# Children's Developing Understanding of the Normative Dimension

# of Others' Assertions

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# Abstract

Until now, psychology and empirical research have focused on the ontogeny of moral and conventional norms, whereas theoretical (epistemic) norms received little attention. While the former regulates the way of acting and human interactions in society, the latter describes the norms of human beliefs and knowledge. Epistemic norms are fundamental for our theoretical reasoning, gaining cultural knowledge and our understanding of truth. Speech acts are of crucial importance in the field of epistemic normativity, as they are closely entwined with epistemic norms. Therefore, the competence to evaluate claims of others is of crucial importance for people. Only with this ability can we distinguish true from false statements and recognize whether others are adhering to or violating epistemic norms. Norms contain obligations, but also entitlements, which constitute a complex normative construct. This complexity develops from the fact that entitlements are equally linked to obligations of others: if a person is entitled to assert his or her knowledge (because the knowledge is justified by sufficient evidence), this implies that others are obliged to grant him this right. If they violated their obligation, it would be a norm transgression.

The objective of the present dissertation was to investigate children's understanding of epistemic normativity, focusing on the understanding of speech acts. In Study 1, their understanding of the correctness or incorrectness of epistemic speech acts in the form of knowledge claims ("I know where X is!") was investigated. Study 2 addressed both the question of whether children understand that knowledge entitles a person to perform speech acts and whether they defend this right. Study 3 examined the understanding of moral dimension of incorrect factual claims ("This is an X!", although it is a Y) in two ways: Study 3a aimed to test whether children included the consequences of a false factual speech act in their evaluation and

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whether they rated a speech act that would lead to harmful consequences more negatively than a speech act that would only result in harmless consequences. Study 3b investigated whether children take into account the intentions of a speaker and evaluate the wrong speech action of a speaker with bad intentions more negatively than that of a speaker with good intentions, whereby both speech acts caused the same harmful consequences.

In order to answer these questions, interview studies (Studies 1 and 3) and a behavioral counter-protest paradigm (Study 2) were used. In all studies, hand puppets performed the speech acts. The dissertation examined children between the ages of three and five.

Both younger (3- to 4.5-year-olds) and older (4.6- to 5.11-year-olds) children accepted correct knowledge claims that corresponded to the observable reality. But only the older age group could reliably reject incorrect knowledge claims that did not match reality. However, some of the younger children could both reject the incorrect knowledge claims and give valid explanations for the evaluation of the speech act. Thus, those competent children were both able to categorize knowledge speech acts and to ascribe knowledge and ignorance, respectively, to the speaker (Study 1). Moreover, it was found that children at the age of three understand non-epistemic entitlements, that is, they defended the right of a person to express true facts by protesting against the unjustifiably criticizing puppet. However, only 5-year-olds were able to apply this protest behavior to epistemic entitlements. It is not before this age that children understand a person's right to assert knowledge that is based on good evidence (Study 2). It was also found that children from the age of four to five understand the moral dimension of incorrect factual claims. Children rated the incorrect factual claim of the puppet more negatively if they anticipated harmful consequences than if the consequences would have been harmless. They also judged the incorrect factual claim of the puppet with bad intentions more negative than that of the

puppet with good intentions. Thus, they placed the intention of the puppets above the harmful consequence to be expected by the false factual claim.

With the three studies, the dissertation showed that an understanding of epistemic normativity and of speech acts of both epistemic ("I know X!") and normative nature gradually develops at the age of four to five years. Finally, children at this age recognize the social-normative component of epistemic states of others and consider knowledge from a normative perspective. However, it also turned out that children develop their understanding of epistemic norms much later than their understanding of practical norms, which is attributable to the complexity of epistemic states. Empirical research on epistemic normativity is still in its early stages, thus further studies are needed to fully understand children's understanding of epistemic normativity.

# Zusammenfassung

Bis jetzt lag in der Psychologie und der empirischen Forschung der Fokus auf der Entstehung von moralischen und konventionellen Normen, wohingegen theoretischen (epistemischen) Normen nur wenig Aufmerksamkeit geschenkt wurde. Während die ersteren Handlungsweisen sowie das menschliche Miteinander in der Gesellschaft regeln, beschreiben letztere die Normen der menschlichen Überzeugungen und des Wissens. Epistemische Normen sind fundamental für unser theoretisches Denken, das Erlangen von kulturellem Wissen und für unser Verständnis von Wahrheit. Sprechakte sind im Bereich der epistemischen Normativität von entscheidender Wichtigkeit, da sie eng mit epistemischen Normen verbunden sind. Aus diesem Grund ist die Kompetenz Behauptungen anderer bewerten zu können für Menschen von großer Bedeutung. Nur mit dieser Fähigkeit können wir wahre von falschen Aussagen unterscheiden und erkennen, ob andere epistemische Normen einhalten oder verletzen.

Normen beinhalten Verpflichtungen, aber auch Berechtigungen, welche ein komplexes normatives Konstrukt darstellen. Diese Komplexität entsteht dadurch, dass Berechtigungen gleichermaßen mit Verpflichtungen anderer verbunden sind: wenn eine Person berechtigt ist ihr Wissen zu äußern (da es durch ausreichende Evidenz begründet ist), bringt dies mit sich, dass andere verpflichtet sind, ihr dieses Recht zuzugestehen. Widersetzten sie sich ihrer Verpflichtung, wäre das eine Normverletzung.

Die vorliegende Dissertation hatte zum Ziel das kindliche Verständnis von epistemischen Normen mit Fokus auf das Verständnis von Sprechakten zu untersuchen. In Studie 1 sollte ihr Verständnis für die Korrektheit oder Inkorrektheit von epistemischen Sprechakten in Form von Wissensbehauptungen („Ich weiß wo X ist!") untersucht werden. Studie 2 ging der Frage nach, ob Kinder sowohl verstehen, dass Wissen eine Person berechtigt Sprechakte auszuführen als

auch, ob sie dieses Recht verteidigen. Studie 3 untersuchte die moralische Dimension von inkorrekten Faktenaussagen („Das ist ein X!", obwohl es ein Y ist). Dieses Verständnis wurde in zweifacher Hinsicht untersucht. In Studie 3a sollte getestet werden, ob Kinder die Konsequenzen eines falschen Sprechaktes in ihre Evaluierung miteinbeziehen und eine Sprechhandlung, die zu schädlichen Konsequenzen führen würden, negativer bewerten als einen Sprechakt, der harmlose Folgen haben würde. Studie 3b sollte untersuchen, ob Kinder die Intentionen eines Sprechers berücksichtigen und die falsche Sprechhandlung eines Sprechers mit schlechter Intention negativer bewerten als die eines Sprechers mit guter Intention, wobei beide Sprechakte dieselben schädlichen Konsequenzen auslösen würden.

Zur Beantwortung dieser Fragestellungen wurden zum einen Interviewstudien (Studie 1 und 3) und zum anderen ein verhaltensorientiertes Gegenprotest-Paradigma (Studie 2) eingesetzt. In allen Studien übten Handpuppen die Sprechakte aus. Die Dissertation untersuchte Kinder im Alter von drei bis fünf Jahren.

Sowohl jüngere (3- bis 4,5-jährige) als auch ältere (4,6- bis 5,11-jährige) Kinder akzeptierten richtige Wissensbehauptungen, die der beobachtbaren Realität entsprachen. Aber nur die ältere Altersgruppe konnte zuverlässig inkorrekte Wissensbehauptungen, die nicht der Realität entsprachen, ablehnen. Jedoch konnte ein Teil der jüngeren Kinder sowohl die inkorrekten Wissensbehauptungen ablehnen als auch valide Erklärungen für die Bewertung des Sprechaktes geben (Studie 1). Des Weiteren zeigte sich, dass Kinder im Alter von drei Jahren nicht-epistemische Berechtigungen verstehen, das heißt sie verteidigten das Recht einer Person wahre Fakten zu äußern, indem sie gegen die zu Unrecht kritisierende Puppe protestierten. Allerdings konnten erst Fünfjährige dieses Protestverhalten auf epistemische Berechtigungen anwenden. Erst in diesem Alter verstehen Kinder das Recht einer Person Wissen zu äußern, wenn

dieses auf guter Evidenz beruht (Studie 2). Zudem zeigte sich, dass Kinder im Alter von vier bis fünf Jahren die moralische Dimension von inkorrekten Faktenaussagen verstehen. Kinder bewerteten die inkorrekte Faktenbehauptung der Puppe negativer, wenn sie schädliche Folgen voraussahen als wenn die Folgen harmlos gewesen wären. Ebenso beurteilten sie die inkorrekte Faktenbehauptung der Puppe mit schlechten Absichten negativer als die der Puppe mit guten Absichten. Somit stellten sie die Intention der Puppen über die schädliche Konsequenz, die durch die falsche Faktenaussage zu antizipieren war.

Mit den drei Studien, konnte in der Dissertation gezeigt werden, dass sich im Alter von vier bis fünf Jahren ein Verständnis für epistemische Normativität und für Sprechakte sowohl epistemischer („Ich weiß X!") als auch normativer Art entwickelt. Kinder in diesem Alter erkennen schließlich die sozial-normative Komponente von epistemischen Zuständen anderer und betrachten Wissen unter einer normativen Sichtweise. Es zeigt sich allerdings auch, dass Kinder das Verständnis von epistemischen Normen weitaus später entwickeln als das Verständnis von praktischen Normen, was auf die Komplexität von epistemischen Zuständen zurückzuführen ist. Die empirische Forschung zu epistemischer Normativität ist noch in ihren Kinderschuhen, so dass es weitere Studien bedarf, um das kindliche Verständnis von epistemischer Normativität vollständig zu verstehen.

# 1. General Introduction

Social norms, which can be seen as the "adhesive" of human societies, both describe what behavior ought to be shown and regulate human actions and thus, human cultural practices (Chudek & Henrich, 2011; Elster, 1989; Fehr & Fischbacher, 2004; Schmidt & Tomasello, 2012; Tomasello, 2009). For example, every day we see people acting in accordance with norms (e.g., they cross the street only when the traffic lights are green) or in discordance with norms (e.g., they are pushing their way into the queue in the supermarket), which, in the case of the latter, leads to social sanctions (e.g., a rebuke from the other waiting). This shows that many actions entail normative expectations of society. It is precisely this assessment of practical norms, in particular their violations, which has been of great importance in the field of developmental psychology since Piaget's pioneering work. His research was the first to examine children's understanding of norms, in particular the assessment of consequences and intentions in the context of transgressing norms (Piaget, 1932).

Another field of developmental psychology that has been investigated extensively is the descriptive understanding of others' mental states including theory of mind (Harris, 2006; Killen, Mulvey, Richardson, Jampol, & Woodward, 2011; Perner, Frith, Leslie, & Leekam, 1989; Sodian & Thoermer, 2008; Wellman & Liu, 2004; Wellman & Miller, 2008; Wimmer & Perner, 1983), epistemic trust (Bernard, Harris, Terrier, & Clément, 2015; Birch, Akmal, & Frampton, 2010; Birch & Bloom, 2002; Clément, 2010; Corriveau, Kinzler, & Harris, 2013; Kinzler, Corriveau, & Harris, 2011; Koenig, 2012; Koenig, Clément, & Harris, 2004; Koenig & Harris, 2005a; Mills, 2013), and the seeing-knowing relation (Friedman, Griffin, Brownell, & Winner, 2003; Pratt & Bryant, 1990; Wimmer, Hogrefe, & Perner, 1988) to name a few.

The normative component of mental states, however, has been largely disregarded to date. This is going hand in hand with a lack of empirical research on epistemic normativity, even though we are confronted with them constantly (e.g., by expressing beliefs and knowledge). This implies that they also have a significant impact on our social practices. Every day people make speech acts, many of which are assertions about the world. Some are true (e.g., "The earth orbits the sun."), others are false (e.g., "Global warming is a myth.") and thus, they either adhere to the norm of saying correct things, as in in the former case or, as in the latter, violate this norm by making incorrect assertions.

The general aim of the dissertation was to examine children's understanding of the normative dimension of speech acts in the context of epistemic normativity. Thus, the thesis investigates two major subjects, that is, normative phenomena (i.e., entitlements, moral transgressions and speech acts) and epistemic phenomena (i.e., knowledge state, beliefs) and their interrelations. In the following section, both subjects will be outlined in order to grant a better understanding of the position the current work aligns itself with. I will begin by describing normativity and the types of norms, including the distinction between practical and theoretical (epistemic) norms as well as obligations and entitlements. This is followed by a more detailed description of the different kinds of speech acts and the normative component of speech acts. Subsequently, research is reported on the development of both normative and epistemic phenomena in children. This subsection intends to provide an overview of the research that has been investigated in this area to date in order to determine the significance of the empirical studies conducted in this thesis. Finally, I will clarify the aim of the current work and briefly outline the sections to come.

## 1.1 Normative Phenomena

### 1.1.1 Types of Norms

One common way to define norms is to differentiate between practical and theoretical (or epistemic) normativity (Engel, 2011; Littlejohn & Turri, 2014). The focus, however, has been in psychology on practical norms, which are norms that concern human cultural practices and institutions with conventional and normative structures. These norms prescribe how to act in a given social context (Schmidt & Rakoczy, 2018a, 2018b). Studies based on social domain theory suggest a differentiation between conventional and moral norms (Tisak & Turiel, 1988; Turiel, 1983, 2006). The conventional dimension of norms specifies rules how to behave and what one usually does in social interactions. This kind of norm is arbitrary and alternative forms of behavior are equally possible (e.g., etiquette rules, dress code, driving on the right vs. left side of the street). Whereas the moral dimension of norms emphasizes more forcefully what a person *ought* to do. These norms are non-arbitrary and regulate behavior that protects others' well-being, justice, and rights (Scanlon, 1998; Turiel, 1983). Transgressions of moral rules are typically judged to be worse than violations of conventional norms (Smetana, 1981).

According to Schmidt and Rakoczy (2018a), practical norms consist of four key features: (i) *standard of correctness* implies that an action can be evaluated as correct or incorrect given social standards, created and accepted by a social group (Hechter & Opp, 2001; Popitz, 2006). Thus, our actions can underlie possible errors and can be right or wrong according to some standards. Normativity presupposes that different behavior is possible to be displayed (in contrast to actions that follow physical laws, such as gravity); (ii) *generality* means that certain norms do not apply occasionally, but in all comparable circumstances. These norms apply for oneself just

as they apply to others, thus, they are actor-independent (Nagel, 1986); (iii) *context-relativity* is specific to conventional norms. It means that norms are usually context-relative (e.g., one ought to wash hands before eating, but not before playing in the sandpit); (iv) *normative force* is different to physical force, in that, they have a binding force and can possibly be violated. As a consequence, we have normative expectations that oneself or another person ought to comply with given norms, including obligations and entitlements (Chudek & Henrich, 2011). Violation of an established norm leads to sanctions by other group members, who are obliged to enforce compliance with the norm. Furthermore, normative expectations have a *world-to-mind* direction of fit, in that the aim of norms is to bring about certain states of affairs in the world. This stands in contrast to the mind-to-world direction of fit of descriptive expectations (Christen & Glock, 2012; Searle, 1983; Wellman & Miller, 2008).

As mentioned at the beginning of this chapter, there also exist epistemic norms in addition to practical norms. So far, philosophers in particular have studied the subject of epistemic normativity. While practical norms focus on the evaluation of actions, epistemic norms aim at the beliefs of a person. Thus, theoretical or epistemic norms, respectively, apply to the norms of human beliefs. These norms determine what beliefs one should hold. Epistemic norms pertain what we ought to say, do or think from an epistemic point of view (Graham, 2015). We assess beliefs according to a variety of epistemic standards. True beliefs match reality, while false beliefs mismatch reality. Beliefs are criticized as unjustified if they are not sufficiently supported by evidence or formed on an unreliable basis. Hence, a fundamental epistemic norm dictates that one must believe only what is true (Boghossian, 2003; Engel, 2013; Gibbard, 2005; Millar, 2004; Shah, 2003; Shah & Velleman, 2005; Wedgwood, 2002; Whiting, 2010). In recent years, however, an alternative approach has gained in popularity. According to this account, knowledge,

rather than truth, constitutes the fundamental norm of belief (Adler, 2002; Bird, 2010; Huemer, 2007; Sosa, 2009, 2010; Sutton, 2007). One of these approaches is Williamson's account of *knowledge norm of assertion*, which states, "one must assert that $p$ only if one knows that $p$". This leads to the conclusion that the assertion of $p$ without knowing $p$ or the assertion of $p$ on insufficient evidence is considered an epistemic norm violation (Williamson, 2000).

Altogether, whereas practical norms are fundamental to our cultural practices, epistemic norms are fundamental to our theoretical reasoning, cultural knowledge, and the understanding of truth (Schmidt & Rakoczy, 2018a).

This analysis shows that practical and epistemic norms have an intriguing dissymmetry. Practical normativity allows a plurality of ethical values, whereas for epistemic values, by definition, this is impossible. In the latter case, a belief is justified only by one reason, either it is true or supported by sufficient and reliable evidence (Engel, 2011). Nevertheless, what the two types of norms have in common is that they require deontic reasoning, namely thinking about what is forbidden or permitted, mandatory or not mandatory (Beller, 2010; Wellman & Miller, 2008).

According to Graham (2015), some epistemic norms, however, might be seen as practical norms or norms with practical dimension. The reason for this is that our beliefs, thoughts and statements about each other can turn certain epistemic norms into social norms. An example of this would be a mistaken claim such as "The water is clean.", although it is contaminated. This violates the epistemic norm of saying only true things or only things I really know. At the same time this becomes a moral norm, because it endangers the well-being of another person.

### 1.1.2 Obligations and Entitlements

Normativity encompasses much more than mere obligations to follow rather simple rules of social practices. The mature understanding of normativity does not only include the understanding of obligations, but also the entitlements that go along with them (Helwig, 1997). For this reason, entitlements are unique normative phenomena and much more complex than other norms, since they are always directly linked to others' obligations. Thus, entitlements and duties consist always of (at least) two actors and one content. Suppose, right holder *A* is entitled to perform some action *X*. It results in that a second party *B* must not interfere with *A*'s entitlement (to perform *X*) and respect *A*'s entitlement. Otherwise, *A*'s entitlement would be violated as well as the norm not to interfere with others' entitlements (Hohfeld, 2001; Rainbolt, 2006). From this follows that entitlements create normative constraints on the behavior of others, with interpersonal normative relationships (horizontal normativity) between these individuals (Schmidt, Rakoczy, & Tomasello, 2013). As with other normative phenomena, entitlements can only exist if they are collectively recognized by the social group (Searle, 1969). For example, a policeman is entitled to arrest persons for unlawful conduct. To get this entitlement, however, this empowerment first had to be recognized by society. According to Schmidt and Rakoczy (2018b) in addition to the first-order normativity (horizontal normativity), a second-order normativity exists (vertical normativity). It describes the right to entitle others to act in a certain way, that is, the owner of object X is entitled to treat X in a certain way (first order) as well as to authorize others to treat X in a certain way (second order), such as by permitting them access to X.

Entitlements, however, are not confined to the realm of actions. We also have epistemic entitlements, in the sense of being entitled to belief and assert justified true beliefs. In this case, substantial evidence entitles individuals to assert their beliefs and protect them from unjustified

criticism. Perceptual knowledge is a special type of epistemic phenomena. Through perception we gain knowledge, on the basis of which we form beliefs, resulting in attributing knowledge to ourselves. Furthermore, it immediately shows us how things are in the world. Knowledge formed on perceptual access to a given event, entitles individuals to claim their beliefs (Matthiessen, 2014). Besides one's own perception, scientifically proven evidence is another factor that entitles a person to make an assertion, such as "The earth is spherical.". If a person prohibits another person from uttering this belief, we have a case of incorrect or invalid norm enforcement. Another form to violate a person's entitlement to make assertions, is to question their authority by asking "How do you know?" and "Do you know that?" or by even rejecting the person's utterance with the dismissal "You do not know that!" (Williamson, 2000).

     In the following chapter I will examine the background of speech acts, which, as mentioned above, are an essential underlying part of epistemic normativity.

### 1.1.3 Speech Acts

According to Searle (1969), speaking a language is performing acts based on constitutive rules, *"(...) The semantic structure of a language may be regarded as a conventional realization of a series of sets of underlying constitutive rules."*. He adds, *"Speech acts are acts characteristically performed by uttering expressions in accordance with these sets of constitutive rules."*. Those so-called constitutive rules create or define new forms of behavior and only exist by virtue of a social-conventional practice. This clearly shows that the normative aspect is indeed not only characteristic of non-verbal actions, but speech acts also bear this aspect within themselves. Language is a rule-based, normatively structured practice, because the conventional rules that constitute a language determine which speech acts are appropriate or inappropriate and which are right or wrong. These apply to all speakers, including the self, in a general manner (Searle, 1969). Searle (1969) categorized possible speech acts into five general subgroups. The first category is *Assertives*, in which the speaker commits himself to the truth of a proposition. We use assertive speech acts to make claims about the way things are. This kind of speech act includes plain declarative sentences, such as describing or reporting (e.g., when one tells someone, "The book is on the table") and expressing an opinion or testimony (Sbisa, in press). As Searle (1979) noticed, *"The simplest test of an assertive is this: can you literally characterize it (inter alia) as true or false."*. In the second category fall *Directives*, in which the speaker commands or requests people to do things (e.g., "Max, open the window!"). The category *Commissives* forms the third group and describes promises or offers (e.g., "I promise to give you your money back."). With this kind of speech act, a speaker expresses his or her intention to perform some action in the future and thus, places an obligation on him to undertake some future act (Bilbow, 2002; Maas, 2008). The utterance of "I promise" in turn creates in the listener the

belief that the speaker intends to perform the promised action (Searle, 1969). The fourth category entails *Expressives*, in which the speaker expresses his feelings and attitudes to the hearer (e.g., forgiving, praising, apologizing or blaming). The fifth and last category is *Declaratives*, in which the speaker changes the world through his utterances by naming, baptizing, or sentencing someone (e.g., "I condemn you to 5 years imprisonment."). However, utterances often fit into several categories. Suppose, a speaker says, "Sir, you didn't give me enough change.". This utterance is not only an assertive, but also an indirect directive, since the speaker is indirectly requesting that the person gives him the correct amount of change.

