust. Corriveau *et al.* (2009) reported that securely attached children trusted information from their mothers (*versus* strangers) when the claims were reasonable, and they were also able to trust their own perceptions when the claims were less rational. However, insecurely attached children, especially those classified as insecure disorganized, were suspicious of the claims from both their mothers and strangers, while avoidant children displayed less reliance on their mothers' claims and preoccupied children exhibited more, regardless of cues about their reliability. Their findings indicated an impaired capacity for selective trust in insecurely attached children, suggesting a link between epistemic disruption and an insecure attachment framework.

Epistemic trust in non-clinical adults

An abundance of literature on how adults perceive and receive knowledge in social communication exists in cognitive psychology, such as the information processing theory proposed by Miller (1956), stage theory originated by Atkinson & Shiffrin (1968), and selective attention theory by Treisman (1964). However, using the specific terms "epistemic trust" and "epistemic vigilance", our database and extended searches yielded only 16 empirical studies in non-clinical adults. Initially, Gilbert and colleagues (Gilbert *et al.*, 1990; Gilbert *et al.*, 1993) adopted a series of experiments on college students to investigate how adults perceive and receive new information communicated by others. Hasson *et al.* (2005) replicated Gilbert's experiments in university student samples. The 3 studies consistently suggest that young adults tend to accept new information with an initial belief in its truthfulness.

A total of 9 studies reported similar results in non-clinical adults as those in studies of children's selective trust. Adults were found to also selectively trust claims supported by good evidence and from sources who show confidence and a history of accuracy (Fitneva & Dunfield, 2010; Gierth & Bromme, 2020; Guerrero *et al.*, 2020; Pozzi & Mazzarella, 2023; Ronfard & Lane, 2019; Tenney *et al.*, 2011). Clément *et al.* (2013) found in their experiments that adults, similarly to 3-year-olds, pre-

ferred to acquire new knowledge from an avatar displaying a happy face than from an avatar displaying an angry face. As informants' facial expressions are naturally used to detect their intention to cooperate, the findings suggest that adults tend to trust communicated knowledge from someone who shows benevolence. Likewise, Lane *et al.* (2013) reported that adults, similarly to 3- to 6-year-olds, showed a greater tendency to trust the information provided by people who appear nice, smart, and honest than by those who are not. Additionally, Echterhoff *et al.* (2017) tested whether an audience-tuned message with shared reality could induce the learner to accept knowledge from out-group sources in a series of experiments. Adults were found to be more likely to accept information from an out-group member who shares consensus with them, despite pre-existing intergroup biases. Their findings suggest that adults are fundamentally flexible in trusting communicated knowledge despite social categorization or bias. However, one study reported that compared to young children, adults, and older children were less overconfident in their knowledge but also less willing to revise their initial beliefs (Hagá & Olson, 2017). Although their findings suggested some age differences in selective trust strategies, it is possible that adults and older children are not, in fact, less willing or less open to revising their beliefs than younger children are. Hagá & Olson (2017) believed that with age, people may become better at recognizing the limits of their own knowledge and also the limits of other people's knowledge, and thus they simply require more or better information to revise their initial beliefs.

Two studies investigated how conspiracy mentality affects trust in communicated knowledge. Imhoff *et al.* (2018) found that adults with a conspiratorial mindset perceived knowledge from powerful sources (*e.g.*, sources with expertise) as less credible and information from powerless sources in a more positive way. As shown in the studies of children's selective trust, individuals in normal development tend to endorse knowledge that is in line with the majority and from sources with expertise. This source-based bias in their findings suggested a disruption in epistemic trust for those with a conspiracy mentality. Frenken & Imhoff (2022) explored conspiracy mentality and trust by asking a large sample of adults to evaluate facial trustworthiness in experiments. They found that those with a conspiracy mentality had a generalized tendency to perceive others as untrustworthy, as indicated by lower frequencies of rating novel faces as trustworthy; in comparison, those without a conspiracy mentality were able to recognize facial trustworthiness and untrustworthiness cues and make evaluations based on cues. Their findings that conspiracy mentality correlated with non-specific mistrust towards others, independent of the displayed (un)trustworthiness cues in the faces, suggested that those with a conspiracy mentality possibly have a generalized view of others as malevolent and threatening. In this sense, the source-based bias that they found in the previous study may actually reflect a general tendency to distrust the social world on various levels. Hence, we can conclude that those with a conspiracy mentality are likely to take a stance of epistemic mistrust.

It is worth noting that the information presented in these experiments was of no relevance or usefulness to the participants. Sperber *et al.* (2010) highlighted that humans tend to accept new information as automatically true to keep the processing cost at a bare minimum unless the information communicated is of relevance to themselves and warrants careful reasoning. Therefore, it is important to carry out experiments where the information communicated is of personal relevance to the participants. Schröder-Pfeifer *et al.* (2022) designed and conducted an experimental paradigm to assess epistemic trust where information of personal

relevance was presented. In their experiment, a small number of college students were first asked to engage in public speaking and mental arithmetic in front of 2 evaluators and other participants and then complete a questionnaire rating their own performance. Later, participants received feedback from the evaluators about their performance. The extent to which participants were able to adequately modify their previous beliefs about themselves on the basis of evaluators' feedback was used as a measurement of their level of epistemic trust. When the communicated information is of high personal relevance, 3 types of participants appear: an open type, an overly vigilant type, and a naïve/uncertain type.

In summary, it is reasonable to assume that with age, people may become more aware and vigilant of potential deception and misinformation. However, the evidence found in non-clinical adults is, in general, consistent with what has been found about children's selective trust. These experimental findings imply that adults, in general, are open to communicated knowledge and can use cues in a similar way as children to decide whether or not to learn from others for their own interests. However, individuals with a mental health crisis may have disruptions in their capacity for epistemic trust and tend to distrust others as knowledge sources. Nevertheless, we anticipate a vast body of investigations on the mechanisms of social communication and social learning in psychology literature that are relevant to epistemic trust but not included in our review due to the necessary constraints of our search strategy. Direct investigations beyond childhood were limited due to the absence of tools measuring epistemic trust as an individual variance factor. Filling the gap, the study by Schröder-Pfeifer *et al.* (2022) was the first to use an experimental tool to assess epistemic stance in terms of openness to knowledge that is of personal relevance and communicated interpersonally. This finding should encourage further research to conduct direct investigations by validating and applying the experimental paradigm to larger and more diverse samples to explore the individual differences in epistemic stance.

Epistemic trust and mental health

To date, 15 studies have investigated the relationship between epistemic trust, psychopathology, and psychotherapy. A total of 5 studies adopted the trust subscale of the Inventory of Parent and Peer Attachment (IPPA) as a proxy measure of epistemic trust in adolescents (Bo *et al.*, 2017; Locati *et al.*, 2022; Locati *et al.*, 2023; Orme *et al.*, 2019; Venta, 2020). Both Orme *et al.* (2019) and Bo *et al.* (2017) examined the correlation between epistemic trust and borderline pathology. Orme *et al.* (2019) found significantly reduced trust toward parents in 322 inpatient adolescents with borderline symptoms. Bo *et al.* (2017) reported a significant increase in trust toward parents and peers along with a decline in borderline symptoms in 25 female Danish adolescents receiving 1-year structured mentalization-based group therapy. Venta (2020) found that lower trust in mothers was associated with adverse childhood experiences and less adaptive acculturative learning in a sample of 100 recently immigrated high school students. Locati *et al.* (2022) reported that lower trust in parents was correlated with a higher level of perceived stress and emotion dysregulation during COVID-enforced social isolation in 131 nonclinical adolescents. Locati *et al.* (2023) revealed gender differences by showing that IPPA trust mediates the association between mentalizing, internalizing, and externalizing problems in females but not in males. These findings are largely in line with the theoretical associations between epistemic mistrust and mental health concerns. However, it should be borne in mind that the trust subscale of the

IPPA actually measures the level of trust toward parents and/or peers in the context of the perceived quality of attachment relationships rather than epistemic trust.

More direct empirical investigations became possible after Campbell *et al.* (2021) introduced a self-report scale, the Epistemic Trust, Mistrust and Credulity Questionnaire (ETMCQ), to measure epistemic stance. The ETMCQ contains 3 subscales measuring epistemic trust, mistrust, and credulity, based on the rationale that epistemic disruption might be expressed in high levels of epistemic mistrust, involving a tendency to reject or avoid any communication, and/or excessive epistemic credulity, where information is received with insufficient discrimination, leaving the recipient vulnerable to misinformation and/or exploitation (Campbell *et al.*, 2021). Including Campbell *et al.* (2021), 5 studies conducted the ETMCQ in large, representative samples to examine the epistemic trust model of developmental psychopathology (Kamplung *et al.*, 2022; Liotti *et al.*, 2023; Nimbi *et al.*, 2023; Tanzilli *et al.*, 2022). Campbell *et al.* (2021) reported positive associations between dysfunctional epistemic stance and adverse childhood experiences, insecure attachment, difficulties in understanding mental states, and global psychopathology severity in UK populations. Similar findings using translated versions of the scale were reported in large community samples in Italy (Liotti *et al.*, 2023; Nimbi *et al.*, 2023; Tanzilli *et al.*, 2022) and Germany (Kamplung *et al.*, 2022). Additionally, in a general sample of 301 Italians, Bincoletto *et al.* (2023) found that negative ageism was associated with psychological distress and linked to epistemic mistrust. Different from the cross-sectional studies using general adult participants, Riedl *et al.* (2023) were the first to apply the ETMCQ to a clinical sample (249 psychosomatic inpatients receiving 6-week rehabilitation treatment in Austria).

