

PERSPECTIVES

Where next for pragmatics and mind reading? A situation-based view (Response to Kissine)

NAPOLEON KATSOS

University of Cambridge

CLARA ANDRÉS-ROQUETA

Universitat Jaume I de Castellón

Our commentary is mainly concerned with Kissine's first argument in his 2021 target article: that mind reading is not necessarily needed for pragmatics. We fully agree with Kissine, and we present (i) additional recent empirical evidence in support of this view and (ii) a new model of pragmatics and mind reading, based on the situation of language use rather than the type of pragmatic phenomenon that is instantiated. The last part of our commentary concerns the logical validity of Kissine's argument, taking into account important concepts in autism research such as heterogeneity, equifinality, and neurodiversity, but also evaluating how relevant the empirical evidence from learning language from TV is to the debate on nativism vs. constructivism. We conclude that there is much to love (as regards pragmatics) and some to query (as regards the conclusions we can draw about nativism vs. constructivism) in this timely and thought-provoking article.

Keywords: pragmatics, mind reading, autistic spectrum disorders (ASD), developmental language disorder (DLD), theory of mind (ToM), structural language

1. INTRODUCTION. In his target article, Kissine (2021) summarizes the evidence in favor of the recently reemerging view that—despite autistic people's success with many pragmatic inferences such as scalar implicatures, indirect speech acts, and metaphors—there are nevertheless aspects of pragmatics in which autistic people's performance is exceptionally lower than that of neurotypical peers. Kissine's main contribution is to unpack the overlooked implications of this view for pragmatic theory on the one hand and language acquisition on the other. As regards the former, he proposes that the 'selective deficit' in autism is related to mind reading, and the fact that autistic people perform well with some aspects of pragmatics reveals that mind reading is not an indispensable part of all pragmatics.¹ As regards language acquisition, the fact that some autistic people acquire structural language within the typical range despite challenges with mind reading poses a challenge for usage-based theories that place intersubjectivity at the core of language acquisition.²

The main thrust of our commentary is to scrutinize the first of Kissine's two proposals. We agree with Kissine that there is indeed strong—and in fact even more novel—evidence that some aspects of pragmatics pose a challenge in autism, and crucially that successful pragmatic processing need not always employ mind reading. In further agreement with Kissine, we argue against correlating the need to actively employ mind reading in pragmatics with the type of pragmatic phenomenon at hand. The view

¹ Two terminological notes. First, in line with Kissine's lexical choices and the work he cites, we use 'autistic person' rather than 'person with autism' or other terms as the reference term that is most preferred by autistic people themselves. Second, the vast majority of research in autism to date subscribes to a 'deficit' model and accordingly uses terms such as 'deficit', 'impairment', and 'difficulty' to refer to those cases where autistic people perform lower than neurotypical peers in a certain task. In our commentary we largely avoid this language, but we find ourselves sometimes using it in order to speak more closely to the arguments in the original article. For a view of autism as a 'difference' rather than a 'deficit', please see §5 and the vocabulary used there.

² Mirroring the target article, we use 'mind reading' in a theoretically agnostic way to refer to the cognitive ability to attribute mental states to other people.

against which we argue would possibly be the most instinctive and intuitive reaction of pragmatic theorists, who have long engaged in the search for distinguishing those classes of pragmatic phenomena, such as generalized implicatures or indirect speech acts, that require less consideration of the context and the speaker than do those classes of pragmatic phenomena, such as metaphor, irony, and sarcasm, that are highly context-dependent and necessitate mind reading (Levinson 2000, Recanati 2003, O'Neill 2012, among many others).

But having argued against the majority view of how to define the need for mind reading in pragmatics, Kissine stops short of providing the positive contribution of a new view on exactly when mind reading is required for pragmatics. Here we propose, both conceptually and with reference to existing and novel data, that it is the communicative situation in which an utterance is used that dictates whether mind reading is required, and specifically whether the interlocutors assume that they are mentally aligned or not. To do so, we draw upon work by Clark and Brennan (1991) on grounding and by Garrod and Pickering (2004, Pickering & Garrod 2006) on alignment in conversation to provide criteria for characterizing mentally aligned or nonaligned situations in which interlocutors represent their partner's mental world as identical or not to their own. Mind reading is required to achieve the speaker's intended pragmatic interpretation only in nonaligned situations. To be explicit, our proposal is that the criterion for the need to use mind reading is not pragmatic typology per se (i.e. this or the other class of pragmatic phenomenon, be it implicature or irony or any other). Instead, it is specific aspects of the communicative situation in which an utterance with a pragmatic inference is used. This should have implications for the direction of pragmatic research from a cognitive perspective, and hopefully for developmental psychology and educational interventions in autism.