Moreover, speech acts consist of two dimensions, that is, they have a propositional content (describing the action, such as that Max opens the window) and an illocutionary force of attitude (assertives, directives, declaratives, commissives, expressives). Thus, the same kind of speech act can assert different semantic content (e.g., Max is opening the window and Max is opening the book) as well as different kinds of speech acts with the same content (e.g., X asserts that Max is opening the window, X asks whether Max is opening the window or X requests Max to open the window). Importantly, different kinds of speech acts with different illocutionary force differ in their direction of fit, that is, the relation between the asserted words and the world they describe. Speech acts can have either a *"word-to-world"* direction of fit, which means that the world is described with words, thus, the world existed before the words. This kind of speech act aims at representing the world truly and accurately. The assertion "Max is opening the window." should describe the action correctly, and if its semantic content is not fulfilled, the speaker is to be criticized. However, if the propositional content of the sentence is correct, the speaker is both entitled to make the assertion and immune to criticism. The opposite direction of fit is *"world-to-word"* direction of fit. It means that the words existed before the world and the world has to

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change in order to fit the propositional content. These include commissives and declaratives. If they are not fulfilled, the fault is on the part of the recipient (Anscombe, 1957; Rakoczy & Tomasello, 2009; Searle, 1969, 1983; Smith, 2003). Thus, speech acts can have the same propositional content (e.g., that Max is opening the window), but because of their different directions of fit, the case of fulfillment is either on the speaker (*"word-to-world"* direction of fit) or on the recipient part (*"world-to-word"* direction of fit; Rakoczy & Tomasello, 2009).

Assertions can be in terms of factual (i.e., non-epistemic) claims, as well as epistemic claims. Epistemic *knowledge claims* (e.g., "I *know* that X") differ from non-epistemic *factual claims* (e.g., "This is an X!") in two crucial ways: First, whereas non-epistemic claims often imply that the speaker claims to possess knowledge about some state of affairs, "I know" statements indicate explicitly that the speaker claims to be knowledgeable with a high degree of confidence and commitment to his epistemic state (in contrast to other epistemic verbs, such as guess, think, suppose, etc.). And second, while non-epistemic claims may be directly assessed without necessarily requiring reference to other facts, knowledge claims are presumed facts about an unobservable (mental) world, which need to be assessed in relation to other facts (e.g., a speaker's perceptual access). Facts that speak in favor or disfavor of the claim put forward. The normative understanding is needed to evaluate whether an assertive speech act, that according to classical accounts, aims at truth (Dummett, 1959; Searle, 1969), meets a norm (Schmidt & Rakoczy, 2018a, 2018b). Thus, evaluating the validity of knowledge claims requires both basic normative and theory of mind abilities.

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## 1.2 Empirical Overview

The general aim of this dissertation was to examine the normative dimension of speech acts, including epistemic and moral aspects. For this reason, the following chapter provides an overview of empirical studies that examined the development of the understanding of both epistemic and normative states in childhood. In the first part of the chapter I will concentrate on studies on children's understanding of the seeing-knowing relation and epistemic trust. The second part of the chapter deals with studies on understanding both practical norms, with a special emphasis on moral transgressions in verbal and non-verbal actions and children's evaluation of claims.

### 1.2.1 Children's Understanding of Epistemic Phenomena

#### *1.2.1.1 Children's Understanding of the Seeing-Knowing Relation*

Children's understanding of the relation between seeing and knowing has been intensively investigated in the past and the results based on different paradigms (e.g., behavioral or verbal) are somewhat mixed. On the one hand, 2-year-olds, and even infants, are sensitive to others' informational access to critical events and modulate their descriptive expectations and communicative behavior accordingly (Baillargeon, Scott, & He, 2010; Liszkowski, Carpenter, Striano, & Tomasello, 2006; Liszkowski, Carpenter, & Tomasello, 2008; O'Neill, 1996; Poulin-Dubois, Sodian, Metz, Tilden, & Schoeppner, 2007; Sodian & Thoermer, 2008). Also, 2-year-olds talk about knowledge and ignorance (mainly in the first and second person) in social interactions (Harris, Ronfard, & Bartz, 2017; Harris, Yang, & Cui, 2017) – all of which may indicate more implicit awareness of others' epistemic states, which may not be sufficient for an

explicit judgment of whether a knowledge claim (with the propositional content that the speaker knows X) is right or wrong. On the other hand, there is evidence that it is not before three to four years of age that children show reliable competence in seeing-knowing tasks requiring them to explicitly attribute knowledge (or ignorance) to third parties who (do not) have visual access to some event or object (O'Neill et al., 1992; Pillow, 1989; Pratt & Bryant, 1990; Sodian & Wimmer, 1987; see Sodian et al., 2006 for converging evidence from a non-verbal task). Some studies suggest that when attributing knowledge and ignorance, 3-year-olds seem to have difficulty with systematically considering others' perceptual access to relevant events (perhaps especially when it does not match their own perceptual access), and, in contrast to older preschoolers, they may lack a firm understanding of the causal link between perception and knowledge formation (Marvin, Greenberg, & Mossler, 1976; Mossler, Marvin, & Greenberg, 1976; Povinelli & deBlois, 1992; Ruffman & Olson, 1989; Wimmer, Hogrefe, & Perner, 1988). For instance, Wimmer, Hogrefe, and Perner (1988) found that 3-year-olds had no issues with stating *that* they knew the identity of an object after having had visual access, but that they were unable to explain *how* (e.g., via visual access) they themselves or another person had acquired knowledge about some state of affairs. More generally, 3-year-olds might be limited in their ability to coordinate two (conflicting) "objective" aspects of a situation (e.g., individual mental states vs. rules; different types of rules; Kalish, 1998; Perner & Roessler, 2012; Schmidt, Hardecker, & Tomasello, 2016). Thus, they might have more difficulty with an epistemic mismatch (in which there are, prima facie, two "objective" facts that need to be reconciled: the fact that the speaker apparently knows X, and the fact that the speaker lacked visual access) than with a non-epistemic mismatch (in which there is only one "objective" fact, e.g., an agent's action, the speaker refers to directly; Rakoczy & Tomasello, 2009).

*1.2.1.2 Epistemic Trust*

In order to successfully learn from others and gain a robust and broad understanding of the world, children need to rely on testimony from others and to develop critical skills for differentiating between trustworthy and untrustworthy sources of knowledge (Mills, 2013; Sperber et al., 2010). Children willingly rely on other persons' testimony when learning new information, such as new words (Harris & Koenig, 2006). Much research on children's epistemic trust suggests that preschoolers are selective in their social learning and engage in epistemic vigilance (Sperber et al., 2010). Three- to 4-year-olds employ several criteria for deciding whom to trust. They track speakers' relevant characteristics, such as prior reliability, accuracy or confidence (Clément, 2010; Einav & Robinson, 2011; Harris, 2012; Koenig & Harris, 2005b; Nurmsoo & Robinson, 2009a, 2009b; Robinson & Nurmsoo, 2009; Stephens, Suarez, & Koenig, 2015) and consider age, familiarity and expertise of speakers (Corriveau & Harris, 2009; Corriveau et al., 2013; Jaswal & Neely, 2006), when deciding whom to learn from in social interactions. In addition they consider the number of informants making a given claim and prefer to learn new information provided by a group than an individual (Chen, Corriveau, & Harris, 2013; Corriveau, Fusaro, & Harris, 2009; Fusaro & Harris, 2008). Moreover, children prefer to learn from their own social (e.g., linguistic, racial) group and favor a speaker that speaks their native language with a native accent over a foreign-accented speaker when learning new words (Chen et al., 2013; Corriveau et al., 2013; Kinzler et al., 2011; Shutts, Banaji, & Spelke, 2009).

In the context of epistemic trust, findings are mixed as to whether children consider others' lack of perceptual access as a cause (and thus excuse) for making mistakes. When tasks focused on identifying hidden objects (i.e., episodic knowledge), three- to five-year-old children took into account an informant's previous inaccuracy (excused by a lack of perceptual access)

when deciding whether to trust the informant in a test situation in which the informant was better informed than the children (Nurmsoo & Robinson, 2009a, 2009b). When, however, the task was about generalizable information (i.e., semantic knowledge), such as labeling unfamiliar objects, three- to seven-year-old children ignored epistemic aspects (a speaker's perceptual access) and focused on prior accuracy when deciding whom of two speakers to trust (Nurmsoo & Robinson, 2009b). Thus, the type of social learning situation (e.g., semantic vs. episodic knowledge) may influence children's attention to, or consideration of, epistemic aspects, such as a speaker's perceptual access to relevant information.

**1.2.2 Children's Understanding of Normative Phenomena**

*1.2.2.1 Children's Understanding of Social Norms*

Developmental research over the past couple of decades has accumulated much evidence that preschoolers and, to some extent, even very young children understand much about the moral dimension of others' actions (Hamlin, 2013; Killen & Smetana, 2015; Rottman & Young, 2015; Schmidt & Tomasello, 2012; Sommerville & Enright, 2018; Turiel, 2006). Interview studies show that older preschoolers, around the age of five, recognize that it is possible to violate conventional norms such as "Children cannot take a bath with their shoes", but not physical laws such as "Little children cannot grow beards" (Kalish, 1998). Most prominently, a bulk of interview studies based on social domain theory suggests that preschoolers reliably differentiate between moral norms (e.g., norms forbidding violent behavior, such as hitting) and conventional norms (e.g., norms prescribing appropriate clothing, such as not wearing pajamas to school), judging that – compared with conventional violations – moral transgressions are more severe, more deserving of punishment, more widely applicable and independent of authority demands (Killen & Smetana, 2015; Smetana, Jambon, & Ball, 2014; Turiel, 2006). Another line of research focused on children's disinterested enforcement of norms in social interactions and found that from around three years of age, children spontaneously protest and criticize agents who violate conventional norms, such as (agreed-upon) simple game rules (Rakoczy, 2008; Rakoczy, Warneken, & Tomasello, 2008; Schmidt, Rakoczy, Mietzsch, & Tomasello, 2016), and agents who commit moral transgressions, such as violating others' rights or harming others (Rossano, Rakoczy, & Tomasello, 2011; Schmidt, Rakoczy, & Tomasello, 2012; Schmidt et al., 2013; Vaish, Missana, & Tomasello, 2011). Furthermore, children at the age of five differentiate

between moral and conventional norm violations by showing different degrees of emotional responses. That is, they report moral violations much more often than conventional violations as well as display a stronger emotional response to moral violations than to conventional transgressions (Hardecker, Schmidt, Roden, & Tomasello, 2016).

And from around three to five years of age, children do not just reject and negatively evaluate harmful physical actions, but also show some understanding of intrinsically harmful verbal actions that produce psychological harm (typically given the content of the speech act), such as name-calling or teasing (Ball, Smetana, & Sturge-Apple, 2017; Helwig, Zelazo, & Wilson, 2001; Smetana et al., 2012), or "epistemic harm" (given the speaker's deceptive intent to instill a false belief in the listener), such as lying and deceiving (Bussey, 1999; Glätzle-Rützler & Lergetporer, 2015; Lyon, Quas, & Carrick, 2013; Marsili, 2016; Peterson, Peterson, & Seeto, 1983; Wiegmann, Samland, & Waldmann, 2016; Wimmer, Gruber, & Perner, 1984, 1985). Together, these studies using different methodologies equally suggest that at preschool age, children understand much about the moral dimension of intrinsically harmful non-verbal and verbal actions.

Ever since Piaget's (1932) seminal work, researchers were interested in whether children put more weight on the consequences of an agent's morally relevant action or on the agent's mental states, such as intention, when evaluating the moral valence of an act. While Piaget was clear that children begin with outcome-based evaluations and only later consider others' intentions in their moral evaluation, more recent research produced heterogeneous results. Whereas some researchers suggest that even school-aged children tend to give more weight to outcomes than to intentions (Costanzo, Coie, Grumet, & Farnill, 1973; Cushman, Sheketoff, Wharton, & Carey, 2013; Gummerum & Chu, 2014; Helwig et al., 2001; Yuill, 1984; Zelazo,

Helwig, & Lau, 1996), others found that when using simplified procedures (e.g., simpler vignettes) or controlling for confounding factors (e.g., the action of the well-intended and the ill-intended actors led to the same outcome), even four- to five-year-old (and in some work, even three-year-old) children consider an agent's intention (Baird & Astington, 2004; Chandler, Greenspan, & Barenboim, 1973; Gvozdic, Moutier, Dupoux, & Buon, 2016; Killen et al., 2011; Nelson, 1980; Nobes, Panagiotaki, & Bartholomew, 2016; Nobes, Panagiotaki, & Pawson, 2009; Vaish, Carpenter, & Tomasello, 2010). A recent study (Josephs, Kushnir, Gräfenhain, & Rakoczy, 2016) demonstrated that four-year-old (and to some extent even three-year-old) children take into account an agent's intentionality (freedom of choice) and protested more when a moral transgression occurred under free conditions than if it occurred under constrained ones. For conventional violations, however, children tended to put more weight on outcomes.

When it comes to explicitly evaluating others' morally relevant actions, children begin to consider the importance of intentions by around four to five years of age (Nelson, 1980; Nobes et al., 2016), which coincides with children's becoming competent at false belief tasks (Perner & Roessler, 2012). Recently, Killen and colleagues (2011) investigated 3.5- to 7.5-year-old children's understanding of intentions in a morally relevant context – morally relevant theory of mind. In tasks addressing morally relevant theory of mind, children receive vignettes in which a "transgressor" accidentally causes harm to another person (e.g., accidentally throws a bag with another person's cupcake away). Children who failed classical false belief tasks were more likely to attribute bad intentions to an accidental transgressor and to accept his punishment than children who passed the false belief task. Overall, children began to take into account the transgressor's intention between 3.5 and 5.5 years of age.

In a nutshell, research on children's understanding of normativity shows that even young children have a basic understanding of normative phenomena. Their behavior shows that they understand the key features of normativity (standards of correctness, generality context relativity and normative force) and consider complying with norms important.

## 1.2.2.2 Children's Understanding and Evaluation of Others' Claims

Past work has focused on whether children, or even infants, categorize others' speech acts as correct or incorrect or, at minimum, as statistically expectable or not. Besides testimonial situations in which children face the epistemological problem whom to trust and cannot verify speakers' claims directly, there are also more "objective" situations in which children are in a position to immediately assess the validity of speakers' assertions (Koenig et al., 2015). For instance, when others make simple non-epistemic claims (i.e., without the form "I know") about some state of affairs (e.g., "This is an X!"), even infants are sensitive to whether a speaker labels an object correctly indicated by increased looking time (Koenig & Echols, 2003), and 2-year-olds spontaneously reject those assertions if they do not match reality (e.g., "Peter is eating the cake" when Peter instead is eating a carrot; Pea, 1982). From around three years of age then, children begin to differentiate between different types of speech acts with different directions of fit (Anscombe, 1957; Searle, 1969), and direct their criticism accordingly to speakers who do not describe observable reality correctly (by non-epistemic assertion, *"word-to-world"* direction of fit) and to actors who do not perform actions as prescribed (by imperative, "*world-to-word*" direction of fit; Rakoczy & Tomasello, 2009). That is, even young children understand that assertive speech acts should describe the present reality correctly and assertions can be assessed as to whether they match reality, whereas imperative speech acts are aimed at changing the reality (e.g., has someone performed a certain action). At the same age, children can identify persons that say something correct or say something wrong and distinguish correct from incorrect statements (Koenig et al., 2004; Lyon et al., 2013).

From around four years of age, children reject future-directed assertions (predictions) that do not hold up to reality (Lohse, Gräfenhain, Behne, & Rakoczy, 2014). Moreover, when hearing

non-epistemic claims (e.g., "Pangolins are brown"), preschoolers (in particular, 3-year-olds) tend to attribute knowledge rather to a speaker whose assertion is objectively verifiable (e.g., via an agent's visible properties) than to a speaker whose claim is not directly verifiable (Koenig et al., 2015). And when adults' assertions are in conflict with what children have just experienced (given objectively accessible information), young preschoolers (2- to 3-year-olds) seem to have difficulty in rejecting or not basing their actions on those assertions, and are thus, perhaps overly trusting (Jaswal, 2010; Jaswal, Croft, Setia, & Cole, 2010). Individual differences in inhibitory control may at least in part explain young children's potential bias to trust others' testimony (Jaswal et al., 2014).

Research on understanding of promises showed that at the age of seven, children understand that speakers can be held responsible for broken promises, but not for unfulfilled predictions (Astington, 1988). Furthermore, younger children fail to make correct promise judgments, due to the fact that they focus too much on the outcome and thus, do not recognize that broken promises are nonetheless promises regardless to the reason for their failure (Maas & Abbeduto, 2001). However, Maas (2008) showed in his study that already 4-year-olds can judge whether an assertion is a lie. But it is not before the age of six that children are able to make judgments concerning promises. Furthermore, the author found that the ability to judge whether an assertion is a promise correlates with children's false belief understanding.

## 1.3 Focus of the Dissertation and Methodological Approach

The general aim of the dissertation was to examine children's understanding of the normative dimensions of speech acts and its relation to child's development of epistemic- and norm-psychology. To this end, three research questions were addressed: (1) Are children proficient to judge the validity of knowledge claims being correct or incorrect? (2) Do children understand the notion of epistemic entitlements of speech acts (i.e., being entitled to assert a justified claim)?, and (3) Do children appreciate the moral dimension of factual claims?

These three research questions need to be answered in order to fully comprehend children's developing understanding of speech acts. The following chapters will present three empirical studies on children's understanding of the normative dimensions of speech acts, aiming to give answers to these questions.

Study 1 investigated 3- to 5-year-olds' understanding of knowledge claims ("I know where X is!") and pursued the question whether children would reliably accept correct knowledge claims as well as reliably reject incorrect knowledge claims given objectively accessible information (about whether the speaker had perceptual access to a critical event). If children showed this pattern, it would give support to the proposal that children understand knowledge claims and are able to verify the accuracy of false claims to knowledge. In this study the age group of younger preschoolers from 3 to 4.5 years of age and older preschoolers from 4.5 to 5 years were chosen to be investigated, because potentially important conceptual and performance skills, such as theory of mind, executive control, and norm understanding are needed to accomplish this task, which develop from around 4 to 4.5 years of age (Garon, Bryson, & Smith, 2008; Perner & Roessler, 2012; Schmidt, Rakoczy, et al., 2016; Wellman, Cross, & Watson, 2001).

Study 2 aimed to explore three- and five-year-old children's understanding of the normative force of epistemic and non-epistemic entitlements. Study 2a investigated children's ability to enforce the speaker's entitlement to make a justified claim (epistemic task) or a factual claim that reflects immediate reality (non-epistemic task), respectively. If children understand and defend epistemic entitlements of others, this would provide further evidence that children begin to develop at a very young age a mature understanding of normativity. The objective of Study 2b was to examine whether three-year-old children understand non-epistemic entitlements. In study 2a we chose to investigate the performance of three- and five-year-old children. The reason for choosing these two age groups was twofold. First, we know from a former study that children at the age of three can distinguish between speech acts that are true and wrong (Rakoczy & Tomasello, 2009), so at this age they should understand the non-epistemic task (i.e., the entitlement to claim true things). Second, a study by Schmidt and colleagues (2013) showed that children understand practical entitlements at the age of three. However, our epistemic task is much more complicated, since children have to understand the entitlement to make claims that are based on objective facts that cannot be reconciled directly with reality, but one has to understand that ownership means to know specific things. Furthermore, to accomplish this task it seems important to have the ability to adopt another person's subjective perspective, which develops from around 4.5 to 5 years (Perner et al., 1989). Therefore, we expected children to understand epistemic entitlements not until the age of five.

Finally, Study 3 reports two experiments, which investigated children's understanding of the moral dimension of factual claims. Study 3a asked whether children evaluate a puppet's factual claim depending on anticipated consequences, that is, do they evaluate the claim more negatively when it would lead to harmful versus harmless consequences. Study 3b looked at

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children's ability to consider the puppet's intention above harmful consequences when evaluating an incorrect factual claim. In Study 3 we investigated four- to five-year-old children. The reason was that when it comes to explicitly evaluating others' morally relevant actions, children begin to consider the importance of intentions by around four to five years of age (Nelson, 1980; Nobes et al., 2016). Furthermore, evaluating others' morally relevant factual claim is far more complicated, since children need to coordinate both consequences (e.g., harmful vs. harmless) and intentions (e.g., good vs. bad) regarding consequences. For intentions, in particular, children are required to use both their normativity and theory of mind skills (Killen & Smetana, 2008; Perner et al., 1989; Rizzo & Killen, 2014; Schmidt & Rakoczy, 2018a).

The methodological approach for assessing the three research questions was conducted both with interview studies (Study 1 and 3) and in Study 2 with a behavioral counter-protest paradigm. This paradigm allows for the most convincing evidence for an understanding of entitlement, that is, a third-party situation, in which children have the opportunity to defend the speaker's right (e.g., to assert true things) against someone who violates these entitlements (Schmidt et al., 2013). In all studies hand puppets performed the key speech acts. Using hand puppets had two reasons. First, it aimed to exclude the possible influence of the experimenter's authority, and second, it allowed examining children's spontaneous linguistic and non-linguistic interventions (Study 2).

**Study 1: Understanding and Evaluating Knowledge Claims**

## Abstract

As epistemic and normative learners, children are dependent on their developing skills for evaluating others' claims. This competence seems particularly important in the current digital age in which children need to discern valid from invalid assertions about the world in both real-life and virtual interactions to ultimately gather and accumulate robust knowledge. We investigated whether younger and older preschoolers ($N = 48$) understand that a speaker's knowledge claim ("I know where X is") may be correct or incorrect given objectively accessible information (about whether the speaker had perceptual access to a critical event). We found that both younger and older preschoolers accepted correct knowledge claims that matched observable reality, but that only older preschoolers reliably rejected incorrect knowledge claims that did not match reality (the speaker lacked perceptual access). Nevertheless, a considerable proportion of younger preschoolers both rejected incorrect knowledge claims and gave valid explanations, suggesting that the ability to scrutinize epistemic claims develops gradually from around 3 to 4 years of age. These findings may help integrate research on children's norm and theory of mind development.

*Key words*: Evaluating claims, Speech acts, Trust, Social-cognitive development, Epistemic learning, Normativity, Knowledge, Theory of mind

## 2.1 Introduction

In their everyday social interactions, children are confronted with different types of speech acts many of which are assertions about the world. Clearly, assertions do not exist in a descriptive vacuum, but are an inherent part of socio-normative practices and thus subject to being challenged, scrutinized, and subsequently accepted or rejected (Brandom, 1994; Sellars, 1963).

