

Argumentation in Early Childhood: A Systematic Review

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Keywords

Argument · Argumentation · Early childhood · Preschool children · Systematic review

Abstract

While scientific evidence on argumentation among preschool children is on the rise, it is dispersed over a number of different fields, which may obfuscate its visibility, merit, and potential. The aim of this systematic review was to synthesize the existing research and, as such, shed more concerted theoretical and empirical light on the origins as well as early development of the human capacity to argue. Based on 57 included studies, we show that it has been approached from numerous theoretical perspectives, with the dialogic view of argumentation and a productive eclecticism between argumentation, developmental, learning, and linguistic theories as the main theoretical denominators. The review also documents that young children's argumentation displays a range of structural-discursive, socio-interactional, and developmental features, positioning them as argumentative agents in their own right. We discuss the implications of our findings in terms of further theory building and their practical significance.

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Argumentation and reasoning skills development in educational contexts has in recent years become a top education policy priority. The US framework for K-12 science education, for example, promotes the skill of argument from evidence as part and parcel of scientific and engineering practices that children are to engage in and develop throughout their schooling (National Research Council, 2012). Likewise, in the Organisation for Economic Co-operation and Development's *Future of Education and Skills 2030* conceptual learning framework, "reconciling tensions and dilemmas," more specifically defined as weighing multiple opposing, contradictory, and even incompatible standpoints, developing arguments with well-supported positions, and finding viable solutions, is considered as one of the transformative competencies of the future (OECD, 2022, pp. 5–6).

This growing policy emphasis can be seen in parallel to mounting scientific evidence on the merits of engaging in argumentative discourse in educational contexts. Argumentation has been framed as one of the most important learning processes that contributes to an active construction of knowledge from early on (Mirza & Perret-Clermont, 2009; Perry & Dockett, 1998) and as a core

ingredient in critical thinking (Davies, 2015; Siegel, 2010), deemed essential for a successful functioning in technologically advanced, information-dense, late modern democracies (Murphy et al., 2016).

Grounded in socio-constructivist and socio-cultural approaches to learning and development (Vygotsky, 1978; Wertsch et al., 1995), much research on argumentation in the educational field has focused on school-aged children's dialogic, collaborative knowledge construction during classroom learning activities (e.g., Driver et al., 2000; Mirza & Perret-Clermont, 2009; Rapanta & Felton, 2022; Schwarz & Baker, 2017). This is particularly true of older age groups, attending upper primary and secondary grades (e.g., Gillies & Khan, 2009; Kuhn et al., 2016; Kuhn & Crowell, 2011).

There is generally less research on the youngest age groups of preschool children who may not have been exposed to systematic instructional approaches aimed at honing their argumentative competence in a more targeted fashion. This may be for a variety of reasons of both conceptual and methodological nature (Schwarz & Baker, 2017). Furthermore, the existing research does not form a well-delineated body of scholarship. Rather, it seems dispersed across different scholastic fields, including argumentation theory and rhetoric, developmental psychology, linguistics as well as education, among others. This may obfuscate the visibility of the current status of knowledge and, by extension, also its theoretical and practical merit and potential. The aim of this systematic review was, therefore, to synthesize international empirical research on argumentation in preschool children and, as such, shed more concerted theoretical and empirical light on the origins as well as early development of the human capacity to argue. It is, however, of note that, rather than offering a historic panorama of developmental trends in children's argumentation, we aim at providing a coherent conceptual description of the phenomenon across the set time frame in the form of a viable taxonomy, facilitated here by the adoption of meta-synthesis as our methodological approach. By implication, we also aim to contribute to further theory and practice building in the field. The two main research questions guiding this study were as follows: (a) how is argumentation in preschool children conceptually framed in international research literature? and (b) what characterizes argumentation in preschool children across different interactional settings?

In what follows, we will first ground the study theoretically by reviewing different definitions of argumentation and by providing an overview of the taxonomies that

have been proposed to conceptualize this broad field. Upon providing details on our methodological choices, we will delve into presenting our findings based on a meta-synthesis of 57 individual studies identified in our search and deemed as within the set eligibility criteria. We will discuss the identified patterns against the broader canvas of research on young children's development in formal and informal contexts, draw some theoretical and practical implications thereof, and suggest avenues for further research.

Theoretical Grounding

Conceptualizing Argumentation

Argumentation is a diffuse and multifaceted concept with numerous conceptualizations in circulation. Tseronis and Forceville (2017) provide a succinct review of some of the main distinctions made in research on argumentation, including O'Keeffe's (1977) distinction between argumentation as a product and as a process. The former refers to the actual act of communication between parties during which a disagreement or a conflict about an issue arises. In its simplest form, it consists of a claim and a reason for the claim. In fact, as the authors point out, the terms argument and claim are often used interchangeably. Argumentation as a process, on the other hand, is the interactional and communicative act that parties enter into about the argument that is being put forward and defended. As Tseronis and Forceville note, while this broad conceptualization is far from undisputed, it is commonly used in research, not least because of its apparent simplicity. It also underscores a long-established point in scholarship on argumentation in that disagreement, opposition, or conflict are at the core of argumentative discourse and can be regarded as the very minimum for a discursive act to merit the label argumentative (see on this, e.g., Gilbert, 2009). However, as Maynard (1985) points out with a specific reference to children's arguments, the concept of initial opposition, framed as a multimodal antecedent arguable event, does not, in itself, necessarily constitute an argument and can be seen mostly as a necessary but not sufficient condition for an argument to arise.

In contemporary definitions, much emphasis is placed on the centrality of dialogue in argumentation. Here, argumentative discourse is seen as firmly planted in the situated context of exchange between parties (Schwarz & Baker, 2017; van Eemeren, 2018). Drawing on previous scholarship within argumentation studies and education,

Schwarz and Baker (2017), for example, propose a dialogic theory of argumentation in education at the heart of which is the so-called deliberative argumentation. This is defined as “a kind of dialogue that integrates rigorous reasoning and accountability towards the other” (p. 230). It is seen as dialectic and dialogic in that it assumes both collaboration and inter-subjectivity. It is also productive in terms of learning outcomes it may stimulate.

A recent systematic review of research on instructional approaches to *learning to argue* (LTA) via dialogue (Rapanta & Felton, 2022) sheds light on the broader patterns in which dialogue across educational classroom settings and levels may foster children’s and young people’s ability to formulate and defend their points of view and structure their argumentation in scientifically valid ways. In the review, an argumentative dialogue is conceptualized as a classroom activity either specifically targeting argumentation skills or leading to argumentation nonintentionally through the promotion of “dialogic norms” (Rapanta & Felton, 2022, p. 481). These two distinct dialogue forms are labeled high- or low-structured, respectively. When mapped onto this analytical distinction, studies identified and systematized in the review are shown to represent a continuum: the low-structured end includes studies targeting mostly whole-class, student-driven, or student-dominant sensemaking, with dialogue being the primary goal and argumentation the nonintentional value added of the dialogic activity; the other, high-structured end comprises studies focusing on mostly small group or one-to-one deliberative dialogue, understood as a dialectic, discursive exchange of differences of opinion with “persuasive deliberation” as a distinct goal. As the authors point out, this latter form may be seen as corresponding to Schwarz and Baker’s (2017) concept of deliberative argumentation. As this suggests, in Rapanta and Felton’s (2022) review, argumentation and dialogue are closely bound, with (argumentative or LTA) dialogue as a tool to promote argumentation in classroom settings, intentionally or nonintentionally, featuring as the focal concept.