The key assumptions of the epistemic trust model of developmental psychopathology all received supporting evidence from the above-mentioned studies. First, childhood adverse experiences and insecure attachment were both found to have strong and positive associations with epistemic mistrust and epistemic credulity, and negative associations with epistemic trust across studies. This supports the theory that early adversity can undermine one's capacity for social learning in the long run as a result of pervasive suspicion or vulnerability to misinformation and that secure attachment with the primary caregiver sets the foundation for one's openness to social communication, that is, securely attached individuals are enabled to generalize trust in the primary caregiver to the social world. Second, poor mentalization (*i.e.*, difficulties in understanding mental states) was found to positively correlate with epistemic mistrust and epistemic credulity across studies. Surprisingly, in psychosomatic inpatients, Riedl *et al.* (2023) found no association between baseline mentalizing level and epistemic trust, nor with mistrust or credulity. Even so, they found that decreases in epistemic mistrust and epistemic credulity and increases in epistemic trust strongly significantly correlated with improved mentalizing at the end of treatment. This inconsistency may also be caused by the use of different scales across studies, which include the Reflective Functioning Questionnaire, the Mentalization Questionnaire, and the Brief-Mentalized Affectivity Scale. Regardless, the empirical evidence overall still supported the theoretical assumptions about epistemic stance and mentalization, that is, difficulties in understanding mental states closely interlink with over-suspiciousness and inability to accurately identify trustworthy sources.

Importantly, epistemic mistrust and epistemic credulity, as dysfunctional epistemic strategies, are strongly positively associ-

ated with psychopathology, as measured by different scales across studies. Campbell *et al.* (2021), Liotti *et al.* (2023), Nimbi *et al.* (2023), and Riedl *et al.* (2023) all adopted the Brief Symptom Inventory (BSI), which assesses psychological distress and symptoms of psychiatric disorders. Tanzilli *et al.* (2022) used a personality inventory to assess the overall level of personality dysfunction, and Kampling *et al.* (2022) employed the International Trauma Questionnaire to capture post-traumatic stress disorder (PTSD) and complex PTSD symptoms. The findings provide consistent evidence for the assumption that epistemic mistrust and epistemic credulity may be associated with vulnerability to psychopathology. However, inconsistent findings appeared regarding the relationship between epistemic trust and psychopathology. Higher scores on epistemic trust were, in some studies, found to be associated with less severe psychological symptomatology (Liotti *et al.*, 2023), lower complex PTSD symptoms (Kampling *et al.*, 2022), and lower levels of depression, anxiety, and somatization (Riedl *et al.*, 2023), but did not associate with reduced levels of psychological symptoms, nor was it a moderator in buffering against childhood adversity in Campbell *et al.* (2021). Moreover, although Riedl *et al.* (2023) found that epistemic credulity and epistemic trust improved with low-to-medium effect sizes alongside reduced symptoms measured by the BSI, no significant changes in epistemic mistrust were observed in relation to psychopathological symptoms. The relatively surprising findings by Riedl *et al.* (2023) regarding mentalizing capacity and psychopathology may be caused by the possibly lessened sensitivity of the ETMCQ in clinical populations, as the scale was designed and validated to capture individual differences of epistemic stance in general populations.

Altogether, we may conclude that these 7 studies using the ETMCQ provide emerging empirical evidence for the theoretical associations drawn between epistemic stance, adverse childhood experiences, attachment style, mentalizing capacity, and psychopathology. In addition to the key variables, epistemic mistrust and/or epistemic credulity were found to be significantly associated with lower abilities in emotional regulation (Liotti *et al.*, 2023), immature defense mechanisms (Tanzilli *et al.*, 2022), maladaptive response patterns (Nimbi *et al.*, 2023; Tanzilli *et al.*, 2022), and prejudice and stereotypes (Bincoletto *et al.*, 2023). Emotional dysregulation and dysfunctional defense mechanisms and response patterns are typically associated with psychopathology, and the evidence of these associations added more support to the theory. Although there are some inconsistencies in the findings and variations in the strength and significance level of the associations, we believe that the empirical investigations adopting the ETMCQ overall provided supporting evidence for the epistemic model of developmental psychopathology.

Finally, to date, 3 studies have explored epistemic trust and mistrust in relation to individual experiences of psychotherapy using semi-structured interview data. Thomas & Jenkins (2019) studied patient experiences of community-based Mentalization-Based Therapy (MBT) in 6 males diagnosed with antisocial personality disorder. They found that epistemic trust appeared to be the overarching concept that encapsulated all themes that emerged (*i.e.*, the experience of the group, attachment, learning flexibility, individual sessions, and impact). The MBT group was seen as providing a safe, transparent, and flexible space, enabling patients to explore different aspects and possibilities of their own and others' minds, which fostered their willingness and capacity to trust others as a source of knowledge. Likewise, Li *et al.* (2022) explored what happened to 15 depressed adolescents who entered treatment with indications of epistemic mistrust through the

course of psychotherapy over 2 years. They found that some adolescents experienced a shift from epistemic mistrust to epistemic trust, which seemed to be associated with the experience of therapy; some also experienced a shift but did not consider it as an outcome of therapy; however, the remaining reported continued mistrust over the 2 years. Importantly, it was found that indications of a shift from epistemic mistrust to epistemic trust were associated with better psychotherapy outcomes regardless of treatment orientations. Finally, Jaffrani *et al.* (2020) investigated how epistemic trust was restored in an adoptive family receiving MBT. It was revealed that the building of epistemic trust went through several stages, from understanding the difficulties that brought the family to therapy, building a secure base within therapy, and then having trust transferred toward other professionals beyond therapy. Generic therapeutic techniques, such as showing empathy, warmth, and respect, building a safe base and therapeutic alliance, and improving mentalization, were found to have facilitated the building of epistemic trust. In addition, 3 factors in the family's history were interpreted by the researchers as having contributed to epistemic mistrust before starting MBT: adverse early experiences, perceptions of professionals putting in minimal effort, and a rigid treatment framework. Together, these 3 studies on epistemic trust and mistrust in relation to therapeutic change provided some preliminary evidence for the associations between restoring epistemic trust and effective psychotherapy.

Discussion

The present study aims to understand existing evidence relevant to the epistemic trust model of developmental psychopathology to better guide future research. Although a large number of investigations on children's selective trust strategies have addressed the development of epistemic trust in childhood, only a limited number of studies have explored epistemic trust in adult populations or in relation to psychopathology, due to a lack of tools to measure epistemic stance. Direct empirical investigation has been recently facilitated by the availability of a self-report scale, the ETMCQ, which measures individual differences in epistemic trust. At the same time, Schröder-Pfeifer *et al.* (2022) have introduced the first experimental tool to assess epistemic stance. Further empirical research adopting the self-report scale (Campbell *et al.*, 2021) or the new experimental paradigm (Schröder-Pfeifer *et al.*, 2022) in diverse samples of adolescents and adults is needed to further test the epistemic trust model of developmental psychopathology.

Sperber's (2010) proposition that children actively utilize epistemic vigilance in learning from social communication is supported by compelling evidence concerning the development of selective trust in children. Researchers in this field often separate epistemic cues from social markers and consider them 2 distinct strategies for selective trust. They postulate that children discern between epistemic cues and social markers, weighing their relevance based on the information they pursue. For example, Harris *et al.* (2018) posited that children rely on epistemic cues for reliable data but assess social traits to gauge an informant's societal standing. Likewise, Markson & Luo (2020) deduced that while children seek epistemic cues for knowledge acquisition, they prioritize informant traits when aiming for social reinforcement. However, we argue that desirable social characteristics could mostly be justified on epistemic grounds. For example, a familiar and similar informant is more apt to offer pertinent and accurate information than an unfamiliar one from a divergent background.

This stems from the idea that contextually relevant knowledge might not hold true in another setting. A common observation is that children tend to orient towards members of their own community to guide their early cultural learning (Bámaca-Colbert *et al.*, 2019; Esseily *et al.*, 2016). Moreover, a benevolent source is more inclined to prioritize the learner's interest, offering accurate information, whereas a malevolent, albeit competent, source may deceive. Additionally, informants who appear older, more attractive, or formally attired might be perceived as more informed, making them seemingly valuable sources for children. Thus, favored informant traits, such as familiarity and similarity, benevolence, older age, and attractiveness, may signal the relevance and usefulness of the information communicated.

Therefore, we propose that young children, who may not be able to explicitly ground their decisions to trust or distrust on epistemic grounds, can attend to the social characteristics of the informants. Nevertheless, there are situations where children ignore epistemically relevant considerations and solely focus on the social markers of the informants. For example, Jaswal and Kondrad (2016) noted that children favored informants showcasing in-group characteristics or prosocial actions, even if it meant compromising accurate data. We speculate that in this case, children may, at an implicit level, prioritize forging positive, enduring social ties that facilitate knowledge exchange with minimal cognitive exertion, as opposed to perpetually evaluating communicative cues. Either way, we argue that children's trust decisions based on social markers demonstrate a fundamentally rational strategy for selective trust and serve the same purpose as epistemic-based judgments, that is, to gather and accumulate robust knowledge about the world.

