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Implications for the Testimonial Reductionism/ Anti-Reductionism Debate from Psychological Studies of Selective Trust: Scope and Limitations

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Abstract

The child objection is a major challenge for reductionism, which requires hearers to have positive reasons for testimonial justification. However, it has been pointed out that anti-reductionism, which requires only the absence of negative reasons, or defeaters, suffers from the same kind of problem. The child objection presupposes the empirical thesis that “children do not have the capacity to consider reasons,” but the plausibility of this assumption may be revealed by developmental psychology research on selective trust. This paper uses recent epistemological studies as a guide to narrow down the types of defeaters that children are required to consider, and then clarifies what kind of reasons various experiments can be said to test the ability to consider, and in what sense children who pass the test can be said to be “considering” reasons. In doing so, we clarify the scope and limits of the implications that selective trust studies can have for reductionism and anti-reductionism. We then suggest what future psychological research is desired from an epistemological interest to go beyond the current limitations.

Keywords: epistemology of testimony; reductionism/anti-reductionism; child objection; selective trust; defeaters

1. Introduction

The reductionism/anti-reductionism debate is a central issue in the epistemology of testimony. Reductionism holds that a person must have positive reasons, such as the belief that the speaker is trustworthy, for the belief in the content of someone’s testimony to be justified.¹ Anti-reductionism, on the other hand, maintains that positive reasons are

¹This paper focuses explicitly on justification and assumes that it is closely related to knowledge. Specifically, we assume that the following relationship between knowledge and justification holds (Goldman and Olsson 2009: 20, 22; Lackey 2008: 9).

S knows that p if and only if
1. p is true.

not necessary for testimonial justification. One major point of contention in this debate is the child objection, which is directed from anti-reductionism to reductionism (Audi 1997).² The objection argues that because children lack the cognitive abilities necessary to have positive reasons, reductionism entails the unacceptable consequence that children can never be justified in their beliefs based on testimony, and then concludes that reductionism must be false.

Obviously, the premise that children lack the cognitive capacities to have positive reasons is an empirical claim that can be verified through scientific investigation. Clément (2010) criticizes the inappropriate appeal to children by reductionism/anti-reductionism because they have sufficient capacity to consider reasons, citing early studies on selective trust in developmental psychology. Of course, what empirical research can show is not that all children can consider reasons, but at best that most or even many can. Nonetheless, among the counterexamples to reductionism, such as the case of asking a stranger for directions in a new place (Lackey 2008: 180), the danger of the child objection lies in the fact that it uniformly excludes all people in the very common category of children from cases of testimonial justification without being limited to the specific situation of hearing testimony. Thus, if a significant proportion, if not all, of children have the capacity to consider reason, the threat of the child objection would be mitigated to a considerable degree. However, further elaboration on Clément's line is required in light of the advancements in both epistemology and developmental psychology since the time of his work. There are two significant considerations in the field of epistemology. The first is that it is now recognized that the child objection is not solely a problem for reductionists (Lackey 2008: Chap. 7). While anti-reductionism does not necessitate positive reasons for justification based on testimony, it does require the absence of negative reasons in common with reductionism. Lackey argues that, since children cannot substantially satisfy this requirement, an undesirable consequence is inevitable even if one adopts anti-reductionism. Secondly, there is a deeper understanding of negative reasons, or defeaters. Specifically, after classifying defeaters according to various criteria, it should be examined whether a particular type of alleged defeaters truly prevents justification and when certain types of defeaters are effective. Such research should help to clarify the necessary conditions for testimonial justification. On the other hand, psychological studies of selective trust involve experiments under various conditions, some of which may be interpreted as testing children's ability to consider defeaters. In this paper, we, therefore, explore the scope and limitations of the implications of selective trust research on the child objection, incorporating findings from both epistemology and developmental psychology.

2. S believes that p.

3. S is justified in believing that p.

4. A suitable anti-Gettier condition is satisfied.

The line of emphasizing the separation of knowledge and justification, taking the knowledge condition weakly and the justification condition strongly, can be found in the epistemology of testimony (cf. Audi 1997). By contrast, the understanding of justification in this paper must be weaker because of the assumed close relationship between justification and knowledge.

²This sort of objection is often referred to as an "infant/child objection," but in this paper it is simply called a "child objection." In the literature on child objections, the age range indicated by the terms "child" or "infant" is often ambiguous and varies (cf. Lackey 2008: 195; Graham 2018: 3021), but for the purposes of this paper, it is assumed to be preschoolers aged approximately one year or older.

