ORIGINAL RESEARCH

Making it precise—Imprecision and underdetermination in linguistic communication

Anna Drożdżowicz[1]

Abstract

How good are we at understanding what others communicate? It often *seems* to us, at least, that we understand quite well what others convey when speaking in a familiar language. However, a growing body of evidence from the psychology of language suggests that in various communicative settings comprehenders routinely form linguistic representations that are underdetermined, "sketchy", "shallow" or imprecise, often without noticing it. The paper discusses some important consequences of this evidence. Following recent discussions in this strand of research, I outline how the evidence is currently best interpreted as supporting a view on which operating at a certain level of imprecision and underdetermination is a *functional feature* of the system responsible for comprehension of linguistic utterances in humans. That this kind of imprecision and underdetermination is part and parcel of linguistic interactions, makes the exact success rate of comprehension particularly hard to estimate. This poses a unique and interesting challenge for assessing the quality of linguistic comprehension. Understanding what a speaker intended to convey with a linguistic utterance may be less transparent than it appears to us. I will discuss the extent to which this evidence may lead to pessimism about how good we are at comprehending what others communicate. However, as I will argue in the last part of the paper, in various cases language users can be sensitive to some types of imprecision and underdetermination in comprehension and make up for it by means of various forms of *post hoc* deliberation. I will describe some such *clarificatory* contexts and end by charting a map of important issues that require further investigation.

Keywords Underdetermination · Imprecision · Linguistic communication · Linguistic understanding

✉ Anna Drożdżowicz
  anna.drozdzowicz@inn.no

1 Department of Law, Philosophy and International Studies, Inland Norway University of Applied Sciences, P.O. Box 400, 2418 Elverum, Norway

1 Introduction

'Be precise' is a common mantra for how we should express ourselves if we want to be understood. But how precise are we when we try to understand what others communicate? How precise is linguistic *comprehension*? These questions are of key importance for our *theoretical* interests in the nature of linguistic communication and *practical* interests *qua* communicators. But the answers to them are far from obvious.

There is a growing body of evidence based on research in the psychology of language that in many communicative settings comprehenders form linguistic representations that are underdetermined, "sketchy" or imprecise (e.g. Sanford & Sturt, 2002; Christianson et al., 2006; Ferreira, 2003; Ferreira, et al., 2001; Greene et al., 1992; Klin et al., 2006; Levine et al., 2000; Stewart et al., 2007; Swets et al., 2008; Frisson, 2009; Karimi & Ferreira, 2016). Linguistic processes can be shallow and incomplete. This surprising feature of the system responsible for language comprehension in humans can be observed at various levels of linguistic processing (e.g. Poesio et al., 2008; Ferreira & Patson, 2007; Patson et al., 2009). The results coming from this strand of research are currently well supported and indicate that comprehenders routinely rely on linguistic representations that are shallow, imprecise and/or underdetermined and can go under their radar. Such representations form a broad category that covers several interesting phenomena that will be explained in Sect. 2 where I present the relevant evidence. For brevity, I will use the abbreviation 'ULR' to refer to this entire category. But what does the evidence coming from this strand of research tell us about the nature and precision of linguistic comprehension?

In this paper I discuss some important consequences that this evidence has for the above question. Recent philosophical debates on linguistic communication have focused on cases of underdetermination and imprecision that result from *the speaker's (relative) indifference* to communicate one specific proposition, i.e. cases when speakers express themselves loosely, and the consequences such imprecision might have for comprehenders (e.g. Buchanan, 2010; Bowker, 2019; Abreu Zavaleta, 2019). I will argue that the evidence of shallow, imprecise and/or underdetermined linguistic representations (ULR) poses a different and potentially more serious challenge for the question of precision and quality of linguistic comprehension than some of these debates might suggest. I will first argue that the problems resulting from such imprecision can arise in cases where hearers want to express a fairly specific message, but where comprehenders will nevertheless form and rely on underdetermined, shallow linguistic representations, without noticing that there is a mismatch between what they grasp and what speakers wanted to communicate. By looking into how the evidence of ULR is discussed in this strand of research, I will outline how it is currently best interpreted as supporting a view on which operating at a certain level of imprecision and underdetermination is a *functional feature* of the system responsible for comprehension of linguistic utterances in humans. That this kind of imprecision and underdetermination is part and parcel of linguistic interactions, makes the exact success rate of comprehension particularly hard to estimate. I will argue that the evidence of underdetermined linguistic representations poses a unique challenge for assessing the quality of linguistic comprehension and may lead to some, albeit lim-

ited, pessimism about how good we are at understanding what others communicate: we might be understanding each other less than it seems to us.

Finally, I will argue that in various cases language users can be sensitive to at least some forms of imprecise and disrupted comprehension and respond to it. This can happen, for example, in cases of outright miscommunication; cases when stakes for retrieving precise meanings are high; cases where speakers and hearers may be held responsible for what they said and cases when meanings are negotiated. I will call such contexts *clarificatory* and use the expression *'the clarificatory aspect of communication'* for the kind of activities that language users can engage in when confronted with them. Importantly, language users have a set of reflective, metacognitive and metalinguistic abilities that enable various forms of linguistic deliberation and negotiation.[1] Thanks to these abilities, at least some linguistic representations and the resulting interpretations *can be made precise post hoc*. I will suggest that this important aspect of linguistic interactions calls for some moderate optimism when considering the question of the precision and quality of linguistic comprehension. But, as I will try to show, our reliance on such clarificatory activities requires further investigation. I will thus suggest that philosophers working on linguistic communication should be interested in exploring both aspects of linguistic interactions, and end by mapping several specific questions that concern clarificatory contexts and the activities they involve.

Before I start, some terminological clarifications are in order.[2] First, in what follows I will use the term *comprehension* in a rather non-technical sense to designate the process by which the hearer forms a linguistic representation of the meaning of the speaker's utterance, which I take to be pretty much compatible with how the term is used in various approaches in theoretical pragmatics (e.g. Wilson & Sperber, 2012. For a view that deploys this notion in a different, technical sense see Goldberg, 2007). This paper concerns linguistic representations, by which I will mean representations that are formed at various levels of linguistic processing and may thus concern various features of linguistic utterances: lexical, syntactic, semantic, pragmatic. Underdetermination concerning these various aspects can lead to shallow understanding of linguistic utterances, as will be described in this paper. This is because information at different stages will contribute to the overall meaning that the comprehender grasps, which I here call "interpretation" to cover the truth-conditions of the sentence, as well as some other aspects of communicated meaning, e.g. implicatures (Wilson & Sperber, 2012). It will be suggested that some linguistic representations are interestingly underdetermined and imprecise. It should be also noted that underdetermination and imprecision in language and linguistic communication can come in various forms. For the purpose of this paper, I will leave aside cases of vagueness that may be intrinsic to some classes of words (e.g. adjectives such as tall, red). I will focus on the undetermination of linguistic representations formed by the comprehender

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[1] I thank Barry Smith for drawing my attention to this topic and useful discussions concerning this interesting aspect of linguistic interactions and its metacognitive nature, as well as for discussions of some of the studies and material presented in section 2.

[2] I thank an anonymous reviewer for this journal for encouraging me to clarify some of these notions and for their helpful suggestions regarding them and their role in the paper.

and resulting in shallow understanding of an utterance, *as contrasted with* what the speaker intended to convey.