One may argue that the studies on selective trust investigate how people perceive informant cues and how they determine whom they should invest trust in, rather than focusing on an individual's willingness and capacity to trust others as a source of knowledge about the world (*i.e.*, epistemic trust). In our view, selective trust is an embodiment of epistemic trust. To put it another way, only when someone possesses the genuine intent and capability to regard others as knowledgeable sources can they discern whom to trust, utilizing cues to optimize their decisions. This perspective finds support in results by Corriveau *et al.* (2009): securely attached children exhibited patterns of selective trust consistent with those observed in other studies. When confronted with plausible claims from both their mothers and strangers, these children, guided by the cue of familiarity, favored their mother's information. Yet, in situations where their mother's assertion conflicted with a stranger's claim backed by perceptual evidence, these children prioritized epistemic cues over social markers, leaning towards the stranger's assertion. In contrast, insecurely attached children showed an absence of selective trust, approaching both their mother's and the stranger's claims with skepticism. Given the corroborative evidence found in adolescents using the IPPA (Bo *et al.*, 2017; Locati *et al.*, 2022; Locati *et al.*, 2023; Orme *et al.*, 2019; Venta, 2020) and in adults using the ETMCQ (Campbell *et al.*, 2021; Liotti *et al.*, 2023), we may conclude that individuals with a secure attachment foundation typically initiate social interactions with a trust rooted in their primary caregivers, which then broadens into selective trust within larger social contexts. However, those with insecure attachments might be less inclined to foster openness to social communication, and their capacity to use epistemic cues and social markers to make trust decisions is compromised. In this sense, the unwillingness or incapacity to trust others as a source of knowledge manifests as a lack of selective trust, epitomized by universal skepticism.

Our contention that selective trust serves as a manifestation of epistemic trust gains further support from 2 studies that investigated how conspiracy mentality affects trust in communicated knowledge. Adults with a conspiratorial mindset were found to have a deviant selective trust strategy; they leaned toward information sources generally perceived as less credible and showed a pervasive inclination to distrust others, even when cues indicated trustworthiness (Frenken & Imhoff, 2022; Imhoff *et al.*, 2018). This suggests that neither the insecurely attached children nor the adults with conspiratorial mindsets employ epistemic cues or social markers in conventional ways.

They either blindly distrust available sources or choose to learn from sources with cues that are generally unpreferable. Drawing from these insights, we infer that the inherent openness of humans to interpersonally transmitted knowledge with active epistemic vigilance is manifested in young children as the act of selective learning from reliable others based on epistemic cues and social markers. However, in individuals with atypical development and/or mental health crises, this capacity may be compromised. Consequently, the absence of selective trust or the adoption of deviant trust strategies can be seen as signs indicating disruptions in the capacity for epistemic trust.

Future direction one: is adolescence the time when variations of epistemic stance become visible?

Although the evidence in adults seemingly aligns with findings about children's selective trust, suggesting that humans in normal development are open to adaptively receiving new knowledge from others, research is scant beyond early childhood. Effective selective learning should evolve alongside individuals' growing capacity to evaluate others' knowledge and intentions. For example, 3- and 4-year-olds show a strong bias to trust what adults say, but older children at 6 to 7 years of age demonstrate increased epistemic vigilance towards others' knowledge when faced with inconsistencies between an adult's verbal and nonverbal cues (Ghossainy *et al.*, 2021). Similarly, older children exhibit greater caution towards others' intentions. Zhang & Sylva (2021) found that in a non-competitive context, 6- to 7-year-olds favored the outgroup informant over the ingroup informant when the outgroup informant had visual access that provided better knowledge. But in a competitive context, 6- to 7-year-olds attached less weight to the visual access that the outgroup informant had and endorsed the ingroup informant instead. Given that 3- to 4-year-olds lacked this inclination, older children probably grew more sensitive to informants' self-interests. However, selective trust studies rarely extend beyond childhood, leaving adolescent behaviors in this context largely uncharted.

Adolescence is a pivotal developmental stage for identity formation (Erikson, 1968). As they transition into this period, young people often grow more skeptical, displaying heightened self-awareness, a sense of imaginary audiences, and risk-taking tendencies (Steinberg, 2005). Their expanding social experiences could potentially make them less gullible regarding communicated knowledge. Dweck and colleagues found that adolescents' perspectives on others began to differ during early adolescence (Dweck, 1999; Erdley & Dweck, 1993; Levy & Dweck, 1999). Some perceived people as unchanging, while others viewed them as adaptable. Although these studies focused on the views of people rather than knowledge receptivity, it's conceivable that adolescents' epistemic trust strategies diverge from childhood patterns. Additionally, heightened activity in brain regions linked to understanding others' intentions was observed during adoles-

cence (van den Bos *et al.*, 2011), a critical factor in deciding to learn from someone. Moreover, studies using the IPPA's trust subscale in adolescent samples (Bo *et al.*, 2017; Locati *et al.*, 2022; Locati *et al.*, 2023; Orme *et al.*, 2019; Venta, 2020;) indicated various factors, such as pathology and adverse experiences, corresponded with reduced trust towards parents and peers. This suggests that epistemic stance variations might become more prominent during adolescence. Investigations across diverse adolescent groups are essential to comprehending the developmental trajectory of epistemic trust and enriching the epistemic trust model of developmental psychopathology.

Future direction two: improving measurements and conducting experiments in adolescents and adults

A direct empirical exploration of the epistemic trust model of developmental psychopathology has been facilitated by the development of the ETMCQ, a self-report scale that measures epistemic stance. The 7 studies (Bincoletto *et al.*, 2023; Campbell *et al.*, 2021; Kampling *et al.*, 2022; Liotti *et al.*, 2023; Nimbi *et al.*, 2023; Riedl *et al.*, 2023; Tanzilli *et al.*, 2022) that tested the ETMCQ with relevant psychological variables in large, representative populations or clinical samples all reported evidence supporting the key assumptions regarding the relations of dysfunctional epistemic strategies with adverse childhood experiences, insecure attachment, poor mentalization, and psychopathology. However, an unexpected finding appeared in Campbell *et al.* (2021): higher scores on epistemic trust were neither correlated with better mentalizing capacity nor with reduced mental health symptoms. Furthermore, elevated levels of epistemic trust did not buffer against the impact of childhood adversity on psychopathology. While their findings were similar to those later reported by Kampling *et al.* (2022), Liotti *et al.* (2023), and Riedl *et al.* (2023), the correlation values in the 3 studies were between -0.2 and -0.1, suggesting a very weak or no association. Campbell *et al.* (2021) rationalized these results by proposing that a stance of epistemic trust is a default mode of social functioning, suggesting that excessive trust beyond the average brings no added clinical advantage. Indeed, epistemic trust can be conceptualized as an inherently stable and healthy disposition with minimal direct correlation to psychopathology. However, further empirical investigations are warranted, given that pronounced deficits or excessive levels of trust could potentially correlate with specific psychopathological manifestations.

Another potential issue is that the trust subscale might not be sufficiently well devised to capture epistemic trust. For example, items 2 (“I find information easier to trust and absorb when it comes from someone who knows me well”) and 7 (“sometimes, having a conversation with people who have known me for a long time helps me develop new perspectives about myself”) lean towards endorsing knowledge from informants based on familiarity cues. Although these 2 items reflect aspects of secure attachment and stable interpersonal relationships, relying solely on social markers for trust decisions can lead to a risk of being misled. In other words, those who score high on epistemic credulity might also score high on these 2 items. Consequently, in future studies, scores on epistemic credulity should be accounted for when determining the association of epistemic trust with mental health symptoms. Given our earlier stance that selective trust epitomizes epistemic trust, researchers might consider including items that

encapsulate selective trust, focusing on the evaluation of epistemic cues in the epistemic trust subscale.

Furthermore, self-report scales capture one's subjective perceptions of behavior. Those who perceive themselves as open to social communication may not truly exhibit an epistemic trust stance. A psychological experiment taps responses to specific stimuli in a structured situation, recording immediate reactions. Building on the majority of research that employs psychological experiments in a laboratory setting, future empirical studies should utilize an experimental approach to assess epistemic stances. To our knowledge, the new paradigm introduced by Schröder-Pfeifer *et al.* (2022) is the first published experimental tool that assesses epistemic trust. Their paradigm communicates personally relevant new knowledge to participants, and the extent of participant belief revision based on this communicated knowledge is measured as their epistemic trust level. The participant types identified in their results align with the 3 independent structures in the ETMCQ, as documented by Campbell *et al.* (2021). Going forward, researchers could employ this new experimental paradigm to discern group differences between those with mental disorders and healthy controls, particularly evaluating whether the open type exhibits fewer mental health symptoms. Moreover, based on the hypothesis that positive caregiving experiences foster one's trust in others' knowledge, Milesi *et al.* (2023) proposed that epistemic trust is a subset of interpersonal trust, and gauging trustworthiness from facial cues is foundational to both types of trust. Future research should consider adopting an experimental approach to test these hypotheses.

Future direction three: prospective observational study helps in understanding how epistemic stance relates to therapeutic change

The 3 qualitative studies (Jaffrani *et al.*, 2020; Li *et al.*, 2022; Thomas & Jenkins, 2019) exploring epistemic trust and mistrust in psychotherapy using interview data provided some preliminary evidence for the association between restoring epistemic trust and effective psychotherapy. Further investigation is needed to understand whether the components for building epistemic trust found in the 3 studies can be generalized across contexts. Fonagy and colleagues (Fonagy *et al.*, 2017b, 2019) have proposed a framework of 3 communication systems that generate epistemic trust in psychotherapeutic interventions and that are believed to explain therapeutic change across different types of psychosocial treatments.