In many situations, children cannot verify claims directly, but need to rely on testimony others provide. Much research suggests that they often do so in competent and selective ways, for instance, by paying attention to cues of trustworthiness, such as reliability and accuracy (Harris, 2012; Jaswal et al., 2010; Koenig et al., 2004; Koenig & Harris, 2005a, 2005b; Nurmsoo & Robinson, 2009a; Robinson, Butterfill, & Nurmsoo, 2011; Stephens et al., 2015). On the other hand, however, children (and, in some contexts, even adults) also seem to have a tendency to uncritically accept testimony, even when it contradicts what they have perceived or learnt (Gilbert, Krull, & Malone, 1990; Jaswal, 2010; Jaswal et al., 2010, 2014). And so it seems vital for children to develop skills for assessing the validity of others' claims in light of their own experience, beliefs, and knowledge. Perhaps particularly important in our digital age in which we need to navigate the jungle of apparent facts and claims coming from many different sources are *epistemic claims*: others' claims about *knowing* some state of affairs (e.g., "I know that X!"). One reason for the importance of scrutinizing *knowledge claims* is that they encompass both the immediate evaluation of the validity of the proposition and the potential to categorize someone as a trustworthy epistemic source given that a knowledge claim, if correct, provides evidence for such trustworthiness. To assess a speaker's knowledge claim as correct or incorrect in a factual context in which a speaker's perceptual access to a critical event is key, children need to possess at least two conceptual skills: (i) a rudimentary epistemological understanding, for instance, that

perception (one major epistemic source) plays a causal role – not just an associative one – in knowledge formation, as evidenced most clearly by using perceptual access (or lack thereof) as an explanation for why someone knows or does not know X (O'Neill et al., 1992; Wimmer, Hogrefe, & Perner, 1988; Wimmer, Hogrefe, & Sodian, 1988); and (ii), a rudimentary normative capacity (that makes use of the former ability).

In the current study, our goal was to investigate whether preschoolers understand that a speaker's knowledge claim (about the location of an object, "I know where X is!") may be valid or invalid, that is, correct or incorrect given observable reality (or "factual truth", i.e., objectively accessible information).[1] In the study children witnessed a speaker who had or did not have perceptual access to a critical hiding event, thus making her subsequent knowledge claim correct or incorrect given the epistemic consequences (knowledge vs. ignorance) that follow from observable reality. We chose to investigate younger preschoolers from 3 to 4.5 years of age and older preschoolers from 4.5 years onwards, because – as explicated above – potentially important conceptual and performance skills related to theory of mind, executive control, and norm understanding develop from around 4 to 4.5 years of age (Garon et al., 2008; Perner & Roessler, 2012; Schmidt, Rakoczy, et al., 2016; Wellman et al., 2001).

We predicted that both younger and older preschoolers would reliably accept correct knowledge claims, but that only older preschoolers would reliably reject incorrect knowledge claims, given younger preschoolers' difficulty with understanding the causal link between seeing and knowing, with coordinating conflicting "objective" aspects simultaneously (i.e., an epistemic

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[1]Note that one could use the opposite pair "justified-unjustified" instead of "correct-incorrect" when discussing the validity of epistemic claims. Since we are interested in one of the clearest cases of evaluating knowledge claims against objectively accessible information (facts), we use the correct-incorrect distinction here.

mismatch situation), and with inhibiting prepotent responses. Moreover, based on the hypothesized importance of a causal understanding of the role of perception in knowledge formation, we predicted that children who reject incorrect knowledge claims are more likely to provide adequate explanations (e.g., lack of perceptual access) for why a speaker does not know something than children who accept incorrect knowledge claims.

The broader aim of this work is to help integrate research on children's norm and theory of mind development. That is, previous research children's developing norm psychology has mainly dealt with children's understanding of practical norms, such as conventional or moral norms (Schmidt & Tomasello, 2012; Turiel, 2006), and the theory of mind literature has predominantly focused on children's understanding of mental states and of processes of knowledge acquisition (Kuhn, Cheney, & Weinstock, 2000; Miller, Hardin, & Montgomery, 2003; Perner & Roessler, 2012; Wellman & Liu, 2004). The evaluation of knowledge claims in the current study, however, required children to use both their theory of mind abilities (understanding perception as a source of knowledge) and basic normative capacities (categorizing a claim as correct or incorrect given some standard, such as observable reality).

## 2.2 Method

### Participants

Forty-eight younger ($n = 24$; 36-54 months; $M = 4$ years, 0 months; 12 girls) and older ($n = 24$; 55-71 months, $M = 5$ years, 1 months; 12 girls) preschoolers participated in the study. Children came from mixed socio-economic backgrounds from a large German city and were recruited via urban daycare centers (in which testing took place). Parents provided written

informed consent. Three additional children were tested, but excluded because of language and comprehension difficulties (1) or experimenter error (2).

**Design**

In a within-participants design, all children received a knowledge claim task with two counterbalanced conditions: a perceiving and a non-perceiving puppet. The knowledge claim task was preceded by a warm-up session (playing with a ball). In the knowledge claim task, the order of the puppet speaking first was counterbalanced between children for each age group. Moreover, the perceiving and non-perceiving puppet's position and the location of the hidden object (left vs. right from the child's viewpoint) were counterbalanced between children for each age group.

**Procedure**

Two experimenters conducted the study: E1, the coordinator, and E2, who operated the two puppets (seal and owl). The child, E1, and E2 sat at a table. E1 sat to the child's left, and E2 sat vis-à-vis to the child (thus the child faced the two puppets).

In the knowledge claim task, E1 first presented two boxes and a gem. To engage the child in the task, E1 told the child that the gem was a gift for the child. Then she announced that she was going to put the gem in one of the boxes, asking the child to pay attention to whether the two puppets really knew where the gem was ("These are my boxes and here I have a gem. The gem is for you [referring to the child]. I will put it in one of the boxes and you [referring to the child] have to pay attention whether they [puppets] really know where the gem is."). This was followed by the non-perceiving puppet being turned around by E1 such that the puppet's back faced the table and the puppet could not "see" the upcoming events. Both E1 and the non-perceiving

puppet explained to the child that the puppet did not "see" anything at all (E1: "The puppet (e.g., owl) is going to turn around and does not see anything at all. Look, the owl does not see what we are doing!"; non-perceiving puppet: "Yes, I do not see what you are doing!"). Then E1 put the gem in one of the two boxes. The perceiving puppet then looked ostensively and made an affirming interjection ("Ah!"), to make clear that the perceiving puppet saw in which box E1 put the gem. Then the non-perceiving puppet was turned around by E1 such that it faced the table again. Importantly, during the whole introductory phase, no epistemic vocabulary was used to have children evaluate independently whether the speaker knew or did not know some state of affairs.

Thereon one of the puppets (counterbalanced) made a knowledge claim ("I know where the gem is."), followed by E1 asking the child to evaluate (accept or reject) the knowledge claim, "Does the owl know where the gem is?". Then E1 prompted the child to explain her answer ("And why does the owl (not) know?"). This procedure was then repeated with the second puppet.

## Coding and Reliability

All sessions were transcribed and coded from videotape by a single observer. A second independent observer, blind to the hypotheses and conditions of the study, transcribed and coded a random sample of 25% of all sessions for reliability.

Children's evaluation of the knowledge claims (dichotomous variable: positive or negative response to E1's question), and their explanation of their judgment were coded. Children's explanations of their evaluation ("And why does he (not) know?") were considered as valid explanations, if they referred directly or indirectly to the puppet's perceptual state (e.g.,

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"Because she saw it.", for the perceiving puppet; e.g., "Because she did not see it", "Because she turned around", for the non-perceiving puppet). Other responses considered invalid were incorrect references to the puppet's perceptual state (e.g., "She [the perceiving puppet] did not see it."), references to reality (e.g., "It is in the red box."), circular explanations (e.g., "She just knows it."), irrelevant explanations (e.g., "Because she has good eyes."), or no explanation (including "Don't know"). Interrater reliability was very good, Cohen's $\kappa = 1$ (evaluation of knowledge claims), $\kappa = 1$ (explanation).

**Statistical Analysis**

Statistical Analysis were run in R, version 3.3.2 (R Core Team, 2016). To account for the non-independence of the data (i.e., repeated observations per child), we used Generalized Linear Mixed Models (GLMM) with binomial error structure for comparing children's performance in the two conditions (perceiving, non-perceiving) separately for each age group (Baayen, Davidson, & Bates, 2008; Bates, Maechler, Bolker, & Walker, 2013). Unstandardized parameter estimates (b), standard errors, 95% confidence intervals (CIs), and odds ratios (ORs) were obtained from the full model. Models included condition and gender as fixed effects and participant as a random effect. We tested for the effect of condition by comparing the fit of the full model (including all fixed and random effects) with the fit of a reduced model (without condition) using a likelihood ratio test (Dobson, 2002). There were no significant effects of gender. Two children from the younger age group did not respond to the evaluation question on one trial each (thus, they could not be asked for explanation). Therefore, analyses per condition were based on 23 younger and 24 older children.

## 2.3 Results

**Evaluation of Knowledge Claims**

Figure 1 depicts the proportion of children accepting the perceiving and non-perceiving puppets' knowledge claims. We predicted age differences in the non-perceiving condition only. Thus, we first conducted a binomial GLM on children's acceptance of the non-perceiving puppet's knowledge claim with age as a continuous predictor (z-transformed). We found a significant effect of age, $\chi^2 (1) = 11.36$, $p < .001$, suggesting that younger preschoolers were more likely to accept the non-perceiving puppet's knowledge claim than older preschoolers. To test whether the proportion of children accepting each knowledge claim was significantly different from chance (.50), we conducted planned exact binomial tests (two-tailed). Older preschoolers reliably accepted knowledge claims by the perceiving puppet (96% of children, $p < .001$), and reliably rejected knowledge claims by the non-perceiving puppet (88%, $p < .001$). Younger preschoolers, however, reliably accepted knowledge claims by the perceiving puppet (96%, $p < .001$), but performed at chance level for the non-perceiving puppet (56%, $p = .68$). Nevertheless, both younger and older preschoolers were more likely to accept knowledge claims by the perceiving puppet than by the non-perceiving puppets as indicated by two binomial GLMMs: younger children, $\chi^2 (1) = 11.06$, $p < .001$, $b = 2.86$, $SE = 1.11$, CI [1.04, 5.84], $OR = 17.54$; older children, $\chi^2 (1) = 39.81$, $p < .001$, $b = 5.08$, $SE = 1.19$, CI [3.11, 8.16], $OR = 160.93$.

In the younger age group, 11 children accepted both types of claims (suggesting a yes bias), no child rejected both types of claims (suggesting a no bias), 10 children accepted the correct, and rejected the incorrect, knowledge claim (correct response pattern), and 1 child showed the opposite pattern, exact McNemar's test, $p = .012$. In the older age group, 2 children accepted both types of claims, no child rejected both types of claims, 21 children accepted the

correct, and rejected the incorrect, knowledge claim, and 1 child showed the opposite pattern, *p* <.001.
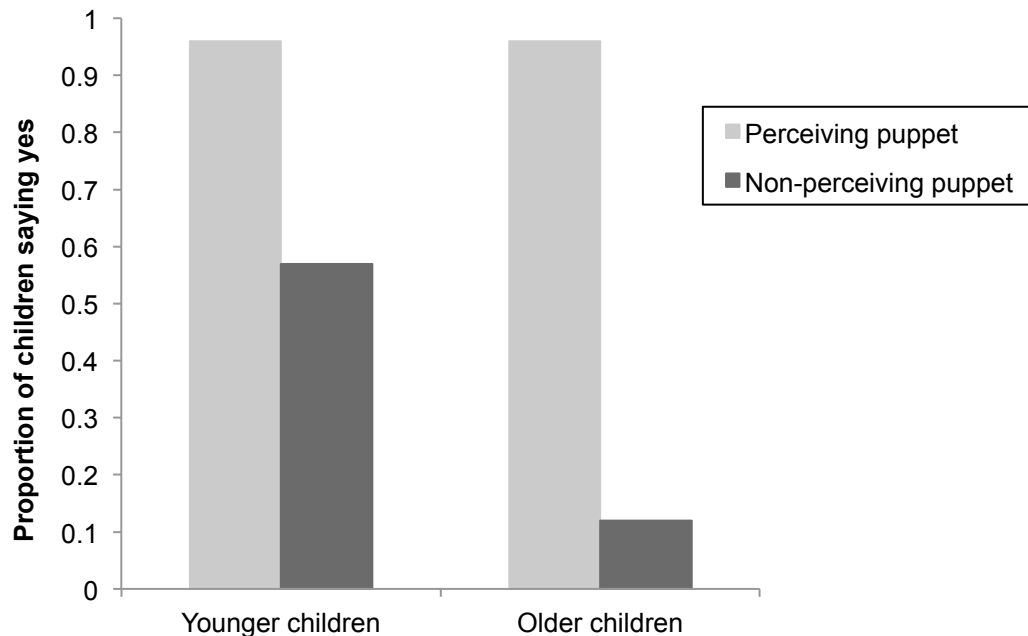


*Figure 1.* Proportion of children accepting the knowledge claims of the perceiving and non-perceiving puppet.

To obtain a more precise view of developmental patterns in preschoolers' evaluation of incorrect knowledge claims in the non-perceiving condition, we subdivided the age groups into 3-year-olds (*n* = 13; range = 3.0-4.1), young 4-year-olds (*n* = 10; range = 4.2-4.6), old 4-year-olds (*n* = 14; range = 4.7-5.1), and 5-year-olds (*n* = 10; range = 5.2-5.11)[2], and conducted four binomial tests. Sixty-nine percent of 3-year-olds (*p* = .27), 40% of young 4-year-olds (*p* = .75), 14% of old 4-year-olds (*p* = .01), and 10% of 5-year-olds (*p* = .02) accepted the non-perceiving

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[2] Condition (perceiving, non-perceiving puppet) was roughly evenly counterbalanced for these subgroups: 57% of 3-year-olds, 40% of young 4-year-olds, and 50% of both old 4-year-olds and 5-year-olds received the non-perceiving condition first.

puppet's knowledge claim. Moreover, 3-year-olds and young 4-year-olds were equally likely to accept the non-perceiving puppet's knowledge claim, Fisher's exact test, $p = .22$, but old 4-year-olds were more likely than 3-year-olds to reject the non-perceiving puppet's knowledge claim, $p = .006$.

**Explanations**

Children were also prompted to explain their evaluation. Valid explanations were direct and indirect references to the puppet's perceptual state (e.g., seeing, non-seeing). All other explanations (e.g., references to reality, i.e., the location of the hidden object) or lack of clear explanations were considered invalid (see Coding and Reliability for details). For the perceiving puppet (see Table 1), valid explanations were given by 21 of 24 older children (88%), and by 12 of 23 younger children (52%). For the non-perceiving puppet (see Table 1), valid explanations were given by 19 of 24 older children (79%), and by 10 of 23 younger children (43%).

With respect to the four age subgroups (see above), 31% (perceiving condition) and 31% (non-perceiving condition) of 3-year-olds referred to reality in their explanations, whereas none of the older age subgroups did. Only a few children gave incorrect references to the puppet's perceptual state and this occurred only in the non-perceiving condition (7% of old 4-year-olds and 10% of 5-year-olds). Independent of condition, irrelevant answers were given by 21% of 3-year-olds, 20% of young 4-year-olds, 7% of old 4-year-olds, and no 5-year-old, and no answer was given by 29% of 3-year-olds, 20% of young 4-year-olds, 21% of old 4-year-olds, and no 5-year-old.

**Relation Between Evaluation of Knowledge Claims and Explanation**

Across age, there were no significant associations between children's evaluation of the perceiving puppet's knowledge claim and the validity of their explanation (Table 1), Fisher's exact tests, *and p's* > .47. However, as predicted, there were significant associations between children's evaluation of the non-perceiving puppet's knowledge claim and the validity of their explanation (Table 1): younger children, $p = .039$, $\varphi = .47$; older children, $p = .005$, $\varphi = .74$, such that children who rejected the non-perceiving puppet's knowledge claim were more likely to give valid explanations, whereas children who accepted the non-perceiving puppet's knowledge claim were more likely to give invalid explanations (but note that only a few older children gave invalid explanations). Moreover, 7 younger (1 of 12 three-year-olds and 6 of 10 young 4-year-olds) and 17 older preschoolers evaluated both knowledge claims (perceiving and non-perceiving puppet) correctly and gave valid explanations in both conditions. Finally, for younger preschoolers who accepted both types of claims (a yes bias pattern), 2 children gave valid explanations in both conditions, 2 children gave valid explanations for the perceiving puppet and invalid explanations for the non-perceiving puppet, 1 child showed the opposite pattern, and 6 children gave invalid explanations in both conditions.

Again, to obtain a more precise view of younger preschoolers' performance in the non-perceiving condition, we assessed 3-year-olds' and young 4-year-olds' (same subgroups as above) performance (Table 1). There was no significant association between evaluation of the non-perceiving puppet's knowledge claim and the validity of children's explanation for 3-year-olds, Fisher's exact test, $p = 1$, but we found a significant association for young 4-year-olds, $p = .03$, $\varphi = .80$.

Table 1

*Association Between Evaluation and Explanation*

| | | | Perceiving Explanation | | Non-perceiving Explanation | |
|---|---|---|---|---|---|---|
| | | | Valid | Invalid | Valid | Invalid |
| Preschoolers' age Younger (3- to young 4-year-olds) | Evaluation | Accept | 12 | 10 | 3 | 10 |
| | | Reject | 0 | 1 | 7 | 3 |
| | | | Valid | Invalid | Valid | Invalid |
| Older (old 4- to 5-year-olds) | Evaluation | Accept | 20 | 3 | 0 | 3 |
| | | Reject | 1 | 0 | 19 | 2 |
| Age subgroups | | | | | | |
| | | | Valid | Invalid | Valid | Invalid |
| 3-year-olds | Evaluation | Accept | 4 | 8 | 2 | 7 |
| | | Reject | 0 | 1 | 1 | 3 |
| | | | Valid | Invalid | Valid | Invalid |
| Young 4-year-olds | Evaluation | Accept | 8 | 2 | 1 | 3 |
| | | Reject | 0 | 0 | 6 | 0 |

## 2.4 Discussion

In today's digital age, the ability to scrutinize apparent facts and claims seems more important than ever. Besides non-epistemic claims about facts (e.g., "This is an X!"), people often make epistemic claims (e.g., "I know that X!"), explicitly suggesting that they know a certain state of affairs – a claim that can be correct or incorrect. This study investigated children's developing understanding of the validity of knowledge claims, an important aspect of their norm and theory of mind development. Children witnessed a speaker claiming knowledge about the location of a hidden object ("I know where X is!"), and we varied the speaker's prior perceptual access to the critical hiding event. When the speaker had seen the hiding event, both younger and older preschoolers predominantly accepted the speaker's knowledge claim. When the speaker had not seen the hiding event, however, only older preschoolers reliably rejected the speaker's

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knowledge claim while younger children performed at chance level. Nonetheless, even younger preschoolers (from 4 years onwards) who rejected the speaker's incorrect knowledge claim mostly gave valid explanations for why the speaker does not know X, suggesting that the ability to evaluate epistemic claims develops gradually from around 3 to 4 years of age.

These findings go beyond prior research on children's norm understanding, epistemic trust, and early epistemology by introducing the challenge to assess someone's knowledge claim – an apparent "objective" fact – considering observable reality (previous perceptual state including epistemic consequences) that supports or conflicts with the claim. For instance, 3-year-olds readily reject incorrect non-epistemic assertions (e.g., "This is an X"; Pea, 1982; Rakoczy & Tomasello, 2009), but the current work investigated epistemic assertions and suggests that it is not until 4 to 5 years of age that children reliably reject incorrect knowledge claims. This result may be, in part, due to the fact that epistemic claims are more complex than non-epistemic claims: In our study, children had to coordinate and reconcile two competing "objective" facts in cases of epistemic mismatch (the fact that the speaker apparently knows X, and the fact that the speaker lacked visual access), something that younger preschoolers seem to have trouble with (Kalish, 1998; Perner & Roessler, 2012; Schmidt, Hardecker, et al., 2016). Note that we did not investigate children's normative understanding in the deontic or axiological sense here, that is, their judgment or expectation that a speaker ought to make correct or even justified claims (or else be blamed, etc.), or that it is bad to make incorrect epistemic claims. Rather, we tested for children's ability to evaluate whether an assertion (with the propositional content that the speaker knows X) is correct or incorrect (according to the norm of truth), that is, whether it matches the epistemic inference (knowledge vs. ignorance), which follows from observable reality (the speaker's perceptual access or lack of perceptual access). Thus, correctness here is evaluated in a

factual context and refers to the content or the object of the speech act, but not to the very act of uttering the speech act with a certain content (B. A. O. Williams, 2002). Our study may help integrate the normativity and theory of mind literatures. That is, normativity research has mostly focused on children's evaluation of others' actions (e.g., in a game or moral context; Schmidt & Tomasello, 2012; Turiel, 2006), and research on theory of mind and early epistemology has mostly focused on children's attribution of mental states, prediction of others' actions, and conditions for knowledge formation (Kuhn et al., 2000; Miller et al., 2003; Perner & Roessler, 2012; Wellman & Liu, 2004; Wellman & Miller, 2008). In our study, however, children were required to consider others' potential epistemic relation to the world (making use of their theory of mind abilities) and to assess the validity of an epistemic claim (making use of both their basic normative and theory of mind abilities).

Our findings also fit with prior work on epistemic trust suggesting that young preschoolers around 3 years of age may be overly credulous when adults' non-epistemic claims conflict with their own experience (Jaswal, 2010; Jaswal et al., 2010, 2014). It is possible that younger preschoolers who accepted incorrect knowledge claims took the non-perceiving puppet's speech act at face value and then had issues coming up with an adequate explanation for their positive evaluation (in particular, 3-year-olds often referred to reality, e.g., "It is in the red box"). Interestingly, younger children (mainly 3-year-olds) who showed a "yes bias" (accepting both types of knowledge claims) often gave invalid explanations for both incorrect and correct knowledge claims. And while 3-year-olds' evaluation of incorrect knowledge claims was not related to the validity of their explanations, we found systematic individual differences in young 4-year-olds: children who rejected incorrect knowledge claims tended to provide valid explanations, whereas children who accepted incorrect knowledge claims tended to provide

invalid explanations. And about two-thirds of young 4-year-olds both evaluated the two types of knowledge claims correctly and gave valid explanations for both claims. Thus, younger preschoolers' chance performance for incorrect knowledge claims suggests that mixed results from previous research on children's understanding of the seeing-knowing relation may be the result not only of methodical differences, but of a conceptual deficit at the group level (e.g., an immature understanding of the causal connection between seeing and knowing) or of a performance deficit with large individual differences (e.g., in inhibitory control), or both.

One might wonder whether younger preschoolers' difficulty with evaluating incorrect knowledge claims condition was mainly driven by their difficulty with understanding the causal connection between seeing and knowing or perhaps also with evaluating knowledge claims per se. Three points are important in this respect.

First, younger preschoolers reliably accepted correct knowledge claims in the perceiving condition and, as a group, were responsive to the puppets' perceptual access, showing more acceptance of correct versus incorrect knowledge claims. This suggests that younger preschoolers were able to competently assess correct knowledge claims (when the claim matched the observed facts) and that they were not just blindly accepting the invalid knowledge claim in the non-perceiving condition. Hence, they did not have issues with evaluating knowledge claims per se (and did not just show a "yes bias" across conditions).