Finally, this paper concerns the issue of precision and quality of linguistic comprehension and whether and how to assess the rate of successful comprehension of linguistic utterances. It is important to note that the notion of communicative success is much debated in the philosophical literature and a notoriously hard one to define. Moreover, what counts as communicative success may in some situations be subject to contextual factors and communicators' individual goals. In a paper commenting on different philosophical traditions to spell out what counts as communicative success, Peter Pagin (2008) provides a useful critical discussion of various philosophical attempts to flesh out this notion (e.g. the classical or content view, the behaviourist/ pragmatist view, the knowledge view). According to Pagin no well-defined pretheoretical notion of communicative success can be identified. Since my paper focuses primarily on the import of one type of evidence for the issue of imprecision and underdetermination in linguistic comprehension, I will not be able to engage in philosophical debates concerning what ultimately *grounds* communicative success. For the purposes of the discussion that follows, I will merely assume that communicative success requires some substantial similarity between the conveyed and comprehended meaning, but that it may be gradable. This implies that communicative success may be compatible with at least some forms of underdetermination, for example in cases where speakers express themselves loosely and welcome some forms of imprecision that I will briefly discuss in Sect. 3.

The paper is structured as follows: Sect. 2 presents evidence that comes from studies on the shallow processing of language. Section 3 discusses the consequences this evidence has for theoretical questions concerning the nature and precision of linguistic comprehension and briefly signposts some further issues that concern information gained through it. In Sect. 4 I present arguments and evidence suggesting that language users have some abilities and resources to address and amend some forms of linguistic imprecision and underdetermination *post hoc*, when they think it is needed, and point to several issues that require further investigation. Section 5 concludes.

2 Underdetermined linguistic representations—evidence

How precise are we when comprehending linguistic utterances? Recent research on linguistic processing seems to challenge the idea that the language comprehension system provides accurate and precise linguistic representations. Several strands of experimental research support the view that in various linguistic settings, comprehenders form underspecified, sketchy or imprecise representations, often without resolving ambiguities and settling on one specific interpretation (Sanford & Sturt, 2002; Frisson, 2009; Slattery et al., 2013; Karimi & Ferreira, 2016). This can often happen without comprehenders noticing the resulting underdetermination and imprecision. Evidence of such imprecise, underdetermined representations has been found

at various stages of linguistic processing: lexical, syntactic, and semantic.[3] The summary of this strand of research presented below draws extensively on several very useful overview articles, in particular: Ferreira & Patson (2007); Karimi & Ferreira (2016) and Christianson (2016).

An important source of evidence for this strand of research comes from the observation that people may obtain only a shallow understanding of a sentence's *meaning* and sometimes may even outright misunderstand sentences without direct consequences for the smooth flow of linguistic communication. One of the earliest and most striking demonstrations of this phenomenon comes from studies on grammatical and semantic illusions, which suggest that language users routinely fail to recognize different forms of ungrammaticality, semantic inaccuracy, inconsistency and nonsense. For example, people tend to insist that they have understood some ungrammatical, and thus meaningless, sentences, such as "*More people have been to Russia than I have" (Montalbetti, 1984). Even when the ungrammaticality of this sentence is pointed out, the experience (or seeming) of acceptability and the experience of meaningfulness that accompany the processing of this sentence will remain to some extent unrevisable. This is despite the fact that comprehenders may struggle to provide and/or paraphrase the interpretation they take this sentence to have (Wellwood et al., 2018). Among semantic illusions, the Moses illusion is one of the best studied. It shows that comprehenders often do not notice striking semantic inaccuracies. When asked 'How many animals of each kind did Moses take on the Ark?', participants tend to answer the question without noticing that it is Noah who should be the subject of that sentence (Erickson & Mattson, 1981, see also Park & Reder, 2004). The Moses illusion is a strikingly common, but largely reversible effect, i.e. it vanishes as soon as the inaccuracy is pointed out.

The studies on grammatical and semantic illusions provide but one type of evidence from the strand of research discussed here. There is some evidence which suggests that comprehenders often obtain only a shallow understanding of a sentence's *meaning* of perfectly grammatical and semantically valid linguistic sentences. Consider first words that have multiple meanings, such as *convent* (the building and the institution). Experimental studies have shown that even when one of the meanings is more frequently used than the other, the language comprehension system frequently ends up activating and *maintaining* both interpretations, which suggests that the ambiguity between the two meanings may not be resolved (Pickering & Frisson, 2001). This is compatible with the fact that people can integrate either meaning when the relevant information arrives at a later stage of dialogue (Pickering & Frisson, 2001). It has been suggested that this kind of persisting ambiguity of word meanings

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[3] Assessing the quality of linguistic communication in general is complicated for several reasons. A different strand of empirical research in the psychology of language suggests that *speakers* themselves tend to overestimate how effective they are in communicating messages (see e.g. Keysar & Henly, 2002; Wu & Keysar, 2007; Chang et al., 2010). I thank an anonymous reviewer for drawing my attention to this literature. Given limited space, I leave discussion of this interesting evidence for another occasion and focus in this paper *entirely* on the evidence of shallow, imprecise linguistic representations formed by comprehenders that is provided by one strand of research. The material presented here will thus allow only for a limited and partial discussion concerning the quality of linguistic communication, as other types of evidence remain to be considered.

may be a functional property of language, given that, at least in some cases, it allows for greater communicative efficiency (Piantadosi et al., 2012, see also Gibson et al., 2019). Next, there is evidence that comprehenders need not always initially commit to either a distributed or non-distributed reading of sentences such as, for example, *Mary and John saved $100* (each might have saved $100, or they might have saved $100 together). Instead, comprehenders may determine the exact interpretation later and only if context requires it (Frazier et al., 1999). Such examples suggest that language users form underdetermined *semantic* representations and that the resulting ambiguities can routinely go unnoticed. It has been also shown that shallow processing affects *reference* resolution in online communications. Some studies suggest that the referents for referring expressions, such as personal pronouns or names, are not always correctly assigned by hearers, resulting in shallow understanding of linguistic utterances (e.g. Klin et al., 2006; Stewart et al., 2007). Stewart et al. (2007) argue that such an initial underdetermination in the case of pronouns ('she', 'their') can be later fully specified when relevant information is encountered and allows comprehenders to disambiguate.

Moving on to more challenging cases, it is commonly observed that some sentences are systematically difficult to process by language users. Garden path sentences, such as *While Mary bathed the baby played in the crib*, are notoriously difficult to comprehend. In this example this is because language users tend to understand the phrase *the baby* as the object of the verb *bathed*, while the phrase is in fact the subject of the verb *played* (Christianson et al., 2001; Ferreira et al., 2001). Studies on garden-path sentences provide an interesting example of evidence for imprecise and occasionally outright inaccurate linguistic representations. In a study by Patson et al. (2009) participants were given similar garden-path sentences and then asked to paraphrase the meaning of garden-path sentences they read. The results showed that people tend to recall the sentence with a misinterpretation, e.g. that *Mary bathed the baby*, which suggests that the processing of garden path sentences can be shallow and inaccurate. These results have been commonly interpreted as evidence of incomplete syntactic analysis (e.g. Christianson et al., 2001; 2006; Swets et al., 2008). However, some recent studies suggest alternative ways of interpreting misinterpretations that arise in such cases. According to Slattery et al. (2013), eye-tracking evidence shows that the problem with the processing of garden path sentences is semantic, not syntactic. Such problems, according to them, are attributable not to failure in building a proper structure, but rather to failures in integrating information about the earlier attempts to build that syntactic representation.[4] Whether the problems with comprehending garden path sentences are syntactic or semantic, such cases illustrate that language users have a tendency to form inaccurate or imprecise representations of such sentences, often without noticing the resulting imprecision or errors.