Two other points are made briefly. The first concerns heterogeneity, equifinality, and neurodiversity, concepts that have received much attention in autism research. When their implications are duly considered, there are more possibilities about the relevance of the first of Kissine's arguments (about research in autism, pragmatics, and mind reading) for the second argument (language acquisition by neurotypical children not being usage-based). These concepts suggest, at the very least, that the prospect that autistic people acquire their first language (L1) in different ways from neurotypical people deserves full attention and cannot be dismissed mainly on the basis of epistemological parsimony. The second and final point concerns the evidence that Kissine cites in support of his argument in favor of nativist approaches: does the evidence from autistic children learning Modern Standard Arabic in a non-intersubjective way constitute genuine cases of L1 acquisition? Or are these cases of sequential bilingualism or even early second language acquisition? In the latter cases, the implications of this evidence for theories of L1 acquisition are less direct than Kissine proposes.

2. WHICH ASPECTS OF PRAGMATICS POSE CHALLENGES FOR AUTISTIC PEOPLE? The idea of 'selective deficit' as regards pragmatics in autism is not new. Happé's (1993) highly cited article on pragmatics in autistic children is widely pointed to as demonstrating that autistic people are challenged only with those aspects of pragmatics that require mind reading. However, Happé 1993 and much of the ensuing work have been rightly criticized for not properly investigating the role of general language abilities (vocabulary and grammar, also known as 'structural language') of autistic people in relation to their pragmatic competence. Since then, much work suggests that pragmatic phenomena traditionally considered to be the flagship of the communicative impairment in autism (such as metaphor and irony) do not actually pose a challenge for autis-

tic people, at least not beyond what one would expect given the structural language abilities of the participants. As mentioned by Kissine, work by Norbury and colleagues (Norbury 2005, Kalandadze et al. 2016; see also Gernsbacher & Pripas-Kapit 2012) has been particularly influential in revealing that structural language abilities rather than mind reading predict participants' performance with pragmatics.

Kissine's timely contribution is to highlight that while it may be the case that structural language skills have an important role in pragmatics, there is actually robust evidence that autistic people nevertheless perform lower than their neurotypical peers regarding pragmatics in those situations where there are increased mind-reading demands. Since this was not the case in all studies that tested pragmatics, it is not surprising that some specific studies and across-the-board meta-analyses would not capture this fact. But a careful look at some recently emerging evidence, such as that reported in Deliens et al. 2018, suggests that the very same autistic people who perform within the range of neurotypicals in conventionalized indirect speech acts—situations that do not require mind reading—nevertheless performed lower than neurotypicals with irony—situations where mind reading is required.

The view that there are aspects of pragmatics that challenge autistic people, even after structural language skill has been factored in, has been advocated in Andrés-Roqueta & Katsos 2017, and in more recent work by Norbury (2014) and others. Recent research that emphatically makes this point is reported in Andrés-Roqueta & Katsos 2020, which assessed participants' pragmatic skills as well as their structural language, mind reading, and nonverbal IQ. In that study, participants were presented with a classic scalar implicature task in which participants' responses depended on their sensitivity to violations of informativeness. This was called a 'linguistic-pragmatics' task in Andrés-Roqueta & Katsos 2017, 2020 because in the specific situations in which an implicature was possible, the demands on mind reading were minimal. The most important factors were the listener's command of the meaning of quantifiers such as *some* and the listener's sensitivity to the pragmatic maxim of informativeness. Participants were also presented with a pragmatic task requiring the understanding of complex communicative intentions modeled on Happé's (1994) STRANGE STORIES task, including phenomena such as irony, pretense, and lying; this was called a 'social-pragmatics' task because in the specific situations in which the critical utterances were used, there were substantial demands on both structural language and mind reading. The participants were twenty Spanish-speaking children between four and ten years of age with a clinical diagnosis of autism and twenty children with a diagnosis of DEVELOPMENTAL LANGUAGE DISORDER (also known as SPECIFIC LANGUAGE IMPAIRMENT) who were thoroughly matched for structural language skills (using tests assessing the production and understanding of words in isolation and of sentences). Two groups of neurotypical children were also included: twenty children age-matched to the autistic children and twenty younger children who were matched for structural language skills to the autistic children (this group was younger because the autistic children's language skills were below those of age-matched neurotypical children). While, by selection, the autistic children had the same structural language skills as the children with developmental language disorder and the language-matched neurotypical children, they had lower structural language skills than the age-matched neurotypicals. Importantly, the autistic children had lower mind-reading skills (as assessed by two first-order false-belief tasks) than all of the other three groups. And equally importantly, the nonverbal IQ of all participants was within the typical range for their chronological age.