There is also a host of related concepts which complicate the theoretical landscape further. One of the most closely related ones is reasoning which can be seen as part of, and is sometimes used interchangeably with, argumentation. Different definitions of reasoning exist. For example, Walton (1990) sees reasoning as something that may or may not occur in the context of a purposive or nonpurposive argument. This again may or may not occur in a larger context of exchange which can be both dialogic and nondialogic and where reasoning represents

an essentially inferential endeavor or “the (actual) process of inferring conclusions from statements” (Walton, 1990, p. 401). Inference, reasoning, and argumentation are on this view closely bound.

Relatedly, emphasizing its social dimension, Mercier and Sperber (2011) have developed an argumentative theory of reasoning where reasoning is seen as being of an evolutionary nature and as serving primarily, though not exclusively, argumentative ends. Like Walton, they too see reasoning as an essentially inferential process. At the center, there is a conscious, as opposed to intuitive, reflective effort at providing and assessing reasons for conclusions that are being drawn and that are meant to be persuasive. They propose further that reasoning is meant to aid in the process of constructing one’s own arguments and in evaluating those of others in different interactional settings and across different age groups. As such, reasoning and, by implication, argumentation are not reserved to adult discourse only but extended to children’s discourse as well. Drawing on evidence from developmental psychology and related fields, Mercier (2011) argues that children display emerging reasoning and argumentation competence, engage in as well as benefit from social reasoning and commit similar argumentation fallacies as adults.

Other theoretical constructs applied in early childhood education and development research, such as inferential thinking (Collins, 2016) or sustained shared thinking (Siraj et al., 2015), can also be regarded as related to argumentation and reasoning, in that they either take as a vantage point the process of inferring a conclusion from a statement or by acknowledging educationally productive dialogues around different and potentially opposing views as central in children’s language and cognitive development. Nonetheless, exactly how they map onto argumentation as a theoretical construct has, to our knowledge, not been interrogated in research in any depth.

Approaches to Studying Argumentation

Much like argumentation itself, there have been numerous attempts at conceptualizing the various approaches to studying argumentation. Gilbert (2009), for example, draws attention to the distinction between dialectic and rhetoric approaches which corresponds to what the author refers to as the “*convince/persuade* dichotomy” (p. 4). Gilbert argues that to convince is often equated with the use of reason and logic while to persuade suggests an appeal to emotions vis-à-vis an audience. Linking this distinction to the Aristotelian subdivision of rhetoric into *logos*, *ethos*, and *pathos*, Gilbert argues further that

Table 1. Approaches to argumentation (reproduced from Schwarz & Baker, 2017, p. 68)

	Discursive	Structural
Monological	Perelman (new rhetoric)	Toulmin (use of argument)
Dialogical	Plantin	van Eemeren and Grootendorst (pragma-dialectics)

these have developed into distinct fields with traditionally little cross-fertilization: (a) *formal logic* (logos) with its emphasis on the structures of argumentation, the concept of formal validity and syllogism as an ideal form of argument; (b) *informal logic*, which integrated the concept of ethos in its study of fallacious argumentation, and (c) *rhetoric* with a focus on pathos or emotionality, deserving traditionally the least attention by argumentation scholars.

In subsequent scholarship, one finds variations of this typology. Tseronis and Forceville (2017), for example, offer a model based on a three-pronged distinction between: (a) *logical approaches*, focused primarily on logical relations between propositions; (b) *dialectic approaches* where argumentation is studied as an exchange adjudicated against an ideal (normative) standard of argumentative reasonableness; and (c) *rhetorical approaches* where attention is directed at the effectiveness of argumentation.

Based on a comprehensive historical overview over major contemporary theoretical models on argumentation, Schwarz and Baker (2017) propose a slightly altered taxonomy with relevance for educational contexts. It is framed in terms of two sets of approaches functioning on a two-dimensional plane. The first dimension distinguishes between discursive and structural approaches, with the former being primarily concerned with the descriptive workings of language and other semiotic modalities in argumentative interactions, and the latter focusing on how argumentative discourse functions in terms of a set of pre-defined structural elements which may or may not have a normative foundation. The second dimension makes a crucial distinction between monological and dialogic approaches. In the former, the focus is primarily on one single party in the act of argumentation, even though other parties may be present or their presence may at least be assumed, as is the case with speeches or written texts. In the latter, argumentation is conceived of as being of a quintessentially interactional nature that always involves and is shaped by more than just one single voice in “a multiparty process of *negotiation of meaning*” (Schwarz & Baker, 2017, p. 74). On our understanding of the model, this distinction is then of an analytical rather

than theoretical nature, given that argumentation is presented as always predicated on the explicit or implicit expression of an opposition or a counter-standpoint. Importantly also, Schwarz and Baker (2017) briefly note that the axes should not be seen as exclusionary but rather as gradual.

Combined cross-dimensionally, the model is exemplified by four approaches, representing major contributions to contemporary argumentation theory. While any detailed treatment is beyond the scope of this paper, they can be summarized as follows: on the monological-structural plane, Schwarz and Baker (2017) place Toulmin’s model of argument (1958), given its primary focus on a single arguer and the distinctly structural workings of their argumentation in terms of a set of pre-defined elements. The monological-discursive plane is represented by Perelman and Olbrechts-Tyteca’s (1973) *New Rhetoric*, as it targets the discursive techniques of structuring argumentative discourse rather than the structure of that discourse itself. Given its primary interest in the audience at which this discourse is directed by the speaker and the efficiency with which the utilized technique may or may not persuade the audience to accept the speaker’s standpoint, it is placed on the monological plane. The dialogical plane is represented by Plantin’s (2005) theorizing and van Eemeren and Grootendorst’s pragma-dialectic model of argumentation (van Eemeren & Grootendorst, 1984, 1992; van Eemeren, 2018) with Plantin occupying the discursive and pragma-dialectics the structural position. As Schwarz and Baker (2017) point out, Plantin’s discursive theory of argumentation is predicated on the idea of a “confrontation of discourses” (p. 74) and how a question that arises thereof is debated through justificatory discourse and counter-discourse. While having a distinctly dialectic vantage point, the pragma-dialectic approach, on the other hand, sees argumentation as a set of argumentative moves that discursive parties conduct as part of a critical discussion in a series of stages in order to resolve a difference of opinion on the merit (Table 1).

In this review, we have taken the reviewed theorizing on argumentation and approaches to argumentation, particularly as conceptualized in educational contexts by Schwarz and Baker (2017), as a vantage point to see its

potential fit with the current body of knowledge on argumentation in early childhood but also as a springboard to further theorizing in this emerging field.