Moving beyond such demanding cases, there is evidence that hearers sometimes form inaccurate representations of even simple, structurally and semantically unambiguous sentences, such as *The dog was bitten by the man* (Ferreira, 2003, for discussion see Karimi & Ferreira, 2016). When asked to name the agent of the action described in the above sentence, participants in the study showed a tendency to give

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[4] I thank an anonymous reviewer for pointing this out.

the wrong answer and choose a more likely subject, i.e. the dog as the agent, despite the fact that there was little time pressure to respond. Studies using event-related potentials (ERP) suggest that, when processing such sentences, the language comprehension system might be relying on *heuristics*. A study from van Herten et al. (2005) showed that semantically implausible utterances (e.g. *The fox shot the poacher*) elicit the P600 component, which is commonly taken as a marker of syntactic revision. According to the authors, the results can be interpreted as showing that when confronted with a semantically implausible meaning, the language comprehension system engages spontaneously in a repair. As a result, it computes a more compelling meaning (*The poacher shot the fox*), which could explain why N400, a component typically marking semantic anomalies, was not observed in the study. Instead, P600 was elicited when the unfolding sentence conflicted with the syntactic structure computed for the revised more plausible reading. Such mistakes in comprehending canonical sentences are often interpreted as evidence of *spontaneous normalization* that the language comprehension system performs when encountering contents that are incompatible with comprehenders' knowledge and expectations about the world (Karimi & Ferreira, 2016). However, in this case as well, alternative hypotheses about the source of resulting imprecisions and inaccuracies have been proposed. One such hypothesis comes from Bornkessel-Schlesewsky & Schlesewsky (2008), who argue that the processing of such sentences is best explained by a dual-stream model. On this model, a compositional stream or route delivers the correct, syntactically licensed meaning of a sentence, whereas a non-linguistic route that goes directly from words to concepts and schemas activates the competing meaning. The results suggest that the latter route takes over in providing the final output of the comprehension process.[5]

Finally, yet another source of evidence pointing to imprecise or systematically underdetermined linguistic representations comes from studies of self-paced reading. In a study by Tabor et al. (2004), participants read sentences in which dashes replaced all the printed characters. They were asked to press the spacebar to reveal each new word, which caused the preceding word to revert to dashes. The procedure is commonly used to measure the on-line tempo of the reading process. The study suggested that the language comprehension system tends to compute syntactic structures *locally* for a limited number of words. Language users can form partial parses of an utterance which are syntactically compatible with only a subpart of the whole utterance. Such local interpretations will be maintained, at least for some time, although they may be inconsistent with the overall sentence structure and global meaning of an utterance, i.e. local coherence may interfere with the global interpretation of an utterance.

Although many classic theories of language processing (e.g. Tanenhaus et al., 1995, MacDonald et al., 1994) tended to assume that representations formed during language processing are accurate, precise, and detailed, the above summarised evidence suggests that linguistic representations formed at various stages of processing can be shallow, partially underdetermined, "sketchy and imprecise" (for detailed overviews see Ferreira & Patson, 2007; Karimi & Ferreira, 2016; Christianson, 2016). Until now the results coming from this thriving domain of research have not

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[5] I thank an anonymous reviewer for drawing my attention to this model.

been challenged. We can thus suppose that they (at least for now) convincingly support the claim that comprehenders routinely rely on linguistic representations that are shallow, imprecise and underdetermined (ULR). How are we to interpret these results and what do they imply for our views on the nature and precision of linguistic comprehension? The next section provides a theoretical discussion of the evidence provided by these studies. I will first discuss recent philosophical debates concerning imprecision and underdetermination in linguistic communication. I will then argue that the evidence of ULR poses a unique and possibly more serious challenge than some of these debates might suggest. I will present the most likely interpretation of the evidence of ULR based on how researchers working in this strand themselves interpret it and discuss some of the implications the evidence has for current philosophical debates on linguistic communication.

3 Good enough linguistic comprehension?

What does the evidence of shallow, imprecise and underdetermined linguistic representations (ULR, for brevity) tell us about the nature of linguistic communication? And how can it help us address questions that concern the quality and precision of linguistic comprehension?

There has been a growing interest among philosophers in some cases of imprecision and underdetermination that arise in our ordinary linguistic interactions. An interesting discussion of cases of imprecise communication can be found in recent philosophical discussions on linguistic understanding and linguistic communication. Cases that have been at the focus of this discussion are cases of underdetermination or imprecision that may result from *the speaker's (relative) indifference* to communicate one specific proposition. It has been argued that when comprehending an utterance there are often many related but slightly different propositions that language users could grasp, but it may not be possible, nor required of them to treat exactly one of them as the one intended by the speaker (Buchanan, 2010; Sperber & Wilson, 1986, 2015; see also Peet, 2016; Bowker, 2017). This is because, in some such cases the speaker may express themselves *loosely*. In other words, the speaker themselves may be indifferent to which specific proposition they express and which of them the audience grasps.

Consider an example from Buchanan (2010, p. 3462−347) in which Chet, preparing for a party for sophisticated beer drinkers, utters to Ted: 'Every beer is in the bucket'. There is a whole array of meanings that Chet can communicate with this utterance (e.g. every sophisticated beer, every imported beer, every impressive beer, etc.). As Buchanan observes, Chet may be *indifferent* between which one of them is the intended one and Ted may grasp any of them, i.e. form a belief about any of them as the one intended without any harm to their interaction. There is thus a sense in which Chet himself has welcomed a certain kind of underdetermination into this linguistic interaction with Ted.

Another classic example of this kind of underdetermination are cases where speakers utter sentences with 'missing' constituents. For example, a speaker may utter 'He is too young' (Carston, 2002, p. 22) and leave it relatively open for a com-

prehender to interpret the missing information (too young for what exactly?). This kind of open-endedness of linguistic communication has been central to relevance theory (Sperber & Wilson, 1986: 55–60, 193–202; Wilson & Sperber, 2012; Sperber & Wilson, 2015):

In many cases of verbal or non-verbal communication, what the communicator wants to do is not to induce a specific belief or set of beliefs in the audience, but to cause what might be roughly described as an impression, giving rise to a range of non-paraphrasable effects. (Sperber & Wilson, 2015, p. 132)

These examples suggest that at least in some cases speakers need not care about being entirely precise when communicating, and it is often enough that comprehenders are roughly accurate when forming beliefs about what speakers intended to communicate. This suggests that at least some cases of linguistic interactions need not require arriving at a fully determined, precise interpretation of an utterance (Buchanan, 2010; Sperber & Wilson, 2015). In such cases, linguistic communication seems to require merely an approximate coordination between speakers' intentions and hearers' beliefs.

Suppose that *this kind* of imprecision and open-endedness arises in at least a subset of everyday linguistic interactions. It has been argued that this observation poses some interesting theoretical questions concerning the nature and epistemic role of *linguistic understanding*. An issue for the epistemology of linguistic understanding can arise in cases where speakers express themselves loosely without having an intention to communicate one specific proposition, but an array of related propositions (e.g. Bowker, 2019; see also Buchanan, 2010; Wilson & Sperber, 2015). As illustrated above, in such cases meanings asserted with utterances will also be underdetermined allowing for various ways to interpret the speaker. Cases like that have been presented as a challenge for the so-called *propositional* view of communication, according to which linguistic utterances express propositions and language users *understand* them only if they entertain the proposition(s) the speaker expressed (Buchanan, 2010; for discussion see Abreu Zavaleta, 2019). As Buchanan (2010) and Abreu Zavaleta (2019) argue, the propositional view dominates current views on linguistic communication and can be found, for example, in Grice (1989a, 1989b)[6], Strawson (1964) and Schiffer (1972). Cases of speakers' loose talk and communicative indifference and of comprehenders' imprecision seem to pose a problem for this view on linguistic communication.