On the view that autistic people perform as low or as high with pragmatics as their structural language skills (Kalandadze et al. 2016), it was predicted that autistic chil-

dren would have low performance on both pragmatic tasks, linguistic pragmatics and social pragmatics, compared to the age-matched neurotypicals, and moreover that they would perform at the same level as the children with developmental language disorder and the neurotypical language-matched group. On the other view, that autistic people perform lower than neurotypicals especially when mind reading is required (Andrés-Roqueta & Katsos 2017; which is in line with Kissine's target article), autistic people will perform lower than the neurotypical language-matched children and the children with developmental language disorder in the complex communicative situations only.

In support of the latter view, Andrés-Roqueta & Katsos 2020 reports that in the linguistic-pragmatic task, children with autism performed as well as the children with developmental language disorder and language-matched neurotypicals, even though the autistic group scored significantly below these two groups in the false-belief task. In the social-pragmatic task, by contrast, the children with autism performed significantly below the children with developmental language disorder and the language-matched group, even though they had the same structural language skills. Moreover, regression analyses revealed that structural language but not mind reading was a significant predictor of success with linguistic pragmatics in the autistic children and children with developmental language disorder (reaching findings similar to those of previous research, e.g. Norbury 2005, Kalandadze et al. 2016). But highlighting the role of mind reading in specific pragmatics tasks, regression analyses revealed that both structural language and mind reading were significant and independent predictors of success in the complex communication social-pragmatics task (in line with Andrés-Roqueta & Katsos 2017, more recent work by Norbury 2014, and Kissine 2021).

The key difference between the early evidence offered by Happé (1993), for a selective challenge with pragmatics, and the new evidence is that there is a better understanding of the demands for mind reading in the specific tasks used and a careful measurement and statistical consideration of the participants' structural language skills and false-belief abilities. This adherence to the top methodological standards identified by Kalandadze et al. (2016) is what allows Andrés-Roqueta & Katsos 2020 to highlight the unique contribution of mind reading for some kind of pragmatics, in addition to the contribution that structural language makes.

3. WHERE NEXT FOR PRAGMATIC THEORY? THE TYPOLOGY-BASED VIEW OF PRAGMATICS AND MIND READING. In many ways, linguistic theory is now more than ready to accommodate findings of a selective engagement of mind reading in pragmatics. Pragmaticians have long argued about how to draw a distinction between pragmatic phenomena that require an understanding of the context and speakers' beliefs and intentions, and therefore engage mind reading, and pragmatic phenomena that do not directly do so. Levinson has influentially proposed that default pragmatic principles are employed for the most routine and context-independent generalized implicatures such as scalar implicatures (Levinson 2000; with context and mind reading having only a secondary role, in potentially canceling generalized implicatures that were generated by default). These default implicatures are to be distinguished from ad hoc particularized implicatures that are derived in the standard Gricean account, which involves considerations of what is relevant in the conversational context as well as the speaker's epistemic state and cooperativity. Recanati (2003) makes a distinction between primary and secondary pragmatic processes along the dimension of genuine consideration of the speaker's intentions being required only for the latter. O'Neill (2012) distinguishes between three types of pragmatics, one of which, mindful pragmatics, includes the kind of pragmatic phenomena that require allocentric reasoning such as humor, irony, and sarcasm.

The way forward for these approaches, which relate certain classes of pragmatic phenomena to the need for mind reading, is for further empirical and theoretical research to attempt to classify this or that pragmatic phenomenon as requiring mind reading or not (or as default pragmatic, or as primary or secondary, or as mindful-pragmatic or not). Let us call this view where it is the pragmatic phenomenon that dictates whether mind reading is needed the **TYPOLOGICAL VIEW OF PRAGMATICS AND MIND READING**.

