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Who's Missing the Point? A Commentary on Claims that Autistic Persons Have a Specific Deficit in Figurative Language Comprehension

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Abstract

It's become a caricature of autistic persons that they don't understand figurative language. Despite empirical evidence to the contrary, three of the four contributions to this special issue endorse this stereotype without question. And all four contributions attribute this supposed deficit to even shakier fallacies, such as the controversial claim that autistic people lack empathy or a 'theory of mind.' In this commentary, we begin by reviewing the literature more exhaustively than the other contributions, and we highlight a point that they missed: Autistic persons are likely to have difficulty comprehending figurative language if they also have difficulty comprehending language in general. There doesn't seem to be a specific deficit in figurative language unique to autism. We also tackle the claim that autistic people lack empathy. And we question the existence of a 'theory of mind area,' while demonstrating the pitfalls that ensnarl researchers when they strain to interpret differences between autistic and non-autistic brain activity as solely autistic deficits.

The four contributions to this special issue remind us of the Hindu parable of the blind-folded scholars who want to understand an elephant. Because each scholar inspects only a segment of the elephant, each draws a different conclusion (Saxe, 1872). All four contributions to this special issue want to understand a common phenomenon -- the comprehension of figurative language by autistic[1] people. But, as Giora notes in her preface, each draws a different conclusion, and, as we suggest, none captures the big picture or paints the empirical landscape in its entirety. For instance, of the 100-plus articles cited across the four contributions, only two are cited in common. And several articles that hold the key to illuminating autistic persons' comprehension of figurative language are completely ignored.

None of the four contributions reference Norbury's (2005b) study, which examines nearly 100 children's understanding of metaphoric language and concludes that only children who have a language disability, regardless of whether they're autistic or not, have difficulty with metaphoric language. If autistic children don't have difficulty comprehending language in general, they don't have difficulty comprehending metaphoric language in particular. And if

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[1]See Sinclair (1999; http://www.jimsinclair.org/) to appreciate our respectful use of the term "autistic persons" rather than "persons with autism."

non-autistic children do have difficulty comprehending language in general, they also have difficulty comprehending metaphoric language in particular. Norbury's (2005b) results couldn't be clearer – or more relevant to this special issue.

None of the four contributions reference Norbury's (2004) study, which examines over 130 children's understanding of idioms and concludes that comprehension ability per se is "the most important determinant of success" in comprehending idioms (p. 1190). Children with a disability in language comprehension, "regardless of autistic status," have more difficulty understanding idioms than do children, autistic or not, without a language disability (p. 1190).

None of the contributions in this special issue reference Norbury and Bishop's (2002) study, which also demonstrates that language comprehension ability, not autism, drives the ability to draw inferences from stories. None reference Young, Diehl, Morris, Hyman, and Bennetto's (2005) study, which controls for language comprehension ability and reports no differences between autistic and typically developing children on a wide range of story comprehension processes, including drawing inferences.

Only one contribution to this special issue (Giora, Gazal, Goldstein, Fein, & Stringaris) refers to Norbury's (2005a) study and concludes correctly that "only those autistic individuals with concomitant language [disability]" have difficulty understanding potentially ambiguous terms. "In this respect," write Giora et al., autistic individuals are "not different from non-autistic peers." For both groups, the ability to understand ambiguous terms is determined by their comprehension skill, not their autistic traits. Giora et al. (this volume) is also the only contribution to reference Brock, Norbury, Einav, and Nation's (2008) study and conclude correctly that "autism on its own may not account" for difficulties in processing contextually relevant information.

Only one contribution (Hobson) cites Norbury and Bishop's (2003) study, but without highlighting the study's conclusion: "Core language abilities rather than pragmatic skill or diagnostic status" drive the ability "to provide evaluative comments, especially about mental or emotional states" (p. 287).

In contrast to these central but mostly ignored studies, one of the few studies referenced by almost all the contributions in this special issue is Ozonoff and Miller (1996). And, in contrast to the studies just described, Ozonoff and Miller's (1996) study neglects to measure or control for their autistic versus non-autistic participants' language comprehension ability. Rather, Ozonoff and Miller (1996) control only for their participants' age and performance on the Vocabulary, Block Design, Object Assembly, and Information subtests of the Wechsler scales, none of which assess comprehension ability.

When Ozonoff and Miller's (1996) autistic participants are less able to identify humorous endings to short vignettes, draw inferences from brief narratives, and understand indirect requests, the contributions to this special issue interpret Ozonoff and Miller's (1996) study as demonstrating that autistic persons have "specific difficulties in non-literal language processing" (Gold & Faust, this issue, p. 58), that autistic persons have "pragmatic language deficits" (Colich et al. this issue), and that this study supports the "received view … that

[autistic] individuals … are biased toward the literal and fail to make sense of nonliteral utterances" (Giora et al., this issue, p. 23).