In the meantime, to understand whether the restoration of epistemic trust represents a vital feature of effective psychotherapy, it would be useful to start with a prospective observational study where the variation of epistemic stance is measured throughout treatment. In the existing literature, only Bo *et al.* (2017) and Riedl *et al.* (2023) conducted assessments at baseline and the end of treatment in the same cohort receiving psychotherapy. Bo *et al.* (2017) found a significant increase in trust toward parents and peers along with a decline in borderline symptoms, and Riedl *et al.* (2023) reported decreases in epistemic mistrust and epistemic credulity and increases in epistemic trust along with improved mentalizing. However, we cannot be sure whether the increased level of epistemic trust is the most central factor leading to therapeutic change or a facilitative factor that enhances the effects of other key variables such as coping skills, emotion regulation, and therapeutic alliance but is not sufficiently helpful on its own for subsequent symptom change. Another possibility is that

restoring epistemic trust is not a generic mechanism for therapeutic change, but that epistemic mistrust is a hindrance to change. Future research might apply the ETMCQ at various time points throughout the treatment to understand whether and how the patient's epistemic stance changes across the sessions. To better understand how epistemic stance relates to therapeutic change and other key variables in psychotherapy (e.g., coping skills, emotion regulation, therapeutic alliance), studies may need to monitor within- and between-session changes to test whether an increase in epistemic trust brings about a subsequent reduction in symptoms and positive influence on other variables.

Measuring within- and between-session changes would, in parallel, help to understand how epistemic trust is restored in an individual. For example, we assume that a change from a dysfunctional to a functional epistemic stance would start with an increased openness to learning from the therapist. This may manifest as moments where the patient gradually accepts new perspectives from the therapist, and based on what they learn, they change the way they perceive their problems and their social environment. It may alternatively manifest as a process by which the patient applies what they have learned from their therapist to real life, finds this experience useful, and then develops an increased openness in subsequent sessions. In the former situation, micro-process research can help to gain a deeper understanding of the dynamics, which might involve a moment-to-moment analysis of treatment sessions, focusing on a segment of a single session, an entire session, or several specified sessions. In the latter situation, how benign/harsh the social environment of the patient is may be critical to the restoration of epistemic trust and symptom improvements. People who continue to live in a harsh environment may appear "hard to reach" and are often the very people who struggle to benefit from psychotherapy and end up dropping out. This may form another area for future empirical research. It would also help to understand what the therapist can do to maximize the benefits of treatment, especially for those who have the most severe/complex mental health needs.

Furthermore, it would be interesting to assess how specific trust towards the therapist evolves during treatment, complemented by the measurement of epistemic trust. Researchers can apply tools such as the Working Alliance Inventory and determine whether an increase in epistemic trust and decreases in epistemic mistrust and credulity correlate with increases in specific trust towards the therapist and working alliance. This assessment would provide insights into whether a strong therapeutic relationship mediates a shift from a dysfunctional to a functional epistemic stance. As the ETMCQ was designed to measure a trait-like tendency and might not be sensitive enough to capture state-like changes, it would be beneficial for psychotherapy research to develop a state measure that reflects within-patient processes of epistemic change. Finally, based on the outcomes of the investigations above, researchers might consider developing a manual that guides the resolution of epistemic mistrust in psychotherapy. This approach would facilitate an understanding of how psychotherapeutic treatment might be tailored to more effectively overcome difficulties in epistemic trust and, consequently, enhance treatment outcomes.

Conclusions

Experimental evidence on selective trust in children underpins the epistemic trust model of developmental psychopathology. Epistemic trust is deployed when humans evaluate various

cues from informants to guide effective social learning. However, disruptions can manifest in individuals with atypical development or mental health crises, showing abnormal trust strategies. Direct empirical exploration in adults was facilitated by the development of a self-report scale for epistemic trust, and these studies highlighted dysfunctional epistemic strategies' role in mental health vulnerability. Preliminary qualitative research also links the restoration of epistemic trust to successful psychotherapy, but the field needs further exploration. However, much remains to be done in this research field. We proposed 3 research directions. First, empirical investigations in adolescent samples are needed to understand whether adolescence is the period when variations in epistemic stance become visible. Second, researchers should conduct behavioral experiments in adolescents and adults to assess dysfunctional and functional epistemic stances and how they relate to vulnerability to mental health disorders. Third, prospective observational studies where the variation of epistemic stance is measured throughout treatment and within- and between-session changes are monitored will be of great help in understanding how epistemic stance relates to therapeutic change. Moreover, broad empirical research involving diverse mental disorders can further validate findings, especially in determining if a dysfunctional epistemic strategy indicates innate psychopathological tendencies. Lastly, varying psychotherapy research can illuminate whether generating epistemic trust may be a generic mechanism for change in effective psychotherapy.

References

- Atkinson, R. C., & Shiffrin, R. M. (1968). Human memory: a proposed system and its control processes. *Psychology of Learning and Motivation*, 2, 89-195. doi: 10.1016/S0079-7421(08)60422-3.
- Bach, B., & Farrell, J. M. (2018). Schemas and modes in borderline personality disorder: the mistrustful, shameful, angry, impulsive, and unhappy child. *Psychiatry Research*, 259, 323-329. doi: 10.1016/j.psychres.2017.10.039.
- Bámaca-Colbert, M. Y., Henry, C. S., Perez-Brena, N., Gayles, J. G., & Martinez, G. (2019). Cultural orientation gaps within a family systems perspective. *Journal of Family Theory & Review*, 11(4), 524-543. doi: 10.1111/jftr.12353.
- Barth, H., Bhandari, K., Garcia, J., MacDonald, K., & Chase, E. (2014). Preschoolers trust novel members of accurate speakers' groups and judge them favourably. *Quarterly Journal of Experimental Psychology*, 67(5), 872-883. doi: 10.1080/17470218.2013.836234.
- Bascandziev, I., & Harris, P. L. (2014). In beauty we trust: children prefer information from more attractive informants. *British Journal of Developmental Psychology*, 32(1), 94-99. doi: 10.1111/bjdp.12022.
- Bascandziev, I., & Harris, P. L. (2016). The beautiful and the accurate: are children's selective trust decisions biased?. *Journal of Experimental Child Psychology*, 152, 92-105. doi: 10.1016/j.jecp.2016.06.017.
- Baumann, A. E., Goldman, E. J., Meltzer, A., & Poulin-Dubois, D. (2023). People do not always know best: preschoolers' trust in social robots. *Journal of Cognition and Development*, 24(4), 1-28. doi: 10.1080/15248372.2023.2178435.
- Berenson, K. R., Johnson, J. C., Zhao, F., Nynaes, O., & Goren, T. (2018). Borderline personality features and integration of