In this recent philosophical debate, some attempts have been made to address the challenge that speaker's indifference and comprehender's imprecision pose for our views on linguistic communication. For example, according to Abreu Zavaleta (2019) the propositional view of linguistic communication with *literal assertoric* utterances can be maintained against the underdetermination evidence, if we adopt a distinction

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[6] Grice was, however, well aware of the indeterminacy that can arise in cases of implicatures. He writes: „Since, to calculate a conversational implicature is to calculate what has to be supposed in order to preserve the supposition that the Cooperative Principle is being observed, and since there may be various possible specific explanations, a list of which may be open, the conversational implicatum in such cases will be disjunction of such specific explanations; and if the list of these is open, the implicatum will have just the kind of indeterminacy that many actual implicata do in fact seem to possess"(Grice, 1989c). I thank Nick Allott for drawing my attention to this passage.

between *content* and *circumstance* determining roles for context (MacFarlane, 2005, 2014) and a version of situation semantics.[7] A different strategy to reply to cases of loose talk and imprecise comprehension can be found in Bowker (2019), who focuses on the question of whether comprehenders in such situations can come to *know* what the speaker meant. According to Bowker, in such cases the conditions for knowing what the speakers meant are less stringent: namely, it is enough that comprehenders derive *any* one of the interpretations meant (loosely) by the speaker. On this view, the underdetermination of a uniquely correct interpretation allows for this kind of flexibility in acquiring knowledge about communicated meaning.[8]

It is an open and interesting question whether and which of the above proposed solutions can successfully address the challenges that arise for the propositional view in cases of imprecision and underdetermination in comprehension that result from the speaker's loose talk and their relative indifference with respect to communicating one precise proposition. However, as I will now argue, the evidence of underdetermined linguistic representations presented in Sect. 2 poses a different and possibly more serious challenge for assessing the quality and precision of linguistic comprehension and linguistic interactions. The challenge will be spelled out in terms of two related problems that I will call *the problem of unwelcome mismatch* and *the problem of systematic imprecision*. In the remainder of this section, I present these problems and discuss how best to interpret the evidence of ULR and the consequences it has for the question of the quality and precision of linguistic comprehension.

I start with the problem of unwelcome mismatch. The recent philosophical debates just presented focus on cases where it seems natural to assume that the speaker's *intentions* are underdetermined and result in underdetermined comprehension on the part of comprehenders. But it is important to consider cases where speakers have intentions to communicate a meaning or meanings that are precise in (at least) some respects. This is where the evidence of ULR becomes highly relevant.

In many cases of everyday linguistic interactions that are structurally similar to those described in the studies presented in Sect. 2, it is very likely that speakers are *not indifferent* and want to communicate (at least some) fairly precise contents with their utterances. For example, they would have in mind one specific meaning of an ambiguous word (e.g. 'convent') or they would intend a personal pronoun they use (e.g. 'her') to refer to a particular person. A speaker would also typically want to convey one specific meaning with a sentence 'The fox shot the poacher' rather than another, very different meaning, e.g. that the poacher shot the fox. Nevertheless, the evidence of ULR suggests that in some such cases comprehenders will still occasionally form and rely on linguistic representations that are underdetermined, shallow or imprecise that can go under their radar and remain unnoticed. In such cases imprecise comprehension may pose specific problems for successful communication and transfer of information. Given that the imprecision described in the studies presented

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[7] Situation semantics is an alternative possible world semantics, originally developed by Barwise and Perry (1981). On this approach truth-conditions are partial functions from possible situations to truth-values. Situations settle the truth-value of only some of sentences; additionally, unlike possible worlds, possible situations can stand in parthood relations to one another. For details see Abreu Zavaleta, 2019.

[8] See Davies (2021) for a recent contribution to this debate.

in Sect. 2 concerns linguistic information that speakers intend to convey in a fairly precise manner (e.g. a pronoun refers to specific person, one meaning of an ambiguous term is intended), comprehenders would in such cases end up with linguistic representations that do not track messages and contents that speakers *actually* want to convey. It is thus not clear whether the above presented solutions to the problem of imprecision/underdetermination that results from speaker's relative indifference and loose talk could be relevant for such cases. Depending on how big the mismatch between speakers' fairly precise intentions to communicate certain meanings and comprehenders' imprecise representations is, linguistic understanding may be jeopardized, and the mismatch often goes unnoticed.

How often exactly is what we grasp in linguistic communication too imprecise and too underdetermined to track what the speaker intended to convey, without us even noticing it? To counter the problem of unwelcome mismatch, one might argue that we should treat the evidence of ULR as evidence of *rare outliers* that can point *merely* to greater than expected fallibility of linguistic comprehension. On this view, the results coming from studies discussed in Sect. 2 could be taken to point to different forms of outright misunderstanding and miscommunication, but not to a *systematic* problem with precision in linguistic interactions. When processing garden-path sentences or when trying to assign referents of pronouns, comprehenders may be misled or perhaps distracted and end up with interpretations that are imprecise or inaccurate. Here is another, albeit related, dismissive reply that could be made at this point. If comprehending an utterance *by definition* requires that a comprehender forms precise, fully determined and accurate linguistic representations, then following this line of interpretation, one could argue that the evidence of ULR does not tell us much about the nature and precision of linguistic comprehension or linguistic communication proper. This would be because such cases could not live up to the standard of what would count as communicating in the first place. I believe that none of these dismissive replies is successful in undermining the challenge that the evidence of URL poses for assessing the quality of linguistic comprehension. This is where *the problem of systematic imprecision* becomes highly relevant. I will now suggest that to the best of our knowledge the kind of imprecision evidenced by studies summarised in Sect. 2 is part and parcel of how the human language comprehension system operates. I will then argue that the *systematic, functional nature* of such imprecision makes the assessment of the exact quality and success rate in linguistic comprehension particularly hard to estimate, given that it can routinely go unnoticed.

The above sketched dismissive reactions to the evidence of ULR are not in line with how researchers who provide the evidence of ULR explain these results. Although new conflicting results can always emerge and other interpretations can be proposed, I believe that the current best interpretation of the evidence of ULR is the one that comes from this strand of research. The evidence of ULR is currently presented as challenging the very idea that the main goal of the language comprehension system is to provide precise and fully specific linguistic representations. Instead, the evidence of ULR is taken to support the *alternative view* according to which the main task of the language comprehension system is much more flexible, i.e. it is to create representations that will be *suitable for the task* that the comprehender wants to perform with the help of the linguistic input (Ferreira et al., 2002, Ferreira &

Patson, 2007, Sanford & Sturt, 2002). In many cases, the comprehender's task is to maintain a dialogue. In some cases, a follow up to linguistic input might be different, e.g. a motor action, a nod, etc. According to this interpretation, although linguistic representations are occasionally imprecise and undetermined, they are typically also *good enough* to continue the conversation without resolving all ambiguities and settling on one specific interpretation (Sanford & Sturt, 2002, Karimi & Ferreira, 2016).

Why do we rely on such underdetermined linguistic representations? There are at least three reasons that could explain this type of flexibility. First, speakers are fallible. According to the *good enough* view (Ferreira & Patson, 2007; Karimi & Ferreira, 2016, Christianson, 2016), one important reason why the language comprehension system exhibits this type of flexibility in relying on shallow, imprecise representations is that, as a matter of fact, speakers often make errors, e.g. mispronounce words, make syntactic errors or simply mix things up. There is a sense in which the comprehension system might be sensitive to this fallibility. According to some interpretations debated in this strand of research it is thus part of how the comprehension system operates that it deals with such deviations by 'charitably' normalizing sentences that are implausible or sound odd, often without hearers noticing the problem (Karimi & Ferreira, 2016). In such cases the syntactic and semantic processing of some sentences is likely to be shallow. At the same time, charitable normalizing will yield results that can help maintain the dialogue and preserve the flow of conversation, without comprehenders noticing some of the problems. But in some cases this kind of default normalization may result in imprecision or even outright misunderstandings, as is vividly illustrated by studies on passives where comprehenders retrieve a more likely meaning (e.g. the man was bitten by the dog).[9]

The second important reason discussed in this strand of research that could explain why the language comprehension system operates with good enough representations is that comprehenders are usually left somewhat unsupervised in how they understand what speakers communicate. As a matter of fact, we are relatively rarely explicitly required to prove that we have understood speakers correctly (Karimi & Ferreira, 2016). It may be primarily due to time constraints (see my next point), but also because in many cases it would be rather impolite to openly doubt a comprehender and obstruct the conversation flow. As a result, imprecise, undetermined or even inaccurate linguistic representations are rarely challenged, unless they obstruct the flow of conversation. Because of that, the good enough view suggests that many linguistic interactions may proceed with some level of imprecision and by merely approximating the meanings that speakers intend to express. A cognitive explanation of this feature of linguistic interactions is also often discussed. It is proposed that the language comprehension system seems to function a lot like reasoning heuristics (Ferreira & Patson, 2007, Christianson, 2016): it allows for a quick computation of linguistic representations. Those may be later challenged, but only in cases where a problem is detected.