The structure of this paper is as follows. The [second](#) section introduces reductionism/anti-reductionism and examines their relation to positive and negative reasons, or defeaters. Additionally, an overview is provided on the nature of defeaters, along the lines of the rebutting/undercutting and psychological/normative distinctions. In Section 3, we look at the child objection to reductionism and its variant, which has been modified to challenge both reductionism and anti-reductionism. The variant of the child objection posits that “justification requires the absence of defeaters” and that “children are not capable of considering defeaters.” Section 4 partially refutes the former premise, thereby narrowing the extent of abilities required for children to possess testimonially justified beliefs. Section 5 examines what kind of reasons various experiments conducted in research on selective trust can be said to test the ability to consider, and in what sense children who pass the test can be said to be “considering” reasons. After identifying the scope and limitations of the implications for the reductionism/anti-reductionism debate, we briefly discuss the kind of research desired in the future to move beyond the current limitations.

2. Reductionism/anti-reductionism and defeaters

The crux of the disagreement between reductionism and anti-reductionism precisely pertains to the criteria on the part of the hearer required for *prima facie* justification.³ According to reductionism, beliefs founded on testimony are *prima facie* justified when the hearer has positive reasons for accepting the testimony, such as a track record of the testifier’s past statements being accurate.⁴

Reductionism:

(R) For every speaker, A, and hearer, B, B believes that p with *prima facie* justification on the basis of A’s testimony only if B has appropriate (non-testimonial) positive reasons to accept A’s testimony.

The intuitive motivation for reductionism is that, at least, belief in the testimony of someone who maliciously tries to deceive the hearer or who is not a reliable epistemic subject in the first place is not likely to be justified if one believes it without any other basis. Reductionism denies the *prima facie* justification in such cases by (R).

In contrast, anti-reductionism denies (R), namely, it does not require any positive reasons for justification.

Anti-reductionism:

(AR) For every speaker, A, and hearer, B, B possibly believes that p with *prima facie* justification on the basis of A’s testimony even if B has no (non-testimonial) positive reason to accept A’s testimony.

³Note that both reductionism and anti-reductionism are formulated as claims about the necessary conditions for justification, especially those concerning the hearer side. In order to have a complete theory of testimonial justification, especially for anti-reductionism, which does not demand much from the hearer, it is necessary to consider conditions on the testifier and on the environment in which the testifier and the hearer are situated. In this respect, we believe that the lines taken by Lackey (2008: 177–78), who requires the reliability of the testifier, and Goldberg (2008), who emphasizes the importance of the social environment, will be promising.

⁴There are two types of reductionism: global reductionism, which requires reasons for believing testimony in general, and local reductionism, which requires reasons for believing the testimony of a particular testifier in a particular situation. What we deal with here is exclusively the latter.

Anti-reductionism allows for a wide range of prima facie justifications without demanding the hearer to have positive reasons. However, the adoption of anti-reductionism does not mean that *ultima facie* justification can also hold independently of the conditions on the hearer side. For *ultima facie* justification, the hearer must not have any negative reasons, i.e., defeaters, for not accepting the testimony. Anti-reductionism, as well as reductionism, accepts the following necessary condition for *ultima facie* justification.⁵

Ultima Facie Justification:

For every speaker, A, and hearer, B, B believes that p with *ultima facie* justification on the basis of A's testimony only if:

(Prima Facie Justification Condition) B believes that p with prima facie justification on the basis of A's testimony and

(No-defeater Condition) B has no psychological or normative defeaters for A's testimony.⁶

Defeaters are possible or actual beliefs that a belief (hereinafter called a target belief) is false (or something that clearly implies that it is false) or that the target belief is not properly based, e.g., formed in an unreliable way, not based on adequate evidence, or not properly related to the evidence. The former is called a rebutting defeater, and the latter an undercutting defeater. For example, suppose I buy lunch at the only sandwich shop near my workplace, and on my way back to the office, I encounter a co-worker who tells me, "I went to the sandwich shop, but it was closed temporarily." At this point, I have a rebutting defeater for the content of my colleague's testimony. In contrast, when we consider the case where, instead of my visiting the shop, I know that my colleague has a habit of making fun of me with nonsensical lies, I have an undercutting defeater. In either case, if I ignore the existence of defeaters and believe the content of my colleague's testimony, then the belief must not be justified. The rebutting/undercutting distinction is a categorization in terms of mechanism: whether the target belief is unjustified by supporting the denial of the target belief or by calling into question the basis of the target belief.