- positive and negative thoughts about significant others. *Personality Disorders: Theory, Research, and Treatment*, 9(5), 447-457. doi: 10.1037/per0000279.
- Bernard, S., Castelain, T., Mercier, H., Kaufmann, L., Van der Henst, J. B., & Clément, F. (2016). The boss is always right: preschoolers endorse the testimony of a dominant over that of a subordinate. *Journal of Experimental Child Psychology*, 152, 307-317. doi: 10.1016/j.jecp.2016.08.007.
- Bernard, S., Mercier, H., & Clément, F. (2012). The power of well-connected arguments: early sensitivity to the connective because. *Journal of Experimental Child Psychology*, 111(1), 128-135. doi: 10.1016/j.jecp.2011.07.003.
- Bernard, S., Proust, J., & Clément, F. (2014). The medium helps the message: early sensitivity to auditory fluency in children's endorsement of statements. *Frontiers in Psychology*, 5, 1412. doi: 10.3389/fpsyg.2014.01412.
- Bincoletto, A.F., Zanini, L., Spitoni, G. F., & Lingiardi, V. (2023). Negative and positive ageism in an Italian sample: how ageist beliefs relate to epistemic trust, psychological distress, and well-being. *Research in Psychotherapy*, 26(2), 676. doi: 10.4081/ripppo.2023.676.
- Birch, S. A., Vauthier, S. A., & Bloom, P. (2008). Three- and four-year-olds spontaneously use others' past performance to guide their learning. *Cognition*, 107(3), 1018-1034. doi: 10.1016/j.cognition.2007.12.008.
- Bo, S., Sharp, C., Beck, E., Pedersen, J., Gondan, M., & Simonsen, E. (2017). First empirical evaluation of outcomes for mentalization-based group therapy for adolescents with BPD. *Personality Disorders*, 8(4), 396-401. doi: 10.1037/per0000210.
- Boseovski, J. J., & Thurman, S. L. (2014). Evaluating and approaching a strange animal: children's trust in informant testimony. *Child Development*, 85(2), 824-834. doi: 10.1111/cdev.12156.
- Bridgers, S., Buchsbaum, D., Seiver, E., Griffiths, T. L., & Gopnik, A. (2016). Children's causal inferences from conflicting testimony and observations. *Developmental Psychology*, 52(1), 9-18. doi: 10.1037/a0039830.
- Brink, K. A., & Wellman, H. M. (2020). Robot teachers for children? Young children trust robots depending on their perceived accuracy and agency. *Developmental Psychology*, 56(7), 1268-1277. doi: 10.1037/dev0000884.
- Brosseau-Liard, P. E., & Birch, S. A. (2010). 'I bet you know more and are nicer too!': what children infer from others' accuracy. *Developmental Science*, 13(5), 772-778. doi: 10.1111/j.1467-7687.2009.00932.x.
- Brosseau-Liard, P. E., & Birch, S. A. (2011). Epistemic states and traits: preschoolers appreciate the differential informativeness of situation-specific and person-specific cues to knowledge. *Child Development*, 82(6), 1788-1796. doi: 10.1111/j.1467-8624.2011.01662.x.
- Brosseau-Liard, P. E., Iannuzziello, A., & Varin, J. (2018). Savvy or Haphazard? Comparing preschoolers' performance across selective learning tasks based on different epistemic indicators. *Journal of Cognition and Development*, 19(4), 367-388. doi: 10.1080/15248372.2018.1495219.
- Brosseau-Liard, P., Penney, D., & Poulin-Dubois, D. (2015). Theory of mind selectively predicts preschoolers' knowledge-based selective word learning. *British Journal of Developmental Psychology*, 33(4), 464-475. doi: 10.1111/bjdp.12107.
- Butler, L. P., Schmidt, M. F., Tavassolie, N. S., & Gibbs, H. M. (2018). Children's evaluation of verified and unverified claims. *Journal of Experimental Child Psychology*, 176, 73-83. doi: 10.1016/j.jecp.2018.07.007.
- Byrne, G. (2020). And whatever you say, you say nothing. Establishing epistemic trust in the lighthouse MBT-parenting programme: a case study. *Journal of Psychological Therapies*, 5(2), 206-228. doi: 10.33212/jpt.v5n2.2020.206.
- Campbell, C., & Allison, E. (2022). Mentalizing the modern world. *Psychoanalytic Psychotherapy*, 36(3), 206-217. doi: 10.1080/02668734.2022.2089906.
- Campbell, C., Tanzer, M., Saunders, R., Booker, T., Allison, E., Li, E., O'Dowda, C., Luyten, P., & Fonagy, P. (2021). Development and validation of a self-report measure of epistemic trust. *PLoS One*, 16(4), e0250264. doi: 10.1371/journal.pone.0250264.
- Castelain, T., Bernard, S., Van der Henst, J. B., & Mercier, H. (2016). The influence of power and reason on young Maya children's endorsement of testimony. *Developmental Science*, 19(6), 957-966. doi: 10.1111/desc.12336.
- Chan, C. C. Y., & Tardif, T. (2013). Knowing better: the role of prior knowledge and culture in trust in testimony. *Developmental Psychology*, 49(3), 591-601. doi: 10.1037/a0031336.
- Clegg, J. M., Kurkul, K. E., & Corriveau, K. H. (2019). Trust me, I'm a competent expert: developmental differences in children's use of an expert's explanation quality to infer trustworthiness. *Journal of Experimental Child Psychology*, 188, 104670. doi: 10.1016/j.jecp.2019.104670.
- Clément, F., Bernard, S., Grandjean, D., & Sander, D. (2013). Emotional expression and vocabulary learning in adults and children. *Cognition & Emotion*, 27(3), 539-548. doi: 10.1080/02699931.2012.724012.
- Corriveau, K., & Harris, P. L. (2009a). Choosing your informant: weighing familiarity and recent accuracy. *Developmental Science*, 12(3), 426-437. doi: 10.1111/j.1467-7687.2008.00792.x.
- Corriveau, K., & Harris, P. L. (2009b). Preschoolers continue to trust a more accurate informant 1 week after exposure to accuracy information. *Developmental Science*, 12(1), 188-193. doi: 10.1111/j.1467-7687.2008.00763.x.
- Corriveau, K. H., Fusaro, M., & Harris, P. L. (2009). Going with the flow: preschoolers prefer nondissenters as informants. *Psychological Science*, 20(3), 372-377. doi: 10.1111/j.1467-9280.2009.02291.x.
- Corriveau, K. H., Harris, P. L., Meins, E., Fernyhough, C., Arnott, B., Elliott, L., Liddle, B., Hearn, A., Vittorini, L., & de Rosnay, M. (2009). Young children's trust in their mother's claims: longitudinal links with attachment security in infancy. *Child Development*, 80(3), 750-761. doi: 10.1111/j.1467-8624.2009.01295.x.
- Corriveau, K. H., Kim, E., Song, G., & Harris, P. L. (2013). Young children's deference to a consensus varies by culture and judgment setting. *Journal of Cognition and Culture*, 13(3-4), 367-381. doi: 10.1163/15685373-12342099.
- Corriveau, K. H., & Kurkul, K. E. (2014). "Why does rain fall?": children prefer to learn from an informant who uses noncircular explanations. *Child Development*, 85(5), 1827-1835. doi: 10.1111/cdev.12240.
- Corriveau, K. H., Pickard, K., & Harris, P. L. (2011). Preschoolers trust particular informants when learning new names and new morphological forms. *British Journal of Developmental Psychology*, 29(Pt 1), 46-63. doi: 10.1348/2044-835X.002009.
- Danovitch, J. H., & Alzahabi, R. (2013). Children show selective trust in technological informants. *Journal of Cognition and*

- Development*, 14(3), 499-513. doi: 10.1080/15248372.2012.689391.
- Danovitch, J. H., & Mills, C. M. (2014). How familiar characters influence children's judgments about information and products. *Journal of Experimental Child Psychology*, 128, 1-20. doi: 10.1016/j.jecp.2014.06.001.
- Ding, X. P., Lim, H. Y., & Heyman, G. D. (2022). Training young children in strategic deception promotes epistemic vigilance. *Developmental Psychology*, 58(6), 1128-1138. doi: 10.1037/dev0001350.
- Doebel, S., Rowell, S. F., & Koenig, M. A. (2016). Young children detect and avoid logically inconsistent sources: the importance of communicative context and executive function. *Child Development*, 87(6), 1956-1970. doi: 10.1111/cdev.12563.
- Durkin, K., & Shafto, P. (2016). Epistemic trust and education: effects of informant reliability on student learning of decimal concepts. *Child Development*, 87(1), 154-164. doi: 10.1111/cdev.12459.
- Dweck, C. S. (1999). Caution-praise can be dangerous. *American Educator*, 23(1), 4-9.
- Echterhoff, G., Kopietz, R., & Higgins, E. T. (2017). Shared reality in intergroup communication: increasing the epistemic authority of an out-group audience. *Journal of Experimental Psychology: General*, 146(6), 806-825. doi: 10.1037/xge0000289.
- Einav, S. (2014). Does the majority always know best? Young children's flexible trust in majority opinion. *PloS One*, 9(8). doi: 10.1371/journal.pone.0104585.
- Einav, S., & Robinson, E. J. (2010). Children's sensitivity to error magnitude when evaluating informants. *Cognitive Development*, 25(3), 218-232. doi: 10.1016/j.cogdev.2010.04.002.
- Einav, S., Levey, A., Patel, P., & Westwood, A. (2020). Epistemic vigilance online: textual inaccuracy and children's selective trust in webpages. *British Journal of Developmental Psychology*, 38(4), 566-579. doi: 10.1111/bjdp.12335.
- Elashi, F. B., & Mills, C. M. (2014). Do children trust based on group membership or prior accuracy? The role of novel group membership in children's trust decisions. *Journal of Experimental Child Psychology*, 128, 88-104. doi: 10.1016/j.jecp.2014.07.003.
- Erdley, C. A., & Dweck, C. S. (1993). Children's implicit personality theories as predictors of their social judgments. *Child Development*, 64(3), 863-878.
- Erikson, E. H. (1968). *Identity: youth and crisis*. W.W. Norton.
- Esseily, R., Somogyi, E., & Guellai, B. (2016). The relative importance of language in guiding social preferences through development. *Frontiers in Psychology*, 7, 1645. doi: 10.3389/fpsyg.2016.01645.
- Fedra, E., & Schmidt, M. F. (2019). Older (but not younger) preschoolers reject incorrect knowledge claims. *British Journal of Developmental Psychology*, 37(1), 130-145. doi: 10.1111/bjdp.12264.
- Fitneva, S. A., & Dunfield, K. A. (2010). Selective information seeking after a single encounter. *Developmental Psychology*, 46(5), 1380-1384. doi: 10.1037/a0019818.
- Folmo, E. J., Karterud, S. W., Kongerslev, M. T., Kvarstein, E. H., & Stänicke, E. (2019). Battles of the comfort zone: modelling therapeutic strategy, alliance, and epistemic trust—a qualitative study of mentalization-based therapy for borderline personality disorder. *Journal of Contemporary Psychotherapy*, 49(3), 141-151. doi: 10.1007/s10879-018-09414-3.
- Fonagy, P., & Allison, E. (2014). The role of mentalizing and epistemic trust in the therapeutic relationship. *Psychotherapy*, 51(3), 372-380. doi: 10.1037/a0036505.
- Fonagy, P., Campbell, C., Constantinou, M., Higgitt, A., Allison, E., & Luyten, P. (2022). Culture and psychopathology: an attempt at reconsidering the role of social learning. *Development and Psychopathology*, 34(4), 1205-1220. doi: 10.1017/S0954579421000092.
- Fonagy, P., Luyten, P., & Allison, E. (2015). Epistemic petrification and the restoration of epistemic trust: a new conceptualization of borderline personality disorder and its psychosocial treatment. *Journal of Personality Disorders*, 29(5), 575-609. doi: 10.1521/pedi.2015.29.5.575.
- Fonagy, P., Luyten, P., Allison, E., & Campbell, C. (2017a). What we have changed our minds about: Part 1. Borderline personality disorder as a limitation of resilience. *Borderline Personality Disorder and Emotion Dysregulation*, 4, 11. doi: 10.1186/s40479-017-0061-9.
- Fonagy, P., Luyten, P., Allison, E., & Campbell, C. (2017b). What we have changed our minds about: Part 2. Borderline personality disorder, epistemic trust and the developmental significance of social communication. *Borderline Personality Disorder and Emotion Dysregulation*, 4, 9. doi: 10.1186/s40479-017-0062-8.
- Fonagy, P., Luyten, P., Allison, E., & Campbell, C. (2019). Mentalizing, epistemic trust and the phenomenology of psychotherapy. *Psychopathology*, 52(2), 94-103. doi: 10.1159/000501526.
- Frenken, M., & Imhoff, R. (2023). Don't trust anybody: conspiracy mentality and the detection of facial trustworthiness cues. *Applied Cognitive Psychology*, 37(2), 256-265. doi: 10.1002/acp.3955.
- Fusaro, M., & Harris, P. L. (2008). Children assess informant reliability using bystanders' non-verbal cues. *Developmental Science*, 11(5), 771-777. doi: 10.1111/j.1467-7687.2008.00728.x.
- Ghossainy, M. E., Al-Shawaf, L., & Woolley, J. D. (2021). Epistemic vigilance in early ontogeny: children's use of nonverbal behavior to detect deception. *Evolutionary Psychology*, 19(1), 1474704920986860. doi: 10.1177/1474704920986860.
- Gierth, L., & Bromme, R. (2020). Beware of vested interests: epistemic vigilance improves reasoning about scientific evidence (for some people). *PloS One*, 15(4), e0231387. doi: 10.1371/journal.pone.0231387.
- Gilbert, D. T., Krull, D. S., & Malone, P. S. (1990). Unbelieving the unbelievable: some problems in the rejection of false information. *Journal of Personality and Social Psychology*, 59(4), 601-613. doi: 10.1037/0022-3514.59.4.601.
- Gilbert, D. T., Tafarodi, R. W., & Malone, P. S. (1993). You can't not believe everything you read. *Journal of Personality and Social Psychology*, 65(2), 221-233. doi: 10.1037/0022-3514.65.2.221.
- Greenhalgh, T., Thorne, S., & Malterud, K. (2018). Time to challenge the spurious hierarchy of systematic over narrative reviews?. *European Journal of Clinical Investigation*, 48(6), e12931. doi: 10.1111/eci.12931.
- Guerrero, S., Cascado, C., Sausa, M., & Enesco, I. (2017). My teacher is wrong: preschoolers' opposition to non-conventional statements. *Early Childhood Research Quarterly*, 39, 1-13. doi: 10.1016/j.ecresq.2016.11.001.
- Guerrero, S., Sebastián-Enesco, C., Morales, I., Varea, E., & Enesco, I. (2020). (In)Sensitivity to accuracy? Children's and adults' decisions about who to trust: the teacher or the internet.