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[9] Note that alternative interpretations of these results would blame such misunderstandings on the dual-nature of processing and the activation/ dominance of schemas and world knowledge, rather than on simple normalization of the signal (Bornkessel-Schlesewsky & Schlesewsky, 2008).

Finally, considerations based on the usual timeframe and effort involved in processing that underlies linguistic interactions provide another reason for why the system responsible for comprehension might operate in such a flexible manner.[10] It is clear that in real life dialogue there might simply not be enough time or resources to fully analyse (and/or revise) an interpretation of a speaker's utterance. Typically, linguistic utterances are processed extremely quickly and replies are often planned before the previous sentence has ended and been processed by an interlocutor (Garrod & Pickering, 2015, Levinson, 2016). If there were enough time, then hearers might have had a chance to process as deeply as possible, checking the accuracy, reconsidering etc. However, comprehension of linguistic utterances also takes mental resources, for which there is competition from other cognitive tasks that also occur under time-pressure. For example, as we engage in dialogue, we might also be simultaneously taking part in other resource consuming activities such as thinking, joint action, etc. In many online linguistic interactions that happen under great time pressure and limited resources the processing of the new upcoming linguistic input would take place as soon as a good enough representation has been built for already received material (Karimi & Ferreira, 2016).

Evidence of ULR is currently best interpreted as supporting the view that the language comprehension system operates in a quick, flexible manner and, at the same time, tolerates quite a lot of underdetermination and imprecision at the level of linguistic representations derived and utilized by comprehenders. Thus allowing for a certain level of imprecision and underdetermination is best explained as a *functional feature* of how the language comprehension system operates in order to allow for smooth and quick linguistic interactions, as postulated by the good enough view. The evidence of ULR is highly relevant for the question concerning the nature and precision of linguistic comprehension. In particular, it suggests that the *exact* average success rate of linguistic understanding is hard to estimate. Shallow and imprecise linguistic representations are not just one-off mistakes, but are rather best explained as resulting from the functional feature of how language is comprehended in various communicative settings. This poses an interesting problem for assessing the average success and quality of linguistic comprehension. Speakers often intend to convey fairly precise messages, but comprehenders are rarely required to prove that they have understood speakers correctly. If not explicitly challenged, many imprecise, undetermined or even inaccurate linguistic representations may remain uncovered. Imprecision at various stages of linguistic processing will often lead to imprecision at the level of communicated meaning, i.e. what comprehenders grasp in linguistic interactions. Since such cases of imprecision can go unnoticed, successful understanding of what a speaker intended to convey with a linguistic utterance may be less transparent than it appears to us, even in cases where speakers want to convey fairly precise contents. Sadly, we may be understanding each other much less than we think is the case.

As a topic for further exploration, I will now flag some potential consequences that the evidence presented in Sect. 2 might have for debates that concern the acquisition of testimonial knowledge. Without settling any of these matters, I briefly sketch two

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[10] I thank Nick Allott for helpful suggestions concerning this problem.

questions that arise in this area and call for further investigation. The first question is that of what the evidence of ULR and the two problems that I have just described would imply for the quality of information that we acquire *via* linguistic communication. The evidence of ULR may have potentially important implications for the quality of such information. As has been discussed in some recent debates on *testimonial knowledge* and *testimonial belief*, observations about various forms of underdetermination and imprecision in linguistic comprehension can pose problems for the epistemology of testimony. According to Peet (2016), since in many cases where utterances are context-sensitive comprehenders will not know which precise proposition was intended by the speaker, they will form testimonial beliefs that fail safety and sensitivity conditions on testimonial knowledge. The recovery problem, as Peet calls it, can thus have implications for the quality and precision of information we gain in linguistic communication and for whether (and to what extent) it can qualify as knowledge. The evidence of ULR shows that comprehenders can rely on linguistic representations that are shallow, imprecise and underdetermined and thereby need not track the exact contents that speakers intend to convey. In a similar vein, comprehenders in such cases are likely to form testimonial beliefs that might fail the safety and sensitivity conditions on testimonial knowledge. This may suggest that at least some part of everyday linguistic interactions where comprehenders rely on shallow and imprecise linguistic representations will not allow for the secure transfer of information among language users.

In a recent paper, Peet (2019) argues that communication can yield testimonial knowledge if interlocutors communicate in such a way that comprehenders form true, non-lucky, and non-deviant communication based beliefs. According to Peet, so explained knowledge-yielding communication can be made consistent with some forms of communicative imprecision. The proposal is meant to capture the sense in which interlocutors must entertain *similar* contents if communication is to succeed. Although imprecision evidenced by results presented in Sect. 2 can typically go unnoticed and be compatible with smooth interactions between language users, it remains an open, interesting question whether this kind of *functional* imprecision could be tolerated for the purpose of acquiring testimonial knowledge. Assessing the consequences that the cases of imprecision described in Sect. 2 would have for acquiring testimonial knowledge requires a dedicated inquiry that goes beyond the scope of this paper.

Another question that should be flagged here is the question of how much linguistic understanding is required for the acquisition of testimonial knowledge. According to a recent proposal (Pollock, 2021), even a fairly accurate grasp of the content communicated by the speaker (e.g. Goldberg, 2007) might not be enough for a comprehender to acquire testimonial knowledge if she does not have an inferential understanding of the content. Pollock observes that such understanding typically allows the comprehender to grasp the inferential relations that hold between the testimonial content and the rest of her beliefs. Pollock argues that poor inferential understanding undermines one's ability to recognise evidence and counterevidence and this, in turn, undermines testimonial warrant. If this is the case, then comprehenders would acquire less testimonial knowledge than the views based on mere preservation of communication content (e.g. Goldberg, 2007) suggest. Thus, the more stringent the

conditions for linguistic understanding one is prepared to adopt, the less likely it becomes that linguistic communication would result in the acquisition of testimonial knowledge. On such stringent views, the evidence of ULR may perhaps seem to make the prospects for acquiring testimonial knowledge particularly dim, given that it suggests that it is a systematic feature of how we interact linguistically that the content grasped by comprehenders need not be preserved. But, again, the exact import of the evidence presented in Sect. 2 for this part of the debate on testimonial knowledge has to be further explored.

Finally, it is important to consider some important limitations concerning the nature and scope of the challenge raised in this section on the basis of the evidence presented in Sect. 2 and the proposed interpretation. To the best of our knowledge, the kind of imprecision and underdetermination discussed in Sect. 2 can be seen as resulting from a *functional feature* of the system responsible for utterance comprehension. The above examples illustrate convincingly, I think, that the evidence of underdetermined, imprecise and shallow linguistic representations poses interesting questions for our views on linguistic understanding, linguistic interactions and (possibly) testimony. Some forms of imprecision and underdetermination in linguistic comprehension seem to be part and parcel of how we interact linguistically. They can occur even when speakers want to convey (at least some) fairly precise meanings. They can often go under the radar of language users and remain unchallenged. The problems of unwelcome mismatch and systematic imprecision amount to a unique challenge. Language users may often not be able to notice and assess whether and to what extent they are subject to such imprecision. This suggests that our estimates of how well we understood what others communicate need not be accurate.