Method

We adopted meta-synthesis as our methodological approach. It belongs to the broader family of qualitative systematic syntheses and has as its overarching purpose to provide a description of a given phenomenon, here argumentation in early childhood, based on a systematic and transparent review of an existing body of research (Saini & Shlonsky, 2012). In conducting a meta-synthesis, one aims at the extractions of central themes and concepts which are compared and contrasted across studies and at offering a synthesis of key outcomes in the form of conceptual taxonomies. Importantly, a meta-synthesis is neither aggregative nor interpretative, but rather integrative. This means that one attempts to work with concepts and findings as they are being used in the identified primary studies, interrogating their similarities and differences critically and synthesizing them into an integrated body of new knowledge (Saini & Shlonsky, 2012).

Central in the approach is a rigorous application of specific methodological steps which include a selection of relevant research databases, specification of a search strategy, inclusion/exclusion criteria as well as a strategy for synthesizing identified studies. As with systematic reviews in general, systematicity and transparency are imperative. However, unlike in quantitative reviews, aiming at comprehensiveness of primary source coverage is not necessarily appropriate in qualitative reviews (Petticrew & Roberts, 2006). Instead, much like in qualitative methodology in general, the principle of saturation is key. As such, a search strategy in a qualitative literature review is often guided by and demonstrates the following three principles: (a) identifying major schools of thought while being alert to dissenting and minority views, (b) searching broadly across relevant disciplines, and (c) combining electronic and hand searches to ensure that key work is not excluded due to deficiencies in bibliographic indexing or coverage gaps in individual databases (Petticrew & Roberts, 2006). Below we therefore detail each of these steps as well as necessary methodological considerations and decisions made along the way.

Search Strategy

Given the transdisciplinary nature of argumentation, as argued above, we have opted to perform our search by pursuing several search channels. First, we selected two international research databases that assemble social scientific research within education, psychology, and related fields and conducted searches therein. These were (a) ERIC – Educational Resources Information Center and (b) PsychINFO. To validate these searches, we conducted an additional relevance-based search in Google Scholar following the same procedure as applied in ERIC and PsychINFO as well as individual searches for the work of key authors. To ensure relevance, we also selected and reviewed four journals we considered as thematically central through an electronic search function offered on their digital platforms. These were (a) *Argumentation: An International Journal of Reasoning*, (b) *Argumentation in Context*, (c) *Argumentation and Advocacy*, and (d) *Informal Logic*.

While it is also a common practice to review reference lists of thematically relevant systematic reviews, no such review was located. During each search, we applied the two following truncated keywords combined through the Boolean operator AND as follows: (argument* AND child*). We also reviewed combinations based on what we saw as either synonyms or closely related concepts. For “argument,” these were “reasoning” and “inference,” while for “child” these were “preschooler” and “toddler.” While, as laid out above, there is a host of other concepts which could be regarded as potentially related to or overlapping with argumentation in early childhood, such as Siraj and colleagues’ (2015) sustained shared thinking, Rapanta and Felton’s (2022) (low-structured) sensemaking, or the concept of (educational) dialogue, our aim was to map out the use of the concept of argumentation per se and, hence, we did not search for studies based on these related concepts.

Inclusion Criteria

Population

We started off targeting studies of children in the age group 0–6 years. We expected that most studies would be located in either home or preschool as institutional contexts. However, age at compulsory school entry can vary between countries. Additionally, a number of the identified studies had a longitudinal and/or comparative design. As such, they were located in both home/preschool and early grades of school. Vigilant to the potential importance of such studies in capturing developmental trends in the early years and in need of a cut-off point, we therefore set the upper age limit at 8 which complies with UNESCO’s (2022) definition of early childhood education. Studies with samples of school children only were excluded, while studies targeting mixed age groups were assessed for inclusion on a case-by-case basis. This resulted in a handful of studies where the oldest participating children, in most cases older siblings, were 9 or, in school settings, grade 4, if age was not specified by the authors.

Publication Period

While we expected that most studies would be published within roughly the last two decades, all studies published since 1970 and up to the present were included so as to capture potential historical research trends.

Geography

We set no restrictions on the geographical location of studies.

Language of Reporting

We included only studies in English. While this decision was partly due to our shared linguistic competence and may potentially have led to an exclusion of important publications in other languages, we considered it justifiable given our aim of thematic and conceptual saturation rather than comprehensiveness.

Study Design

We included only peer-reviewed qualitative and quantitative empirical studies published in digitally available scientific journals. Books, book chapters, scientific reports, conference papers, as well as master and PhD thesis were excluded. This decision was partly guided by pragmatic reasons related to issues of digital access, and while it may have led to the exclusion of important innovations in the field, we assumed that recent key findings would

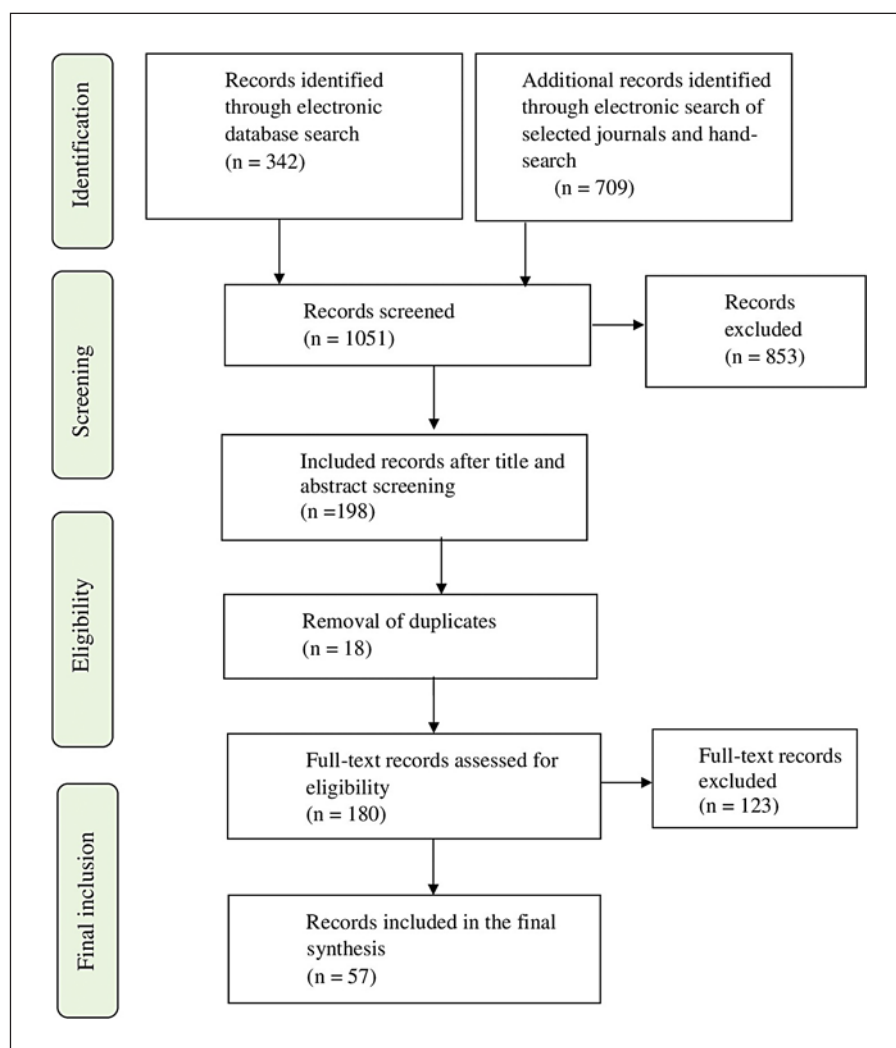


Fig. 1. Flowchart of the review strategy.

simultaneously be disseminated through peer-reviewed journal publications, potentially captured through our search.