However, there is already quite some evidence that the typological view is not the best way to account for the wealth of findings on pragmatics, mind reading, and autism. Recall that Happé's (1993) study suggested that autistic people find metaphor less challenging than irony because the latter requires in-depth mind reading (second-order theory of mind)—rendering irony an excellent candidate for the category of pragmatic phenomena that require mind reading. But according to the systematic review by Kalandadze et al. (2016), metaphor and irony are on par in terms of how challenging they are for autistic people, once the structural language abilities of participants are taken into account. In fact, sarcasm and irony are, on balance, somewhat easier for autistic people than metaphors. How would the typological view interpret this evidence? Should we interpret this as evidence that irony is one of those pragmatic phenomena that do not require mind reading?

Moreover, a careful reading of another very widely cited study by Olofson et al. (2014), this time on metaphor, shows that autistic people with high structural language skills do not perform well on all metaphors. Specifically, they report a difference between the accuracy of comprehension of conventionalized and novel nonconventionalized metaphors, with autistic participants performing significantly lower in the latter compared to the former. Moreover, once one adapts chance performance to 50% rather than 33%, the autistic participants appear to score right at chance for novel metaphors (52%, rather than higher than chance as claimed by the authors).³ A thorough investigation of this and other studies then raises the question of what to do with metaphor as a pragmatic phenomenon. Is this evidence that (at least novel) metaphors are a pragmatic phenomenon that requires mind reading?

4. THE SITUATION-BASED VIEW OF PRAGMATICS AND MIND READING. Andrés-Roqueta & Katsos 2017, 2020 hint at another way to think about the relation between mind reading and pragmatics, which is a situation-based view. It is not the pragmatic-theoretical type of the phenomenon that makes the difference on whether mind reading is necessary—for example, whether it is a case of scalar implicature, metaphor, or irony—but rather it is the communicative situation in which an utterance is uttered that dictates whether mind reading is required.

³ Olofson et al. set chance to 33%. With 52% correct, the autistic group is reported to score significantly higher than chance. But while there were three response options given—an option consistent with the literal interpretation of the critical utterance, an option consistent with the metaphorical interpretation, and a distractor option—the distractor option was not a plausible match for either the literal or the metaphorical or in fact any kind of relevant interpretation of the critical utterance. For example, for the metaphor that 'for human beings seeing is understanding', following a short narrative the options include a picture consistent with the metaphor (a human in a eureka moment), a picture consistent with a literal interpretation (a human who can see a relevant object that has been mentioned in the narrative), and a picture of an irrelevant inanimate object not mentioned in the discourse. Once this is taken into account, chance level should be set at 50%, and it is hard to see how the autistic group's performance (with a mean of 52%, *SD* of 21%, and a range of 21–90%) could differ from chance.

What might the conditions be that regulate engaging mind reading? Here work by Garrod and Pickering on *ALIGNMENT IN CONVERSATION* (Garrod & Pickering 2004, Pickering & Garrod 2006) suggests that in their effort to make communication successful and efficient, interlocutors may align their models of the situation to the effect that their communicative behaviors, from phonetic features to lexical choices and—crucially in our case—to their assumptions about each other's mental states, converge. Cues that interlocutors might be using to reach the assumption that their mental states are aligned come from various sources, as discussed in Garrod and Pickering's work and as proposed by work on *GROUNDING*. Clark and Brennan (1991) highlight the importance of physical copresence of the speaker and the listener, that they can see each other and their mutual surroundings, that they are using a spoken medium rather than a written one, that they are communicating in real time, and that their attention is focused exclusively on the conversation ongoing between them. A history of successful communication between the interlocutors, including in the preceding turns (for example, establishing and maintaining reference as the conversation unfolds and using words from their common vocabulary) is another cue to interlocutors that they may assume they are engaged in an activity where their mental states are aligned.

In such situations, interlocutors may derive pragmatic inferences by representing the perspective of the speaker as required in intersubjective theories of pragmatics such as Grice's, but in the most frugal way. Listeners assume that their partner's mental world—their knowledge, preferences, and intentions regarding the communicative situation—is identical to their own (i.e. the listener's). This is not a pure egocentric processing strategy, because a mental state for each interlocutor is represented; but it is not an active intersubjective mind-reading strategy either, in that no divergences between the partners' mental states are considered. In mentally aligned situations, words and sentences uttered by the speaker have been designed with a listener in mind whose mental world is identical to the speaker's. *Mutatis mutandis* for the listener, who interprets the speaker's words and sentences in the way that the speaker would mean them if the speaker's mental states were the same as the listener's. As a result, a listener in such mentally aligned situations will arrive at interpretations that are pragmatically appropriate *FOR THEM*. In different theories' technical terms, listeners will arrive at cooperative (Grice 1975) or salient (Giora 1997) or relevant (Sperber & Wilson 1995) interpretations as if the speaker were themselves. However, in situations that do not clearly signal alignment of mental states, our proposal is that interlocutors often do engage in active mind reading and use this to compute what is in the common ground, what the speaker's intentions are, and so forth.