In contrast, the psychological/normative distinction is in terms of the status of the defeating beliefs themselves. Psychological defeaters are beliefs that the subject actually holds that rebut or undermine the target belief. Psychological defeaters function by being believed by the subject and are thought to lose justification of the target belief

⁵In this paper, we construe that the conflict between reductionism and anti-reductionism is over the conditions for prima facie justification, and that both sides agree that *ultima facie* justification requires the absence of defeaters. However, this point is often not made explicit. For example, Lackey (2008: Chap. 5), who is the main focus of the next section, does not distinguish between prima facie justification and *ultima facie* justification, and understands reductionism to require a positive reason for justification and anti-reductionism to require the absence of negative reasons. In contrast, a recent summary by Leonard (2021: Sec. 1), which includes the no-defeater condition in both reductionism and anti-reductionism, reflects the same understanding as this paper.

⁶The no-defeater condition is based on a formulation by Lackey (2008: 158). However, although it is omitted here for the sake of simplicity, precisely speaking, the defeater must be limited to those that are not themselves defeated. For example, in the case of the friend's house discussed below, if one takes a closer look at the gray object that reappears and realizes that it is a mouse toy, there is no longer any reason to believe that there is a mouse. Strictly speaking, therefore, the no-defeater condition refers only to defeaters that are not defeated.

even if it is not true in itself and even if it does not have a positive epistemic status such as knowledge, justification, or warrant. (We discuss in Section 4 what is an appropriate example of a psychological defeater.)

In turn, normative defeaters function by virtue of the fact that the subject in some sense *ought* to believe. It is not necessary that the subject actually believes in order for normative defeaters to cause the target belief to lose its justification. For example, I am invited to my friend's house, and he tells me, "There is no mouse because I always keep my house clean." which I believe. But then I see a gray object about seven inches long moving quickly in the corner of the room. But, hating mice, I cannot believe the horror of a mouse being in the room I am in, so I try not to think about the gray object. At this time, I do not believe that there is a mouse, and I continue to believe my friend's testimony that there is no mouse, which does not seem justified. This is a case of a normative defeater.

3. Child objection against reductionism and its variant

Anti-reductionism rejects (R), reductionism, and thus does not require the hearer's positive reasons for *prima facie* justification. However, since it accepts the no-defeater condition, it does require the absence of negative reasons for *ultima facie* justification. According to Lackey (2008: Chap. 7), this makes anti-reductionism vulnerable to a variant of the child objection.

The child objection is originally directed at reductionism.⁷

Child Objection against Reductionism:

- (a) According to reductionism, for every speaker, A, and hearer, B, B believes that p with (*ultima facie*) justification on the basis of A's testimony only if B has appropriate positive reasons to accept A's testimony.
- (b) However, children lack the cognitive capacity to have appropriate positive reasons.
- (c) Therefore, children cannot have any testimonial justification for their beliefs. ((a) + (b))
- (d) Children do have at least some beliefs with (*ultima facie*) justification on the basis of testimony.

Since (c) and (d) conflict, the child objection concludes that (a), namely reductionism, should be abandoned. At the same time, the proponents of the child objection argue that children can satisfy the no-defeater condition because they do not have negative reasons, i.e., defeaters, and therefore anti-reductionism can admit the testimonial justification of children (Audi 1997: 415).

In response, Lackey argues that what is necessary for justification is not satisfying the no-defeater condition in such a way. According to her, satisfactions of the condition that prohibits something in the form of "only if X does not φ ," can be

⁷The child objection to reductionism is presented by Audi (1997: 414–16), who denies that justification is a necessary condition for knowledge and acknowledges the possibility that children can have knowledge but cannot have testimonial justification. Here we follow Lackey's reformulation of justification as a necessary condition for knowledge (Lackey 2008: 9, 196). It should also be noted here that since Lackey's purpose is to defend her own idea called "dualism," which includes R, from the child objection, she formulates the objection as an objection to reductionism and dualism, but here it is simply an objection to reductionism.

characterized into two types: trivial and substantive satisfaction. Moreover, she contends that it is substantive satisfaction of the no-defeater condition that is required for justification (Lackey 2008: 7.2).

Trivial Satisfaction: X does not φ merely because X does not have the capacity to φ .

Substantive Satisfaction: X has the capacity to φ and does not φ .