Second, younger preschoolers did not reliably reject incorrect knowledge claims but performed at chance level, which, at the individual level, could be a result of uncertainty or of truly understanding that the knowledge claim was incorrect. Our findings that 3-year-olds' evaluation of incorrect knowledge claims was unrelated to the validity of their explanation, but that young 4-year-olds' evaluation of knowledge claims was systematically related to their

explanations, suggests that 3-year-olds have severe difficulty with the causal understanding of seeing and knowing and that developmental change occurs from around four years of age. These results are in line with findings suggesting that 4-year-olds perform better at attributing ignorance than 3-year-olds (Friedman et al., 2003; Hogrefe, Wimmer, & Perner, 1986). Nevertheless, future work could use the current paradigm and omit the puppets' knowledge claims to differentiate more directly between children's causal understanding of seeing and knowing and their ability to assess knowledge claims in the present seeing-knowing context.

And third, from a theoretical perspective, the evaluation of a knowledge claim, qua definition, presupposes the ability to assess information or evidence that speak in favor or disfavor of the claim put forward. And here, understanding perception as a source of knowledge is key. And if younger preschoolers have performance issues with handling two types of putative facts (the knowledge claim and the puppet's prior lack of perceptual access), they, one could argue, become competence issues in the case of the evaluation of knowledge claims. This is because such an evaluation is a normative capacity that necessitates the ability to compare an action (the knowledge claim) with some standard (observable reality, the facts) and to infer whether the claim is correct or incorrect given objectively accessible information (Schmidt & Rakoczy, 2018a, 2018b).

At first glance, younger preschoolers' difficulty with rejecting incorrect knowledge claims in our study seems at odds with findings suggesting that even 3-year-olds excuse prior inaccuracy when it can be explained by lack of perceptual access and thus ignorance (Nurmsoo & Robinson, 2009a; Robinson & Nurmsoo, 2009). In those studies, however, children were required to handle only one fact about the observable world at a time, such as a speaker's uninformative access. In our study, children were required to process an alleged fact about the unobservable world ("I

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know that X") and its relation to a fact about the observable world (i.e., the speaker's prior perceptual access) – and come to a conclusion about whether the speaker's knowledge claim is correct or incorrect, which might presuppose more robust social-cognitive (theory of mind) and cognitive (inhibitory control) abilities. Interestingly, and related to our findings of a relation between children's evaluation of knowledge claims and their explanation, Robinson and Nurmsoo (2009) found that 3- to 5-year-olds' who tended to explain a puppet's mistakes by her ignorance or false belief were more likely (than children who did not use epistemic explanations) to believe the puppet (and thus excuse previous errors) when it was better informed than they were about the content of a box. Thus, future work should look more closely at interrelations between children's theory of mind abilities and their understanding of epistemic and non-epistemic claims.

Moreover, future research could vary children's own informational state so that it matches the third party's informational state or not. It may be that younger preschoolers profit from congruency in perceptual access (Koenig et al., 2015; Ruffman & Olson, 1989), but such a finding would call into question the robustness of young children's understanding of the validity of knowledge claims. Furthermore, future research may investigate the (social-)cognitive mechanisms underlying children's developing ability to assess epistemic claims.

Together, the present findings show that preschoolers differentiate between correct and incorrect knowledge claims, and that this ability develops – with substantial individual variation – gradually from around 3 to 4 years of age. These findings go beyond prior work on children's understanding of practical norms or non-epistemic assertions, testimony, and the seeing-knowing relation, and bridge these literatures, opening new avenues for future research on children's developing understanding of the validity of speech acts. It is possible that preschoolers start off

with a strong focus on whether claims and assertions match observable reality (as prescribed by the norm of truth) and only later consider other normative factors, such as whether claims are backed by reasons (independent of assessments of truth).

# Study 2: Children's Understanding of Epistemic and Non-epistemic Entitlements

## Abstract

Much research on the ontogeny of normativity has focused on conventional and moral normativity rather than epistemic normativity (e.g., the entitlement to claim knowledge). In the present study, we investigated whether three- and five-year-old children understand that a person is entitled to assert his or her knowledge about some state of affairs if it is based on good evidence and would thus defend some person's entitlement to claim knowledge against invalid criticism. In Study 2a children ($N = 48$) were given a knowledge task and a fact task. In the knowledge task, children witnessed a speaker making a justified claim (e.g., stating the proper name of her property [e.g., animal]) or an unjustified claim (e.g., stating the unknown proper name of someone else's property). In the fact task a speaker labeled an object either correctly or incorrectly. Then, children had the opportunity to defend the speaker against a second party who protested against the speaker. Five-year-olds rejected the second-party's protest in both the epistemic (knowledge) and non-epistemic (fact) task, but 3-year-olds only did so in the non-epistemic task in which the speaker made true versus false assertions. Study 2b replicated the findings of the 3-year-olds' ($N = 24$) ability to understand non-epistemic entitlements. These findings provide the first evidence that children at the age of five understand something about epistemic normativity, namely the normativity of knowledge.

*Keywords*: Entitlements, Rights, Normativity, Norm psychology, Epistemology, Epistemic norms, Speech acts

## 3.1 Introduction

Social norms are the cornerstone of human societies (Chudek & Henrich, 2011; Elster, 1989; Fehr & Fischbacher, 2004; Tomasello, 2009). Previous research on children's developing norm psychology has mainly dealt with their understanding of practical norms, such as conventional or moral norms (Schmidt & Tomasello, 2012; Turiel, 2006). These studies show that from early on, children show an understanding of normative obligations. From around three years of age, children spontaneously protest and criticize agents who violate conventional norms, such as (agreed-upon) simple game rules (Rakoczy, 2008; Rakoczy et al., 2008; Schmidt, Rakoczy, et al., 2016) and agents who commit moral transgressions, such as violating others' rights, or harming others (Rossano et al., 2011; Schmidt et al., 2012, 2013; Vaish et al., 2010). However, normativity is not confined to the realm of actions, we also have obligations regarding our epistemic states (such as knowledge or beliefs). While practical normativity includes conventional and moral norms, theoretical norms concern the normativity of epistemic states. Deriving from this, research on epistemic normativity integrates topics from two different research fields, that is, on the one hand research on normativity and on the other hand research on epistemic states, such as theory of mind research.

Beside obligations, mature normative understanding involves also recognizing entitlements of others. Entitlements are special normative phenomena and much more complex than other norms, as they are always directly linked to others' obligations. Suppose, right holder *A* is entitled to perform some action *X*. It results in that a second party *B* must not interfere with *A*'s entitlement (to perform *X*) and respect *A*'s entitlement. Otherwise, *A*'s entitlement would be violated as well as the norm not to interfere with others' entitlements (Hohfeld, 2001; Rainbolt, 2006). From this follows that entitlements create normative constraints on another person's

conduct (Schmidt & Rakoczy, 2018a). A study by Schmidt and colleagues (2013) showed that already children at the age of three have an understanding of practical entitlements. They understand that under certain circumstances (i.e., ownership) a person is entitled to do something and defend this person's entitlement against unjustified criticism from second parties.

Entitlements are given in both practical normativity and epistemic normativity. The reason for this is that knowledge has a social-normative dimension in that we can apply normative criteria for what counts as good evidence for believing something (Brandom, 1994; Sellars, 1963). And it is precisely this evidence that leads to entitlements in epistemic normativity. Evidence determines whether a claim is justified or unjustified. A justified knowledge claim is only given if it is based on good and sufficient evidence. For example, asserting, "The earth is spherical." is a justified claim, since evidence supports this belief. By saying, "The earth is flat." one would assert an unjustified claim, since the belief is not supported by any evidence. Criticizing a speaker for the first statement would be illegitimate and would constitute in a case of incorrect or invalid enforcement of norms.

The nature of evidence is wide-ranging. The most obvious evidence are (one's own) perception (Matthiessen, 2014) and hard facts (e.g., "The capital of Germany is Berlin." or "The human species developed over hundreds of years."). Another facet of evidence is ownership, insofar as I as the owner have knowledge about my property. The so-called "familiarity principle" states that, non-visible characteristics specific to an individual can only be known by people who are familiar with that individual. Already 2-year-olds appreciate that knowing an individual's proper name requires a person being familiar with that subject (Birch & Bloom, 2002). In the present study, this type of evidence was adopted, thus ownership (i.e., knowing the name of one's own stuffed animal) was decisive for a justified claim.

The rationale of the present study was to investigate whether younger and older preschoolers understand epistemic entitlements, that is, the entitlement to make justified knowledge claims (about the name of an animal, "X is called Y!") given good evidence (i.e., ownership). In particular, we sought to assess whether children understand that from being entitled to make a claim follows that one is immune to criticism. The most convincing evidence for an understanding of entitlement is a situation, in which children are unaffected observers and have the opportunity to defend a right-holder's entitlement against a second-party who violates these entitlements (Schmidt et al., 2013). On this account, children witnessed a speaker puppet that was or was not the owner of a stuffed animal, thus, making his subsequent knowledge claim justified or unjustified given the epistemic consequences (knowledge vs. ignorance). Thereupon, the judge protested in response to the knowledge claim and told the speaker that he must not assert the claim. We predicted that older but not younger preschoolers understand the entitlement to make epistemic claims, and therefore, counter-protest against the judge when the knowledge claim was justified, but not when the claim was unjustified. Moreover, we predicted that children who showed counter-protest are more likely to provide valid explanations (e.g., being the owner of the animal and therefore knowledgeable) for why a speaker is (not) entitled to make a knowledge claim than children who did not counter-protest.

For the purpose of controlling for children's understanding of the entitlement to claim simple factual claims that describe reality, we additionally included a non-epistemic fact task. For the non-epistemic task, we predicted that both younger and older preschoolers would reliably counter-protest when the factual claim (labeling an object, "This is an X!") was correct but not when it was incorrect (i.e., "This is an X!", although it is a Y). Moreover, we predicted that

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children who showed counter-protest are more likely to provide valid explanations (e.g., the object's identity) than children who did not show any counter-protest.

## 3.2 Study 2a

In Study 2a, children observed the following situation (Figure 2). In the knowledge task, the judge protested against the speaker, either unjustifiably (because the speaker was knowledgeable about the name; *owner* condition) or justifiably (because the speaker was ignorant about the name; *non-owner* condition). In the fact task, the judge protested against the speaker either unjustifiably (because the speaker had labeled the object correctly; *fact-correct* condition) or justifiably (because the speaker had labeled the object incorrectly; *fact-incorrect* condition).
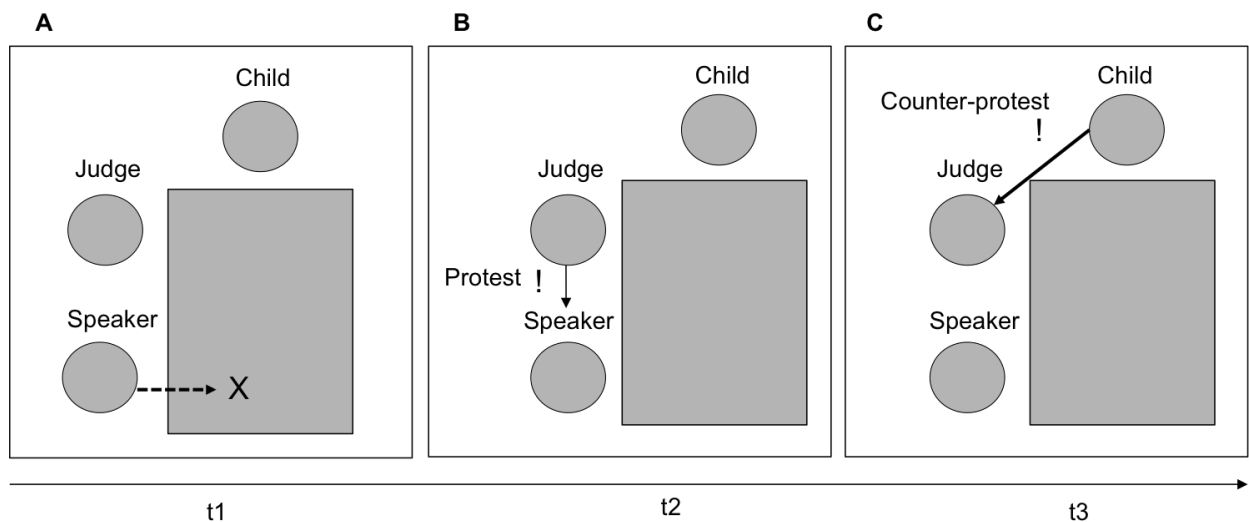


*Figure 2.* Temporal schematic of the methodological approach. The parties were the child and two hand puppets (a judge and a speaker). (A) First, the child witnessed the speaker making a speech act X (i.e., telling the stuffed animal's name or labeling an object). (B) Second, the judge protested normatively against the speaker and prohibited him from claiming X. (C) Third, the child had the opportunity to counter-protest against the judge. The two puppets did not react to the child's protest.

### 3.2.1 Method

**Participants.** Forty-eight children participated in the study: 24 three-year-olds ($M = 3$ years, 6 months; range $= 36 – 47$ months; 12 girls) and 24 five-year-olds ($M = 5$ years, 5 months; range $= 60 – 71$ months; 12 girls). Children came from mixed socio-economic backgrounds from a large German city and were recruited via urban daycare centers (in which testing took place). Parents provided written informed consent. Three additional children were excluded from the final sample due to procedural errors (2) or technical error (1).

**Design.** In a within-participants design, all children received two types of task, an epistemic knowledge task (four trials) and a non-epistemic fact task (four trials). The two tasks were preceded by a warm-up session (playing with a ball, a hammer and a disk-and-peg-game). The order of the type of task was counterbalanced and the two conditions (owner/non-owner and fact-correct/fact-incorrect) of each type of task were systematically varied.

**Procedure.** Two experimenters conducted the study, which lasted roughly 20 minutes: E1 was the adult authority and E2 operated the speaker puppets (a polar bear puppet, and a dog puppet, respectively) and the judge (a lion puppet). E1 sat to the child's left, the judge and the speaker puppet sat to the child's right. Table 2 provides a procedural overview of the two types of task and the experimental manipulations. Importantly, during the test phase, E1 either left the room (knowledge task) or was turned away from the table, writing something down (fact task) to give children the opportunity to intervene spontaneously.

The warm-up session consisted of playing together with a ball and of two instrumental tasks in which E1 performed an instrumental action that the child could reproduce (e.g., using a

hammer to hit on wooden balls to send them through holes of a cuboid). Then, the judge made an instrumental mistake by failing to use a conventional means necessary to achieve an aim (e.g., failing to use the hammer), and children had the opportunity to intervene and correct the judge in the absence of E1 (who turned away from the table to write something down). The purpose of the warm-up session was to familiarize children with the hand puppets and to make them feel comfortable interacting with them.

*Knowledge task.* During the introductory phase the owner (the speaker in the *owner* condition, and E1 in the *non-owner* condition, respectively) presented his animal (e.g., a monkey). He explained that no one has ever seen it before and that he had given his animal a name, which he has never told anyone yet ("Look this is my monkey. And no one has ever seen this monkey before. And guess what? I gave this monkey a name, but I have never ever told someone the monkey's name."). Depending on the condition, E1 or the speaker confirmed that the owner has not told him the name yet either ("Yes, X has never ever told me the monkey's name."). Then E1 excused himself and left the room to make a call. Importantly, during the whole introductory phase, no epistemic vocabulary (e.g., knowing) was used to have children infer independently whether the speaker knows some state of affairs. In the test phase, the speaker stated the animal's name (e.g., "The monkey is called Waldemar!"), whereupon the judge protested against the speaker, forbidding him to claim knowledge ("[Speaker's name] may not claim that he knows the monkey's name."). When children counter-protested against the judge, but did not give any reason why the speaker may or may not claim his knowledge, the judge asked them for a reason ("And why?"). When children did not show any counter-protest against the judge, the judge asked them whether the speaker may or may not claim to know the name

("May [speaker's name] claim that he knows the monkey's name, or may he not?), and were asked for a reason.

*Fact task.* E1 demonstrated an object (e.g., a spoon) and then turned away from the table to write something down. Thereafter, the speaker labeled the object either correctly (*fact-correct* condition, "This is a spoon!") or incorrectly (*fact-incorrect* condition, "This is an elephant!"), whereupon the judge forbade the speaker to claim this ("[Speaker's name] may not claim that this is a spoon!" or "[Speaker's name] may not claim that this is an elephant!").

Table 2

*Procedural overview of the knowledge and fact task for each condition*

| | Knowledge task | | Fact task | |
|---|---|---|---|---|
| Claim | Justified | Unjustified | Correct | Incorrect |
| Speaker | Owner knowledgeable | Non-owner ignorant | Labels object correctly | Labels object incorrectly |
| Action phase | Speaker makes claim ("X is called [name]"/This is an X") | | | |
| Test phase | Judge protests against protagonist ("[Speaker's name] may not claim that he knows X's name!"/ [Speaker's name] may not claim that this is an X!") | | | |

**Coding**

All sessions were recorded, transcribed, and coded from videotape by a single observer. A second independent observer, blind to the hypotheses and conditions of the study, transcribed and coded a random sample of 25% of all sessions for reliability.

**Protest.** For the test phase of each trial of either type of task, all relevant verbal and behavioral responses were described and assigned to one of two counter-protest categories

(hierarchically ordered): (a) direct counter-protest, that is, verbal counter-protest making use of normative vocabulary (e.g., using the modal verbs "can" and "may" or the German word "doch" that is used to contradict a negative statement; e.g., "Yes, [speaker's name] may claim that!"; or (b) indirect counter-protest, that is, verbal phrases that indicate disagreement with the judge on a less explicit level by indirect critique to the judge (e.g., "But it is [speaker's name] animal"; "But this is a spoon!"). As its final code, each trial received the hierarchically highest category code that appeared during its test phase; for example, if a child performed both direct and indirect counter-protests on a given trial, the code direct counter-protest was given for that trial. Furthermore, for each trial affirmative responses were coded (agreement with the judge's negative protest clause, e.g., "That's right!" or protest against the speaker, e.g., "That's not a cat!"). For each type of task, sum scores (0-2) were computed per condition of direct counter-protest and counter-protest (direct or indirect counter-protest) for each child.

**Reasons.** For the test phase of each trial of either type of task, all relevant verbal responses were described and assigned to the following categories: (1) criticism of the judge (e.g., "Because this is a spoon."); (2) ownership (e.g., "Because it is his ladybug."); (3) epistemic state (e.g., "Because he knows the name.", "Because he does not know the name); (4) affirmation (e.g., "Because this isn't a cat"); (5) other (e.g., "Because I allow it.", "If he wants, he can do that."); (6) no answer or "don't know". In the case of multiple answers, the one that fit the highest category was used.

Children's explanations of their response in the knowledge task were considered as valid explanations, if they referred to the actor's epistemic state or ownership (e.g., "Because he knows the name." or "Because it is his ladybug." in the owner condition; e.g., "Because he does not

know the name." or "Because it belongs to E1." in the non-owner condition). All other explanations were coded as invalid. Children's explanations of their response in the fact task were considered as valid explanations, if they referred to the actor's labeling of the object (e.g., "Because it is a spoon." in the fact-correct condition; e.g., "Because it is not a cat" in the fact-incorrect condition). All other explanations were coded as invalid.

Interrater reliability was very good, Cohen's $\kappa = .985$ (counter-protest), $\kappa = .971$ (agreement), $\kappa = 1$ (forced-choice question), $\kappa = .939$ (explanation).

**Statistical analysis.** Statistical Analysis were run in R, version 3.4.2 (R Core Team, 2016). For the measure response to the judge's protest (i.e., counter-protest and affirmation, or answer to the forced-choice question), we used non-parametric statistics (Wilcoxon Z-tests) instead of paired sample $t$-tests, because errors were not normally distributed. For non-parametric tests, we computed the generic effect size $r$.

In the knowledge task, twelve 3-year-olds and three 5-year-olds did neither respond to the judge's protest nor answered the forced-choice question in one or both conditions (thus, they could not be asked for explanations), resulting in 18 missing values in the owner and 20 missing values in the non-owner condition (3-year-olds), and two missing values in the owner and three missing values in the non-owner condition (5-year-olds). In the fact task, nine 3-year-olds and three 5-year-olds did not show any response to the judge in one or both conditions, resulting in 12 missing values in the fact-correct and 12 missing values in the fact-incorrect condition (3-year-olds) and five missing values in the fact-correct and four missing values in the fact-incorrect condition (5-year-olds). Therefore, analyses on the association between protest and the validity of children's explanation were based in the knowledge task on 16 younger and 23 older children

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(owner condition) and 16 younger and 24 older children (non-owner condition) and in the fact task per condition on 19 younger and 22 older children.

### 3.2.2 Results

**Knowledge task.**

*Counter-protest.* Figure 3 displays the mean sum scores of children's counter-protest against the judge's protest against the actor (pooled across type of task, yielding two trials per condition, thus a score from 0 to 2 was possible). Three-year-olds hardly showed any counter-protest (owner condition: $M = 0.29$, $SD = 0.62$; non-owner condition: $M = 0.08$, $SD = 0.41$; $Z = -1.17$, $N = 24$, $p = .238$, $r = .240$). Three-year-olds' counter-protest collapsed with the forced-choice question showed the same pattern, $Z = -0.90$, $N = 24$, $p = .365$, $r = .184$. Five-year-olds, however, performed significantly more counter-protest (i.e., direct and indirect counter-protest) against the judge in the owner condition ($M = 1.17$, $SD = 0.92$) than in the non-owner condition ($M = 0.67$, $SD = 0.82$), $Z = -2.16$, $N = 24$, $p = .030$, $r = .442$. Five-year-olds' counter-protest collapsed with the forced-choice question showed the same pattern, $Z = -3.03$, $N = 24$, $p = .002$, $r = .619$.