Prima facie, this lack of transparency around the quality of linguistic comprehension calls for some pessimism in how well we can both *understand* and *learn* from each other. But the scope of this pessimism seems interestingly limited in that the cases of imprecision discussed here can also be seen as *prima facie* compatible with the claims of *overall* functionality of the system responsible for comprehension of linguistic utterances. As an analogy, one can think of perceptual systems that process other types of complicated information and are also constrained in various ways. Such systems allow for quick and generally accurate computation of perceptual stimuli, but they will occasionally and systematically cause perceivers to be subject to different kinds of illusions that result from principles under which such systems operate. In a similar manner one may see some of the evidence presented in Sect. 2 as systematically resulting from constraints and principles that guide comprehension of linguistic utterances.[11] Moreover, as in the cases of perceptual illusions, even when it appears to us that we have understood what the speaker communicated with their utterance,[12] our comprehension may be compromised in ways that are not fully trans-

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[11] I thank Nick Allott for suggesting to me this line of interpretation.

[12] The nature and possible roles of such seemings or experiences of understanding utterances in a familiar language has recently been a much debated topic. On some recently popular views, *meanings* (or understanding them) can be experienced in one way or another (e.g. Bayne, 2009; Brogaard, 2018, 2020; cf. O'Callaghan, 2011; Balcerak Jackson, 2019; Gasparri & Murez, 2021). Furthermore, it has been argued that such experiences of meanings can provide rational basis or *prima facie* justification for beliefs and knowledge about what was said or communicated that comprehenders acquire in linguistic communication

parent to us. It is quite likely that shallow processing of referential expressions and lexical ambiguities would undermine at least some communicative exchanges. It is of course possible that speakers may not always be bothered by the fact that some of what they intended to convey was processed in a shallow, underdetermined way, for example in cases where shallow representations concern parts of the dialogue that are less crucial for the exchange than other parts. Exactly how detrimental such failures would be for interacting with other people is still an open matter dependent on the context and stakes involved.[13]

Bearing in mind the above described lack of transparency and the scope of fallibility discussed in this case, it is important to note that language users often have an interest in precision when engaging in linguistic communication. In what follows I will show that language users can have good reasons to aim for precision in at least some linguistic interactions and be sensitive to such reasons. Importantly, they have additional abilities and resources that can facilitate achieving precision in many linguistic encounters. Some forms of linguistic underdetermination and imprecision can be made *precise post hoc*, when a need for that is recognized by language users. This calls for some optimism. But it also requires further investigation.

4 Making it precise—linguistic comprehension and clarificatory contexts

As the evidence presented in Sect. 2 suggests, some linguistic interactions may proceed, despite the fact that comprehenders form and rely on imprecise, shallow and underdetermined linguistic representations. As I have argued in Sect. 3, this poses a unique challenge for assessing the quality of linguistic comprehension: linguistic understanding may in such cases be systematically jeopardized and the secure transfer of information between language users may be prevented, without them noticing it. But this is not always the case. Let's face it: sometimes linguistic communication does not appear to run smoothly. Linguistic interactions can occasionally be challenging and lead to various forms of outright misunderstanding.[14] Moreover, comprehending what a speaker wanted to convey with an utterance may in some cases be difficult and require explicit effort. Examples of such situations are cases when language users experience misunderstanding or miscommunication, cases when the stakes for precise understanding are particularly high, cases when meanings are

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(e.g. Fricker, 2003; Brogaard, 2018). The evidence presented in this paper may put some pressure on some of these views, given that they seem to presuppose that one fairly precise proposition, roughly the asserted meaning of an utterance, is experienced in comprehension and further utilized. I leave a more detailed discussion of these possible implications for another occasion. The matter is complex, given that there seem to be various ways of describing such experiences and the overall phenomenology that accompanies linguistic comprehension is rich and varied. For example, word recognition may be accompanied by impressions of the meanings of individual words, even before those have been properly processed and integrated in the context of an entire utterance and comprehenders' background knowledge. Sensory imagery might be sometimes involved when concepts behind words are activated (see e.g. Prinz, 2011; Dodd, 2014).

[13] I thank J.P. Grodniewicz for raising this interesting question.

[14] For an interesting discussion of the notion of misunderstanding and research in linguistics see Allott, 2016.

explicitly negotiated by conversational participants (e.g. Allott, 2016, Elder, 2019). Relatedly, some of the research in psychology of language challenges the idea that language users in typical communicative settings make only one attempt at understanding interlocutors and achieving communicative success, as it might happen when we communicate by traditional written channels (Clark, 1996). According to Clark (1986; 1996) this kind of one-shot communication is not the typical situation. Instead, in his view linguistic communication is an intrinsically collaborative and social activity. We are usually allowed to ask the speaker to clarify, and it is often in the speaker's interests to engage with such explicitly expressed demands for clarification. On this account, *clarifications* that follow imprecise or disrupted communication are an important aspect of at least some linguistic interactions.

What happens in such linguistic interactions? And are they interestingly different from cases where things go smoothly or, at least, *apparently* smoothly? In such cases imprecision, inaccuracy or simple lack of comprehension are explicitly noticed or brought to light. *Precision* and *clarifications* may in some cases be in high demand, thereby motivating language users to engage in *post-hoc* deliberation about linguistic material. Thus, in such cases language users may be prompted to reflectively recover and consider some linguistic representations, such as representations of what she takes to be the meaning communicated with an utterance or with a particular word. This would typically be done by means of follow up questions, as discussed in Clark (1986; 1996), as well as explicit, rational, *post-hoc* reflection and deliberation. Although some of the above mentioned situations can vary quite a lot and place somewhat different requirements on language users (for an overview see Allott, 2016), for brevity, I will call them *clarificatory contexts*. I will use the label '*the clarificatory aspect of* communication' to mark the kind of activities that language users can engage in in such clarificatory contexts. Note, however, that, as argued by Clark (1986, 1996), this kind of clarificatory aspect of linguistic communication concerns activities that will often be part and parcel of many communicative interactions and communication *per se*, given that, as noted, language users routinely ask follow up questions and provide clarifications. At the same time, this aspect of communication is interestingly different from cases when comprehension goes smoothly, given that it often requires deliberation or even negotiations between interlocutors.[15]

Consider as one example a case where the speaker at some point in the conversation wants to convey that they have been to a convent (the institution, not just a building), but the comprehender processes the word in a shallow manner and does not resolve the lexical ambiguity of that word. The comprehender might notice later, as the dialogue unfolds, that they are surprised to hear that the interlocutor is about to make their vows and thus realize that they have not fully understood what the speaker intended to convey, i.e. they might become aware of this specific imprecision (or underdetermination) in how they processed the other utterance. In some cases

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[15] It is an interesting question to consider whether a perfect, 100% precision in understanding is ever an achievable result of such clarificatory linguistic interactions. I thank an anonymous reviewer for raising this issue. For the purpose of the paper I leave this question open and will merely assume that language users can in the contexts discussed in this section aim at *increased* precision via clarifications, such that might be acceptable by both parties for the purpose of an interaction they engage in. This is *prima facie* compatible with the possibility that some residual forms of imprecision may not be resolved in such cases.

the context may provide enough material to resolve it without consulting the speaker (e.g. via explicit reasoning: 'vows' as in 'religious vows', 'convent' as the institution). In other cases, for example, when the evidence is unclear and the perceived stakes for precise understanding are high, the comprehender might be motivated to explicitly ask the speaker about the intended meaning. In this case, clarification may amount to a simple and unproblematic follow up answer that would explain the speaker's referential intention.