The proposal here is that it is the situation (and specific cues within it) that dictates whether interlocutors assume they are aligned, and as an outcome whether they engage in active mind reading. From this view we can derive predictions about challenges with pragmatics as a function of mind reading, especially in nonaligned situations with regard to the monitoring of the situation on the one hand, and the implementation of mind reading on the other. Specifically, listeners might not arrive at a speaker's intended meaning either because they have not appropriately monitored (or cannot do so) what kind of situation they are in and therefore they are erroneously not attempting to engage in mind reading, or because, even though they have identified that the situation calls for mind reading, they are challenged to a small or large extent by mind reading (either by the cognitive demands of mind reading itself, or by the cognitive demands of mind reading in combination with any cognitive demands of pragmatic inferencing or other cognitive processes—such as cognitive load, for example).

5. EVIDENCE FOR THE SITUATION-BASED VIEW OF MIND READING. In recent and ongoing work with colleagues, we put some of the predictions of the situation-based view of pragmatic processing to the test in a novel task. Specifically, we have adapted a version of the **DIRECTOR TASK**, which has been widely employed in research in perspective taking and common ground (e.g. Keysar et al. 2000), with the novel element that certain trials involve the application of the maxim of informativeness. In this version listeners can see what is depicted on all four cards in front of them; however, the speaker who is asking them to pick a specific card can only see those cards that are not in the shaded square. Participants are in the listener’s role and are familiarized with both the speaker’s and listener’s perspective to establish that they understand that the cards which are not in the shaded square are in the common ground, while the card in the shaded square is in their privileged ground. In some trials the correct response to the speaker’s instructions requires pragmatic inferencing, in some trials it requires taking the perspective of the interlocutor, and in some trials it requires both. We can illustrate this with reference

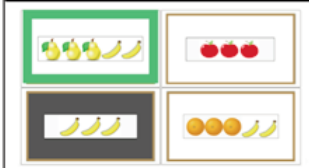
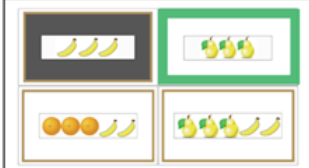

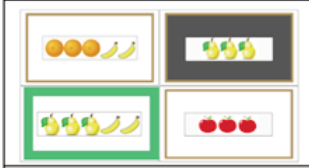

	<p>Condition A: common ground unambiguous</p>
	<p>Condition B: common ground implicature</p>
	<p>Condition C: privileged ground ambiguous</p>
	<p>Condition D: privileged ground implicature</p>
	<p>Condition E: privileged ground and common ground implicatures</p>

FIGURE 1. The shaded square represents the card that is visible to the listener but not the speaker; the green frame around a card indicates that this is the theoretically optimal response. The labels on the conditions indicate whether there is potentially interfering information in the privileged ground (privileged ground) or not (common ground), whether the instructions are ambiguous, and if an implicature needs to be derived by the listener.

to Figure 1, where for ease of exposition the speaker's request is 'Pick the card with pears' in all of the conditions.

For the sake of brevity, we focus here on conditions B, C, and D. In condition B there are two cards that can be referred to as 'the card with pears', and this instruction would therefore be ambiguous—unless listeners employ informativeness, in which case they should select the card that has just pears on it. This condition assesses whether participants are competent with informativeness in a mentally aligned situation because all of the relevant information is in the common ground. In condition C there are two cards that can be referred to as 'the card with pears', but one of them is in the listener's privileged ground. Hence the instructions are ambiguous unless listeners engage in mind reading. This condition assesses whether participants can monitor that this is a non-mentally aligned situation. Turning to condition D, there are two cards that can be referred to as 'the card with pears', and the instructions are ambiguous. Informativeness applied as if this were a mentally aligned situation would lead to the selection of the cards with just pears. However, if listeners identify that this is a nonaligned situation and engage in mind reading, then they should instead select the card with pears and bananas, because the card with just pears is not a card the speaker could plausibly ask for.