But such interpretations miss an important part of Ozonoff and Miller's (1996) study, just like the blindfolded scholars in the Hindu parable miss important parts of the elephant. The autistic participants in Ozonoff and Miller's (1996) study also perform more poorly than the non-autistic participants when identifying non-humorous endings, when answering factual questions, and when understanding direct requests. Across the board, they perform more poorly on both literal and non-literal language tasks, on both so-called pragmatic and non-pragmatic language tasks. Most likely the autistic participants perform more poorly on all these language tasks because they're less skilled at language comprehension – they have a language disability that the non-autistic participants don't. And because the study controls only for vocabulary (and block design, object assembly, and information) while neglecting to control for language comprehension, differences in language comprehension result.

For decades, language researchers have understood that simply knowing the meanings of individual words is a necessary but hardly sufficient component of the ability to comprehend connected text or discourse. And for decades, language disability researchers have known that controlling for vocabulary is a flawed proxy for controlling for language comprehension. For instance, over 30 years ago, Rizzo and Stephens (1981) demonstrated that language-disabled and non-disabled participants could easily resemble one another on the MPLI Vocabulary Test while differing by as much as 1.5 standard deviations on the MPLI Language Comprehension Test. Almost 30 years ago, Tsai and Beisler (1984) warned that "relying on one test [e.g., the Peabody Picture Vocabulary Test] to select language-matched controls [for autistic research participants] may yield inappropriate controls" and "lead to faulty conclusions" (see also Mottron, 2004).

Nonetheless, alongside Ozonoff and Miller (1996), many of the studies cited by the contributions to this special issue as evidence that autistic persons have a specific deficit in figurative language rely precariously for their studies' control on tests of vocabulary, rather than comprehension (e.g., Baron-Cohen, 1997; Baron-Cohen, Leslie, & Frith, 1985; Beaumont & Sofronoff, 2008; García-Pérez, Hobson, & Lee, 2008; García-Pérez, Lee, & Hobson, 2007; Gunter, Ghaziuddin, & Ellis, 2002; Happé, 1995; Hobson, Lee, & Hobson, 2007; 2010).

Other studies cited by the contributions as evidence that autistic persons have a specific deficit in figurative language rely precariously on Verbal or Performance IQ for their studies' control (e.g., Eales 1993; Ghaziuddin et al. 2000; Gold & Faust, 2010; Gold, Faust, & Goldstein, 2010; Just, Cherkassky, Keller, & Minshew, 2004; Jolliffe & Baron-Cohen, 1999a; 1999b; Kana, Keller, Cherkassky, Minshew, & Just, 2006; Kleinhans, Müller, Cohen, & Courchesne, 2008; Losh & Capps, 2003; Paul & Cohen, 1985; Pijnacker, Geurts, van Lambalgen, Buitelaar, & Hagoort, 2010; Tesink, Buitelaar, Petersson, van der Gaag, Kan, Tendolkar, & Hagoort, 2009; Wang, Lee, Sigman, & Dapretto, 2006; 2007).

But for persons with a language disability, as is often the case for autistic children and adults, IQ -- even verbal IQ – can obscure that disability. For instance, the autistic

participants tested for fundamental language ability in Kjelgaard and Tager-Flusberg's (2001) study, post verbal IQ scores in the average range, while their language comprehension scores clock in a whopping standard deviation lower. In Landa and Goldberg's (2005) study, the autistic participants match within two points the verbal IQ of their non-autistic controls, but they differ by nearly a standard deviation in their fundamental language ability. In Paul and Cohen's (1984) study, the autistic participants match within five points the performance IQ of their non-autistic controls, but they differ by more than three standard deviations in their language comprehension ability (see Anderson et al., 2001, and Bigler et al., 2007, for a similar pattern with autistic participants; Manor, Shalev, Joseph, & Gross-Tsur, 2011, for a similar pattern with language-disabled non-autistic participants).

It should come as no surprise, therefore, that in a study like Landa and Goldberg (2005), when two participant groups differ in language ability, they'll also differ in figurative language ability. In fact, it would be surprising only if that were not the case. As we stated earlier: If autistic persons have difficulty comprehending language, they'll also have difficulty comprehending metaphoric, idiomatic, inferential, potentially ambiguous, or otherwise complex language. And the same goes for non-autistic persons. More difficulty comprehending figures of language that are more difficult to comprehend is neither surprising nor unique to autism. Neither is giving literal answers to more difficult metaphors, similes, idioms, or implicatures (e.g., Cain & Towse, 2008; Levorato, Nesi, & Cacciari, 2004; Nippold & Fey, 1983; Qualls & Harris, 2003; Secord & Wiig, 1983; Vallance & Wintre, 1997).