*Affirmation.* Five-year-olds affirmative responses (i.e., agree with the judge or protest against the actor; sum scores over two trials) showed the opposite pattern of their counter-protest behavior. They showed more affirmative responses in the non-owner condition ($M = 0.33$, $SD = 0.56$) than in the owner condition ($M = 0.08$, $SD = 0.45$), $Z = -2.44$, $N = 24$, $p = .014$, $r = .500$. The same pattern was found when the spontaneous affirmation was collapsed with children's forced-choice answer, $Z = -3.12$, $N = 24$, $p = .001$, $r = .638$. However, no 3-year-old showed any

spontaneous affirmative response in either of the two conditions. Collapsed with the answer to the forced-choice question, there was no significant difference between the two conditions, $Z = -0.37$, $N = 24$, $p = .705$, $r = .077$.
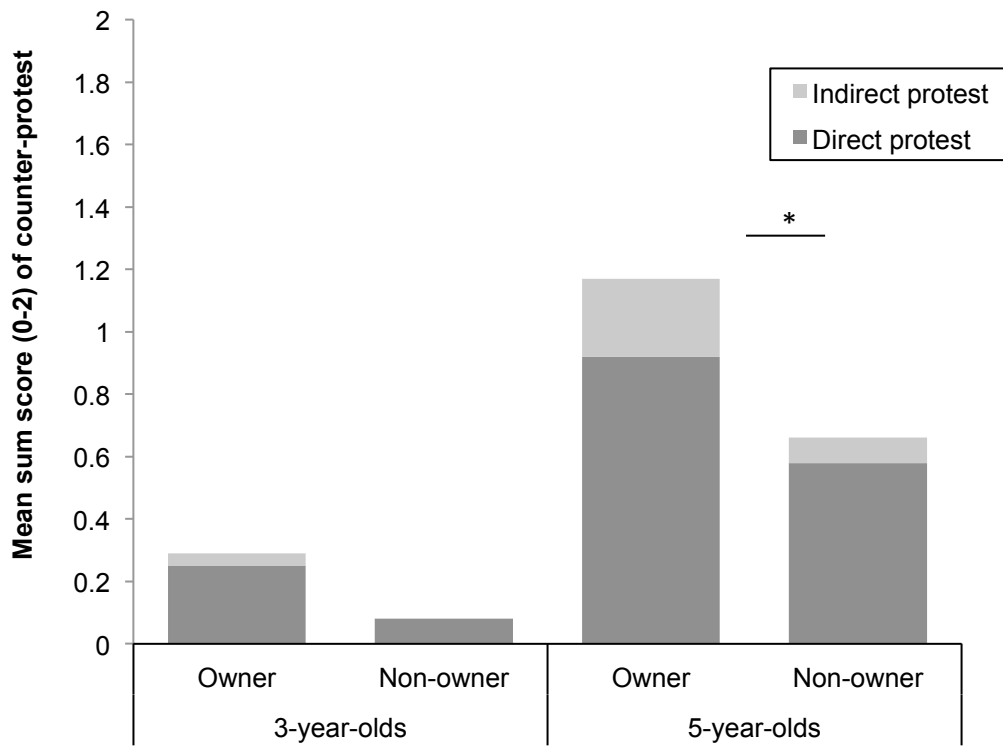


*Figure 3*. Knowledge task: Children's mean sum score of counter-protest; *p ≤. 05.

*Explanations.* Children were also prompted to explain their response. Table 3 shows the frequencies of children's justifications.

Table 3

*Knowledge task: Frequencies of explanations (for why the speaker may or may not claim X)*

| | Age group | | | |
| | 3-year-olds | | 5-year-olds | |
| Condition | Owner | Non-owner | Owner | Non-owner |
|---|---|---|---|---|
| Categories | | | | |
| Ownership | 9 (30%) | 0 | 29 (63%) | 0 |
| Non-ownership | 0 | 3 (11%) | 0 | 6 (13%) |
| Knowledge | 1 (3%) | 2 (7%) | 1 (2%) | 6 (13%) |
| Ignorance | 0 | 0 | 2 (4%) | 5 (11%) |
| Other | 7 (23%) | 8 (29%) | 7 (15%) | 18 (40%) |
| No answer | 13 (43%) | 15 (54%) | 7 (15%) | 10 (22%) |

***Relation Between Response and Explanation.*** As predicted, there was a significant association between children's counter-protest and the validity of their explanation in the owner condition (Table 4), 3-year-olds: Fisher's exact test, $p = .050$; 5-year-olds: Fisher's exact test, $p = .002$, such that children who showed counter-protest against the judge were more likely to give valid explanations (i.e., referred either to speaker's ownership or knowledge), whereas children who did not show any counter-protest against the judge were more likely to give invalid explanations. Due to the large number of missing values in the younger age group, results, however, must be interpreted cautiously. There was also a significant association between 5-year-olds' affirmative response and the validity of their explanation in the non-owner condition (Table 3), Fisher's exact test, $p = .040$, such that children who showed affirmative responses were more likely to give valid explanations (i.e., referred either to speaker's non-ownership or ignorance), whereas children who did not show any affirmative responses were more likely to give invalid

explanations. Since no 3-year-old showed any spontaneous affirmative response, no statistical analyses were conducted.

Table 4

*Knowledge task: Association counter-protest/affirmation and validity of explanation*

| | | | Valid Explanation | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | 3-year-olds | | | 5-year-olds | | |
| Condition | | | 0 | 1 | 2 | 0 | 1 | 2 |
| Owner | Protest frequency | 0 | 9 | 0 | 2 | 5 | 1 | 1 |
| | | 1 | 1 | 1 | 1 | 1 | 1 | 2 |
| | | 2 | 0 | 1 | 1 | 1 | 0 | 11 |
| Non-owner | Affirmation frequency | 0 | 14 | 1 | 1 | 13 | 3 | 1 |
| | | 1 | 0 | 0 | 0 | 1 | 4 | 1 |
| | | 2 | 0 | 0 | 0 | 1 | 0 | 0 |

**Fact task.**

*Counter-protest.* Figure 4 displays the mean sum scores of children's counter-protest against the judge's protest (pooled across type of task, yielding two trials per condition, thus a score from 0 to 2 was possible). Children from both age-groups performed significantly more direct counter-protest against the judge in the fact-correct condition (when the object was labeled correctly), 3-year-olds: $M = 0.42$, $SD = 0.65$; 5-year-olds: $M = 0.54$, $SD = 0.78$, than in the fact-incorrect condition (when the object was labeled incorrectly); 3-year-olds: $M = 0$, $SD = 0$; $Z = -2.63$, $p = .008$, $r = .539$; 5-year-olds: $M = 0.08$, $SD = 0.28$; $Z = -2.49$, $p = .012$, $r = .509$. Children's counter-protest (i.e., direct or indirect counter-protest) showed the same pattern, 3-year-olds: $Z = -3.62$, $p \leq .001$, $r = .739$; 5-year-olds: $Z = -3.54$, $p \leq .001$, $r = .723$ (Figure 3), as

well as children's counter-protest collapsed with the forced-choice question, 3-year-olds: $Z = -3.76$, $p \leq .001$, $r = .767$; 5-year-olds: $Z = -4.12$, $p \leq .001$, $r = .841$.

*Affirmation.* Children's spontaneous affirmative responses (i.e., agreement with the judge or protest against the actor) showed the opposite pattern of their counter-protest behavior. Children performed significantly more spontaneous affirmative responses in the fact-correct condition (3-year-olds: $M = 1.04$, $SD = 0.86$; 5-year-olds: $M = 1.42$; $SD = 0.83$) than in the fact-incorrect condition (3-year-olds: $M = 0$, $SD = 0$; $Z = -3.62$, $p \leq .001$, $r = .739$; 5-year-olds: $M = 0.17$; $SD = 0.56$; $Z = -3.83$, $p \leq .001$, $r = .781$). Children's agreement (i.e., spontaneous affirmation collapsed with the forced-choice question) showed the same pattern, 3-year-olds: $Z = -3.36$, $p \leq .001$, $r = .685$; 5-year-olds: $Z = -4.15$, $p \leq .001$, $r = .846$.
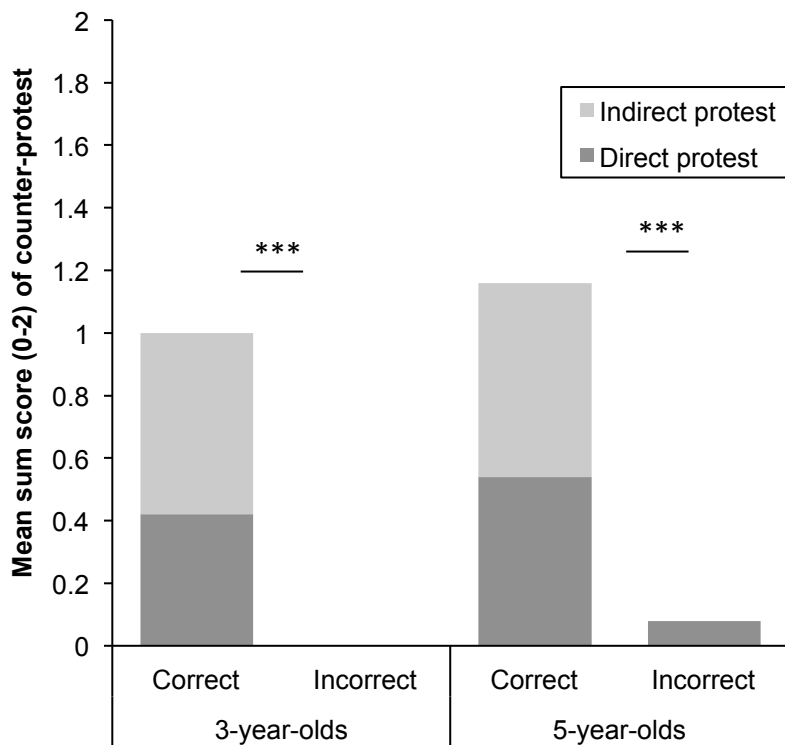


*Figure 4.* Fact task: Children's mean sum score of counter-protest; ***p ≤ .001.

*Explanations.* Children were also prompted to explain their response. Table 5 shows the frequencies of children's justifications.

Table 5

*Fact task: Frequencies of explanations (for why the speaker may or may not claim X)*

| | Age group | | | |
| | 3-year-olds | | 5-year-olds | |
| Condition | Fact-correct | Fact-incorrect | Fact-correct | Fact-incorrect |
|---|---|---|---|---|
| Categories Criticism of judge's protest | 23 (64%) | 0 | 20 (47%) | 1 (2%) |
| Knowledge | 0 | 0 | 4 (9%) | 0 |
| Affirmation | 0 | 32 (89%) | 0 | 37 (84%) |
| Other | 4 (11%) | 0 | 15 (35%) | 6 (14%) |
| No answer | 9 (25%) | 4 (11%) | 4 (9%) | 0 |

**Relation Between Response and Explanation.** As predicted, there was a significant association between children's counter-protest and the validity of their explanation in the fact-correct condition (Table 6), 3-year-olds: Fisher's exact test, $p \leq .001$; 5-year-olds: Fisher's exact test, $p = .018$, such that children who showed counter-protest against the judge were more likely to give valid explanations, whereas children who did not show any counter-protest against the judge were more likely to give invalid explanations. There was also a significant association between children's affirmative response and the validity of their explanation in the fact-incorrect condition (Table 6), 3-year-olds: Fisher's exact test, $p = .009$; 5-year-olds: Fisher's exact test, $p$

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=.005, such that children who showed affirmative responses were more likely to give valid explanations, whereas children who did not show any affirmative responses were more likely to give invalid explanations. Due to the large number of missing values, the results of the 3-year-olds, however, must be interpreted with caution.

Table 6

*Fact task: Association counter-protest/affirmation and validity of explanation*

| | | | Valid Explanation | | | | | |
| | | | 3-year-olds | | | 5-year-olds | | |
| Condition | | | 0 | 1 | 2 | 0 | 1 | 2 |
| Fact-correct | Protest frequency | 0 | 3 | 0 | 0 | 4 | 0 | 2 |
| | | 1 | 1 | 6 | 1 | 2 | 2 | 1 |
| | | 2 | 0 | 1 | 7 | 2 | 0 | 9 |
| Fact-incorrect | Affirmation frequency | 0 | 2 | 0 | 1 | 2 | 0 | 1 |
| | | 1 | 0 | 2 | 5 | 0 | 1 | 3 |
| | | 2 | 0 | 0 | 9 | 0 | 0 | 15 |

### 3.2.3 Discussion

Five-year-olds reliably rejected the second-party's protest in both the epistemic (knowledge) and the non-epistemic (fact) task. Three-year-olds only did so in the non-epistemic task in which the speaker made true versus false assertions. This result stands in line with research on three-year-old children's understanding of the normative directions of fit for different kind of speech acts (Rakoczy & Tomasello, 2009).

The results of the present study provide the first evidence that at the age of five, children understand something about epistemic normativity, namely the normativity of knowledge and the entitlement to claim justified beliefs (i.e., the knowledge of the name of one's own stuffed

animal). Moreover, this study shows that already children at the age of three are even motivated to defend others' entitlement to make true claims. Additionally, five-year-old children even stood up for others' rights to assert knowledge. Most importantly, they showed this disinterested behavior, although they themselves were uninvolved as a third-party.

Unexpectedly, in a few cases, 5-year-olds showed counter-protest in the non-owner condition. There are two possible approaches to explaining this behavior. The first is based on the assumption that 5-year-olds hold the view that one can believe and thus assert anything one wants (young relativists, so to speak). To explain the second approach, it must be stressed at the outset that children who falsely protested often assumed that the speaker puppet knew the name of the animal for some reason (e.g., E1 had secretly told the speaker puppet the name). Therefore, on closer inspection, we assume that this false protest actually indicates all the more the understanding of epistemic entitlements. It shows that children understand that when a person knows something, he or she is also entitled to make his or her knowledge known.

One concern about the performance of the 3-year-olds in the non-epistemic task was that it did not display their real competencies. One possible interpretation of their results is that they might have accomplished the task without understanding non-epistemic entitlements. In the interest of rejecting this alternative hypothesis, Study 2b was conducted.

## 3.3 Study 2b

Study 2b served two purposes. First, we wanted to replicate the finding of the non-epistemic fact task of Study 2a with a new sample of three-year-old children. Second, we aimed to clarify the judge's protest sentence, in order to test children's understanding of the word "to claim" (German: "behaupten") and their understanding of the entitlement to make non-epistemic

claims. Given the concerns that children did not understand the actor's non-epistemic entitlement, but showed the correct response by comparing whether the real object matched the object the judge mentioned in his protest, we modified the judge's protest sentence so that he no longer referred directly to the object (i.e., "Sam may not claim this!").

### 3.3.1 Method

**Participants.** Twenty-four children ($M$ = 3 years, 4 months; range = 36 – 47 months; 12 girls) participated in the study. Children had mixed socio-economic backgrounds and came from a large German city. They were recruited via urban daycare centers (in which testing took place) and parents provided written informed consent. Three additional children were excluded from the final sample due to experimenter error (1) or uncooperativeness (2).

**Design.** All children first received a warm-up session (playing with a ball, a hammer and a disk-and-peg-game) followed by a non-epistemic fact task consisting of two conditions (*fact-correct* and *fact-incorrect* condition; two trials each for a total of four trials) similar to the fact task in Study 2a. The two conditions were systematically varied. See Table 7 for a more detailed overview.

**Procedure.** The general procedure and set-up were identical to Study 2a with the following exceptions: children got only the non-epistemic fact task and the judge's protest sentence was changed, such that he did not refer to the object directly anymore ("[Speaker's name] may not claim that!").

**Coding and reliability.** All sessions were recorded, transcribed, and coded from videotape by a single observer. A second independent observer, blind to the hypotheses and conditions of the study, transcribed and coded a random sample of 25% of all sessions for reliability. The coding was identical to Study 2a. Interrater reliability was very good, Cohen's κ = 1 (spontaneous responses (i.e., counter-protest or agreement)), κ = 1 (forced-choice question), κ = 1 (explanation).

**Statistical analysis.** Statistical Analysis was run in R, version 3.4.2 (R Core Team, 2016). Analyses were carried out as in Study 2a. Five 3-year-olds neither responded to the judge's protest nor answered the forced-choice question in one or both conditions, thus, they could not be asked for explanations (resulting in eight missing values in the fact-correct and six missing values in the fact-incorrect condition). Therefore, analyses on the association between protest and the validity of children's explanation were based in the fact-correct condition on 19 and 21 children in the fact-incorrect condition.

Table 7

*Procedural overview of the fact task for each condition*

|  | Fact task | |
| --- | --- | --- |
| Claim | Correct | Incorrect |
| Speaker | Labels object correctly | Labels object incorrectly |
| Action phase | Speaker makes claim ("This is an X!") | |
| Test phase | Judge protests against protagonist ("[Speaker's name] may not claim this!") | |

**3.3.2 Results**

*Counter-Protest*. Figure 5 displays the mean sum scores of children's counter-protest against the judge's protest against the actor (pooled across type of task, yielding two trials per condition, thus a score from 0 to 2 was possible). Children performed significantly more direct counter-protest against the judge in the fact-correct condition (when the object was labeled correctly; $M = 0.42$, $SD = 0.88$) than in the fact-incorrect condition (when the object was labeled incorrectly; $M = 0.08$, $SD = 0.41$), $Z = -2.070$, $p = .038$, $r = .422$. Children's counter-protest (i.e., direct or indirect counter-protest) showed the same pattern, $Z = -2.598$, $p = .009$, $r = .530$ (Figure 4), as well as children's counter-protest collapsed with the forced-choice question, $Z = -2.829$, $p = .004$, $r = .577$.

*Affirmation*. Children's spontaneous affirmative responses (i.e., agreement with the judge or protest against the actor) showed the opposite pattern of their counter-protest behavior. Children performed significantly more spontaneous affirmative responses in the fact-incorrect condition ($M = 0.88$, $SD = 0.95$) than in the fact-correct condition ($M = 0.21$, $SD = 0.51$), $Z = -2.809$, $p = .004$, $r = .573$. Children's agreement (i.e., spontaneous affirmation collapsed with the forced-choice question) showed the same pattern, $Z = -2.984$, $p = .002$, $r = .609$.
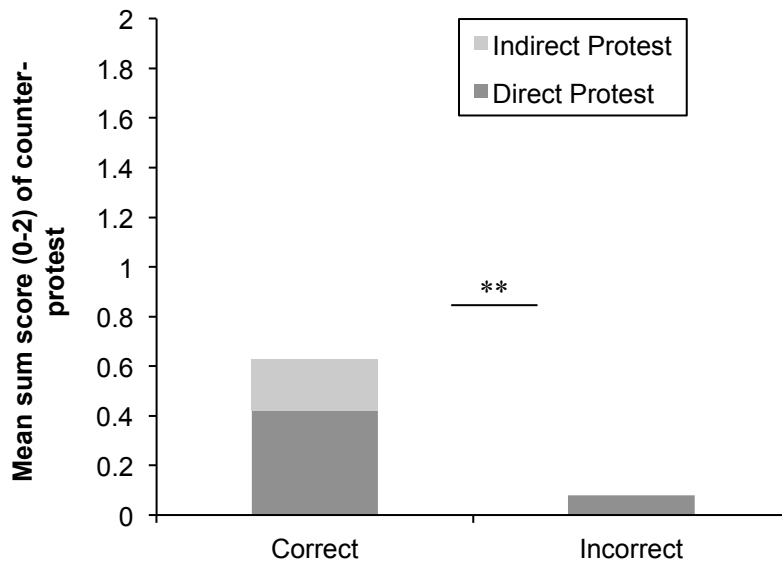
*Figure 5.* Mean sum scores of counter-protest as a function of condition; **p < .01.

**Explanations.**

Children were also prompted to explain their response. Table 8 shows the frequencies of children's justifications.

Table 8

*Frequencies of explanations (for why the speaker may or may not claim X)*

| | Task | |
|---|---|---|
| Categories | Fact-correct | Fact-incorrect |
| Criticism of judge's protest | 16 (40%) | 0 |
| Affirmation | 0 | 25 (60%) |
| Other | 12 (30%) | 10 (24%) |
| No answer | 12 (30%) | 7 (17%) |

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**Relation Between Response and Explanation.**

Valid explanations were in the fact-correct condition references to the actor's correct labeling of the object ("Because this is a spoon.") and in the fact-incorrect condition references to the actor's wrong labeling of the object ("Because this is not a cat."). All other explanations were coded as invalid. As predicted, there was a significant association between children's counter-protest and the validity of their explanation in the fact-correct condition (Table 9), Fisher's exact test, $p = .023$, such that children who showed counter-protest against the judge were more likely to give valid explanations, whereas children who did not show any counter-protest against the judge, were more likely to give invalid explanations. There was also a significant association between children's affirmative response and the validity of their explanation in the fact-incorrect condition (Table 9), Fisher's exact test, $p < .001$, such that children who showed affirmative responses were more likely to give valid than invalid explanations, whereas children who did not show any affirmative responses were more likely to give invalid than valid explanations.

Table 9

*Association counter-protest/affirmation and validity of explanation fact task*

| Condition | | | Explanation | |
|---|---|---|---|---|
| | | | Valid | Invalid |
| Fact-correct | Protest | Protest | 7 | 2 |
| | | No Protest | 2 | 8 |
| | | | Valid | Invalid |
| Fact-incorrect | Affirmation | Affirmation | 12 | 0 |
| | | No Affirmation | 2 | 7 |

### 3.3.3 Discussion

Study 2b replicated the results of Study 2a. Three-year-olds showed significantly more counter-protest when the object was labeled correctly than when it was labeled incorrectly. When the object was labeled incorrectly, children showed the opposite pattern of their counter-protest behavior and showed more affirmative responses towards the judge than they did when the object was labeled correctly. These results provide evidence that 3-year-olds did not simply compare the judge's protest sentence with the real object, but understood both the word "to claim" and the entitlement for making correct non-epistemic factual claims.

## 3.4 General Discussion

Much developmental research on the ontogeny of normativity has focused on moral and conventional normativity (Killen & Smetana, 2008, 2014; Schmidt, Rakoczy, et al., 2016; Turiel, 2006). Theory of mind research has mostly investigated children's understanding of non-normative (i.e., causal-descriptive) aspects of epistemic states (e.g., predicting what an agent will do; Perner & Roessler, 2012). Epistemic states (such as beliefs and knowledge), however, have a social-normative dimension as well (Brandom, 1994; Sellars, 1963). Traditionally, for instance, knowing something means to hold a justified true belief. That is, we are entitled to claim knowledge about some state of affairs if we have good reason (e.g., evidence) for it. And if we have, we are immune to criticism. In Study 2a, we investigated whether three- and five-year-old children understand the normativity of knowledge in this way and would thus defend another person's entitlement to claim knowledge against invalid criticism.

The current findings provide the first evidence that children at the age of five have a beginning understanding of epistemic normativity and are even motivated to defend others'

entitlements. Older, but not younger preschoolers defended a third party's entitlement to make knowledge claims against a second-party judge who challenged those entitlements.

Importantly, during the whole introductory phase, no epistemic vocabulary was used to have children evaluate independently whether the speaker knew or did not know some state of affairs. Five-year-olds understood better than 3-year-olds to deal with the concept of "ownership". Therefore, among other things, the results of the younger children may be due to the missing understanding that ownership gives reason to know certain facts, such as the name of one's own subject. It seems that 3-year-olds have not yet developed the competence to understand objective reasons (in this case property) that justify the entitlements of others.