In recent work (Wilson et al. 2022) we find that six-year-old neurotypical children who pass FALSE-BELIEF tasks in other parts of the experimental session could apply informativeness at ceiling rates in condition B, a mentally aligned situation (all thirty-three children in experiment 1 are classified as 'passers', scoring 5/6 or 6/6 correct responses). Many children also correctly identified that they were in a nonaligned situation in condition C, though the majority did not do so (only fourteen of thirty-three children were passers, or 42%). Moreover, children performed strikingly poorly in condition D, where informativeness has to be applied in a nonaligned situation (four of thirty-three passers, or 12%—all of the passers had also passed condition C). Adults performed at ceiling levels in all conditions except condition D, where only twenty-seven of thirty-six were consistent passers (75%). In a separate ongoing study, adults were tested in condition E as well, which is another nonaligned situation where mind reading helps by narrowing down the options available to listeners from their own perspective. Adult performance in condition E was 90% correct, which is high but lower than ceiling, and they achieved only 70% correct in condition D, which is line with the 75% achieved by adults in Wilson et al. 2022.

The findings from this new experimental paradigm demonstrate (i) that six-year-old children are still in the process of developing the ability to monitor whether they are in a nonaligned situation (only 42% of children succeeded in condition C). Since all of the children passed a false-belief task in another part of the experimental session, this is not a challenge with mind reading itself, but with monitoring whether they are in a situation that requires mind reading (a non-mentally aligned situation or not); (ii) six-year-old children are perfectly competent regarding informativeness in aligned situations (condition B); (iii) it is the combination of informativeness and a nonaligned situation that leads to an exceptional challenge (only 12% of children succeeded in condition D). Similarly, while adults performed at high levels overall, they did not perform at ceiling in the two conditions where informativeness had to be applied in a nonaligned situation (conditions D and E).

We are now in a position to make specific predictions about when autistic people might perform lower than neurotypicals with pragmatics in this task. In line with the assumption of the heterogeneity of cognitive abilities in autism, autistic people will perform as well as their structural language skills with regard to informativeness in condition B.

Some autistic people may find it difficult to monitor whether they are in an aligned situation, leading to low performance in conditions C, D, and E (with performance being equally low across the three conditions). But even among people who are in principle able to monitor what situation they are in, those conditions where informativeness operates in a nonaligned situation may be exceptionally difficult (conditions D and E would be more challenging than condition B, which requires informativeness only, or condition C, which is a nonaligned situation but with no need for pragmatic inferencing).

To summarize, in this commentary we offered a theoretical outline and emerging evidence that the relation between mind reading and pragmatics is one that can be determined not according to the type of pragmatic phenomenon, but according to the situation of use. Correspondingly, informativeness, irony, and metaphor are not the categories that help us predict when autistic or neurotypical people will find arriving at a pragmatically appropriate interpretation challenging. We should instead be looking at classifying situations of language use as requiring mind reading or not, or, as we called them, as ‘mentally aligned’ or not. While we referred to some of the aspects of a situation that interlocutors might be using as cues to monitor the type of situation they are in, much research remains to be done. But the focus of this research is radically different under this new proposal.

So far, our paper has been in agreement with Kissine’s view on the selective need to engage mind reading in pragmatics; beyond bolstering it with novel evidence, we have complemented it with a brief exposition of the situation-based view, which is an empirically testable attempt to define the relation between mind reading and pragmatics without reference to types of pragmatic phenomena per se. In the final part of our response we turn to the relationship of the arguments from autism, pragmatics, and mind reading to language acquisition and usage-based approaches.

6. CHALLENGES FROM HETEROGENEITY AND NEURODIVERSITY. As Kissine notes, autism is characterized by heterogeneity. While acknowledging that in autism language skills can range all the way from nonexistent to within the typical range, Kissine nevertheless subscribes to the view that throughout the spectrum of language abilities, and even among the most proficient autistic people, there are exceptional challenges in mind reading and intersubjective communication (precisely because the latter requires mind reading). Yet within many of the studies which reveal that autistic people perform lower than controls do with pragmatics, there is evidence of some individuals who perform within the typical range. This is even the case with pragmatics that requires mind reading. In the Andrés-Roqueta & Katsos 2020 study discussed earlier, autistic children (age range: 48–120 months) had lower scores than language- and age-matched neurotypical peers and peers with developmental language disorders in the ‘social-pragmatics’ task, where target-like pragmatic interpretation requires mind reading. However, within the autistic group, whose mean score for social pragmatics was 3.5 out of a maximum of 18 (*SD* 4.7), there was a wide range of individual scores, from 0–14. The mean for the age-matched neurotypical group stood at 10.6 (range 0–17; *SD* 5.32; age-matching criterion of no more than three months difference in chronological age). Looking at individual profiles, three out of twenty autistic children performed numerically higher than their age-matched neurotypical child, despite it being a pragmatic task that required mind reading. These autistic children had very good scores with structural language too (and with false-belief tasks). Therefore, on what grounds could we argue that these autistic children with strong pragmatic and mind-reading skills cannot have acquired their structural language skills with recourse to the kind of intersubjective and mind-reading skills that usage-