- Frontiers in Psychology*, 11, 551131. doi: 10.3389/fpsyg.2020.551131.
- Guerrero, S., Sebastián-Enesco, C., Pérez, N., & Enesco, I. (2019). Myths in science: children trust but do not retain their teacher's information. *Journal of Applied Developmental Psychology*, 62, 116-121. doi: 10.1016/j.appdev.2019.02.007.
- Gweon, H., Pelton, H., Konopka, J. A., & Schulz, L. E. (2014). Sins of omission: children selectively explore when teachers are under-informative. *Cognition*, 132(3), 335-341. doi: 10.1016/j.cognition.2014.04.013.
- Gweon, H., Shafto, P., & Schulz, L. (2018). Development of children's sensitivity to overinformativeness in learning and teaching. *Developmental Psychology*, 54(11), 2113-2125. doi: 10.1037/dev0000580.
- Hagá, S., & Olson, K. R. (2017). Knowing-it-all but still learning: perceptions of one's own knowledge and belief revision. *Developmental Psychology*, 53(12), 2319-2332. doi: 10.1037/dev0000433.
- Harris, P. L., Koenig, M. A., Corriveau, K. H., & Jaswal, V. K. (2018). Cognitive foundations of learning from testimony. *Annual Review of Psychology*, 69, 251-273. doi: 10.1146/annurev-psych-122216-011710.
- Hasson, U., Simmons, J. P., & Todorov, A. (2005). Believe it or not: on the possibility of suspending belief. *Psychological Science*, 16(7), 566-571. doi: 10.1111/j.0956-7976.2005.01576.x.
- Imhoff, R., Lamberty, P., & Klein, O. (2018). Using power as a negative cue: how conspiracy mentality affects epistemic trust in sources of historical knowledge. *Personality and Social Psychology Bulletin*, 44(9), 1364-1379. doi: 10.1177/0146167218768779.
- Jaffer, S., & Ma, L. (2015). Preschoolers show less trust in physically disabled or obese informants. *Frontiers in Psychology*, 5, 1524. doi: 10.3389/fpsyg.2014.01524.
- Jaffrani, A. A., Sunley, T., & Midgley, N. (2020). The building of epistemic trust: an adoptive family's experience of mentalization-based therapy. *Journal of Infant, Child, & Adolescent Psychotherapy*, 19(3), 271-282. doi: 10.1080/15289168.2020.1768356.
- Jaswal, V. K., McKercher, D. A., & Vanderborcht, M. (2008). Limitations on reliability: regularity rules in the English plural and past tense. *Child Development*, 79(3), 750-760. doi: 10.1111/j.1467-8624.2008.01155.x.
- Jaswal, V. K., & Neely, L. A. (2006). Adults don't always know best: preschoolers use past reliability over age when learning new words. *Psychological Science*, 17(9), 757-758. doi: 10.1111/j.1467-9280.2006.01778.x.
- Johnston, A. M., Mills, C. M., & Landrum, A. R. (2015). How do children weigh competence and benevolence when deciding whom to trust?. *Cognition*, 144, 76-90. doi: 10.1016/j.cognition.2015.07.015.
- Kamphuis, J. H., & Finn, S. E. (2019). Therapeutic assessment in personality disorders: toward the restoration of epistemic trust. *Journal of Personality Assessment*, 101(6), 662-674. doi: 10.1080/00223891.2018.1476360.
- Kamplung, H., Kruse, J., Lampe, A., Nolte, T., Hettich, N., Brähler, E., Sachser, C., Fegert, J. M., Gingelmaier, S., Fonagy, P., Krakau, L., Zara, S., & Riedl, D. (2022). Epistemic trust and personality functioning mediate the association between adverse childhood experiences and posttraumatic stress disorder and complex posttraumatic stress disorder in adulthood. *Frontiers in Psychiatry*, 13, 919191. doi: 10.3389/fpsyg.2022.919191.
- Kinzler, K. D., Corriveau, K. H., & Harris, P. L. (2011). Children's selective trust in native-accented speakers. *Developmental Science*, 14(1), 106-111. doi: 10.1111/j.1467-7687.2010.00965.x.
- Knapen, S., van Diemen, R., Hutsebaut, J., Fonagy, P., & Beekman, A. (2022). Defining the concept and clinical features of epistemic trust: a delphi study. *Journal of Nervous and Mental Disease*, 210(4), 312-314. doi: 10.1097/NMD.00000000000001446.
- Koenig, M. A. (2012). Beyond semantic accuracy: preschoolers evaluate a speaker's reasons. *Child Development*, 83(3), 1051-1063. doi: 10.1111/j.1467-8624.2012.01742.x.
- Koenig, M. A., Clément, F., & Harris, P. L. (2004). Trust in testimony: children's use of true and false statements. *Psychological Science*, 15(10), 694-698. doi: 10.1111/j.0956-7976.2004.00742.x.
- Koenig, M. A., & Harris, P. L. (2005). Preschoolers mistrust ignorant and inaccurate speakers. *Child Development*, 76(6), 1261-1277. doi: 10.1111/j.1467-8624.2005.00849.x.
- Koenig, M. A., & Jaswal, V. K. (2011). Characterizing children's expectations about expertise and incompetence: halo or pitchfork effects?. *Child Development*, 82(5), 1634-1647. doi: 10.1111/j.1467-8624.2011.01618.x.
- Kondrad, R. L., & Jaswal, V. K. (2012). Explaining the errors away: young children forgive understandable semantic mistakes. *Cognitive Development*, 27(2), 126-135. doi: 10.1016/j.cogdev.2011.11.001.
- Kotaman, H., & Aslan, M. (2021). Whom to trust: joker or teacher. *European Journal of Developmental Psychology*, 18(3), 350-366. doi: 10.1080/17405629.2020.1788534.
- Kotaman, H., & Aslan, M. (2023). Children's epistemic and interpersonal trust decisions for precise versus relative testimony. *Early Child Development and Care*, 193(6), 743-753. doi: 10.1080/03004430.2022.2154343.
- Kushnir, T., & Koenig, M. A. (2017). What I don't know won't hurt you: the relation between professed ignorance and later knowledge claims. *Developmental Psychology*, 53(5), 826-835. doi: 10.1037/dev0000294.
- Kushnir, T., Vredenburgh, C., & Schneider, L. A. (2013). "Who can help me fix this toy?" The distinction between causal knowledge and word knowledge guides preschoolers' selective requests for information. *Developmental Psychology*, 49(3), 446-453. doi: 10.1037/a0031649.
- Landrum, A. R., Mills, C. M., & Johnston, A. M. (2013). When do children trust the expert? Benevolence information influences children's trust more than expertise. *Developmental Science*, 16(4), 622-638. doi: 10.1111/desc.12059.
- Lane, J. D., & Harris, P. L. (2015). The Roles of intuition and informants' expertise in children's epistemic trust. *Child Development*, 86(3), 919-926. doi: 10.1111/cdev.12324.
- Lane, J. D., Harris, P. L., Gelman, S. A., & Wellman, H. M. (2014). More than meets the eye: young children's trust in claims that defy their perceptions. *Developmental Psychology*, 50(3), 865-871. doi: 10.1037/a0034291.
- Lane, J. D., Wellman, H. M., & Gelman, S. A. (2013). Informants' traits weigh heavily in young children's trust in testimony and in their epistemic inferences. *Child Development*, 84(4), 1253-1268. doi: 10.1111/cdev.12029.
- Lawson C. A. (2018). Knowing when to trust a teacher: the contribution of category status and sample composition to young children's judgments of informant trustworthiness. *Journal of Experimental Child Psychology*, 173, 380-387. doi: 10.1016/j.jecp.2018.04.003.