Study Quality

While the issue of scientific quality of studies included in systematic reviews is an important one, it is also far from controversial (see on this, Bubikova-Moan et al., 2019). Given our decision to include peer-reviewed studies only, guaranteeing a certain degree of quality assurance in itself, we considered it sufficient for our purposes to assess an overall coherence between research aims, methods employed, and reported findings in each study. While qualitative assessment rubrics are available (see, e.g., CASP, 2019), we did not consider their employment as imperative for reasons given above.

Review Strategy

The database search, described above, led to the identification of altogether 1,051 individual studies. Our ensuing review strategy consisted of primarily three steps: (a) an initial systematic screening of all study titles and abstracts, leading to the exclusion of 853

studies that did not meet our eligibility criteria, primarily that of thematic focus and/or children's age; (b) a full-text review of 180 studies that remained upon the removal of 18 duplicates; this included an extended data extraction and a quality appraisal of methodological soundness according to the set criteria, as described above, leading to the exclusion of further 123 studies, first and foremost due to a misfit with the age criterion; and, finally, (c) an in-depth analysis of all 57 included studies. The last step included a content analysis that allowed us to identify major themes and outcomes, systematize these, and arrive at conceptual taxonomies. Aiming at an in-depth data extraction, steps (b) and (c) were conducted with the aid of an Excel spreadsheet, considered essential for keeping a detailed, transparent, and easily accessible record trail of all key information and decisions made along the way. By coding major themes vis-à-vis both of our research questions across the included studies, we could trace patterns in the data corpus in a rigorous and systematic manner upon the completion of step (c). The first author coded the entire sample of included studies, arriving at a preliminary conceptual taxonomy. At this stage of the analytical process, the first author conducted

a validation coding on a random 15% of the sample with the second author. In line with validation procedures pursued in qualitative research (Creswell & Miller, 2000), rather than aiming at calculating interrater agreement, the validation coding round provided an opportunity for peer debriefing and reflexivity that led to further refinement and a finalization of our conceptual taxonomy. In addition to keeping a detailed audit of all our steps, as described here, we considered this satisfactory in ensuring analytical soundness. The entire review process is visualized in Figure 1. It is of note that one additional study was identified by hand search upon the completion of all steps in the review round, as described above. It was assessed following the same review strategy and, since it met our eligibility criteria, added to the sample. Rather than necessitating an adjustment of our conceptual taxonomy, this additional step validated it. In the figure, this study appears as part of the process and is included in the total of 1,051 studies.

Broad Features of the Reviewed Sample of Studies

Methodological Design and Publication-Related Features

The identified sample of studies bears witness to a wide range of methodological approaches that have been employed in studying argumentation in the youngest age groups. There is a clear preference for applying qualitative methodological designs, with more than a half of the sample falling into this category. In these studies, video observations were the most frequently adopted data collection method. Furthermore, about a third of the sample adopted quantitative methodological designs, including experimental, quasi-experimental, or, in a few cases, longitudinal designs. The remaining studies adopted mixed methods designs, combining mostly, but not exclusively, longitudinal qualitative observational methods with other methods such as interviews as well as cross-sectional data collections on specific argumentation-related outcome measures.

In terms of the publication period, an overwhelming majority of the sample was published after the year 2000 with a significant publication activity increase in roughly the last decade. Based on the provided information on the geographical setting of the data collection, most studies were conducted in European countries, followed by North and South American countries, middle- and far-eastern Asian countries, or in a cross-continental combination of geographical locations. See Table 2 for a numerical overview.

Participant Features and Structures

In terms of the participating children's age, the included studies range from involving children as young as 1

Table 2. Adopted methodological designs, publication period, and geographical location of the included studies

	Studies, <i>n</i>	% (rounded)
Methodological design		
Mixed	8	14
Qualitative	31	54
Quantitative	18	32
Total	57	100
Period of publication		
1970–1979	1	2
1980–1989	3	5
1990–1999	5	9
2000–2009	2	4
2010–2021	46	80
Total	57	100
Geographical location		
Europe	44	77
North and South America	8	14
Asia – Middle and Far East	4	7
Cross-continental	1	2
Total	57	100

month and up to 9 years of age. The majority of studies have participants in mixed age groups or in the age bracket 3–6 years. A few studies do not provide specific information on children's age but, given the study setting, it can be assumed that in all cases they involved children in kindergarten and/or early school grades.

The sample as a whole has looked into a range of settings, with the home environment and its close neighborhood as well as experimental and quasi-experimental study settings as the most prevalent ones. Kindergartens were represented in a quarter of studies. The remaining studies combined home and kindergarten or kindergarten and early school settings.

Lastly, we were interested to see what participant structures were interrogated, focusing in particular on the choice of adult and peer involvement. We note that in the majority of the included studies, there was adult involvement either in the form of active participation in play or other child-adult activities or, alternatively, as a function of the experimental or quasi-experimental methodological designs of the study. The studies pursued mostly group participant structures, here defined as larger than dyads, followed by dyadic structures or combinations of dyads and groups. In one case, the study focus was on individual child writing. See Table 3 for a numerical overview.

Table 3. Children's age, study settings, participant structures and adult involvement

	Studies, <i>n</i> % (rounded)	
Children's age		
0–3	6	11
3–6	21	36
Mixed ages 1–9	24	42
Unspecified age (kindergarten and/or early school grades)	6	11
Total	56	100
Study settings		
Home and neighborhood	19	33
Kindergarten	14	25
Kindergarten and home	5	8
Kindergarten and early school	2	4
Other – experimental, quasi-experimental	17	30
Total	57	100
Participant structures		
Dyads	13	23
Groups	34	60
Dyads and groups	9	15
Individual	1	2
Total	57	100
Adult involvement		
Yes	43	75
No	14	25
Total	57	100

Main Findings

Framing Argumentation

Our analysis shows that, when it comes to framing argumentation as a theoretical concept, there are several common denominators of the corpus as a whole. First, the sample displays a variable degree of specificity in the way argumentation is conceptualized or theorized, ranging from highly specific and theoretically elaborated positions to more diffuse and less theoretically specific positions. Following Schwarz and Baker's (2017) overarching, two-pronged discursive-structural dimension, our analysis revealed the following more detailed patterns.