based theories evoke? And with regard to the autistic people who do perform less well with mind reading and intersubjective pragmatics in the Andrés-Roqueta & Katsos 2020 study, the regressions suggest that they are the participants most likely to have lower structural language skills, which is in line with the predictions of usage-based approaches.

If at least some autistic people within the subgroup of autistic people with good structural language skills have the inferential machinery that would allow them to acquire L1 as assumed by usage-based approaches, then Kissine's core argument comes into question. At the very least it needs to be qualified with reference to subgroups of the high-language-skills autistic group. Of course we do not exclude the possibility that there are subgroups of autistic people who would vindicate Kissine's point, where strong language skills exist despite challenges with intersubjective pragmatics. The point from heterogeneity is that it manifests not only in structural language skills, but in mind reading and pragmatics too; and therefore one must draw cautious conclusions about the relationship between these constructs, and with reference to subsets of autistic profiles.

Discussion of heterogeneity is connected with the recent concept of neurodiversity as well as the 'double empathy' challenge in multiple ways, which we only lightly touch upon here. One aspect of neurodiversity is to deemphasize the 'deficit' language used to describe the abilities of autistic people and instead to explore the differences between autistic and nonautistic cognition and communication. 'Double empathy' suggests that we look at autism not from a solely neurotypical perspective but also an autistic one, where, for example, autistic-to-autistic interactions may be different from neurotypical-to-autistic ones. Autistic people appreciate interactions with other autistic people more so than with neurotypicals (Morrison et al. 2020). Many communicative difficulties between autistic and neurotypical people are due to 'neurotype mismatch', that is, bidirectional differences in communicative style and a reciprocal lack of understanding between autistic and neurotypical people, rather than a deficit or inability of the autistic person (Crompton et al. 2020). It would not come as a surprise to the growing body of researchers who look at autism from the perspective of difference rather than deficit if some of the key findings of deficit with this or the other type of pragmatics in autism eventually become reinterpreted as having revealed a difference in the type of pragmatic inference that was made (or in the circumstances in which it was made). The consequence for Kissine's argument overall is that while we do not fully know how autistic communication differs from that of neurotypicals, it is difficult to base theoretical arguments on the fact that there is a marked 'deficit', 'impairment', or 'difficulty' with pragmatics, especially in autistic people with high structural language skills. This is a challenge for every researcher in autism, of course, and it calls for methodologically different ways of assessing pragmatic competence: first, with qualitative research methods that may help inform the interpretation of any quantitative differences by revealing the autistic person's meaning and perspective on the task at hand; second, with a closer look at autistic-with-autistic interactions and the pragmatic norms, humorous language, and figurative language used, which may reveal differences in rather than lack of intersubjective inferences.

Another aspect of neurodiversity speaks to the second part of the target article, where Kissine adopts what we would informally call 'neurosimilarity'. That is the view that whichever way one population acquires L1 skills within the typical range, other populations with different neural and cognitive assets who also acquire L1 within the typical range must do so in the same way. What is the evidence in support of this view? Kissine (p. e146) notes that '[t]o be sure, one could argue that the way language is learned by