Just as a person who never lies because he lacks the ability to do so cannot claim any moral superiority, a person who lacks the ability to consider defeaters and hence does not have defeaters cannot have superior epistemic status. Therefore, it is not the mere trivial satisfaction but the substantive satisfaction of the no-defeater condition that is necessary for justification. In addition, according to Lackey, reasons are reasons, whether positive or negative, and thus as long as children are not capable of considering positive reasons, as the proponents of the child objection to reductionism assume, they should also be incapable of considering negative reasons (Lackey 2008: 199). Even if children satisfy the no-defeater condition, it is in the sense of trivial satisfaction. It follows from the above that we can construct a variant of the child objection.⁸

Variant of Child Objection:

- (a) According to the conditions of *ultima facie* justification, which both reductionism and anti-reductionism endorse, for every speaker, A, and hearer, B, B believes that p with (*ultima facie*) justification on the basis of A's testimony only if B substantively satisfies the no-defeater condition, that is, B has the capacity to consider defeaters and has no psychological or normative defeaters for A's testimony.
- (b) However, children lack the cognitive capacity to consider defeaters.
- (c) Therefore, children cannot substantively satisfy the no-defeater condition and thus cannot have any testimonial justification for their beliefs. ((a) + (b))
- (d) Children do have at least some beliefs with (*ultima facie*) justification on the basis of testimony.

Insofar as the absence of a defeater is necessary for *ultima facie* justification, even anti-reductionism cannot avoid the unacceptable consequence that children do not have any testimonially justified beliefs. Therefore, an appeal to children's abilities makes no difference to the pros and cons of reductionism and anti-reductionism. This is Lackey's response to the child objection against reductionism.

Nevertheless, while reductionism is challenged by both the original child objection and its variant, anti-reductionism need to only address the variant. Although there are several possible paths for anti-reductionists to deal with the variant, here we consider the following two:⁹

⁸This formulation of the variant is largely based on Lackey (2008: 207–8). However, since she formulates reductionism in a way that does not include the no-defeater condition, the variant challenges only anti-reductionism. In this paper, the variant is problematic for both reductionism and anti-reductionism, since we posit that both accept the no-defeater condition as a necessary condition for *ultima facie* justification.

⁹It has been assumed that (d) is supported by intuition, but it is of course possible to reject this by arguing, for example, that children have knowledge but not justification (Audi 1997), that children have pragmatic rather than epistemic justification (Van Cleve 2006), or that children have only *prima facie*

Negation of (a):

B may still believe *p* with justification on the basis of A's testimony even if B has a certain kind of defeater.

Negation of (b):

Children have the cognitive capacity to consider defeaters.

These claims, or their combination, may allow anti-reductionism to deal with the variant of the child objection. Our principal focus is to address the success or failure of the latter claim through psychological studies of selective trust. In advance of this, in the next section, we narrow the extent of the types of defeaters that children are required to consider through the examination of the former claim.

4. Abolishing the no-defeater condition partially

Recent literature on defeaters has indicated the potential for certain alleged types of defeaters does not actually inhibit the justification of the target belief. This section specifically introduces arguments that challenge psychological defeat.¹⁰ If these arguments hold true, then the no-psychological-defeater condition becomes unnecessary and the conditions for *ultima facie* justification should be somewhat less stringent.

According to Lackey (2008: 44–45), psychological defeaters impede the justification of the target belief, independent of its own epistemic status, e.g., justification. Nevertheless, Lackey's example, wherein Miranda, who has a certain belief regarding the Civil War based on a textbook, comes to believe that the writer of the textbook was an unqualified scholar or a deceiver, lacks any information about how Miranda's beliefs about the author were acquired or based.¹¹ Despite the fact that there can naturally be psychological and normative defeaters simultaneously, if the primary feature of psychological defeaters is that they can function without justification, we should consider scenarios where the defeater clearly lacks justification, such as when her belief stems from or is based on a strong dislike for the author or a malicious rumor by an individual who is at odds with the author.

It is questionable, however, that the justification of the target belief is prevented in a case with such additional details. If one acquires the beliefs about the author but still maintains the original beliefs about the Civil War, then Miranda is indeed irrational in the sense that she possesses an inconsistent set of beliefs. However, whether irrationality immediately renders the target beliefs unjustified is a matter of debate. Firstly, particularly for the externalist understanding of knowledge and justification, whether what is required is reliability, sensitivity, or safety, the idea that such an epistemic status should be understood in relation to truth is widely accepted. Even if one believes in the author's disqualification solely because she dislikes him, there is nothing to support

justification and not *ultima facie* justification. This possibility cannot be examined in this paper. I would like to thank Hiroshi Ohtani for bringing this possibility to my attention.

¹⁰There are also critiques of normative defeaters (Graham and Lyons 2021: 3.4; Nottelmann 2021). However, as will be seen in Section 5, the formulations of normative defeaters are more varied than those of psychological defeaters, and each criticism is limited to a particular formulation. The success or failure of the criticisms and a discussion of the appropriate formulation of normative defeaters will be left for another paper.