In studies where children's argumentation was analyzed with the aid of pre-defined structural elements and/or relations between these and hence meriting Schwarz and Baker's (2017) label structural, we identified four distinct approaches. The majority of studies adopted as their main theoretical lens either the pragma-dialectic theory of argumentation (e.g., Bova, 2015a–c; Bova & Arcidiano, 2013b, 2014, 2018; Convertini, 2021a,b; Greco et al., 2018) or, with a variable degree of elaboration, Mercier and Sperber's argumentative theory of reasoning (e.g., Domberg et al., 2018; Köymen et al., 2014, 2020a,b;

Mammen et al., 2019; Mascaro et al., 2019; Mercier et al., 2014, 2018). A handful of studies drew also on Toulmin's (1958) theorizing (e.g., Kosko & Zimmerman, 2019; Köymen et al., 2016; Mammen et al., 2018). The last subcategory comprised studies where theoretical positions were not elaborated beyond a specific interest in identifying the basic building blocks of arguments and their characteristics, such as distinctions between types of initial oppositions and types of justifications (e.g., Dunn & Munn, 1987; Tesla & Dunn, 1992). It is of note that studies in our sample may also represent more nuanced theoretical positions within these broader categories, as is, for example, the case with several studies working within the pragma-dialectic tradition and specifically applying Rigotti and Greco's (2019) Argumentum Model of Topics, an approach developed to aid with the reconstruction of implicit inferential reasoning (e.g., Convertini, 2021a; Greco et al., 2018).

In studies with a distinct focus on the interactional, situated, and, often, sequential patterning of children's argumentative discourse, categorized as Schwarz and Baker's (2017) discursive approaches, we detected as the common vantage point an interest in the oppositional nature of children's argumentation in most studies. A no-

table nuancing in this regard was provided by Hannken-Illjes & Bose (2018, 2019) who specifically broadened the argumentative vantage point to include both opposition/dissent and cooperativity. Also, in many of these studies, the oppositional nature of argumentation was not further elaborated explicitly but was explored in depth in line with sequential, interactional, or conversation-analytic approaches (e.g., Arcidiacono & Perret-Clermont, 2009; Arendt, 2019; Arendt & Ehrlich, 2020; Bova & Arcidiacono, 2013a; Dovigo, 2016; Ehrlich, 2011, 2019; Eisenberg & Garvey, 1981; Howe & McWilliam, 2001; Shiro et al., 2019). In some cases, more specific argumentation-theoretical and rhetorical positions were adopted (e.g., Bose & Hannken-Illjes, 2020; Hannken-Illjes & Bose, 2018, 2019).

Second, in terms of Schwarz and Baker's (2017) monologic-dialogic dimension, we note a near-exclusive reliance on the dialogic view of argumentation. In most studies, this was made explicitly clear in the way study authors presented their theoretical and analytical grounding, including studies that drew on discursive approaches to argumentation (e.g., Arendt, 2019; Ehrlich, 2019; Hannken-Illjes & Bose, 2018, 2019; Shiro et al., 2019) as well as studies that pursued structural ends in line with established dialogic theories of argumentation, such as pragma-dialectics (e.g., Bova, 2015a–c; Bova & Arcidiacono, 2013b, 2018; Convertini, 2021a,b; Greco et al., 2018). However, the sample also comprises studies, where the dialogic view was not explicitly thematized or laid out. These were studies where the oppositional nature of argumentation was taken as a vantage point and where an a priori orchestration of more than a single voice in an argumentative exchange could only be assumed. Although these studies could be seen as having the dialogic perspective, at least in part, implicitly weaved in their theoretical texture, they may be described as oscillating between a monologic and dialogic view of argumentation at best. This subcategory is represented primarily by some of the earlier studies in our sample, conducted primarily in the 1970s through to the 1990s (e.g., Dunn & Munn, 1987; Przetacznikowa, 1971; Slomkowski & Dunn, 1992; Tesla & Dunn, 1992).

Third, the included studies displayed a productive eclecticism between argumentation theory and other theorizing, primarily within developmental psychology, the learning sciences, and linguistics. Furthermore, the theoretical pool was represented by different levels of theorizing, including more overarching, meta-theoretical perspectives as well as more specific, lower level theorizing within and across the above subfields. The former, meta-

level theories most often included Piagetian and neo-Piagetian theorizing, particularly Piaget's work on the role of conflict in development and his work on the development of moral reasoning (e.g., Howe & McWilliam, 2001; Mammen et al., 2019) as well as socio-cultural developmental perspectives, rooted in Vygotskian theorizing, most notably his work on the role of language in cognitive development (e.g., Arendt, 2019; Ehrlich, 2019; Ehrlich & Blum-Kulka, 2010) and in Dewey's experiential learning (Arendt, 2019). The latter, lower level theorizing, was represented by scholarship on issues such as learning designs within science, technology, engineering and mathematics (STEM) research (e.g., Convertini, 2021a, 2021b). A number of studies drew also on language socialization perspectives, more specifically in terms of family interactional research (e.g., Bova, 2015c; Bova & Arcidiacono, 2013a,b, 2015, 2018). Another, more specifically pronounced theoretical dimension was linguistic and discourse-theoretical, particularly as applied to child language development. It was represented by conceptual grounding in as diverse perspectives as systemic-functional grammar in combination with Peircean semiotics (Kosko & Zimmerman, 2019), interactional scholarship on peer talk and child-adult talk (e.g., Ehrlich, 2011, 2019), exploratory talk and sustained shared thinking (Dovigo, 2016), and the more overarching Bakhtinian lens on language acquisition (de Vasconcelos & Leitão, 2016).

Features of Children's Argumentation

The identified studies bear witness to a wide range of distinct features of young children's argumentative discourse. We have categorized these as either (a) structural-discursive features, (b) features relating specifically to socio-interactional aspects of children's argumentation, and (c) developmental features reported in studies with a comparative, longitudinal, or cross-sectional design on different aspects of the first two categories. As this suggests, the categories and subcategories are not discreet, since one and the same study may have pursued more than one single analytical end and, as such, may have been placed under several headings and subheadings, such as structural-discursive and developmental. We elaborate on and exemplify each category, with their corresponding subcategories, below. For additional clarity, the entire taxonomy is also visualized in Figure 2.

Structural-Discursive Features

More than a half of the identified studies reported on various structural-discursive features, further subcatego-

Structural-discursive features	Socio-interactional features	Developmental features
<ul style="list-style-type: none"> • Children's argument construction • Children's argument evaluation • Other meta-features 	<ul style="list-style-type: none"> • The role of interactional partners • The role of other interactional features 	<ul style="list-style-type: none"> • The complexity, variation and sophistication of children's argumentation • The frequency of children's use of argumentation

Fig. 2. Taxonomy of features of children's argumentation.

rized as relating to one of the following three dimensions: (a) children's argument construction, (b) children's argument evaluation, and (c) other meta-features, concerning primarily sources and functions of children's argumentation. In general, the sample showcases a broad range of these features, attesting to the versatility and heterogeneity of children's argumentation as well as to children's capacities as arguers and argumentative agents.