- Lee, R. (2017). Mistrustful and misunderstood: a review of paranoid personality disorder. *Current Behavioral Neuroscience Reports*, 4(2), 151-165. doi: 10.1007/s40473-017-0116-7.
- Levy, S. R., & Dweck, C. S. (1999). The impact of children's static versus dynamic conceptions of people on stereotype formation. *Child Development*, 70(5), 1163-1180. doi: 10.1111/1467-8624.00085.
- Li, E. T., Midgley, N., Luyten, P., Sprecher, E. A., & Campbell, C. (2022). Mapping the journey from epistemic mistrust in depressed adolescents receiving psychotherapy. *Journal of Counseling Psychology*, 69(5), 678-690. doi: 10.1037/cou0000625.
- Li, P. H., Stephens Hoff, E., & Koenig, M. A. (2022). Children's attributions of moral and epistemic virtue: Effects on learning and memory. *Developmental Psychology*, 58(6), 1114-1127. doi: 10.1037/dev0001342.
- Li, X., & Yow, W. Q. (2018). Willingness to revise own testimony: 3- and 4-year-olds' selective trust in unexpected testimony from accurate and inaccurate informants. *Journal of Experimental Child Psychology*, 173, 1-15. doi: 10.1016/j.jecp.2018.03.008.
- Liotti, M., Milesi, A., Spitioti, G. F., Tanzilli, A., Speranza, A. M., Parolin, L., Campbell, C., Fonagy, P., Lingiardi, V., & Giovannardi, G. (2023). Unpacking trust: the Italian validation of the epistemic trust, mistrust, and credulity questionnaire (ETMCQ). *PloS One*, 18(1), e0280328. doi: 10.1371/journal.pone.0280328.
- Liu, D., Vanderbilt, K. E., & Heyman, G. D. (2013). Selective trust: children's use of intention and outcome of past testimony. *Developmental Psychology*, 49(3), 439-445. doi: 10.1037/a0031615.
- Locati, F., Benzi, I. M. A., Milesi, A., Campbell, C., Midgley, N., Fonagy, P., & Parolin, L. (2023). Associations of mentalization and epistemic trust with internalizing and externalizing problems in adolescence: a gender-sensitive structural equation modeling approach. *Journal of Adolescence*. doi: 10.1002/jad.12226.
- Locati, F., Milesi, A., Conte, F., Campbell, C., Fonagy, P., Ensink, K., & Parolin, L. (2022). Adolescence in lockdown: the protective role of mentalizing and epistemic trust. *Journal of Clinical Psychology*, 79(4), 969-984. doi: 10.1002/jclp.23453.
- Lucas, A. J., Burdett, E. R. R., Burgess, V., Wood, L. A., McGuigan, N., Harris, P. L., & Whiten, A. (2017). The development of selective copying: children's learning from an expert versus their mother. *Child Development*, 88(6), 2026-2042. doi: 10.1111/cdev.12711.
- Lucas, A. J., Lewis, C., Pala, F. C., Wong, K., & Berridge, D. (2013). Social-cognitive processes in preschoolers' selective trust: three cultures compared. *Developmental Psychology*, 49(3), 579-590. doi: 10.1037/a0029864.
- Luchkina, E., Sommerville, J. A., & Sobel, D. M. (2018). More than just making it go: Toddlers effectively integrate causal efficacy and intentionality in selecting an appropriate causal intervention. *Cognitive Development*, 45, 48-56. https://doi.org/10.1016/j.cogdev.2017.12.003
- Luu, B., Rosnay, M. d., & Harris, P. L. (2013). Five-year-olds are willing, but 4-year-olds refuse, to trust informants who offer new and unfamiliar labels for parts of the body. *Journal of Experimental Child Psychology*, 116(2), 234-246. doi: 10.1016/j.jecp.2013.06.003.
- Luyten, P., Campbell, C., Allison, E., & Fonagy, P. (2020). The mentalizing approach to psychopathology: state of the art and future directions. *Annual Review of Clinical Psychology*, 16, 297-325. doi: 10.1146/annurev-clinpsy-071919-015355.
- Ma, L., & Woolley, J. D. (2013). Young children's sensitivity to speaker gender when learning from others. *Journal of Cognition and Development*, 14(1), 100-119. https://doi.org/10.1080/15248372.2011.638687
- MacDonald, K., Schug, M., Chase, E., & Barth, H. (2013). My people, right or wrong? Minimal group membership disrupts preschoolers' selective trust. *Cognitive Development*, 28(3), 247-259. doi: 10.1016/j.cogdev.2012.11.001.
- Markson, L., & Luo, Y. (2020). Trust in early childhood. *Advances in Child Development and Behavior*, 58, 137-162. doi: 10.1016/bs.acdb.2020.01.005.
- Mascaro, O., & Sperber, D. (2009). The moral, epistemic, and mindreading components of children's vigilance towards deception. *Cognition*, 112(3), 367-380. doi: 10.1016/j.cognition.2009.05.012.
- McDonald, K. P., & Ma, L. (2015). Dress nicer = know more? Young children's knowledge attribution and selective learning based on how others dress. *PloS One*, 10(12), e0144424. doi: 10.1371/journal.pone.0144424.
- Mercier, H., Bernard, S., & Clément, F. (2014). Early sensitivity to arguments: how preschoolers weight circular arguments. *Journal of Experimental Child Psychology*, 125, 102-109. doi: 10.1016/j.jecp.2013.11.011.
- Milesi, A., De Carli, P., Locati, F., Benzi, I., Campbell, C., Fonagy, P., & Parolin, L. (2023). How can I trust you? The role of facial trustworthiness in the development of epistemic and interpersonal trust. *Human Development*, 67(2), 57-68. doi: 10.1159/000530248.
- Miller, G. A. (1956). The magical number seven, plus or minus two: Some limits on our capacity for processing information. *Psychological Review*, 63(2), 81-97. doi: 10.1037/h0043158.
- Morgan, T. J., Laland, K. N., & Harris, P. L. (2015). The development of adaptive conformity in young children: effects of uncertainty and consensus. *Developmental science*, 18(4), 511-524. https://doi.org/10.1111/desc.12231
- Nelson, P. B., Adamson, L. B., & Bakeman, R. (2008). Toddlers' joint engagement experience facilitates preschoolers' acquisition of theory of mind. *Developmental Science*, 11(6), 847-852. doi: 10.1111/j.1467-7687.2008.00733.x.
- Nimbi, F. M., Baiocco, R., Giovannardi, G., Tanzilli, A., & Lingiardi, V. (2023). Who is afraid of monkeypox? Analysis of psychosocial factors associated with the first reactions of fear of monkeypox in the Italian population. *Behavioral Sciences*, 13(3), 235. doi: 10.3390/bs13030235.
- Nurmsoo, E., & Robinson, E. J. (2009). Children's trust in previously inaccurate informants who were well or poorly informed: when past errors can be excused. *Child development*, 80(1), 23-27. doi: 10.1111/j.1467-8624.2008.01243.x.
- Orme, W., Bowersox, L., Vanwoerden, S., Fonagy, P., & Sharp, C. (2019). The relation between epistemic trust and borderline pathology in an adolescent inpatient sample. *Borderline Personality Disorder and Emotion Dysregulation*, 6, 13. doi: 10.1186/s40479-019-0110-7.
- Palmquist, C. M., Floersheimer, A., Crum, K., & Ruggiero, J. (2022). Social cognition and trust: exploring the role of theory of mind and hostile attribution bias in children's skepticism of inaccurate informants. *Journal of Experimental Child Psychology*, 215, 105341. doi: 10.1016/j.jecp.2021.105341.
- Palmquist, C. M., & Jaswal, V. K. (2015). Preschoolers' inferences about pointers and labelers: the modality matters. *Cognitive*