¹¹In addition to Lackey, Grundmann (2011: 158) also supports the psychological defeater, but his case is one of believing a parents' white lie, not a case where the defeater itself is clearly unjustified.

the truth of that belief, and thus the mere belief should be irrelevant to the likelihood of the textbook's content being true.¹²

Although the above assumes externalism, Graham and Lyons (2021: 48–50) argue that even if one adopts a plausible version of internalism, the idea of the psychological defeater is still unacceptable. According to them, what is expected of a subject in an irrational state is to relinquish one of the inconsistent beliefs, not necessarily the target belief. If the evidence the subject has as a whole supports the target belief, or if the preponderance of the set of beliefs is consistent with the target belief, for instance, in the cases where Miranda knows that the author is a specialist in American history or she has encountered similar statements in numerous other textbooks and scholarly works, it is rather the beliefs that constitute psychological defeaters that should be discarded.¹³

If it were necessary to assess the ability of children to consider psychological defeaters, that would be a formidable task. To demonstrate that the children who pass a test are capable of considering psychological defeaters rather than normative defeaters, one would need to convince them of something on clearly flawed grounds, confirm that they indeed believe it, and then see how the beliefs are reflected in their doxastic state regarding the target belief.^{14,15} Nevertheless, if the aforementioned arguments hold, this concern becomes irrelevant. The alleged psychological defeaters do not prevent the target belief from being justified, and the criterion for *ultima facie* justification does not necessitate the absence of psychological defeaters. The no-defeater condition would thus be revised as follows.

(No-normative-defeater Condition) B has no normative defeaters for A's testimony.

This condition is weaker than the original. Thus, the argument for rejecting premise (b) of the variant of the child objection can focus on demonstrating that children have the capacity to consider normative defeaters.

¹²A similar line of thought against psychological defeat, particularly from the point of view of reliabilism, can also be found in my previous paper (Iizuka 2022 in Japanese).

¹³Graham and Lyons demonstrate here that neither the evidentialism of Pollock and Cruz (1999: 194–201) nor the coherentism implies that the target belief should be discarded. On coherentism, however, in situations where the majority of the set of beliefs held by a subject who has unjustifiably acquired and held a number of beliefs are consistent with the defeater, the subject may be required to discard the target beliefs to resolve the irrationality, but such an unusual situation does not seem to be considered here.

¹⁴This sort of problem does not arise when testing the ability to consider normative defeaters. There is no problem with a child who passes the test also possessing psychological defeaters. It is true that target beliefs held by subjects who ignore normative defeaters are prevented from being justified even in the absence of psychological defeaters, but when we consider situations in which we successfully reflect normative defeaters in the doxastic state, they are usually accompanied by psychological defeaters. Namely, we acquire a defeating belief that we should have and then revise our doxastic states. It would be strange to doubt the testimony of a friend without believing that the gray object was a mouse. I would like to thank Yuki Noritate for bringing this point to my attention.

¹⁵In addition, psychological defeat is even more problematic. For a psychological rebutting defeat to hold, the subject must have a defeating belief that $\neg p$ or something that clearly implies $\neg p$ while continuing to hold the target belief that p . It is questionable whether it is possible for a single subject to believe $\neg p$ while believing p . I would like to thank Masashi Kasaki for pointing this out.

5. Defeaters and selective trust

Since the mid-2000s, there has been growing research in the field of developmental psychology examining children's selective trust, or the tendency to distinguish between others in terms of their trustworthiness as sources of information and learn from certain individuals.¹⁶ In a typical experiment, two informants with different attributes make contradictory statements about the name or function of an object, and the children are asked whom they believe, or experimenters observe whom they turn to for answers to the questions posed. These studies demonstrate that young children, particularly those aged 3 and older, utilize epistemic characteristics such as accuracy and expertise as well as social characteristics such as age and familiarity as cues to select specific individuals to believe the testimony or to ask for the answer.¹⁷

What has been outlined above appears to be quite different from the portrayal of children that the child objection posits.¹⁸ Citing various studies on selective trust, Clément (2010) criticizes philosophers engaged in the reductionism/anti-reductionism debate on the basis that children are not as gullible as assumed.¹⁹ Nonetheless, to determine what we can say and to what extent about the reductionism/anti-reductionism debate from these empirical studies, it will be necessary to comprehend precisely the premises of the child objection, especially (a) and (b). First, there can be a range in the extent to which it is necessary to judge that children have the capacity to consider positive and negative reasons. A relatively weak requirement might be that one can appropriately change one's treatment of testimonies when there are reasons to (or not to) believe them. This could be described as sensitivity to reasons. It is this type of ability that can be assessed in psychological research on selective trust. If the demands of the proponents of the child objection are more stringent, such as the ability to believe a particular testifier by reasoning using concepts such as "accuracy" and "reliability," or the ability to provide reasons why one believes a particular testimony when asked why, then, it will be difficult to infer out the implications for the child objection directly from the existing research on selective trust.²⁰ Thus, what we can examine here is limited to whether children can consider reasons in a weak sense.