The first dimension predominates in the sample. It comprises findings on children's use of various linguistic, discursive and argumentative elements, reasoning strategies as well as specific patterns of their use. Przetacznikowa's study (1971), for example, drew early attention to the dominance of situational and functional reasoning in preschool children's argumentative discourse concerning manipulative and constructional tasks. Pontecorvo & Arcidiacono (2010) on the other hand, document children's variable use of different argumentative strategies, such as contrafactual reasoning, hypothesizing, and categorization, when they engage in disputes about narratives. The study shows that some of these strategies, such as rhetorical ones, can be transferred across different interactional contexts. Several other studies have interrogated specific types of argumentation schemes in children's argumentative discourse. Convertini & Arcidiacono (2021) for example, provide empirical evidence on the predominance of causal argumentation in children's play-based activities with scientific content. Interrogating arguments from authority, Bova's (2015a, 2015b, 2015c) studies underscore that in child-adult argumentative discourse, it is adults, rather than other children, that represent sources of expertise. Zooming specifically in on the degree of children's adaptation of their conflict resolution strategies and how it may affect the outcome of argumentative episodes, Eisenberg & Garvey (1981) show

that the least adaptive strategies are likely to result in a termination of argumentative episodes, while insistence and nonresponse be reciprocated as such by their interactional partners. More adaptive strategies of reason-giving may lead to concession. Studies also document that children may draw on multimodal resources to put forward different structural elements of arguments, including standpoints, reasons, and conclusions in order to drive their reasoning forward (Convertini & Arcidiacono, 2021; Sumpter & Hedefalk, 2015).

Several studies in the sample pay specific attention to children's justifications. They attest to children's early, nonverbal sensitivity to the role of evidence and opponents' informational access in argumentation (Mascaro et al., 2019) as well as children's budding competence to differentiate hypothesis from evidence (Koksall-Tuncer & Sodian, 2018). That children's use of evidence displays both complexity and variation is underscored by Orsolini (1993) and Dunn & Munn (1987). Looking at 3-year-old children, the latter study, for example, nuances the types of justifications children may use as ranging from emotional justifications, to references to social rules and material consequences of different courses of action.

Researchers have also mapped out the functioning of a range of specific linguistic and discursive elements in children's argumentative discourse. One such element, explored in several studies, is the use of repetitions as an argumentative resource (Arendt, 2019; Arendt & Ehrlich, 2020) and as, in fact, the most frequent strategy, along with insistence, pursued by children vis-à-vis their opponents (Eisenberg, 1987). Rocci et al.'s (2020) study on children's employment of adversative connectives (*aber, mais, ma* – “but”) in their counterarguments documents its functional versatility, ranging from connecting previous actions to the propositional content of arguments,

refuting but also externalizing inner dialogue. Studies by Ehrlich (2019) as well as Ehrlich & Blum-Kulka (2010) explore the use of oral and paradigmatic features in children's argumentation, showcasing among other things how they may function in establishing criteria of argument relevance, certainty, and acceptance (Ehrlich, 2019). Bova & Arcidiacono's (2013a) study on children's why questions in child-adult discourse shows that these serve mostly explanatory rather than argumentative purposes. Investigating children's use of evaluative and evidential language markers in their stance-taking in peer confrontational discourse, Shiro et al. (2019) found a high occurrence of references to intention and obligation, in the latter case expressed through the use of various deontic expressions, as well as a high degree of assertiveness expressed by the children through negative polarity.

The second dimension concerns children's argument evaluation, explored experimentally in only two individual studies in our sample (Castelain et al., 2018; Mercier et al., 2018). Both confirm that children display sensitivity to information that may be provided in arguments by their opponents. Mercier et al.'s (2018) findings also offer evidence that children's capacity to evaluate their opponent's weak and strong arguments may be affected by linguistic markers in different languages and, hence, be in part linguistically conditioned.

The third dimension comprises findings on what we have termed as meta-features of children's argumentation. These branch further into two thematic subcategories. First, several studies were preoccupied with interrogating and reporting on the specific functions argumentation may have in children's discourse. These ranged from an epistemic function, where the establishment of validity rather than simply conflict resolution was explored through children's activation of multimodal means of communication (Hannken-Illjes & Bose, 2018) or through the use of paradigmatic discursive resources, such as verification or analogy (Ehrlich & Blum-Kulka, 2010). In addition, children's argumentation was also shown to have a distinct socialization function, for example, in family mealtime exchanges (Bova & Arcidiacono, 2015). A further nuancing of the social function of children's argumentation was specifically offered by Rytel (1996) who drew attention to its interactional conflict resolution rather than merely content resolution dimension.

In addition to the functions of children's argumentation, several studies explored explicitly the sources of disagreement that may unleash children's argumentative exchanges. Findings confirmed that there are numerous issues that may lead to argumentation, including children's

requests (Bova & Arcidiacono, 2013b, 2015), specific issues such as food and behavioral norms (Bova & Arcidiacono, 2015, 2018), or plans and intentions rather than factual information and truth assertions (Sprott, 1992). Importantly, however, while children may not always be the main initiators of argumentative interactions (Bova & Arcidiacono, 2013b, 2015), they are also shown to display argumentative agency by raising discussion issues that matter to them (Schär & Greco, 2018).

Socio-Interactional Features

Nearly two thirds of the sample reported on findings concerning socio-interactional aspects of children's argumentation, relating primarily to how different contextual features may affect the analyzed argumentative exchanges. Interrogating their nature and prominence, our analysis led to a more nuanced two-pronged subcategorization into (a) the role of the interactional partners and (b) the role of other contextual features. On the whole, the included studies point clearly toward children's great sensitivity to interactional aspects of context when they engage in argumentative discourse.

Zooming in on the first, most clearly pronounced dimension, the included studies bear concerted witness to children's sensitivity to the identity, power, and status of their interactional partners. It also asserts their capacities to adjust and accommodate their argumentative strategies and moves accordingly (Arcidiacono & Perret-Clermont, 2009; Eisenberg & Garvey, 1981; Slomkowski & Dunn, 1992). Studies interrogating specifically child-adult argumentative exchanges report, among other things, on children's sensitivity to adults' interactional involvement and leadership (Dovigo, 2016; Vasconcelos & Leitão, 2016), underscoring adults' crucial role in scaffolding and guiding children's development. Also, Bova & Arcidiacono's (2013b, 2015, 2018) studies on family mealtime exchanges confirm that age differences as well as differences in competence and roles affect child-adult argumentative discourse, with the adult often taking the lead role in initiating argumentation and by being seen as an authority therein by the child. These studies also corroborate that the types of adults' and children's arguments have a close correspondence, a finding also reported with a specific reference to mothers' and children's justifications in an earlier study by Dunn & Munn (1987). Interestingly, Mammen et al.'s (2019) study shows that it is not only children who display great sensitivity in acting and interacting as arguers with adults; adults too adjust the way they may challenge children of different ages in their argumentative exchanges, in this particular study

manifested in their mutual discussions about picture book stories on moral dilemmas.