In the non-epistemic task, however, both age groups defended the speaker's entitlement when his assertion was true (i.e., the object was correctly named) but was criticized unjustifiably by the judge. This result (of the 3-year-olds) was further confirmed by Study 2b, which was the main objective of this study. The results of Study 2b are all the more remarkable as it was no longer possible for the children to match the object from the judge's protest sentence with the actual object (on the table), which was achieved by clarifying the judge's protest sentence. This shows that already three-year-old children understand entitlements in a non-epistemic context, that is, the entitlement to claim correct things.

These findings go beyond prior research on children's norm understanding, and early epistemology. For instance, children as young as three years readily reject incorrect non-epistemic assertions (e.g., "This is an X"; Pea, 1982; Rakoczy & Tomasello, 2009). The current work, however, investigated the challenge to assess someone's claim and the linked entitlement, based on objective reasons that support or conflict with the claim. The results suggest that it is not until five years of age that children reliably defend others' rights to make knowledge claims.

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This result may in part be due to the premise that in order to defend the speaker's entitlement it is first necessary to understand the objective reasons (e.g., ownership) underlying epistemic entitlements.

From a moral-motivational perspective, defending another person's entitlement is extremely striking, since children themselves were uninvolved as a third-party. Although not their own entitlements were violated, they still felt responsible for the speaker's entitlement and spoke up for the puppet. This behavior shows a remarkable selflessness at a very young age. These results complement Schmidt and colleagues (2013) findings and show that on the one hand 3-year-olds do not only defend practical entitlements, but also non-epistemic entitlements of others (the right to make factual claims that match reality). On the other hand, it was not until the age of five that children defend the epistemic entitlement of others (the right to assert justified knowledge claims).

Our findings may help bridge the literature on normativity and theory of mind. Developmental psychological research on normativity has mostly focused on children's understanding and evaluation of conventional and moral norm violations (Schmidt & Tomasello, 2012; Turiel, 2006), and research on epistemic understanding has almost exclusively focused on young children's understanding of others' mental states in causal – not in normative – terms. For instance, theory of mind research has investigated whether children understand that others' mental states are subjective and might thus, not accord with reality (i.e., they might hold a false belief), but nevertheless will influence their actions (Kuhn et al., 2000; Miller et al., 2003; Perner & Roessler, 2012; Wellman & Liu, 2004). In our study, however, children were required to understand the normative dimension of epistemic states. That is, to consider others' reasons

(making use of theory of mind abilities), and to defend epistemic entitlements of others (making use of their normative abilities).

Epistemic normativity is fundamental to understanding how groups of people from different cultures acquire and share knowledge. It is also crucial for scientific thinking and reasoning. Understanding the normative dimension of epistemic states helps us distinguish "good" from "bad" evidence and decide which claim is justified and can be accepted. The capacity for understanding epistemic normativity is fundamental to understanding processes of human cultural evolution and the accumulation of cultural knowledge (Henrich & McElreath, 2003). A full grasp of epistemic states, and thus theory of mind, entails appreciating the social-normative dimension of these mental states.

In the current study, children were required to draw the conclusion that the speaker knew or did not know the name of the animal because of his or her ownership or non-ownership, respectively. It was thus, merely an assumption that the reasons were valid. Future research should investigate epistemic entitlements where the reasons for the claim are easier to identify (such as perception or common knowledge). This could also help younger children in particular who have problems understanding the underlying reasons associated with ownership.

In the present studies, the speaker was entitled because of an objective reason (i.e., ownership) and held a justified true belief. However, another interesting line of research could investigate, when children develop an understanding of subjective reasons and the entitlement to hold, for example, justified false beliefs.

Taken together, the present studies show five main findings. Firstly, children at the age of five have a beginning mature understanding of epistemic normativity and understand that epistemic norms include both obligations and entitlements. Secondly, they already appreciate the

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social-normative dimension of epistemic states at this young age. Thirdly, they understand the underlying (objective) reasons (i.e., ownership) for why a person is entitled to make a claim. Fourthly, children at the age of five are even motivated to defend the right of others to assert justified claims of knowledge. Fifthly and lastly, already 3-year-olds defend the entitlements of others to assert non-epistemic facts.

# Study 3: Preschooler's Understanding of the Moral Dimension of

# Factual Claims

## Abstract

Research on children's developing moral cognition has mostly focused on their evaluation of, and reasoning about, others' intrinsically harmful (non-)verbal actions (e.g., hitting, lying). But assertions may have morally relevant (intended or unintended) consequences, too. For instance, if someone wrongly claims that "This water is clean!", such an incorrect representation of reality may have harmful consequences to others. In two experiments, we investigated preschoolers' evaluation of others' morally relevant factual claims. In Experiment 1, children witnessed a puppet making incorrect assertions that would lead to harm or to no harm. In Experiment 2, incorrect assertions would always lead to harm, but the puppet either intended the harm to occur or not. Children evaluated the puppet's factual claim more negatively when they anticipated harmful versus harmless consequences (Experiment 1) and when the puppet's intention was bad versus good over and above harmful consequences (Experiment 2). These findings suggest that preschoolers' normative understanding is not limited to evaluating others' intrinsically harmful transgressions, but also entails an appreciation of the morally relevant consequences of, and intentions underlying, others' factual claims.

## 4.1 Introduction

People make assertions about the world every day. Many of these (e.g., "The sun is smaller than the earth.") are typically orthogonal to moral issues and can simply be accepted or rejected given observable reality or some piece of evidence. Others may be morally relevant for a speaker intends to (interpersonally) deceive an addressee (e.g., lying). But sometimes, even simple factual claims – which we keep distinct from the term "lying" – (e.g., "This water is clean!") may become morally relevant, in that they may have harmful consequences (e.g., influence others to act in harmful ways). What is more, speakers may even use factual claims that are easily refutable (e.g., simple generalizations, or claims like "This project was not a success!", "The Earth is flat!") not so much to deceive others, but rather as a means to bring about certain (harmful) consequences (e.g., instill conflict, uncertainty). That is, factual claims may have a moral dimension over and above questions of deceptive intent, truthfulness (i.e., whether the speaker believes the claim or not), or intrinsic harmfulness (e.g., insults). Perhaps especially in the digital age of today in which we face all kinds of assertions that may be associated with certain (intended or unintended) consequences, it seems vital to assess children's understanding of the moral relevance of simple factual claims.

Some assertions, such as (malicious) lies, may be considered intrinsically harmful as they are morally relevant regardless of their consequences (Lee, 2013; Turiel, 1983). That is, even if a lie is not effective or does not produce major harm, we may find the mere act of lying, the deceptive intent, blameworthy. However, there is also a more extrinsic component of moral relevance to assertions, namely, the potentially harmful consequences they may entail. For instance, factual claims, such as "This water is clean!", may simply be false given observable reality. Thus, one may easily refute them. However, they may also bring about harmful

consequences beyond questions of truthfulness or deception (e.g., someone might get sick by drinking dirty water). Thus, we can morally evaluate assertions for their consequences just like physical actions (Cushman, 2008). Moreover, we may have information about whether the speaker intends harmful consequences to occur or not. Importantly, the speaker may not even have deceptive intent or believe the claim to be false, but rather use the speech act to bring about harmful consequences. Thus, we may also morally evaluate assertions for the intentionality of their consequences.

While there is much evidence that preschoolers understand the moral dimension of others' intrinsically harmful (non-)verbal actions (e.g., hitting, stealing, lying), there is, to our knowledge, no research on their understanding (in terms of normative evaluation) of the moral dimension of others' factual claims that become morally relevant not because of their deceptive motivation, but because of the harmful consequences – intended or not – they may entail.

Hence, in the current study we are interested in two major questions concerning children's understanding of the moral dimension of factual claims: (i) How do children evaluate assertions that lead to harmful consequences? And (ii) does it matter for children's moral evaluation whether the harmful consequences were intended by the speaker or not? Evaluating morally relevant assertions is more complex than evaluating morally relevant actions. Regarding the former, the child can directly assess someone's action considering moral norms or principles (e.g., "Hitting is wrong!"). Regarding the latter, however, the child needs to infer that a factual claim (e.g., "This is an X!") – which, per se, could be considered amoral in that it merely corresponds to reality or not (Turri, 2017) – may lead to harmful consequences and that those consequences may be intended or not. Hence, the crux is to evaluate the assertion as good or bad

not in light of its correspondence to reality, but regarding the *moral relevance* of its *consequences* and the *intentionality* of those consequences.

When evaluating others' morally relevant factual claims, children thus need to coordinate both consequences (e.g., harmful vs. harmless) and intentions (e.g., good vs. bad) regarding consequences. For intentions, in particular, children are required to use both their normativity and theory of mind skills (Killen & Smetana, 2008; Perner et al., 1989; Rizzo & Killen, 2014; Schmidt & Rakoczy, 2018a). When it comes to explicitly evaluating others' morally relevant actions, children begin to consider the importance of intentions by around 4 to 5 years of age (Nelson, 1980; Nobes et al., 2016).

In the current study, therefore, we are interested in speech acts that are in and of themselves amoral (i.e., they are simply correct or incorrect and not deceptive), but come with moral relevance, either in terms of anticipated consequences or in terms of the intentionality of those consequences. We sought to investigate in two experiments whether 4- to 5-year old children understand the moral dimension of factual claims and evaluate and reason about such claims in terms of morally relevant consequences (Experiment 1) or the intentionality of morally relevant consequences (Experiment 2). Importantly, to investigate children's evaluation of assertions, and not of (non-verbal) actions, one needs to make sure that children only witness a speaker making an assertion, but not performing an action (which could be directly assessed without referring to the speaker's assertion). Moreover, to exclude the moral evaluation of epistemic harm (e.g., deceptive intent) and psychological harm (e.g., teasing), it is crucial to use assertions that can easily be rejected given observable reality, and that do not have a specific addressee (that might be deceived or insulted). In Experiment 1, therefore, a puppet made simple incorrect factual claims (e.g., "This is an X!", although it was a Y) and children were told that

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this incorrect claim would either lead to harm (another puppet would lose her property) or to no harm (a paper ball would be thrown away). In Experiment 2, incorrect claims would always lead to harm, but the puppet either intended the harmful consequences (bad intention) or not (good intention). We predicted that preschoolers would evaluate the incorrect factual claim more negatively (i) when it would lead to harm than when it would not cause any harm (Experiment 1), and (ii) when it was based on a bad intention than when its underlying intention was good (Experiment 2). Moreover, we predicted that children who differentiate correctly between the two types of incorrect factual claims in both experiments would be more likely to provide adequate justifications (referring to consequences in Experiment 1 and to intentions in Experiment 2) for their differential evaluation than children who did not differentiate between the two types of incorrect factual claims.

## 4.2 Study 3a

In Experiment 1, we sought to investigate how children evaluate and justify their evaluation about others' morally relevant factual claims. We manipulated the consequences of the incorrect claim: it would either lead to harm or to no harm.

### 4.2.1 Method

**Participants.** Twenty-four (51-69 months; $M = 5$ years, 0 months; 12 girls) preschoolers participated in the study. Children came from mixed socio-economic backgrounds from a large German city and were recruited via urban daycare centers (in which testing took place). Parents provided written informed consent. One additional child was tested but excluded due to uncooperativeness.

**Design.** In a within-participants design, all children received a factual claim task with two conditions: a puppet made an incorrect claim that would either lead to harm (harm condition) or to no harm (no harm condition). The factual claim task was preceded by a warm-up session (playing with a ball) and a training phase, which consisted of two instrumental warm-up tasks (one harm, one no harm condition). The order of condition was counterbalanced between children.

**Procedure.** Two experimenters conducted the study, which lasted roughly 10 minutes: E1, the coordinator, and E2, who operated two puppets (an elephant named "Susi" and an owl named "Lore"). The child, E1, and E2 sat at a table. E1 sat to the child's left, and E2 on the child's right. The factual claim task was preceded by a training phase with two warm-up tasks to make sure children understood the consequences of an incorrect behavior that led either to harm or to no harm.

*Training phase.* In the harm condition, E1 first showed the child and the puppets five stickers and put them in front of the owl ("Look Lore, these are your stickers. These are yours. Look [referring to the child] these are Lore's stickers and Lore really likes these stickers."). The owl confirmed this by saying, "Yes, I really like these stickers! And if my stickers are gone, I will be very sad!" and subsequently said goodbye and went to sleep. First, the experimenter performed an instrumental action that the child could reproduce (e.g., using a hammer to hit on wooden balls to send them through holes of a cuboid). After that she put a box on the table asking the child to pay attention ("And now pay attention to what Susi will do! But Susi must not do anything wrong! If Susi does something wrong, I will take away all of Lore's stickers and put

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them in this box and then Lore is very sad!"). In the no harm condition there was only the elephant present and instead of stickers, a paper ball was the object of interest. The experimenter showed the child another instrumental action that the child could reproduce (e.g., putting a disc on a peg). Thereafter, the experimenter put a box on the table asking the child to pay attention ("And now pay attention to what Susi will do! But Susi must not do anything wrong! If Susi does something wrong, I will take this paper and put it in this box and then no one is sad!"). In the test phase of both the harm and the no harm condition, the elephant made an instrumental mistake by failing to use a conventional means necessary to achieve an aim (e.g., failing to use the hammer). When the experimenter turned back she asked the child two control questions, "Did Susi do it right or wrong?" and "What will I do with these stickers/the paper?" Depending on the child's answer the experimenter either confirmed the child's answer or she corrected him/her, and as announced, the experimenter put the stickers/paper in the box on the table. After answering the control questions, the child was asked to evaluate the elephant's action for its moral valence on a four-point Likert scale with smiley faces as anchor ("Susi did it wrong. Is this very bad [German: "schlecht"], a little bad, good or very good.") and was asked to justify his/her evaluation.

*Factual claim task*. The important difference between the factual claim task and the warm-up tasks in the training phase was that instead of evaluating instrumental actions the child was asked to evaluate factual claims for their moral valence and the child did not see the announced consequences, but had to anticipate them. The set-up was similar to the one in the training phase but differed in two ways: in the harm condition, the stickers were replaced by gems and in both conditions, objects were used instead of toys. In the introduction phase, the owl again declared that she likes her gems very much and would be very sad if her gems would be gone and subsequently went to sleep. Then the experimenter put an object (e.g., a spoon) and a

box on the table and asked the child to pay attention to what the elephant was going to say ("And now pay attention to what Susi will say. But Susi must not say anything wrong! If Susi says something wrong, I will take away all of Lore's gems and put them in this box and then Lore is very sad." (*harm condition*), or "If Susi is saying something wrong, I will take this paper and put it in this box and then no one is sad!" (*no harm condition*). When the experimenter had turned around, the elephant thought aloud: "Well, when I am saying something wrong, [experimenter's name] will take away all of Lore's gems and put them in this box and then Lore is very sad." (harm condition), or "Well, when I am saying something wrong, [experimenter's name] will take this paper and put it in this box and then no one is sad!" (no harm condition).

In the test phase of both conditions, the elephant pointed to the object (e.g., spoon) and made an incorrect claim: "I say this is an X (e.g., cat)." The experimenter then turned back and corrected the elephant saying, "This is a Y, not an X!" The child was then asked to evaluate the elephant's speech act for its moral valence on a four-point Likert scale with smiley faces as anchor ("Susi said it wrong. Is this very bad, a little bad, good or very good?") and to justify his/her evaluation.


**Coding and reliability.** All sessions were transcribed and coded from videotape by a single observer. A second independent observer, blind to the hypotheses and conditions of the study, transcribed and coded a random sample of 25% of all sessions for reliability.

Children's answers to the control questions (dichotomous variable: correct or incorrect response to E1's questions), their evaluation on the Likert scale – from 1 (very good) to 4 (very bad) – and the justification of their evaluation were coded. Children's verbal responses were assigned to the following categories (the first and third categories were determined a priori; see

also Nobes et al., 2009): (a) references to consequences (e.g., "Because now all gems are gone.";
"Because now no one is sad."); (b) references to the elephant's actions and speech acts (e.g.,
"Because she did it wrong.", "Because it is not a cat."); (c) references to the elephant's intentions
(e.g., "Because she [the elephant] wants to have the stickers."); (d) irrelevant justifications (e.g.,
"Because the gems are so beautiful."); or (e) no justifications (including "Don't know").

Interrater reliability was very good, Cohen's $\kappa = 1$ (both answers to the control question 1
and 2), $\kappa = 1$ (warm-up task evaluation), $\kappa = 1$ (warm-up task justification), $\kappa = 1$ (factual claim
task evaluation), $\kappa = 1$ (factual claim task justification).

**Statistical analysis.** Statistical Analysis were run in R, version 3.4.2 (R Core Team,
2016). For the measure evaluation of the action in the warm-up and the speech act in the factual
claim task, we used non-parametric statistics (Wilcoxon Z-tests) instead of paired sample *t*-tests,
because errors were not normally distributed. For non-parametric tests, we computed the generic
effect size *r*.

**4.2.2 Results**

**Factual claim task.**

*Evaluation.* In the factual claim task, children evaluated the puppet's speech act
significantly more negative when the speech act would lead to harm ($M = 3.29$, $SD = 0.75$) than
when it would lead to no harm ($M = 2.54$, $SD = 1.06$; $Z = -2.360$, $p = .018$, $r = .481$). Figure 6
shows the mean score of children's' evaluation of the puppet's speech act.
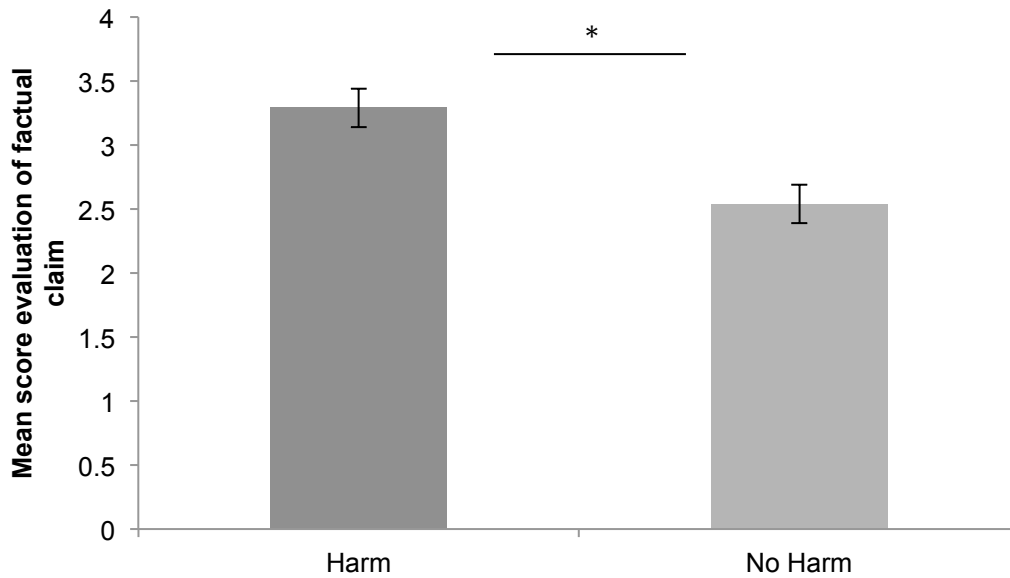
*Figure 6.* Mean score of children's evaluation (from 0 = very good to 4 = very bad). Error bars depict standard error of the mean; *p ≤. 05.

*Justifications.* Children also had the opportunity to justify their evaluation. Table 10 shows the frequencies of children's justifications.

Table 10

*Frequencies (percentage) of Justifications*

|  | Task | | | |
|---|---|---|---|---|
|  | Warm-up | | Factual claim | |
| Category | Harm | No Harm | Harm | No Harm |
| Consequences | 6 (25%) | 3 (12.5%) | 7 (29%) | 6 (25%) |
| Action/Speech act | 10 (42%) | 12 (50%) | 11 (46%) | 10 (42%) |
| Intentions | 1 (4%) | 0 | 0 | 0 |
| Other | 2 (8%) | 3 (12.5%) | 2 (8%) | 2 (8%) |
| No answer | 5 (21%) | 6 (25%) | 4 (17%) | 6 (25%) |

*Relation between evaluation and justifications.* For the purposes of analyses, children were categorized as "*competent*" (i.e., children who evaluated the puppet's speech act that would lead to harm more negatively than the speech act that would lead to no harm) and "*other*" (i.e., the rest of the sample). There were significant associations between children's justifications and their competence in evaluating the moral valence of the puppet's speech act both when it would lead to harm, $\chi^2$ (2, $N = 24$) = 6.45, $p = .011$, $V = .42$ and to no harm, $\chi^2$ (2, $N = 24$) = 4, $p = .045$, $V = .31$ (see Table 11), such that competent children were more likely to justify their evaluation referring to the consequences of the speech act (rather than using other types of justification) than other children.

Table 11

*Association Between Evaluation and Justification*

| Task | Condition | | | Justification Category | | |
|---|---|---|---|---|---|---|
| | | | | Intentions | Consequences | Other |
| Factual claim | Harm | Evaluation | Other | 0 | 2 | 14 |
| | | | Competent | 0 | 5 | 3 |
| | | | | Intentions | Consequences | Other |
| | No Harm | Evaluation | Other | 0 | 2 | 14 |
| | | | Competent | 0 | 4 | 4 |
| | | | | Intentions | Consequences | Other |
| Warm-up | Harm | Evaluation | Other | 0 | 4 | 11 |
| | | | Competent | 1 | 2 | 6 |
| | | | | Intentions | Consequences | Other |
| | No Harm | Evaluation | Other | 0 | 0 | 15 |
| | | | Competent | 0 | 3 | 6 |

**Warm-up task.** Children answered two control questions in the warm-up tasks to make sure they understood the consequences of a wrong action. In the harm condition, one child (4%), and in the no harm condition, two children (8%) gave incorrect answers to the first control question ("Did Lore do it right or wrong?", correct answer was "wrong"). In the harm condition, no child, and in the no harm condition, two children (8%) gave an incorrect answer to the second control question ("And what will I do with the stickers/paper?", correct answer was "You put them/it in the box.").

*Evaluation.* In the warm-up tasks, children evaluated the wrong behavior significantly more negative when the action led to harm ($M = 3.38$, $SD = 0.65$) than when it led to no harm ($M = 2.71$, $SD = 1$; $Z = -2.495$, $p = .011$, $r = .509$).

*Justifications.* See Table 1 for the frequencies of children's justifications.

***Relation between evaluation and justifications.*** There was no significant association between children's justifications and their competence in evaluating the moral valence of the puppet's action that led to harm, $\chi^2$ (2, $N = 24$) $= 1.74$, $p = .587$, $V = .27$ (see Table 2). However, there was a significant association between children's justifications and their competence in evaluating the moral valence of the puppet's action that led to no harm, $\chi^2$ (2, $N = 24$) $= 5.71$, $p = .016$, $V = .36$, such that competent children were more likely to justify their evaluation referring to the consequences of the action (rather than using other types of justification) than the other children.