However, in some other cases of underdetermination the clarificatory activity that can follow when underdetermination is brought to light might be much more complicated. Consider as another example a comprehender, a professional actor, who gets mildly offended when his friend utters "You looked great" after his performance in the theatre. The comprehender feels offended because he takes the speaker's utterance as implicating that his performance was either not worthy of a comment or was overshadowed by the irrelevant matter of how he looked when performing. Suppose the speaker had no intention of implicating anything like that and thinks the comprehender's interpretation of the utterance is uncharitable. The comprehender might wonder whether his friend's remark was an insult or a compliment. In order to resolve this situation the speaker and the comprehender may engage in the process of carefully reconstructing and negotiating what has been communicated by that utterance (for a discussion of similar cases see e.g. Elder, 2019). The comprehender will consider whether he has correctly understood the utterance and the intention behind it, the speaker will wonder if the utterance could have been understood in the manner the hearer understood it after all. Such activities will have a purpose of assigning some interpretative responsibilities to both sides in order to resolve the communicative impasse. They will most likely require settling on a specific, determined interpretation (or interpretations) of an utterance.[16] In this case, the relevance of the remark and the intention behind it would be crucial for the task. However, in at least some such cases as the one described, speakers' intentions can get trumped by other things. One kind of case is what might be called 'communicative negligence' i.e. where good (or at least non-malevolent) intentions do not excuse carelessness in linguistic communication.[17]

"Was this a compliment or an insult?", "Did ASAP in an email from work meant 'by tomorrow'?", "Was this an invitation to join them at the table?", "Are both testing and quarantine required after crossing the border?". In everyday communicative interactions we face a plethora of situations where we will be particularly motivated to clarify some forms of linguistic imprecision and underdetermination by means of

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[16] An anonymous reviewer for this paper observes that the case just described may be interestingly different from those presented in Sect. 2 because it does not seem to concern making precise the truth-conditional content of an utterance, but rather of making the intended (or unintended) implicature precise. I believe this observation points to an interesting overlap between underdetermination at the level of what is said and what is implicated. When taken at face value 'You looked great' in this case may seem odd and irrelevant to the comprehender, which is why they entertain possible implicated meanings of that remark. In this case asking follow up questions might therefore concern imprecision at the level of comprehending both what the speaker said and what they might have implied. I believe that the underdetermination in such cases may sometimes concern overall communicated meaning.

[17] I thank Nick Allott for suggesting this as a possible outcome to consider here.

deliberation and reflection. Despite the evidence presented in Sect. 2, many linguistic interactions require that we can do so, *if needed*. As already mentioned, imprecision at the lexical, syntactic and semantic level may easily result in imprecision at the level of communicated meaning. If a given linguistic interaction requires that things be spelled out and made precise, language users will have to attend to this task. This is an important caveat to investigate when considering the above evidence and the consequences it would have for addressing the question of how precise linguistic *comprehension* is and how well it can suit the task of transferring knowledge.

Engaging in various clarificatory contexts often requires that language users have a set of reflective, metacognitive and metalinguistic abilities that enable various forms of deliberation and negotiation.[18] Thanks to these abilities, at least some forms of linguistic imprecision can be amended. This can happen only when imprecision (or underdetermination) is noticed and actually perceived as a problem by at least one party. Furthermore, it is important to observe that the abilities to deliberately reflect and settle on a determined interpretation of linguistic representations are often different from the linguistic and interpretative abilities required in cases of linguistic communication that run smoothly and are uninterrupted. Whether and how we engage in such clarificatory transactions will be determined by factors that often go well beyond our linguistic abilities. I will now discuss some abilities and resources that are important in clarificatory contexts. I will also suggest that not all of them need to be evenly distributed among language users, making transactions in clarificatory contexts subject to various potential influences that are in need of further investigation.

Minimally, all language users develop *metalinguistic abilities* or capacities for metalinguistic awareness, at least to some degree. Such abilities are often needed for comprehenders to engage in reflecting and deliberating about linguistic representations. For example language users must be able to understand that words can refer, have multiple meanings, imply things, etc. and be able to discuss those. Although all neurotypical language users develop such abilities, it is interesting to note that linguistic and metalinguistic competence exhibit different *developmental trajectories*. Think about children who gradually gain their linguistic abilities. Already from around the age of two they can comprehend linguistic utterances of increasing complexity. But it is only at the later stage that children acquire *metalinguistic competence* (or metalinguistic awareness), i.e. "the ability to think about and reflect upon the nature and functions of language" (Pratt & Grieve, 1984). In broad terms, metalinguistic abilities include the ability to consciously analyse language and its subparts, to reflect on the structural features of language, such as syntactic semantic or phonological features, to know how they operate and how they are incorporated

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[18] Plunkett & Sundell (2013) argue for a notion of a metalinguistic negotiation that denotes exchange in which speakers *tacitly negotiate* the proper deployment of some linguistic expression in a context. According to them, metalinguistic negotiations express disagreements over information that is conveyed pragmatically and about what concepts should be deployed in the context at hand. The case described by Plunkett & Sundell's seems different from many clarificatory contexts discussed in this section, because it does not require *the speaker's explicit intention and deliberation*. Because of that feature, the proposal treats meaning negotiations as a particularly pervasive phenomenon in everyday linguistic interactions. Given these differences in the nature of negotiations involved, for the purpose of this paper I leave the phenomenon that Plunkett & Sundell describe aside.

into the wider language system (Beceren, 2010; Nagy, 2007). There seems to be no fixed time when children develop core metalinguistic abilities and the estimates vary from the ages of 4 to 8 years (Hakes, 2012). A considerable shift in such abilities is reported at the age of 7–8 (Edwards & Kirkpatrick, 1999).

Although metalinguistic abilities are required for language users to reflect on and analyse language in at least some clarificatory contexts, they are acquired within a certain developmental time course that is different from developing other linguistic abilities. Language users may not be able to engage in some clarificatory contexts until they reach a certain age. It is interesting to note that linguistic and metalinguistic abilities, as described above, can also occasionally exhibit different *environmental trajectories.* Some interesting differences can be found in studies with second-language learners and between mono- and bilinguals. Roehr and Gánem-Gutiérrez (2009) report that language-learning experience in formal settings is highly correlated with the second-language learners' increased metalinguistic knowledge. Differences in metalinguistic abilities have also been reported between monolingual and bilingual children, with bilingual children scoring better on some metalinguistic tests (Bialystok & Barac, 2013, Sanz, 2012). It seems that although metalinguistic abilities are required for dealing with some clarificatory contexts, different groups of speakers (e.g. children before age 4, second language learners, multilingual speakers) may have somewhat different metalinguistic abilities at their disposal.

Another important resource for engaging in clarificatory contexts is information that can be described as *contextual knowledge or shared understanding* of the situation between the speaker and the comprehender. The greater the overlap between their respective background information, the easier it will be to find a way to amend imprecision and resolve the communicative impasse. "Was this a compliment or an insult?"—in the above case, the comprehender may himself quickly understand that the comment has been intended as genuine praise. If the interpretation is explicitly discussed between the speaker and the comprehender, the comprehender may be persuaded by the speaker that his intention has been to compliment the performance, if, for example, he could also believe that the scenic image is an integral part of success in performing. *Social and cultural differences* are generally considered to be one important source of misunderstanding and miscommunication because they often result in substantive differences in shared knowledge and assumptions (e.g. Schegloff, 1987). The scope of shared assumptions and expectations can greatly influence how smoothly comprehenders will arrive at precise and mutually accepted interpretations and tackle various situations of communicative impasse.

But there are a number of other factors that can greatly influence the results of reflection and deliberation in clarificatory contexts. *Social skills* may be one factor that can affect how well language users will do in cases where deliberation or negotiation of a meaning is required. "Was this an invitation to join them at the table?"—successfully interpreting utterances that may carry an invitation will depend on the comprehender's social skills. *Persuasive skills* of a speaker may affect how prone a comprehender will be to accept the speaker's authority over the communicated meaning. Certain personality traits and dispositions to experience some emotions, such as *anxiety*, may make underdetermined and sketchy linguistic representations notoriously hard to manage. "Was this a compliment or an insult?", "Did ASAP in an

email from work meant 'by tomorrow'?"—In such clarificatory contexts, a comprehender that is prone to experience anxiety may arrive at precise interpretations that communicate messages that are more stringent or more pessimistic than those that were intended. Indeed, the need for making linguistic representations precise may be lower than for comprehenders who are more relaxed about how precise the uptake is.