Additionally, as a common point against both Lackey (2008), who holds that child objection poses difficulties for anti-reductionism as well as reductionism, and Clément (2010), who maintains that it is not problematic for either, it is crucial to distinguish the

¹⁶I would like to thank the anonymous reviewer for introducing me to the relevant recent psychological literature.

¹⁷The effects of epistemic and social characteristics at each age of 3–5 years are also confirmed by meta-analyses by Tong *et al.* (2019).

¹⁸Because developmental stages, particularly language development, impose constraints on experimental methods, studies of selective trust have focused on young children aged 3 years and older, with limited research on children younger than 3 years old. With the valuable exception of Jaswal (2010) and Jaswal *et al.* (2014), the studies discussed in this paper also mostly focus on children aged 3 years and older.

¹⁹However, the reductionist response to the child objection that Clément (2010: 532) has in mind is that of treating children as exceptions, not that of Lackey (2008), who appeals to the variant.

²⁰Indeed, Audi (1997: 414), who raised the child objection to reductionism, argues that children do not have the capacity to consider positive reasons because they lack concepts such as "credibility," which seems to demand more than just sensitivity to the existence of positive reasons. Graham (2018: 3019–20) also has a strong conception of reductionism. In contrast, Lackey's examples of subjects that cannot substantially satisfy the conditions that prohibit something are clocks, telephone poles and coffee cups, which do not even satisfy the apparently weak requirement, and thus it is not clear to what extent she requires for justification (Lackey 2008: 199).

Table 1. Response tendencies of 3- and 4-year-olds in three situations

	Accurate/inaccurate	Accurate/neutral	Neutral/inaccurate
3-year-olds	Accurate	Indiscriminate	Neutral
4-year-olds	Accurate	Accurate	Neutral

ability to consider positive reasons and the ability to consider negative reasons. For instance, it is not self-evident whether a person who, in principle, rejects the testimony of others and believes only when there are positive reasons to do so has the capacity to consider negative reasons, and vice versa. In the following, we investigate what insight research on selective trust can impart into the ability to consider negative reasons, i.e., defeaters, along the lines of the undercutting/rebutting distinction. In the course of that, we will also obtain partial insight into the positive reasons.

5.1. Undercutting defeaters

The most typical type of undercutting defeater would be the inaccuracy of the testifier. Studies examining children's reactions to different testifier accuracies primarily compare individuals who repeat correct statements about the names or functions of things with those who repeat incorrect statements (Clément *et al.* 2004; Koenig *et al.* 2004). The results show that children tend to believe the former in these situations, but it is not clear whether they are responding to accuracy or inaccuracy, or both. Therefore, Corriveau *et al.* (2010) conducted an experiment with 3- and 4-year-olds in which they set up a total of three situations in which they compared an accurate testifier to a neutral testifier with no information about accuracy, an inaccurate testifier to a neutral testifier, and an accurate testifier to an inaccurate testifier. They found that both 3- and 4-year-olds are more likely to believe the testimony of a neutral testifier than that of an inaccurate testifier (Table 1). Similar results were obtained by Vanderbilt *et al.* (2014). These suggest that children accept the testimony, at least considering the typical undercutting defeater.²¹

At the same time, the experiment by Corriveau *et al.* (2010) includes a test of the ability to consider certain positive reasons. In the situation comparing accurate and neutral testifiers, only 4-year-olds showed a tendency to believe the accurate ones, while 3-year-olds were indiscriminate. This suggests that the ability to consider negative reasons, as far as accuracy is concerned, develops earlier than the ability to consider positive reasons.