Studies on specifically peer interactions attest to similar sensitivity children display toward other children in argumentation and how their argumentative exchanges may provide a platform for a collaborative construction and negotiation of power and status within children's peer cultures (Meyer, 1992). Additionally, scholars have underscored the key role argumentative peer exchanges may play in fostering a range of skills, including social, cognitive, and linguistic (Arendt, 2019; Ehrlich & Blum-Kulka, 2010; Köymen et al., 2014; Shiro et al., 2019).

The reported findings also specifically thematize the functional and discursive differences between peer and child-adult argumentation. Eisenberg (1987) points out that in terms of argumentation strategies, children display less adaptability and more aggressive argumentative behavior with peers than in argumentative interactions with adults. Ehrlich (2011) documents that peer argumentation displays a high degree of contextualized talk, offering opportunities for building and nurturing interpersonal relations and solidarity. Child-adult talk, on the other hand, was in Ehrlich's study characterized as decontextualized talk, displaying features associated with school literacy. Looking specifically at the duration of peer and child-adult argumentative discussions, Mammen et al. (2019) provide scientific evidence on their differences, with peer discussions being of a shorter duration. Importantly, researchers have also thematized the misalignments between children and adults in their mutual argumentative exchanges, for example, in terms of implicit premises (Greco et al., 2018) but also in terms of their interpretative worlds (Iannaccone et al., 2019). As the authors underscore, this may lead to misunderstandings as well as underestimation of children's capacities and agency as arguers.

Moving on to the second, less clearly pronounced dimension, the sample shows that also other features of context, such as the nature of the instructional task (Kosko & Zimmerman, 2019), the specific type of interactional setting (Ehrlich, 2019; Orsolini, 1993; Pontecorvo & Arcidiacono, 2010) but also methodological aspects concerning the study design and choice of data collection methods (Arcidiacono & Perret-Clermont, 2009) may affect what argumentative resources children may activate and how they will be utilized in their argumentative discussions. Furthermore, studies have also shown that the very nature of the interactional framing of children's argumentative discourse may result in different argumentative activities. Hannken-Illjes & Bose (2019) underscore

this very point in their study of peer argumentation established multimodally as either cooperative or agonistic. They show that cooperative situations display interactional synchronicity while uncooperative ones bear witness to the opposite. A correspondence between the frequency of arguments and the degree of cooperativity is also corroborated in Domberg et al.'s (2018) experimental study. Investigating specifically the influence of group competition on children's argumentative behavior in a subsequent study, Domberg et al. (2021) offer evidence that it may be inconsistent and subject to the task and its nature.

Developmental Features

Studies in our sample also shed light on a range of structural-discursive and socio-interactional features of children's argumentation in a comparative light through the employment of comparison age groups. We have subcategorized the relevant findings as either thematizing (a) the developing complexity, variation, and sophistication of children's argumentation and (b) the frequency of children's use of argumentation or its specific elements. On the whole, the sample attests to a clear developmental trajectory in terms of both the complexity and frequency with which children engage in argumentative discourse.

In terms of the first subcategory, the developmental tendency is reported on aspects concerning both argument construction and argument evaluation. Studies interrogating specifically the use of various argumentative strategies show that children's competence to offer a more varied range of perspectives on conflictual issues, as opposed to solely offering an oppositive standpoint, grows with age (Rytel, 1996). Furthermore, children become more skilled in identifying and producing relevant and valid counterarguments with age, although the skill can be fostered even in very young children through training (Köymen et al., 2020b). With time, children's argumentative strategies also become more complex (Arcidiacono & Bova, 2015) as well as more varied and more strategically applied (Domberg et al., 2018). Studies looking at children's mathematical reasoning strategies also attest to an increasing sophistication (Kosko & Zimmerman, 2019; Krummheuer, 2013).

Studies thematizing specifically children's justifications and their use of evidence report that some aspects may show a developmental tendency, such as children's capacity to adjudicate the quality of justifications and to apply them more correctly and consistently (Mammen et al., 2018). Also, children's reasoning based on perceptual and verbal evidence may grow in sophistication and vari-

ation with age (Przetacznikowa, 1971). Sprott (1992) reports age differences in children's use of justifications in different disputes, showing a greater engagement by older children in factual disputes as opposed to more personal disputes. Nonetheless, studies also report no significant age differences in terms of children's sensitivity to adjusting the informativeness of their justifications based on shared common ground (Köymen et al., 2016) or in their use of direct evidence (Köymen et al., 2020a).

In terms of comparative findings on socio-emotional aspects of children's argumentation, studies show growing social sensitivity to reasoning, such as children's increasing persuasion skills in order to reach an agreement (Köymen et al., 2014), older children's preference to signal dominance when evaluating arguments (Mercier et al., 2014), and their preference to use argumentation for self-interest promotion rather than reaching an agreement (Tesla & Dunn, 1992). However, studies also report no age differences when it comes to constructing more balanced arguments in cooperative settings or when offering different argument positions (Rytel, 1996). Furthermore, children show increasing sensitivity to the quality of their opponents' argument (Domberg et al., 2019; Mercier et al., 2014), such as in preferring strong (perceptual) rather than weak (circular) arguments as they grow older.

Lastly, the sample also attests to the growing frequency of children's arguments with age. This concerns both production of reasons to justify claims (Domberg et al., 2021), the use of indirect evidence under certain conditions (Köymen et al., 2020a), the more explicit use of warrants and justifications as well as children's increasing tendency to reach mutual agreement (Köymen et al., 2014), or express conflicting positions in disputes (Rytel, 1996). That an increasing frequency in children's argument construction may be a function of context confirm studies investigating argumentation in peer play (e.g., Arendt, 2019) and in specifically cooperative experimental group settings, where a greater rate of arguments was observed across age groups (Domberg et al., 2018). As Mammen et al.'s (2019) study shows, frequency may also be related to the identity of children's interactional partners rather than children's increasing age per se.

Summarizing Discussion

Based on a meta-synthesis of 57 individual empirical studies, our review offers a systematic insight on a range of aspects concerning argumentation in the youngest age

groups. Showcasing a range of methodological designs adopted over the last five decades of research, the study systematically documents an increasing scientific interest in exploring this budding field across different continents, national contexts, interactional settings, and participant structures. While these descriptive features are necessarily a reflection of our methodological choices and, as such, cannot be taken to provide a complete or authoritative picture of the field, the review does, in our view, shed light on a number of salient tendencies and patterns. With necessary caution, we note that the field displays great methodological, thematic, and conceptual heterogeneity that we see as both productive and necessary, particularly if we are to arrive at a comprehensive understanding of what it takes to argue in the early years.

More specifically, with reference to our first research question, we note that the existing scholarship on young children's argumentation is profoundly interdisciplinary, drawing on different traditions within argumentation theory as well as a range of other scholastic fields, including developmental psychology, education, linguistics, and discourse studies as the most prominent ones. As such, the review brings systematic scientific evidence on board regarding our initial assumption on the dispersion of studies across different scholastic areas. The construction of any overarching conceptual taxonomy of such a broad and heterogeneous field necessitates a certain degree of simplification. In this endeavor, Schwarz and Baker's (2017) two-dimensional taxonomy offered a productive springboard to a more nuanced exploration of conceptual patterns in the sample.