the autistic individuals [who learn language in a non-intersubjective way] is intrinsically distinct from the neurotypical pathway to language. However, it is highly implausible and scientifically questionable to posit two drastically different neurocognitive mechanisms for a skill as complex as language acquisition'. Without providing any further arguments, the appeal here seems to be exclusively to epistemological parsimony, where one would rather not proliferate the theories and mechanisms postulated in language acquisition beyond the necessary, until and unless there is compelling evidence to do so. However, decades of research in development looking at equifinality (Bishop 1997) suggest exactly the opposite. According to equifinality, development will proceed along a path that is individually optimized for each learner, given the initial biological conditions, the environmental inputs, and the subsequent interactions between these over time (see Astle & Fletcher-Watson 2020 for a review). Given (i) the extent of the differences in the neural mechanisms employed by autistic people at every level of language processing (see Groen et al. 2008 for a review) and (ii) that the input autistic children receive in learning their L1 may differ from that of their neurotypical peers in that autistic children learn from caregivers who may also be on the broader autistic spectrum, we have at least two good reasons to suspect that those autistic people who acquire their L1 to similar levels as neurotypical peers do not necessarily do so via the neurotypical pathways.⁴ And we should consider equifinality plausible not only for structural language skills, but also for pragmatics (in that autistic people who perform similarly to neurotypicals in some pragmatic tasks seem to do so using different neural mechanisms; Tesink et al. 2009).

While we do not provide here strong empirical evidence contrary to the view that autistic people acquire L1 in the ways neurotypicals do, we highlight that the prevailing direction of progress in developmental research shows that we need more than an appeal to parsimony in order to subscribe to this view.

7. ON NON-INTERSUBJECTIVE LANGUAGE LEARNING. Finally, we consider briefly the recent and certainly exciting evidence that Kissine et al. (2019) report for non-intersubjective learning of language by autistic individuals. In five case studies, young children seem to have learned a very high level of Modern Standard Arabic (MSA) from watching cartoons and child-oriented TV programs aired in Tunisia. This is surprising for a country where the colloquial variety of Arabic is used in all everyday situations and MSA is reserved for some TV and for formal interactions. Presumably, all young pre-school-aged Tunisian children learn some of it this way; otherwise, one would imagine that they would have stopped airing programs aimed at young children in a variety that they are struggling to learn. What is impressive instead is the proficiency that the autistic children have acquired in the noncolloquial variety in the absence of intersubjective input or formal instruction. But what kind of language acquisition is at work here? Is this the kind of L1 acquisition about which there is a debate between nativism and constructionism? These cases do not seem to correspond to L1 acquisition, because a critical feature of L1 acquisition is that language learning occurs in the absence of already established linguistic experience that can be used to scaffold language learning. These are not even cases of

⁴ As regards the role of input, the plain observation here is that autistic children learn principles of language from parents who are likely to engage more with autistic than with neurotypical interactional patterns. That the structure of the input affects the learning mechanisms is also known independently from research in bilingualism, where it has been established that because bilingual children receive input in more than one language, leading to greater lexical overlap across languages, they rely less on the strategy of word learning by exclusion than do monolingual peers (Byers-Heinlein & Werker 2009).

simultaneous two-L1 acquisition, because the participants, who ranged from five to ten years of age, most of them being seven to eight years old at the time of testing, were surely exposed to Colloquial Arabic in an intersubjective way from birth. It is not clear when exposure to MSA on TV would have begun to kickstart language learning to a substantial amount. But it would be difficult to argue that at the time the children started receiving substantial exposure to the noncolloquial variety from TV, they had not already mastered some of the Colloquial Arabic variety in an intersubjective way from their parents. Therefore, this precocious learning from TV seems to be an instance of early second language acquisition (or perhaps sequential bilingualism, depending on the age at which the children started having substantial exposure to TV programs using MSA). If this is correct, it weakens the relevance of the evidence for debates on L1 acquisition, without of course diminishing the need to scrutinize and understand the implications of the evidence for language learning more generally.

8. CONCLUSION. We conclude that as regards pragmatics, mind reading, and autism, Kissine has thrown into the spotlight a minority view that is nevertheless well supported by a careful consideration of the empirical evidence. Our outline of mental alignment and the situation-based view of pragmatics is meant as a positive step forward toward defining and testing new relations between these key concepts. With regard to the relationship between language acquisition in autism and language acquisition by neurotypical children, we believe that Kissine has perhaps raised more questions with each turn of his argument than he has offered answers. But we are fortunate that this is the case, for it is not common that a single article will spark so much discussion in different disciplines, ranging from pragmatics to language acquisition, and from autism to bilingualism.

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Katsos
Department of Theoretical and Applied Linguistics,
English Faculty Building
University of Cambridge
TR-24, CB3 9DP, Cambridge, UK
[nk248@cam.ac.uk]

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Andrés-Roqueta
Department of Developmental, Educational,
Social and Methodological Psychology
Universitat Jaume I de Castellón
Av/ Sos Baynat, s/n, 12071
Castellón, Spain
[candres@uji.es]