- Development*, 35, 178-185. doi: 10.1016/j.cogdev.2015.06.003.
- Pasquini, E. S., Corriveau, K. H., Koenig, M., & Harris, P. L. (2007). Preschoolers monitor the relative accuracy of informants. *Developmental Psychology*, 43(5), 1216-1226. doi: 10.1037/0012-1649.43.5.1216.
- Poulin-Dubois, D., & Chow, V. (2009). The effect of a looker's past reliability on infants' reasoning about beliefs. *Developmental Psychology*, 45(6), 1576-1582. doi: 10.1037/a0016715.
- Pozzi, M., & Mazzarella, D. (2023). Speaker trustworthiness: shall confidence match evidence?. *Philosophical Psychology*, 1-24. doi: 10.1080/09515089.2023.2193220.
- Rakoczy, H., Warneken, F., & Tomasello, M. (2009). Young children's selective learning of rule games from reliable and unreliable models. *Cognitive Development*, 24(1), 61-69. doi: 10.1016/j.cogdev.2008.07.004.
- Reyes-Jaquez, B., & Echols, C. H. (2013). Developmental differences in the relative weighing of informants' social attributes. *Developmental Psychology*, 49(3), 602-613. doi: 10.1037/a0031674.
- Riedl, D., Rothmund, M. S., Grote, V., Fischer, M. J., Kampling, H., Kruse, J., Nolte, T., Labek, K., & Lampe, A. (2023). Mentalizing and epistemic trust as critical success factors in psychosomatic rehabilitation: results of a single center longitudinal observational study. *Frontiers in Psychiatry*, 14, 1150422. doi: 10.3389/fpsy.2023.1150422.
- Robinson, E. J., Einav, S., & Fox, A. (2013). Reading to learn: prereaders' and early readers' trust in text as a source of knowledge. *Developmental Psychology*, 49(3), 505-513. doi: 10.1037/a0029494.
- Ronfard, S., & Lane, J. D. (2018). Preschoolers continually adjust their epistemic trust based on an informant's ongoing accuracy. *Child Development*, 89(2), 414-429. doi: 10.1111/cdev.12720.
- Ronfard, S., & Lane, J. D. (2019). Children's and adults' epistemic trust in and impressions of inaccurate informants. *Journal of Experimental Child Psychology*, 188, 104662. doi: 10.1016/j.jecp.2019.104662.
- Sampaio, L. R., Harris, P. L., & Barros, M. L. (2019). Children's selective trust: when a group majority is confronted with past accuracy. *British Journal of Developmental Psychology*, 37(4), 571-584. doi: 10.1111/bjdp.12297.
- Schillaci, R. S., & Kelemen, D. (2014). Children's conformity when acquiring novel conventions: the case of artifacts. *Journal of Cognition and Development*, 15(4), 569-583. doi: 10.1080/15248372.2013.784973.
- Schröder-Pfeifer, P., Georg, A. K., Talia, A., Volkert, J., Ditzen, B., & Taubner, S. (2022). The epistemic trust assessment—an experimental measure of epistemic trust. *Psychoanalytic Psychology*, 39(1), 50-58. doi: 10.1037/pap0000322.
- Scofield, J., Gilpin, A. T., Pierucci, J., & Morgan, R. (2013). Matters of accuracy and conventionality: prior accuracy guides children's evaluations of others' actions. *Developmental Psychology*, 49(3), 432-438. doi: 10.1037/a0029888.
- Sjöberg, L., & Herber, M. W. (2008). Too much trust in (social) trust? The importance of epistemic concerns and perceived antagonism. *International Journal of Global Environmental Issues*, 8(1-2), 30-44. doi: 10.1504/IJGENVI.2008.017258.
- Sobel, D. M., & Macris, D. M. (2013). Children's understanding of speaker reliability between lexical and syntactic knowledge. *Developmental Psychology*, 49(3), 523-532. doi: 10.1037/a0029658.
- Sperber, D., Clément, F., Heintz, C., Mascaro, O., Mercier, H., Origg, G., & Wilson, D. (2010). Epistemic vigilance. *Mind & Language*, 25(4), 359-393. doi: 10.1111/j.1468-0017.2010.01394.x.
- Sprecher, E. A., Li, E., Slead, M., & Midgley, N. (2022). 'Trust me, we can sort this out': a theory-testing case study of the role of epistemic trust in fostering relationships. *Qualitative Research in Psychology*, 19(4), 1117-1142. doi: 10.1080/14780887.2022.2033898.
- Steinberg, L. (2005). Cognitive and affective development in adolescence. *Trends in Cognitive Sciences*, 9(2), 69-74. doi: 10.1016/j.tics.2004.12.005.
- Stengelin, R., Grueneisen, S., & Tomasello, M. (2018). Why should I trust you? Investigating young children's spontaneous mistrust in potential deceivers. *Cognitive Development*, 48, 146-154. doi: 10.1016/j.cogdev.2018.08.006.
- Tanzilli, A., Cibelli, A., Liotti, M., Fiorentino, F., Williams, R., & Lingiardi, V. (2022). Personality, defenses, mentalization, and epistemic trust related to pandemic containment strategies and the COVID-19 vaccine: a sequential mediation model. *International Journal of Environmental Research and Public Health*, 19(21), 14290. doi: 10.3390/ijerph192114290.
- Tenney, E. R., Small, J. E., Kondrad, R. L., Jaswal, V. K., & Spellman, B. A. (2011). Accuracy, confidence, and calibration: how young children and adults assess credibility. *Developmental Psychology*, 47(4), 1065-1077. doi: 10.1037/a0023273.
- Terrier, N., Bernard, S., Mercier, H., & Clément, F. (2016). Visual access trumps gender in 3- and 4-year-old children's endorsement of testimony. *Journal of Experimental Child Psychology*, 146, 223-230. doi: 10.1016/j.jecp.2016.02.002.
- Thomas, N., & Jenkins, H. (2019). The journey from epistemic vigilance to epistemic trust: service-users experiences of a community mentalization-based treatment programme for Anti-Social personality disorder (ASPD). *Journal of Forensic Psychiatry & Psychology*, 30(6), 909-938. doi: 10.1080/14789949.2019.1670856.
- Tong, Y., Wang, F., & Danovitch, J. (2020). The role of epistemic and social characteristics in children's selective trust: three meta-analyses. *Developmental Science*, 23(2), e12895. doi: 10.1111/desc.12895.
- Torraco, R. J. (2005). Writing integrative literature reviews: guidelines and examples. *Human Resource Development Review*, 4(3), 356-367. doi: 10.1177/1534484305278283.
- Treisman, A. M. (1964). Selective attention in man. *British Medical Bulletin*, 20(1), 12-16. doi: 10.1093/oxfordjournals.bmb.a070274.
- Vaish, A., Carpenter, M., & Tomasello, M. (2010). Young children selectively avoid helping people with harmful intentions. *Child Development*, 81(6), 1661-1669. doi: 10.1111/j.1467-8624.2010.01500.x.
- van den Bos, W., van Dijk, E., Westenberg, M., Rombouts, S. A., & Crone, E. A. (2011). Changing brains, changing perspectives: the neurocognitive development of reciprocity. *Psychological Science*, 22(1), 60-70. doi: 10.1177/0956797610391102.
- Vanderbilt, K. E., Heyman, G. D., & Liu, D. (2018). Young children show more vigilance against individuals with poor knowledge than those with antisocial motives. *Infant and Child Development*, 27(3), e2078. doi: 10.1002/icd.2078.
- Vanderbilt, K. E., Ochoa, K. D., & Heilbrun, J. (2018). Consider the source: children link the accuracy of text-based sources to the accuracy of the author. *British Journal of Developmental Psychology*, 36(4), 634-651. doi: 10.1111/bjdp.12247.

- Varró-Horváth, D. Á., Dorn, K., & Lábadi, B. (2017). Understanding deceptive intentions behind pointing gestures in 12-15-month-old infants. *Infant Behavior and Development, 47*, 121-124. doi: 10.1016/j.infbeh.2017.03.004.
- Venta, A. (2020). Attachment facilitates acculturative learning and adversity moderates: validating the theory of epistemic trust in a natural experiment. *Child Psychiatry and Human Development, 51*(3), 471-477. doi: 10.1007/s10578-020-00958-x.
- Wang, F., Tong, Y., & Danovitch, J. (2019). Who do I believe? Children's epistemic trust in internet, teacher, and peer informants. *Cognitive Development, 50*, 248-260. doi: 10.1016/j.cogdev.2019.05.006.
- Whittemore, R., & Knafl, K. (2005). The integrative review: updated methodology. *Journal of Advanced Nursing, 52*(5), 546-553. doi: 10.1111/j.1365-2648.2005.03621.x.
- Wiebe, M., Granata, N., & Lane, J. D. (2022). Children's attributions of knowledge and trustworthiness to persons with disabilities. *Cognitive Development, 61*, 101143. doi: 10.1016/j.cogdev.2021.101143.
- Wu, R., Tummeltshammer, K. S., Gliga, T., & Kirkham, N. Z. (2014). Ostensive signals support learning from novel attention cues during infancy. *Frontiers in Psychology, 5*, 251.
- Yang, R., Zhang, L., & Wu, X. (2023). In the presence and absence of conflicting testimony, children's selective trust in the in-group informant in moral judgment and knowledge access. *Journal of Experimental Child Psychology, 231*, 105664. doi: 10.1016/j.jecp.2023.105664.
- Zhang, M., & Sylva, K. (2021). Effects of group membership and visual access on children's selective trust in competitive and non-competitive contexts. *Cognitive Development, 57*, 100972. doi: 10.1016/j.cogdev.2020.100972.

Online supplementary material:

Supplementary Table 1. An overview of each individual study.