5.2. Rebutting defeaters

A study by Clément *et al.* (2004) with 3- and 4-year-olds includes a task to see whether children prefer to believe their own observations or the testimony of others when they contradict. In this experiment, the children were presented with two puppets that make accurate statements and inaccurate ones. After the children watching a single-colored pom-pom being placed in a box in front of them, both puppets looked inside the box and were asked what color the pom-pom was. They then answered different colors

²¹In addition, Kushnir and Koenig (2017) suggest that 3- to 4-year-old children are able to distinguish between inaccuracy and ignorance.

from the one the children have observed. The experiment examined how children answered when asked what color the pom-pom was. For example, the observation that “the pom-pom is red” is a typical rebutting defeater that clearly implies that the testimony “the pom-pom is green” is false. Therefore, this task can be construed as a test of the ability to consider rebutting defeaters. The results of Clément *et al.*'s experiment shows that both 3- and 4-year-olds tend to answer the color they observed with their own eyes rather than the testimony of the puppets. This suggests that, at least in such a simple case, children over the age of 3 accept the testimony of others, taking into account rebutting defeaters.

It should be noted that the finding that children aged 3 years and older prioritize their own observations over the content of the testimony has also been confirmed in situations where they make observations after hearing the testimony. For example, in a study by Hermansen *et al.* (2021) with 3- and 4-year-olds and by Bridgers *et al.* (2016) with 4- and 5-year-olds, children who heard a false testimony about which object could activate a music box and then observed whether the music box actually sounded tended to prioritize the observation over the testimony.²²

However, study by Jaswal (2010), which was conducted with 2-year-olds, shows more nuanced results. Two of his experiments are relevant here. The experiments involved a device consisting of three transparent tubes with three cups, each with a different picture, placed at the bottom end of each of the three curved tubes. The children observed a ball introduced from one of the top ends that rolled down the tube, and fell into the cup. At this point, the testifier indicated a different cup from the one the children observed as the place where the ball was placed. The children were then asked which cup contained the ball, and the experimenters observed how they responded either verbally or by pointing. This procedure was used in two experiments, one with a transparent cup and the other with an opaque cup. The results show that the children tended to prioritize their observations when they kept seeing the ball in the transparent cup, but they tended to believe the testimony in the case of the opaque cup. This suggests that 2-year-olds, except in limited cases where they have fairly strong convictions, are unable to properly reflect rebutting defeaters in their doxastic states.²³

Furthermore, similar results were found in a similar experiment by Jaswal *et al.* (2014) that included 3-year-olds as well as 2-year-olds.²⁴ In addition, in a study by Ma and Ganea (2010), when hearing an incorrect testimony after seeing an experimenter hide a toy, most 4- and 5-year-olds searched for the location where they had seen the toy hidden, whereas 3-year-olds tended to look for the location indicated by the misleading testimony. These results for 3-year-olds differ from the findings of Clément *et al.* (2004), discussed above.

In summary, many 2-year-olds are not yet able to properly consider rebuttal defeaters, but it is considered that many children will be able to do so by age 4 or older. However, the results from studies of 3-year-olds, who appear to be in the process of developing this ability, are inconsistent, making it difficult to draw conclusions at this time.

²²In addition to these, McLoughlin *et al.* (2021) and Finiasz *et al.* (2023), while not focusing on situations in which observations provide defeaters for the content of testimony, show that 4- and 5-year-olds integrate testimony and observation.

²³However, original motivation of Jaswal (2010) for providing a clear cup case is to rule out the possibility that children are following the testimony to avoid objecting to the adults.

²⁴Note that Jaswal *et al.* (2014) did not separate the groups of 2- and 3-year-olds in their analysis.

5.3. Implications for the reductionism/anti-reductionism debate

Setting aside some of the caveats that are discussed later, these results have the following implications for reductionism/anti-reductionism. First, anti-reductionists might say that the variant of the child objection is not persuasive because, although 2-year-olds are still in the process of developing their abilities, children at least 4 years old have shown the ability to consider both types of defeaters. Reductionists, on the other hand, might think that while the ability to consider negative reasons may indeed develop somewhat earlier than the ability to consider positive reasons, the difference is almost nonexistent, or if there is, it is only about one year and not significant (Table 2). What is suggested here as the conclusion is that the appeal to children's ability to consider reasons does not make as decisive a difference in the superiority of reductionism/anti-reductionism as was initially thought. This conclusion itself is no different from that of Lackey (2008) and Clément (2010). However, the grounds for it lie between those provided by them. That is, children are not fully capable of considering reasons but are not totally helpless: they are in the process of developing this capacity. The period in which they have the capacity to consider negative reasons, which both reductionism and anti-reductionism require, but not positive ones, which only reductionism requires, is not very long, if at all. Thus, as far as children are concerned, the difference between reductionism and anti-reductionism is at most whether or not children in this short period of time are capable of testimonial justification.