**4.2.3 Discussion**

Children in this experiment evaluated the puppet's factual claim act more negatively when it would lead to harmful consequences than when it would lead to no harm. Moreover, those children who evaluated the puppet's assertions competently (i.e., evaluating the harm-related assertion as worse than the no harm-related assertion) were more likely to justify their evaluation referring to the consequences of the factual claim than to give irrelevant or no justification, whereas the other children (i.e., those who did not differentiate between the two types of factual claims or gave a more negative evaluation of the no harm-related assertion) were more likely to refer to the incorrect factual claim itself, to give an irrelevant answer or no justification. This suggests that preschoolers' normative understanding goes beyond evaluating others' intrinsically harmful (non-)verbal actions (e.g., hitting, lying), and also entails an appreciation of the moral consequences of others' assertive speech acts. However, this experiment leaves open the question of whether children appreciate morally relevant intentions underlying others' assertive speech acts when controlling for outcome. Thus, to assess this question, we conducted a second experiment in which consequences would always be harmful and either intended by a puppet (bad intention) or not (good intention).

## 4.3 Study 3b

In Experiment 2, in contrast to Experiment 1, incorrect factual claims always would lead to harm. However, the puppet either intended those harmful consequences or not. Findings from different studies suggest that when confronted with vignettes about different types of transgressions, children can differentiate between acts based on good and acts based on bad intentions from around 4 to 5 years of age (Nobes et al., 2016, 2009; Núñez & Harris, 1998).

Furthermore, Killen and colleagues (2011) found that children began to take into account a transgressor's intention between 3.5 and 5.5 years, such that children who passed classical false belief tasks were more likely to attribute good intentions to an accidental transgressor and to decline punishment of the accidental transgressor than children who failed the false belief task. Importantly, we went beyond prior work and did not investigate whether children consider intentions when evaluating intrinsically harmful *non-verbal actions* (e.g., physical harm, such as breaking cups or hurting another person accidentally or intentionally) or verbal actions (e.g., lying), but rather whether children consider whether a puppet intends harm to occur when evaluating her speech act. If they do, children should evaluate the well-intended puppet's incorrect factual claim more positively than the ill-intended puppet's incorrect factual claim.

### 4.3.1 Method

**Participants.** Twenty-four (48-71 months; $M = 5$ years, 0 months; 12 girls) preschoolers participated in the study. Children came from mixed socio-economic backgrounds from a large German city and were recruited via urban daycare centers and a museum (in which testing took place). Parents provided written informed consent. One additional child was tested but excluded due to language difficulties.

**Design.** In a within-participants design, all children received a factual claim task in which a puppet made an incorrect assertion that would always lead to harm. The task had two conditions, which differed in that the puppet's intention was either good or bad (*good-intention condition, bad-intention condition*). The factual claim task was preceded by a warm-up session (playing with a ball) and warm-up tasks, which consisted of two instrumental tasks. A forced

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choice task always came last. The order of condition was counterbalanced between children. The order of the puppets' appearance remained the same (elephant, dog, lion, and seal).

**Procedure.** Two experimenters conducted the study, which lasted roughly 15 minutes: E1, the coordinator, and E2, who operated the victim (an owl puppet), the two actor puppets (an elephant and a dog) and the two speaker puppets (a lion and a seal). Each puppet was used in one trial only. The child, E1, and E2 sat at a table. E1 sat to the child's left, and E2 sat vis-à-vis to the child (thus the child faced the puppets).

The factual claim task was preceded by a training phase, consisting of two warm-up tasks to make sure children understood the consequences of an incorrect behavior that was based on good or bad intentions.

*Training phase.* E1 first showed the child and the two puppets (e.g., owl and elephant) five stickers and put them in front of the owl ("Look owl, these are your stickers. These are yours. Look [referring to the child] these are the owl's stickers and she really likes these stickers."). The owl confirmed this by saying "Yes, I really like these stickers! And if my stickers are gone, I am very sad!" and subsequently said goodbye and went to sleep. First the experimenter performed an instrumental action that the child could reproduce (e.g., using a hammer to hit on wooden balls to send them through holes of a cuboid). After that she put a box in front of the elephant, and asked the child to pay attention ("And now pay attention to what the elephant will do! But he must not do anything wrong! If he does something wrong, I will take away all of the owl's stickers and put them in the elephant's box and then the owl is very sad!"). When the experimenter had turned around, the elephant repeated: "Well, if I do something wrong, [experimenter's name] will take away all of the owl's stickers and put them in my box,

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and then the owl is very sad." In the bad intention condition he announced: "The owl should not keep the stickers. I want those stickers. That's why I want to do something wrong.", while announcing in the good intention condition: "The owl should keep the stickers. I do not want those stickers. That's why I want to do something right."

In the test phase, in both the good and the bad intention conditions, the elephant made an instrumental mistake, by failing to use a conventional means necessary to achieve an aim (e.g., failing to use the hammer). When the experimenter turned back she asked the child "Did he do it right or wrong?" and "What will I do with these stickers?" Depending on the child's answer the experimenter either confirmed the child's answer or she corrected him/her, and as announced, the experimenter put the stickers in the other puppet's box. After answering the control questions, the child had to evaluate the elephant's action for its moral valence on a Likert scale ("The elephant did it wrong. Is this mean, a little mean [German "böse"], good or very good of him.") and was asked to justify his/her evaluation. Note that we used the German word "böse" to allow children to focus on intentions and not only on the fact that harm occurred or even that the speech act was incorrect.

*Factual claim task*. The important difference between the warm-up task and the factual claim task was that instead of evaluating an instrumental action the child had to evaluate factual claims for their moral valence, and the child did not see the announced consequences, but had to anticipate them. The set-up was similar to the one in the warm-up task and differed only in two ways: the stickers were replaced by gems and in both conditions, objects were used instead of toys. In the introduction phase, the owl again declared that she likes her gems very much and would be very sad if her gems would be gone and subsequently went to sleep. Then the experimenter put a box in front of the speaker puppet (e.g., the lion) and an object (e.g., a spoon)

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on the table, and asked the child to pay attention to what the speaker puppet was going to say ("And now pay attention to what the lion will say. But he must not say anything wrong! If he says something wrong, I will take away all of the owl's gems and put them in the lion's box and then the owl is very sad."). When the experimenter had turned around, the speaker puppet repeated: "Well, when I am saying something wrong, [experimenter's name] will take away all of the owl's gems and put them in my box and then the owl is very sad." In the bad-intention condition the puppet announced: "The owl should not keep the gems. I want those gems. That's why I want to say something wrong.", while announcing in the good-intention condition: "The owl should keep the gems. I do not want those gems. That's why I want to say something right."

In the test phase of both conditions, the speaker puppet pointed on the object (e.g., spoon) and made an incorrect claim: "I say this is an X (e.g., cat)." The experimenter then turned back and corrected the lion ("This is a Y, not an X!"). The child was asked to evaluate the lion's claim for its moral valence on a Likert scale ("The elephant said it wrong. Is this mean, a little mean, good or very good of him?") and to justify his/her evaluation.

After the evaluation trials both speaker puppets (lion and seal) who took part in the factual claim task came back. The experimenter repeated the puppets' intentions: "The lion wanted to have the owl's gems and therefore wanted to say something wrong. And the seal did not want to have the owl's gems and therefore wanted to say something right. And then both said something wrong. But who of the two is mean?" The child had to choose one puppet and was asked to justify his/her choice.

**Coding and Reliability.** All sessions were transcribed and coded from videotape by a single observer. A second independent observer, blind to the hypotheses and conditions of the study, transcribed and coded a random sample of 25% of all sessions for reliability.

Children's answers to the control questions (dichotomous variable: correct or incorrect response to E1's questions), their rating on the Likert scale – from 1 (very good) to 4 (mean) – and the justification of their rating were coded. Children's verbal responses were assigned to categories: (a) references to the puppet's intention (e.g., "Because he did it on purpose.", "Because he said he wants to say it right); (b) references to the consequences (e.g., "Because now all gems are gone.", "Because then she [the owl] is sad."); (c) references to the puppet's action or claim (e.g., "Because he did it wrong.", "Because they are actually scissors."); (d) references to the ownership (e.g., "Because these are the owl's gems."); (e) irrelevant justifications (e.g., "Because he has sharp teeth."); or (f) no justifications (including "Don't know").

Interrater reliability was very good, Cohen's $\kappa = 1$ (both answers to the control question 1 and 2), Cohen's $\kappa = 1$ (warm-up task evaluation), Cohen's $\kappa = 1$ (warm-up task justification), Cohen's $\kappa = 1$ (factual claim task evaluation), Cohen's $\kappa = 1$ (factual claim task justification) , Cohen's $\kappa = 1$ (forced-choice task : "Who of the two is mean?"), Cohen's $\kappa = 1$ (forced-choice task justification).

**Statistical Analysis.** Statistical Analysis were run in R, version 3.4.2 (R Core Team, 2016). Analyses were carried out as in Study 3a.

### 4.3.2 Results

**Factual claim task**

*Evaluation.* In the factual claim task, children evaluated the puppet's speech act significantly more negatively when the puppet's intention was bad ($M = 3.58$, $SD = 0.78$) than when it was good ($M = 3.42$, $SD = 0.78$; $Z = -2.00$, $p = .046$, $r = -.408$). Figure 7 shows the mean score of children's evaluation of the puppet's speech act.
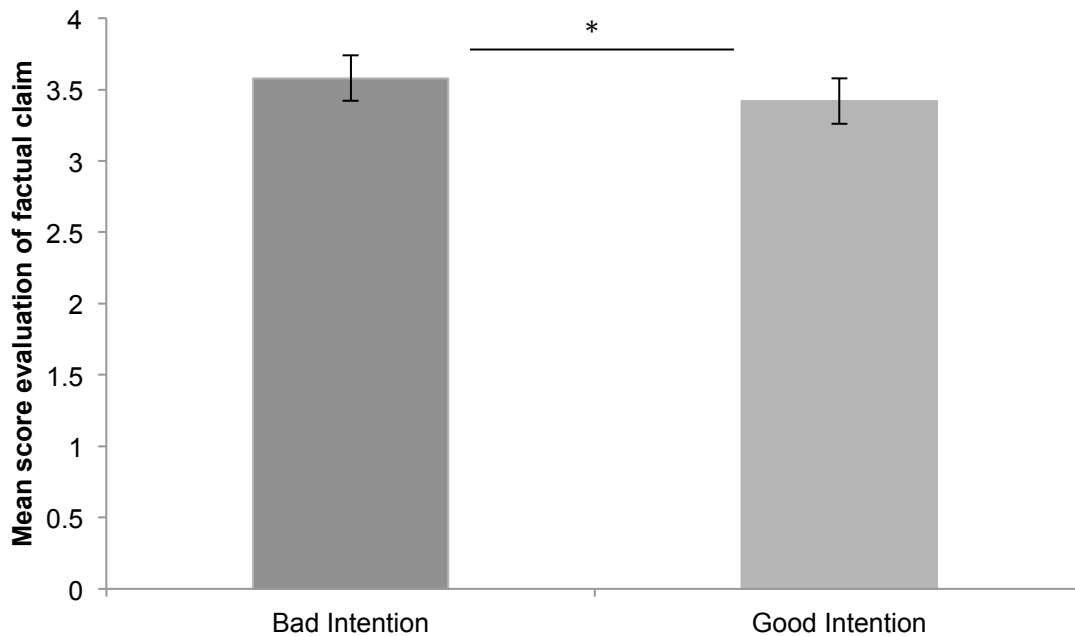


*Figure 7.* Mean score of children's evaluation (from 0 = very good to 4 = mean). Error bars depict standard error of the mean; *p ≤. 05.

*Justifications.* Children also had the opportunity to justify their evaluation. Table 12 shows the frequencies of children's justifications.

Table 12

*Frequencies (percentage) of justifications*

| | Task | | | | |
|---|---|---|---|---|---|
| | Warm-up | | | Factual Claim | |
| Categories | Bad Intention | Good Intention | | Bad Intention | Good Intention |
| Bad Intention | 5 (21%) | 0 | | 6 (25%) | 1 (4%) |
| Good Intention | 0 | 4 (17%) | | 0 | 3 (12.5%) |
| Consequences | 5 (21%) | 4 (17%) | | 5 (21%) | 5 (21%) |
| Action/Speech act | 10 (42%) | 11 (46%) | | 10 (42%) | 10 (42%) |
| Ownership | 0 | 1 (4%) | | 1 (4%) | 1 (4%) |
| Other | 1 (4%) | 1 (4%) | | 1 (4%) | 1 (4%) |
| No answer | 3 (12%) | 3 (12%) | | 1 (4%) | 3 (12.5%) |

***Relation Between Evaluation and Justification.*** For the purposes of analyses, children

were categorized as "*competent*" (i.e., children who evaluated the puppet's speech act that was

based on bad intentions more negatively than when it was based on good intention) and "*other*"

(i.e., did not differentiate between the two conditions). As predicted there were significant

associations between children's justifications and their competence in evaluating the moral

valence of the puppet's speech act (see Table 13): bad intentions, $\chi^2$ (2, $N = 24$) = 14.40, $p = .001$,

$V = .775$; good intentions, $\chi^2$ (2, $N = 24$) = 11.88, $p = .002$, $V = .703$, such that children who

evaluated the puppet's speech act competently were more likely to give justifications that referred

to the puppet's intentions (rather than using other justification categories) than children who did

not differentiate between the two puppets. These children were more likely to give justifications

that referred to the consequences of the speech act, irrelevant justifications or no justifications.

Table 13

*Association Evaluation and Justification*

| | | | | Justification Category | | |
|---|---|---|---|---|---|---|
| Task | Intention | | | Intentions | Consequences | Other |
| Factual claim | Bad | Evaluation | Other | 2 | 5 | 13 |
| | | | Competent | 4 | 0 | 0 |
| | Good | Evaluation | Other | 1 | 5 | 14 |
| | | | Competent | 3 | 0 | 1 |
| Warm-up | Bad | Evaluation | Other | 1 | 4 | 14 |
| | | | Competent | 4 | 1 | 0 |
| | Good | Evaluation | Other | 1 | 4 | 14 |
| | | | Competent | 3 | 0 | 2 |

*Forced-choice task.* After the evaluation phase, children were asked to identify the "mean" puppet. To test whether the proportion of children choosing correctly the puppet with bad intentions was significantly different from chance (.50), we conducted a planned exact binomial test (two-tailed). Children reliably chose the puppet with bad intentions (88% of children, $p <$ .001). Furthermore, children were asked to justify their choice. Of the children who correctly identified the ill-intended puppet as the "mean" (German: "böse") puppet, 9 children (43%) referred to the puppet's bad intentions, 3 children (14%) to the wrong speech act, 2 children (10%) to the consequences in their justification, 3 children (14%) gave an irrelevant, and 4 children (19%) gave no justification. Of the children who incorrectly identified the well-intended puppet as the "mean" puppet, 1 child referred to the puppet's bad intentions (33%), 1 child (33%)

to the puppet's good intentions in their justification and 1 child (33%) gave an irrelevant justification.

**Warm-up task.** In the warm-up task children answered two control questions to make sure they understood the consequences of a wrong action based on good or bad intentions. Only when the puppet had good intentions 8 children gave an incorrect answer to the first control question ("Did she do it right or wrong?", correct answer was "wrong"). When the puppet had bad intentions 1 child gave an incorrect answer to the second control question ("And what will I do with the stickers?", correct answer was "You put them in the puppet's box.").

*Evaluation.* In the training phase, children evaluated the puppet's action marginally more negative when the puppet had bad intentions ($M = 3.62$, $SD = 0.71$) than when she had good ones ($M = 3.42$, $SD = 0.78$; $Z = -1.67$, $p = .096$, $r = -.340$).

*Justifications.* See Table 3 for the frequencies of children's justifications.

*Relation Between Evaluation and Justification.* As predicted there were significant associations between children's justifications and their competence in evaluating the moral valence of the puppet's action (see Table 4): bad intentions, $\chi^2$ (2, $N = 24$) = 14.29, $p = .001$, $V = .772$; good intentions, $\chi^2$ (2, $N = 24$) = 8.84, $p = .012$, $V = .607$, such that children who evaluated the puppet's action and speech act competently were more likely to give justifications that referred to the puppet's intentions (rather than using other justification categories) than children who did not differentiate between the two puppets or wrongly evaluated the puppet's action more negatively when it was based on good than on bad intentions. These children were more likely to

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give justifications that referred to the consequences of the action, irrelevant justifications or no justifications.

### 4.3.3 Discussion

Children in this experiment evaluated the puppet's factual claim – which was always incorrect and would always lead to harm – more negatively when the puppet intended the harmful outcome (bad intention) than when the puppet did not intend the harmful outcome (good intention). Moreover, competent children (who evaluated the ill-intended speech act more negatively than the well-intended one) were more likely to give justifications that referred to the puppet's intentions than to the consequences of the assertive speech act, whereas the other children (i.e., who did not distinguish between the two speech acts, were more likely to give a justification that referred to the consequences of the speech act, or, for instance, to the wrong speech act itself than to the puppet's intention. Furthermore, children reliably chose the ill-intentioned puppet as being the "mean" puppet. These findings suggest that preschoolers' normative understanding of morally relevant assertions also entails an appreciation of the intentions underlying those speech acts.

## 4.4 General Discussion

Much developmental research on children's understanding of normativity and morality focused on their evaluation of others' intrinsically harmful (non-)verbal actions, such as hitting, stealing, lying, or teasing. Verbal actions (e.g., assertions), however, may have a moral dimension beyond epistemic harm (e.g., lying) or psychological harm (e.g., teasing). For instance, if someone makes an incorrect factual claim (e.g., "This water is clean!" or "The Earth is flat!"),

this may lead to harmful consequences to others. And the speaker may even want those harmful consequences to occur and therefore misuse the factual claim to reach an ill-intended goal. We investigated children's understanding of the moral dimension of factual claims. In two experiments, children witnessed a speaker making an incorrect assertion ("This is an X!"). In Experiment 1 we varied the speech act's consequences: it would either lead to harm (another puppet would lose her property) or to no harm (a paper ball would be thrown away). Children evaluated the incorrect factual claim that would lead to harm more negatively than the incorrect factual claim that would not lead to any harm. In Experiment 2, the incorrect assertion would always lead to harm (a puppet would lose her property). However, we varied whether the puppet's intention was good (harmful consequences were not intended) or bad (harmful consequences were intended). When the speaker was ill-intended, children evaluated her claim more negatively than when she was well-intentioned, although both claims would lead to harmful consequences. Importantly, in neither experiment did children witness morally relevant (non-verbal) actions in the factual claim task, such as throwing away someone's property. Rather, they witnessed and evaluated morally relevant factual claims that were related to upcoming consequences or prior intentions.

These findings go beyond previous work on children's evaluation of, and reasoning about, others' morally relevant (non-)verbal actions (e.g., hitting, stealing, lying, teasing) in interview studies (Bussey, 1992; Peterson et al., 1983; Smetana, 2006; Smetana et al., 2012; Tisak & Turiel, 1988; Turiel, 1983) and children's spontaneous protest responses to norm transgressions in social interactions (Schmidt & Tomasello, 2012). In our study, children did not witness concrete harming non-verbal actions, psychological harm or epistemic harm, but rather factual claims (which, per se, need not be considered moral, but rather correct or incorrect given

observable reality; Turri, 2017) with moral relevance. Our findings also go beyond prior work on preschoolers' evaluation of speech acts, which did not involve a moral dimension, such as harm. For instance, 3-year-olds were found to criticize speakers who make incorrect factual claims (Rakoczy & Tomasello, 2009). In our experiments, however, claims were always incorrect, and children had to reason about the additional moral layer (consequences or intentionality of consequences) when evaluating the factual claims.

Moreover, in both experiments, competent children (i.e., in Experiment 1 children who evaluated the harm-related speech act more negatively than the no harm-related one, and in Experiment 2, children who evaluated the ill-intended speech act more negatively than the well-intended one, respectively) were more likely to use the appropriate justification type (consequences in Experiment 1, intentions in Experiment 2) rather than other justification categories than the other children (i.e., children who made the reverse evaluation or no difference between the puppets' speech acts). These interrelations bolster the claim that children did not merely evaluate the incorrect factual claim per se, but focused on consequences and intentions, respectively. However, they also suggest that while as a group, children were competent at evaluating the factual claims in moral terms, there are also substantial individual differences in children's competence for evaluation and justification that should be investigated in future work. We should also note that Experiment 2, in particular, was challenging regarding both the design (constant harm, incorrect speech act, (un-)intended consequences) and the experimenter's question, which referred to the incorrectness of the factual claim ("X said it wrong. Is this mean, a little mean, good or very good of him?"). This might have led some children to focus on whether the assertion matched reality or not (thus not on moral questions). Similarly, Nobes and colleagues (2016) found that the phrasing of the experimenter's question had a huge influence on

children's moral evaluation, such as whether they focused on intention or outcome. Moreover, the fact that the anticipated outcome would always be harmful in Experiment 2 (actual harm did not occur in the test phase) might in part explain why children's evaluation in Experiment 2 was overall rather negative. Thus, future research could vary the intentionality of consequences while keeping anticipated consequences harmless.

The forced-choice test in Experiment 2, in which the clear majority of children correctly identified the puppet with ill intentions (and often referred to intentions in their reasoning) as the "mean" one supports the notion that preschoolers appreciate others' intentions as morally relevant and use them for making moral evaluations. Similarly, Killen and colleagues (2011) found that from around late preschool age, children consider others' intentions regarding morally relevant non-verbal actions in which an accidental transgressor caused harm. Given that Killen and colleagues found systematic associations between children's competence in false belief tasks and their moral evaluation of the non-verbal actions, one interesting question for future research is whether theory of mind skills and moral evaluation of verbal actions – assertions underlain by good or bad intentions – are related.

Together, the present findings suggest that preschoolers' normative understanding is not confined to evaluating others' intrinsically harmful (non-)verbal actions, but also entails an appreciation of the moral dimension of factual claims that are typically merely true or false. And when children evaluate factual claims regarding their moral worth, they take into account consequences and intentions regarding consequences. The current work thus broadens the investigation of the ontogeny of normativity by integrating moral cognition with children's developing understanding of speech acts, such as factual claims. Developing the ability to scrutinize and evaluate factual

claims with moral relevance is a crucial skill, perhaps even more so in our digital age in which

children are confronted with assertions in virtual forums on a daily basis.