In terms of the monologic-dialogic dimension, we found the dialogic view explicitly or implicitly present in most of the included studies. In fact, these were in some cases hard to disentangle and positions were found to be oscillating rather than clearly delineated. This in itself underscores the point that argumentation as a specific form of discourse is *per definition* predicated on the presence of more than one voice. Indeed, as in other meaning-making processes, polyphony or heteroglossia (Bakhtin, 1981) is weaved in its very theoretical texture. Hence, the monologic view represents at best an analytical distinction, not least in the field of argumentation in the early years.

In terms of the structural-discursive dimension, the included studies can be seen as following either more distinctly structural or discursive aims. While some draw on theoretically elaborated positions, on a broad level represented by pragma-dialectics (van Eemeren, 2018), the argumentative theory of reasoning (Mercier & Sperber,

2011) and, to a lesser degree, Toulmin's (1958) argumentation model, others operate with the basic structural elements of standpoint and justification/reason as inherent in the concept. Moreover, these broader categories may themselves branch into more nuanced approaches to investigate specific features of children's argumentation, such as children's implicit reasoning (Convertini, 2021a; Greco et al., 2018) through the application of the Argumentum Model of Topics approach (Rigotti & Greco, 2019). This then bears witness to a considerable theoretical variation within the field. We note further that the common denominator of the sample as a whole is a view of opposition, disagreement, or a difference of opinion as a defining minimal feature of children's argumentation. We will argue that this is the case even in studies that propose to see cooperativity as representing a possible initial argumentative framing (e.g., Hannken-Illjes & Bose, 2018, 2019), since opposition is, on our reading, not denied but rather presupposed here as well. Hence, given that the structural aspect, subsuming the oppositional antecedent, is inherent in all argumentation, one can argue that, within the field of argumentation in the early years, the structural-discursive dimension of Schwarz and Baker's (2017) model represents a continuum, stretching from more to less structural specificity along, primarily, the dialogic dimension.

With reference to our second research question, our review provides a systematic meta-synthesis of scientific evidence on a number of distinct features of young children's argumentative discourse. First, it bears witness to a breadth of capacities and competencies that very young children may activate not only to resolve disagreement but also to arrive at solutions that are commonly shared and valid in their peer cultures. Building on the now long-established insights from within the sociology of childhood (James et al., 1998; James & Prout, 1997), this positions them as productive arguers and argumentative agents in their own right. In addition, our findings also point toward the importance of argumentation in socializing and initiating children into specific ways of thinking across home, kindergarten, and early school contexts. Building on and broadening Ehrlich & Blum-Kulka's (2010) concept of peer talk as a *double-opportunity space*, we therefore propose to see children's argumentation as a *multi-opportunity space* in which their linguistic, socio-emotional, and cognitive skills as well as their epistemic understanding can be productively nourished and fostered across different settings and participant structures.

Second, the review points consistently toward children's utmost sensitivity to the interactional context of

exchange. It underscores the role of both peer play and peer talk as a key platform for understanding argumentation in the youngest age groups but also the quintessential role of adults, such as teachers and parents, in fostering children's capacities as arguers and critical thinkers. It also highlights differences between these conditions and underscores their variable significance for continued growth. However, children's contextual sensitivity does not end with the interactional partner but extends to other contextual features such as the nature of the task they engage in and that may trigger argumentation, the employed methodological design features but also features of the broader contextual setting. While lending further support to a firmly established insight in early childhood scholarship on the key role of context in children's learning and development (NAYEC, 2022), it also corroborates Arcidiacono and Perret-Clermont's (2009) observation on the methodological limitations of earlier scholarship that, insufficiently attentive to this essential nature of very young children's argumentation, may have led to the underestimation of their argumentative capacities. Additionally, it underscores the continued challenge of investigating preschoolers' argumentation in scientifically valid ways, calling among other things for researcher vigilance and reflexivity throughout all stages of the research process.

Third, the review reveals clear developmental patterns in children's argumentation in terms of its complexity, sophistication, variability, and frequency. However, once again, rather than inviting a view of children as argumentative becomings on the way to adult competence, we propose to see these findings as key to understanding the very origins and development of the human capacity to argue. Not only is this knowledge essential for a productive bridging between home, preschool, and school communities of practice, it propels to salience the continued need for locating attention and support in young children's lived worlds (Dyson, 2013) and in line with developmentally appropriate pedagogical approaches (Barbarin & Wasik, 2011; NAYEC, 2022; Samuelsson & Carlsson, 2008).

Concluding Remarks

While this review provides a systematic insight into the growing knowledge foundation on argumentation in the youngest age group, we see a distinct need for further research. One area of much promise is children's multimodal argumentation, thematized in our sample through a handful of studies only. Given children's deeply multi-

modal and situated way of being and participating in social life, it may open not only for important practical insights with implications for early childhood parenting and professional practice, but also new theoretical advances in the field of argumentation in general and multimodal argumentation in particular. Likewise, given the growing presence of digital tools in children's everyday lives, studying how very young children potentially make use of digital artifacts as they initiate and advance arguments and negotiate standpoints while engaging in digital play-based and other activities seems to be as yet a largely unexplored territory.

By extension, we also call for a continued cross-fertilization between theoretical approaches as well as a scientifically rigorous interrogation of potential connections and overlaps between very young children's argumentation and related concepts that were not specifically targeted in this review, such as sustained shared thinking (Siraj et al., 2015), inferential thinking (Collins, 2016), or the even broader concepts of exploratory talk (Mercer & Wegerif, 1998) and low-structured sensemaking, employed in Rapanta & Felton's (2022) review to describe argumentation activity in early school grades. Rather than assuming the logico-rational conceptualization of argumentation as the only valid vantage point, rendering children's argumentation a priori as mostly fallacious or deficient and hence not meriting the label in any positive sense, such pursuits may add a new layer to the ongoing conceptual debate within argumentation studies on what forms of argument qualify as such and why (see, e.g., Birdsell & Groarke, 1996; Bubikova-Moan, 2021; Tindale, 2017; Tseronis & Forceville, 2017). In our view, a continued exploration of these and other relevant issues through a sustained scientific effort will advance not only our understanding of the multifaceted nature of argumentation as a quintessential form of human communication but also how the early capacities to argue develop and can be

nourished in developmentally sensitive ways so that children can grow to become rigorous arguers and critical thinkers of tomorrow.

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Statement of Ethics

Given that this study is a meta-synthesis of relevant empirical studies, no ethics approval on research subject participation was required.

Conflict of Interest Statement

The authors declare no conflict of interest.

Author Contributions

The first author has led and contributed to all stages of the study design and production, including all database searches, manuscript screening, and full-text review, as well as the analytical and manuscript production process. The second author has contributed in conceptual and methodological discussions, the full-text review, the analytical validation, and final manuscript production process.

Data Availability Statement

The empirical studies included in this review can be accessed online or as hard-copy manuscripts in the relevant journals.

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Note: studies included and reviewed in the meta-synthesis are marked with an asterisk (*)

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