However, there are several concerns in drawing conclusions about children's ability to consider reasons from the above experiments. First, these situation settings are not typical in selective trust research, and in particular, there are not many studies, such as Corriveau *et al.* (2010), that distinguish between the ability to consider positive reasons for trusting the testifier and the ability to consider undercutting defeaters that indicate the testifier's unreliability. In addition, the situations set up in the experiment represent only a small fraction of the cases of undercutting and rebutting defeaters, and it cannot be directly concluded that some children have the ability to consider defeaters in general based on the fact that they pass the above tasks.

In addition, whether the settings of the experiments adequately capture normative defeaters depends on how they should be understood. Normative defeaters are thought to be beliefs that epistemic subjects should have, but when one should have such beliefs is debatable. One idea is that it is when the subject actually has good evidence to support the belief. This is also the understanding that Lackey (2008: 7.2) employs in constructing a variant of the child objection. In the aforementioned experiments, the children actually have evidence by hearing the testifier repeat false statements or by seeing the color of the toy with their own eyes, and in this sense, they have a normative defeater. In contrast, recent research has presented the idea that normative defeat may hold when there is a duty to look for evidence even if one does not actually have the evidence (Goldberg 2016; Lackey 2016: Sec. 7). For example, a mouse exterminator visits a house on business and the house owner tells him, "There is no mouse because I always keep my house clean." The exterminator believes them without checking inside the house. He has no evidence that mice are there. However, since he is obligated to look for evidence, his belief that there are no mice does not seem justified.

If the evidence sufficient for normative defeat to hold is not limited to that actually possessed by the subject, what criteria should be used to determine the scope of evidence, and whether such an expanded understanding of normative defeaters should be allowed in the first place are still under discussion and have not been settled (cf.

Table 2. Ability of 2- to 4-years-olds to consider negative and positive reasons and reductionist/anti-reductionist admission or denial of their testimonial justification

	Negative reasons (undercutting)	Negative reasons (rebutting)	Positive reasons		Anti-reductionist admission or denial of testimonial justification	Reductionist admission or denial of testimonial justification
2-year-olds	–	Fail	Fail (estimated)	→	Deny	Deny
3-year-olds	Pass	Inconsistent	Fail		Undetermined	Deny
4-year-olds	Pass	Pass	Pass		Admit	Admit

Nottelmann 2021). However, if normative defeaters are not limited to what the evidence in a subject's possession actually supports, then the experiments of Corriveau *et al.* (2010), Vanderbilt *et al.* (2014), and Clément *et al.* (2004) clearly do not sufficiently test the ability to consider normative defeaters. This is because what these experiments examined is how children reflect the defeaters with evidence in their doxastic states.

Psychological research may also shed light on whether children are able to consider normative defeaters in an extended sense. For example, Vanderbilt *et al.* (2014), Ronfard *et al.* (2018), and Hermansen *et al.* (2021) suggest that preschoolers do not show a tendency to spontaneously explore on their own or seek information from another informant after hearing a testimony, even when given the opportunity to do so. However, in these settings, unlike the mouse exterminator, children are not required to determine the truth of the proposition in question with a high degree of accuracy. Thus, we cannot conclude from these studies alone that children are incapable of considering extended normative defeaters.

In light of the above, the following studies are eagerly awaited in the interest of the child objection. First, more research is needed to confirm the reproducibility of the results of the various experiments that have been referred to so far. In addition, experiments with neutral testifiers are desirable, not only for accuracy, but also for other epistemic characteristics such as expertise and confidence that can constitute defeaters or positive reasons. Finally, measuring the ability to consider normative defeaters in an extended sense would require an experiment that sets up a situation in which children have an obligation, or at least some reason, to determine the truth or falsity of the proposition in question when they are given the opportunity to explore it further on their own or to seek information from another informant.

6. Conclusions

The child objection is one of the most primary arguments against reductionism. However, the testimonial justification of children is also problematic for anti-reductionism, since anti-reductionism, along with reductionism, accepts that the absence of defeaters is necessary for *ultima facie* justification. But if the phenomenon of psychological defeat is only apparent, then what is required for justification to hold is limited to the absence of normative defeaters. Although the variant of the child objection assumes that children are incapable of considering reasons, developmental psychological research on selective trust suggests that children over the age of 3 do consider, at least in a weak sense, the existence of undercutting defeaters, and by the age of 4 at the latest, the existence of rebutting defeaters is also considered and reflected in their beliefs. Nevertheless, since the ability to consider positive reasons also develops with a delay of at most a year or so, it is unlikely that appealing to children's abilities would make as much difference as expected in establishing the superiority of reductionism or anti-reductionism. However, there are several concerns about drawing implications for the child objection from existing psychological research, and further research is desired.²⁵

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