There are various abilities and resources that comprehenders will typically rely on in order to deal with situations that fall under the above described category of clarificatory contexts occurring in many linguistic interactions. There are various factors that can influence whether and how well they will be able to resolve an existing ambiguity or underdetermination and/or tackle communicative impasse. Two language users may speak the same language and exhibit similar levels of linguistic competence and therefore be equally well positioned to form linguistic representations in typical cases of smooth communication, some of which may be imprecise and underdetermined. But the same two language users may *differ* in terms of resources and abilities they have for deliberation and/or negotiation that will be required in situations when some forms of linguistic underdetermination or disruption have to be dealt with.

Imprecision and underdetermination are (to some extent) part and parcel of linguistic interactions. As we have seen in Sect. 3, the fact that they can go unnoticed has interesting consequences for the question of precision and quality of linguistic comprehension and (possibly) the quality of information gained through it. Although some linguistic interactions may allow for a certain level of open-endedness and imprecision, as for example when speakers express themselves loosely without having one precise interpretation in mind, in other cases the gap between what speakers intend to convey and what hearers grasp by relying on imprecise representations may be too large to allow for secure comprehension of meaning intended by the speaker and secure acquisition of information.

But, as I have argued here, it is important to observe that there are many contexts where language users are or can be made sensitive to various forms of imprecision that arise in linguistic interactions. This means that at least some cases of problematic imprecision in linguistic comprehension can be taken care of and resolved by language users *post-hoc*. Importantly, as the material presented in this section illustrates, language users have various resources and abilities to engage in activities that can make up for some of the initial imprecision in linguistic comprehension. Comprehenders can notice some problematic instances of imprecision and underdetermination, for example if the stakes of linguistic interactions are high. By relying on the above described resources they can, either on their own or together with speakers, correct some forms of imprecision that may affect communication. Such clarificatory contexts are an important part of linguistic communication and call for some optimism with respect to the question of the precision and quality of linguistic comprehension.

Clarificatory contexts and what they require from communicators are thus an important part of linguistic interactions. However, except for rare occasions (e.g. Allott, 2016; Kerbrat-Orecchioni, 2016, Elder, 2019, Podosky, 2021), they have not been properly explored in recent *philosophical* discussions concerning the nature and epistemology of linguistic communication. The fact that language users can be sensitive to some cases of linguistic underdetermination and imprecision and have

various tools at their disposal to address it raises several interesting descriptive and normative questions. Those questions can be split into three general areas and I will now list some of them. First, there are issues that concern when and why some of the cases of imprecision discussed in this paper can be noticed by language users. For example, it will be important to understand whether there are any systematic patterns of which cases of imprecision and underdetermination of linguistic representations go unnoticed and which can be easily recognized by language users. Some forms of imprecision may result in greater anomalies in the material delivered by the language comprehension system. Given that monitoring mechanisms are often taken to be an important aspect of linguistic processing, including comprehension (e.g. Pickering & Garrod, 2013; Allott, 2020), comprehenders' attention may be more often systematically drawn to some types of ambiguities and imprecisions than to others. But is there any regularity in which types of imprecision we are sensitive to and which of them go under the radar? For example, is imprecision with respect to referent resolutions (e.g. who are we speaking about? who has done it?) less tolerable than imprecision that results from high context-sensitivity of some specific groups of words (e.g. 'every', now', 'soon'). And if so, why?[19] A related issue to consider in this area is whether certain language users may be more sensitive than others to some forms of imprecision and underdetermination. Philosophers and perhaps lawyers might be natural candidate groups to consider here, given that a lot of their professional activity is aimed at resolving ambiguities and arriving at ideas or statements that are clear and precise.

The second area concerns questions about how to proceed when imprecision or underdetermination is noticed. Imprecision in one's own (or others') linguistic comprehension need not lead to action and clarificatory activities. In some cases speakers and comprehenders may have various reasons not to explicitly address imprecision even when they notice it. Time pressure, perceived low stakes of the context in which an utterance is shared, perceived willingness of the interlocutor to engage in the process of making an utterance precise, or even tiredness, might be among such reasons. But it is not clear how decisions about whether or not to address a noticed case of imprecision are made and how some of these various considerations may be weighed when arriving at it. Whether and when a speaker, a comprehender, or both of them will engage in clarificatory activities and repair is another interesting issue to consider. Some interesting work on different repair strategies adopted by speakers and comprehenders in different cases of miscommunication can be found in conversational analysis research (e.g. Schegloff et al., 1977, Schegloff, 2000). Cases of repair and prevention of communicative impasses have also been studied in recent empirical literature (Clark, 1994; Clark & Tree, 2002, for an overview see Allott, 2016). This empirical material can be fruitfully utilized when investigating questions that fall under the domain of decision making, engagement and responsibility in clarificatory contexts.

The third area of issues concerns normative questions about the clarificatory aspect of linguistic communication. How should we engage in clarificatory contexts?

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[19] Recent work by Muller et al., 2020 may be useful to address this question in the context of Moses illusions.

This is an important issue to consider since, as I have mentioned earlier in this section, it seems that at least some of the abilities and resources that we rely on when engaging in various forms of such clarifications may not be evenly distributed among speakers. This creates the possibility that, for various reasons, some speakers may be worse positioned than others when trying to make communication precise and/ or resolve a communicative impasse. Relatedly, it is important to mention the possibility that some forms of power relations between different groups of speakers may result in inequalities in negotiations performed in some clarificatory contexts and thus will reflect on their results. For example, speakers from some oppressed groups may be systematically silenced or excluded when trying to engage in some corrective linguistic interactions that concern interpretation and understanding of terms and labels. In a recent paper Podosky (2021) discusses cases of "non-ideal metalinguistic disagreement" that occurs when a speaker has greater control in the joint activity of clarifying a meaning of a word in a particular context. Podosky argues that some such cases are deeply worrying because they can involve power imbalances, where the speaker has "illegitimate control in managing the disagreement that results from a certain identity prejudice they hold against the audience". Podosky's proposal provides a useful starting point for the discussion of some of the normative issues that can arise in clarificatory contexts (see also: Fricker, 2007; Dotson, 2011).

Clarificatory contexts and activities they involve are an important part of how we interact linguistically. Our capacities to engage in them allow us to make up for at least some forms of imprecision and underdetermination that we may encounter when communicating and that may lead to various forms of misunderstanding. The exact nature, scope and consequences of this aspect of linguistic communication require dedicated and systematic investigation that goes beyond the scope of this paper.

5 Conclusions

The paper discussed the consequences and implications that the evidence of shallow, imprecise and undetermined linguistic representations (ULR) has for the question about the nature and quality of linguistic comprehension. Following this strand of research, I have suggested that this evidence is currently best explained as resulting from a functional feature of the utterance comprehension system. I have argued that this kind of systematic flexibility resulting in cases of imprecision in linguistic interactions poses an interesting challenge for assessing how precise linguistic comprehension is. Successful linguistic understanding is less transparent than it often seems to us.

Although communicating with language is "inherently risky" (Allott, 2016), in various cases language users can be sensitive to some forms of imprecision and underdetermination. Moreover, they have resources and abilities to make up for the initial imprecision in linguistic comprehension by means of follow ups and *post hoc* deliberation. These observations can assuage at least some of the pessimism resulting from lack of transparency about the quality and precision of linguistic comprehension. But the clarificatory aspect of linguistic communication has been relatively

neglected by philosophers. As such, it requires more interest and detailed investigation from those concerned with the nature and quality of linguistic interactions.

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