# 5. General Discussion

Past research has mostly focused on practical norms, such as conventional (e.g., etiquette rules) or moral norms (e.g., hitting someone is wrong). This path of research showed that already 3-year-olds understand the key features of normativity (i.e., standard-correctness, generality, context-relativity and normative force) and understand the obligation to follow norms. Furthermore, children understand that violating a moral norm is worse than violating a conventional norm (Tisak & Turiel, 1988). Three-year-olds even understand that entitlements are linked to obligations and defend practical entitlements of others (Schmidt et al., 2013). Another huge research field in developmental psychology is the investigation of children's descriptive understanding of epistemic states. Results show that a profound understanding of epistemic states develop around the age of four to five (Harris, 2006; Koenig & Harris, 2005b; Robinson et al., 2011; Sodian & Wimmer, 1987; Wimmer & Perner, 1983). At this age, children can take others' perspectives and understand that another person's knowledge is independent of their own knowledge (Wimmer & Perner, 1983). Moreover, they know at this age to trust trustworthy speaker over unreliable speaker (Jaswal & Neely, 2006; Koenig & Harris, 2005a; Nurmsoo & Robinson, 2009b; Robinson & Nurmsoo, 2009) and know that from seeing an event follows to know certain things (Nurmsoo & Robinson, 2009a; Robinson et al., 2011; Wimmer, Hogrefe, & Sodian, 1988).

The normative dimension of epistemic states, however, has not received much attention in developmental psychology research to date. Thus, the question of whether and how children understand epistemic norms, especially those associated with speech acts, is still unresolved.

The research of this dissertation was guided by the notion that beside practical norms, there are also epistemic norms that need to be investigated. Thus, the general aim of the thesis

was to examine children's understanding of the normative dimensions of speech acts as well as epistemic entitlements (i.e., the entitlement to assert justified beliefs). The dissertation examined three research questions that are essential for our understanding of children's development in epistemic and normative psychology: (1) Are children proficient to evaluate the validity of knowledge claims (e.g., "I know X!") by their correctness? (2) Do children understand the notion of epistemic entitlements (i.e., being entitled to assert a justified claim)?, and (3) Do children appreciate the moral dimension of factual claims? These three research questions needed to be answered in order to fully comprehend children's developing understanding of speech acts both in their epistemic as well as normative dimension.

In the following chapter, first, I will briefly summarize the major finding of the three empirical studies presented in the current thesis. This will be followed by a more general discussion of the results, focusing on our understanding of entitlements, speech acts and children's development. After highlighting the theoretical impact of the current thesis, some limitations and propositions for future research will be described and possible applied implications will be briefly touched before drawing some final conclusions.

## 5.1 Summary

Study 1 investigated children's developing understanding and evaluation of the validity of knowledge claims, an important aspect of their norm and theory of mind development. A competence that is especially important in the current digital age in which children need to scrutinize apparent facts and claims in order to differentiate correct from incorrect assertions about the world to ultimately gather and accumulate robust knowledge. Besides non-epistemic claims about facts (e.g., "This is an X!"), one often asserts epistemic claims (e.g., "I know that X!"), explicitly asserting that one knows a certain state of affairs.

In the current study, three- to five-year-old children witnessed a speaker claiming knowledge about the location of a hidden object ("I know where X is!"). However, the speaker's prior perceptual access to the critical hiding event was manipulated, such that the speaker either was knowledgeable about where the object was hidden (speaker had perceptual access) or was ignorant about the location of the object (speaker lacked perceptual access). Then, children were asked to evaluate whether a speaker's knowledge claim was correct or incorrect given objectively accessible information, that is, whether the speaker had perceptual access to the critical hiding event.

The results showed that both younger (3 to 4.5 years) and older (4.6 to 5.11 years) preschoolers predominantly accepted the speaker's correct knowledge claims when the speaker had seen the hiding event. However, when the speaker lacked perceptual access, only older preschoolers reliably rejected the speaker's incorrect knowledge claim, while younger children performed at chance level. Nevertheless, even a considerable proportion of young 4-year-olds both rejected incorrect knowledge claims and gave valid explanations for why the speaker does

not know X, suggesting that the ability to evaluate epistemic claims develops gradually from around four years of age.

These findings go beyond prior research on children's understanding of, non-epistemic assertions, early epistemology, epistemic trust, testimony and the seeing-knowing relation. We know from former studies that, for instance, 3-year-olds readily reject incorrect non-epistemic assertions (e.g., "This is an X"; Pea, 1982; Rakoczy & Tomasello, 2009), but the current study investigated epistemic assertions and challenged children to assess a speaker's knowledge claim. Thus, the current work may help bridge these literatures and integrate research on children's norm and theory of mind development.

In summary, the findings of this study suggest that evaluating incorrect knowledge claims ("I know X!") is far more complex than evaluating incorrect non-epistemic factual claims ("This is an X!"). Owing to this, it is not before the age of four that children are able to reject incorrect knowledge claims.

Study set 2 investigated the understanding of epistemic entitlements in children, namely the entitlements to assert knowledge based on justified true beliefs. For control purposes, the understanding of non-epistemic entitlements was also examined. To this end, 3- and 5-year-olds were tested with a counter-protest paradigm, observing a speaker puppet asserting a claim that the judge puppet subsequently criticized, either justifiably or unjustifiably. In the non-epistemic task, the justification of the assertion was given by the correct or incorrect naming of an object, whereas in the epistemic task, the justification was determined by knowledge through ownership. The results showed that in the non-epistemic task, both age groups counter-protested against the judge, when the speaker puppet was criticized unjustifiably. Study 2b emphasized the ability of 3-year-olds to defend non-epistemic entitlements of others. This finding stands in line with

Rakoczy and Tomasello's (2009) study, which showed that already three-year-old children understand the normative directions of fit for different kind of speech acts. However, in the epistemic task, only 5-year-olds reliably rejected the second-party's protest and, thus, defended the speaker's entitlement to make justified knowledge claims. Furthermore, 5-year-olds showed the opposite behavior, when the speaker asserted an unjustified claim, that is, they affirmed the judge's protest or criticized the speaker themselves for his unjustified assertion.

The findings of the present study provide the first evidence that children develop at the age of five an understanding of epistemic entitlements, namely the entitlement to claim justified knowledge. They seem to develop an understanding of the social-normative dimension of knowledge and understand that one must have reasons to be able to invoke entitlements (Brandom, 1994). If these prerequisites are fulfilled, however, others are obliged to respect the speaker's entitlements.

In addition, children's counter-protest showed that they are even willing to stand up for others' entitlements to assert knowledge. Most noteworthy is the fact that children showed this selfless behavior even though they themselves were not involved as a first party, which, from the moral-motivation point of view, constitutes an important step in the moral development of children.

Taken together, the results of this study suggest that 3-year-olds have difficulties yet to understand epistemic entitlements. However, children at the age of five begin to develop a mature understanding of normativity so that they can already enforce epistemic entitlements of others.

Study set 3 investigated in two experiments, whether children at the age of four to five understand that factual claims may have a moral dimension too. To this end, children in Study 3a witnessed a puppet making a false factual claim ("That's an X!" even though it was a Y), which

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would lead to harmful consequences (another puppet would lose her treasured gems) or harmless consequences (a paper ball would be thrown away). In Study 3b, children observed a puppet that also asserted a false factual claim, but this claim would always lead to harm (another puppet would lose her treasured gems), however, the puppets differed in whether they intended the harm to occur or not.

The results of Study 3a showed that children evaluated the puppet's incorrect factual claim more negatively when they anticipated harmful versus harmless consequences. In Study 3b, children took into account the puppet's intention. They rated the false factual claim of the puppet with bad intentions more negatively than that of the puppet with good intentions, over and above harmful consequences. In addition, the vast majority of children identified the puppet with bad intentions as the mean one of the two puppets.

The results complement our understanding of children's understanding and judgment of moral transgressions of others. Until now, the focus of research on children's developing moral cognition has been on children's evaluation of, and reasoning about, others' intrinsically harmful (non-)verbal actions (e.g., hitting, lying). However, the moral dimension of factual speech acts remained unconsidered in research, although factual claims can have morally relevant (intended or unintended) consequences, too.

Taken together, the findings of these two experiments suggest that the normative understanding of preschool children is not limited to evaluating the per se harmful behavioral transgressions of others, but also involves an appreciation of the morally relevant consequences and intentions of the factual claims of others.

## 5.2 Contributions to our Understanding of Epistemic Entitlements

The findings of Study 2a, presented in the current thesis aimed to investigate the theoretical considerations on epistemic norms, which particularly philosophers have been discussing so far (Dretske, 2000; Engel, 2008, 2011; Graham, 2015; Littlejohn & Turri, 2014; Matthiessen, 2014; Pollock, 1987; M. Williams, 2000).

Schmidt and colleagues (2013) found that children at the age of three understand practical entitlements and therewith, acknowledge the link between entitlements and obligations concerning practical normativity. Regarding horizontal normativity, children were competent in defending an actor's entitlement both the entitlement to possess an object and the entitlement to play a game in a conventional way. Additionally, children understood vertical normativity, namely second-order entitlements (an owner is authorized to entitle another person to use the owner's property). The results of the current thesis show that children's understanding of entitlements goes beyond practical entitlements, and applies to epistemic entitlements as well, that is, holding the entitlement to express knowledge (based on good evidence). The current results support the idea that children at the age of five begin to develop a mature understanding of normativity beyond practical norms. Beside epistemic obligations (i.e., that one has to assert true things; Boghossian, 2003; Engel, 2011, 2013; Graham, 2015; Shah, 2003), children understand also the interrelation between epistemic obligations and epistemic entitlements.

According to Rainbolt (2006) a right holder *A* has the entitlement to perform an action *X*. This entails that a second-party *B* may not interfere with *A*'s action *X*. Otherwise, *B* would violate *A*'s entitlement to perform *X*. Applied to the current study, it means that the speaker as a right-holder was entitled to assert his knowledge about his stuffed animal's name (action X). Although, the judge (as a second-party) should have respected the speaker's entitlement, he interfered with

the speaker's entitlement to commit a speech act, and thus violated the speaker's entitlement to assert his knowledge.

Good reasons are the basis for a person's entitlement and are crucial to whether the person has the entitlement to perform a certain action. For example, the basis of practical entitlements is, among other things, ownership. Even young children understand the concept of ownership and know that only the owner has the right to determine what is done with his property (Schmidt et al., 2013). Epistemic entitlements, though, are more complex, because they are based on mental states. The complexity here is that one has to consider two steps before epistemic entitlements can be assigned to a person. The first step is to consider the evidence and decide on its validity. The second step requires comparing the evidence with the mental state of the individual.

In Study 2a, children first had to understand that ownership counts as good and valid reason and second that the speaker as an owner of the animal knows things about his property that are not visible (in this case the name). However, often there is no fixed benchmark for what is considered good evidence or how much evidence is needed to count as knowledge. Traditionally, sources such as sensory perception or memory are considered reliable. However, most of our evidence is grounded on testimony and, thus, a ubiquitously source of knowledge (Lackey, 2006; Matthiessen, 2014). Also in our study, children had to rely on the speaker's testimony that he was asserting the correct name of his animal and, thus entitled to claim knowledge.

The current findings that children at the age of five understand the normative notion of epistemic entitlements are important for two reasons. First, by counter-protesting and therewith defending the entitlements of others to assert justified knowledge, children show that they

understand that on the one hand one is obliged to make only true assertions, but on the other hand also that one must respect the entitlement of an individual to express his knowledge.

Second, in our world full of correct but also full of false information, it is important that children can evaluate the truth value of statements and, thus, recognize when a person is entitled to make a claim as well as when he is not.

## 5.3 Contributions to our Understanding of Speech Acts

The findings presented in the current thesis go beyond and complement previous research on speech acts. Together, my dissertation shows that children have an even more profound understanding of speech acts than hitherto assumed. The peculiarity of the research in this thesis is that it examined three new aspects of speech acts, that is, the evaluation of both epistemic claims (i.e., "I know that X!") and the moral dimension of factual claims (e.g., "This is an X!"), as well as the entitlement to make speech acts. A bunch of studies on children's understanding of speech acts have found that children can track the fulfillment or non-fulfillment of the descriptive dimension of factual speech acts (Birch & Bloom, 2002; Koenig & Echols, 2003; Pea, 1982; Stephens et al., 2015). Already young children show an understanding of the validity of simple non-epistemic speech acts (i.e., without saying "I know"), when they can directly compare a speaker's assertion with reality (Koenig et al., 2015). For example, even 2-year-olds display a prolonged looking time when a speaker misnames an object instead of correctly naming it (Koenig & Echols, 2003). Another study showed that at the same age, children spontaneously negate false assertion that do not match reality (e.g., "Peter is eating the cake", when Peter instead is eating a carrot; Pea, 1982). All these studies have in common that they investigated non-epistemic claims and did not investigate children's understanding of epistemic claims.

Beside non-epistemic claims about facts, people often assert knowledge claims, explicitly indicating that they know a certain state of affairs. In our global age, in which we are confronted daily with facts and assertions uttered by others, it is crucial to be able to evaluate the validity of knowledge claims. As study 1 showed, preschool children gradually develop an understanding of the validity of knowledge claims. This ability begins with the acceptance of valid knowledge

claims, which children acquire at the age of three, and from the age of 4.5, they can finally reject invalid knowledge claims.

As Searle (1969) explained, speech acts have different directions-of-fit, distinguishing between the "*word-to-world*" direction-of-fit, that is, a speaker makes an assertion about a fact (e.g., assertions) and the "*world-to-word*" direction-of-fit, meaning that a speaker changes the world with his words (e.g., imperatives). Rakoczy and Tomasello (2009) investigated 3-year-olds understanding of the normative structures deriving from different directions-of-fit of imperatives and assertions. The authors found that children at the age of three distinguish between the directions-of-fit, namely that children selectively directed their criticism at actors when they did not follow the imperatives of the speaker, but at speakers when their assertions described an actor's action incorrectly. Study set 2 investigated children's understanding of the entitlement to make speech acts. Study 2b complements Rakoczy and Tomasello's (2009) findings and shows that 3-year-olds understand the relation between assertions and imperatives (non-epistemic entitlements), namely that a speaker is entitled to make a correct non-epistemic claim ("This is an X!") and is immune to inappropriate protest or imperatives, respectively ("You must not claim this!"). However, they also understood that when the speaker made an incorrect assertion (i.e., he labeled an object incorrectly), children approved the judge's protest or imperative, respectively. Study 2a showed that with increasing age, children's understanding of this concept develops even further, such that they can apply it to epistemic speech acts.

Previous research investigated children's understanding of speech acts that either caused psychological harm (harming others with the content of the speech act), such as name-calling and teasing (Ball et al., 2017; Helwig et al., 2001; Smetana et al., 2012) or epistemic harm through

lying and deceiving another person (Bussey, 1992, 1999; Lyon et al., 2013; Maas, 2008; Maas & Abbeduto, 2001; Peterson et al., 1983).

These results fit with the findings of Study set 3, which showed that children inferred that a factual claim (e.g., "This is an X!"), which could be considered amoral, can have under certain circumstance a moral dimension (Turri, 2017). They evaluated the assertion as good or bad not in light of its correspondence to reality, but rather in light of the moral relevance of its consequences (Study 3a) and the intentionality of those consequences (Study 3b).

Altogether, these findings show that children gain a more profound understanding of speech acts as they grow older and consider the normative dimension of speech acts, as well as the perspective and knowledge of the speaker in their evaluation.

## 5.4 Developmental Aspects

Recent research on children's norm understanding has been concentrating on children at the age of three and younger (Hamlin, 2013; Rakoczy, 2008; Rakoczy et al., 2008; Schmidt et al., 2012; Schmidt & Tomasello, 2012; Vaish et al., 2010; Van de Vondervoort & Hamlin, 2016). This path of research, though, investigated particularly practical normativity, such as social and moral norms. Furthermore, Schmidt and colleagues (2013) found that children at the age of three understand practical entitlements.

However, the three presented studies in the current thesis investigated children's understanding of epistemic normativity, namely children's understanding of the moral dimension of speech acts, including evaluating the validity of knowledge claims (Study 1), entitlements to assert knowledge, that is, making justified speech acts (Study set 2) and evaluating the moral dimension of factual speech acts with the focus on understanding of consequences (harmful versus harmless) and intentions (Study set 3).

Evaluating the moral dimension of epistemic states proved to be more difficult, attributable to the fact that evaluating the moral dimension of speech acts encompass the understanding of normativity as well as epistemology, especially when considering the importance of intentions (Astington, 2004; Baird & Astington, 2004; Cummins, 2013; Killen & Smetana, 2008; Perner et al., 1989; Rizzo & Killen, 2014; Schmidt & Rakoczy, 2018a).

The results of the current thesis provided evidence that the understanding of the epistemic dimension of normativity develops gradually from the age of four to five, which fits with prior research, that showed that children's understanding of epistemic states develop gradually at this age range. This includes the ability to understand others' perspectives, such as the understanding of theory of mind, knowledge acquisition or testimony (Birch & Bloom, 2007; Miller et al., 2003;

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Sodian & Thoermer, 2008; Sodian & Wimmer, 1987; Wellman et al., 2001) to name a few. In the studies of the current thesis, children had to use both their normative and epistemic understanding. They had to understand the normative aspect of the speech acts and at the same time track the epistemic status of the speaker.

Previous studies on children's ability to judge moral transgressions regarding their consequences or on which intentions they are based, emerge at the age of four to five (Killen & Smetana, 2014; Nelson, 1980; Nobes et al., 2016, 2009; Rizzo & Killen, 2014). Study set 3 investigated moral transgressions by judging incorrect factual claims. Children's evaluation of incorrect speech acts depending on harmful versus harmless consequences fit to some extent with prior research on (non-)verbal moral transgressions (Killen et al., 2011). When children were asked to judge incorrect factual claims, which were based either on bad or good intentions (in both cases, however, harmful consequences would happen), they judged that the claim of the puppet with bad intentions was meaner and were able to identify in a forced-choice situation the mean puppet. Thus, results showed that children have a beginning understanding of the moral dimension of factual claim, which is gradually developing from the age of four to five. The ability to judge factual claims on their moral value begins with weighing consequences and strengthens with children considering a speaker's intention. But importantly, there were significant differences within the age group, such that only a few children could differentiate between the incorrect factual claims that were based either on good or bad intentions. This is a strong indication that the ability to evaluate factual claims by intention only begins to develop gradually from the age of four to five.

## 5.5 Limitations and Implications for Future Directions

The present work aimed to gain a deeper insight into how and when children understand epistemic norms, such as the normative dimension of speech acts. While the findings of the three studies provide first evidence that children of preschool age have a beginning mature understanding of (epistemic) normativity, the question of what are the prerequisites for such an understanding remains unanswered.

Addressing this question is of great interest given that in all three studies children within an age group showed substantial differences in their task performance. Several prerequisites are possible. The most important factor to examine is the interrelation between children's ability in theory of mind and their competence in evaluating speech acts. All three studies require in their own way the ability to understand the perspective of others.

In Study 1, this relationship was given by the fact that children had to consider the potential epistemic relationship of others to the world (using their theory of mind skills) and to evaluate the validity of an epistemic claim (using both their basic normative and their theory of mind skills).

In Study set 2, the relationship between these two capabilities is plausible, since to defend others' epistemic entitlements, it is necessary both to understand the epistemic reasons for such entitlements (something that is not possible without theory of mind abilities) and to understand the normative link between obligations and entitlements, thus normative understanding.

Regarding Study set 3, recent research found systematic associations between children's competence in false belief tasks and their moral evaluation of non-verbal actions (Killen et al., 2011). Thus, it is likely that theory of mind skills and the moral evaluation of verbal actions, that is, claims supported by good or bad intentions might be related as well.

Another aspect that future research should investigate is the cognitive mechanisms, for example inhibition, underlying the development of children's ability to evaluate epistemic claims. The reason for this assumption is that it is necessary to inhibit one's own knowledge in order to correctly assess false epistemic claims.

Epistemic entitlements have not yet been investigated in empirical research. The entitlement to express a belief requires good reasons. In the present study, the entitlement was grounded on the fact that the speaker was the owner of a stuffed animal and thus knew about certain properties, for instance the name. The connection between knowing something through ownership and the entitlement to assert knowledge is, however, highly demanding and most likely overwhelmed the 3-year-olds. In order to test whether the lack of competence of 3-year-olds is really due to their performance rather than to pragmatic reasons, the understanding of epistemic entitlements should be examined with less complex reasons. Future research may investigate further reasons that justify a speaker expressing his belief, such as perceptual access to a critical event. Previous research showed that younger children prefer to learn from people who gained their knowledge from perceptual access (Mitchell, Robinson, Nye, & Isaacs, 1997; O'Neill et al., 1992). In addition, they attribute more knowledge to themselves when they have gained it through perception than when it has only been told to them (Robinson, Haigh, & Nurmsoo, 2008). This shows the high value of perception in the acquisition of knowledge for children. Using perceptual access as a justification for asserting knowledge would allow children to verify the speaker's testimony and thus rule out possible trust or pragmatic issues that children might have with the speaker's testimony.

The thesis focused on children's understanding of justified true beliefs based on objective reasons. Human beliefs, however, are diverse and cannot be classified only as right and justified

or wrong and unjustified. There are also special forms such as justified false beliefs, which is a belief that a person holds without knowing that it is false. From his or her point of view, however, the belief is true and, thus justified. In order to gain a more profound understanding of children's understanding of entitlements regarding epistemic states, it would be interesting to investigate whether they understand entitlements based on subjective reasons.

In Study 3b, only a few children differentiated between the speech acts of the two puppets. As Killen and colleagues (2011) showed in their study, the competence to assess intentions develops up to the age of seven years. Nevertheless, a factor that could explain children's performance is the wording of the experimenter's question, which referred to the incorrectness of the factual claim ("X said it wrong. Is this mean, a little mean, good or very good of him?"). The wording, however, is of great importance for this kind of task (Nobes et al., 2016). For this reason, in future studies, the emphasis on the false speech act in favor of intention should be less emphasized.

The current work has taken the first step towards empirically investigating the understanding of epistemic norms in children. For a deeper understanding, however, much future research is needed in this field.

## 5.6 Conclusion

In summary, the thesis complements the literature on normativity, which to date has dealt exclusively with children's understanding of practical norms. The work presented in the current thesis demonstrates that preschool-aged children do not only understand practical norms, but also develop gradually from around the age of four to five an understanding of epistemic normativity, including the understanding of the normative dimension of speech acts. Moreover, this work provides a valuable contribution to our understanding of how children understand normativity. Finally, the thesis seeks to provide the first step towards a holistic view of norms, both by highlighting the importance and omnipresence of epistemic norms and by juxtaposing them with practical norms. Further research is certainly needed to examine how sophisticated children's understanding of epistemic norms is and to address the multitude of open questions on the ontogeny of epistemic normativity.

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# List of Tables

# List of Figures

# Appendix

**Original works in connection with this dissertation**

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