In their own studies, Gold and Faust (this issue; 2010; Gold et al., 2010) and Giora et al. (this issue) try to sidestep the need to control for language comprehension ability by selecting autistic participants with a diagnosis of Asperger syndrome. But Asperger diagnoses are notoriously unreliable indicants of early language development (Lord et al., 2011); parents, whose retrospective memory often determines Asperger diagnoses, are notoriously unreliable informants of early language acquisition (Hus, Taylor, & Lord, 2011), and Asperger diagnoses are notoriously unreliable indexes of current-day language comprehension ability (Bennett et al., 2008; Lewis, Murdoch, & Woodyatt, 2007).

Consequently, we agree with Gold and Faust's (2010, p. 808) disclaimer that a "limitation of [their studies] is the absence of language assessment results for the [Asperger syndrome] participants. Although normal language development was reported by parents, and participants with reading disabilities were excluded, performance on verbal IQ tests does not necessarily eliminate language difficulties.…[S]tudies examining skills that entail language processing should control for language level by conducting formal language assessments."

And we find troubling how heavily the contributions in this special issue rely on studies that fail to control for any participant matching variable; such studies merely compare autistic and non-autistic participants, sometimes not even controlling for age (e.g., Boddaert, Belin, Chabane, Poline, Barthélémy, Mouren-Simeoni, Brunelle et al., 2003; Dawson, Finley, Phillips, & Galpert, 1986; Dennis, Lazenby, & Lockyer, 2001; Firth & Snowling, 1983; Flagg, Cardy, Roberts, & Roberts, 2005; Happé, 1993; 1997; Happé, Ehlers, Fletcher, Frith,

Johansson, Gillberg, Dolan, Frackowiak, & Frith, 1996; Kaland, Møller-Nielse, Callesen, Mortensen, Gottlieb, & Smith, 2002; Knaus, Silver, Lindgren, Hadjikhani, & Tager-Flusberg, 2008; Lopez & Leekam, 2003; Martin & McDonald, 2004; Nikolaenko, 2001; Paul, Orlovski, Marcinko, & Volkmar, 2009; Schindele, Lüedtke, & Kaup, 2008).

In a journal editorial titled, "How to Be A Critical Consumer" of language disability studies, Nippold (2011, p. 240) prompts readers to ask a primary question when evaluating studies, "Were the experimental and control groups matched appropriately for factors such as age, gender, cognitive ability, primary language, language level, and parental education?" If not, Nippold encourages caution, and so do we. As Norbury (2004, p. 1190) relates, "Examining groups on the basis of clinical diagnosis alone would have left us with a confusing and incomplete picture." Such a pitfall characterizes much of the literature on so-called Theory of Mind deficits, to which we now turn.

Rather than accepting the more straightforward point that persons who have more difficulty comprehending language will also have more difficulty comprehending figurative language, most of the contributions to this special issue rely on the most controversial claims ever made about autistic persons: They "lack … empathy and theory of mind" (Giora et al., this issue, p. 411).[2] We find these claims troubling at two levels.

Empirically, virtually all studies concluding that autistic persons lack a theory of mind suffer from the same lack of control as the studies concluding that autistic persons have a specific deficit in figurative language. Gernsbacher and Frymiare (2005) provide a detailed critique of theory-of-mind-autism studies; here, we simply highlight the problems apparent in just one illustrative study: Happé (1993), a study so popular among the contributions to this special issue that it is one of only two studies cited by all the contributions (the other being Gold & Faust, 2010).

In this two-decade-old study, Happé (1993) selects three small groups of autistic children (N=6), who, after watching a skit involving Susie and Katie hiding an object in a box, differ in their ability to answer the question, "What will Katie think that Susie thinks is inside the box before I open it?" As Gernsbacher and Frymiare (2005) note, the grammatical structure of the test question involves one of the most complex constructions in the English language. The question contains not just one but two sentential complements. In fact, all 'mentalizing' statements (e.g., "I think that …") invoke sentential complement constructions; so-called first-order Theory of Mind questions contain one sentential complement, and second-order Theory of Mind questions contain two sentential complements (e.g., "I think that you think that …")

We'd hope that any study that hinges its conclusions about human sentience on the ability to answer grammatically complex questions would control for the ability to comprehend grammatically complex sentences. But Happé's (1993) study fails to implement those necessary controls, as do numerous other studies purporting to show that autistic persons lack a theory of mind. In Happé's (1993) study, the only language-related factor measured,

[2]See also Colich et al., this issue; Gold and Faust, this issue; and Hobson, this issue, though Hobson refers to this construct as "metarepresentation."

and not even fully controlled, is verbal IQ, which is, as we noted before, a poor proxy for language comprehension (as is vocabulary, which is the only language-related factor controlled in Baron-Cohen, Leslie, & Frith's seminal 1985 theory-of-mind-autism study).

Not surprisingly, therefore, the children in Happé's (1993) study who are more versus less successful answering grammatically complex questions and are consequently deemed to have more versus less of a theory of mind are also more versus less successful comprehending sentences containing metaphors and irony. The common denominator underlying the children's success is unlikely to be their theory of mind – or lack thereof. It's undoubtedly their language comprehension ability.

What happens in Theory of Mind studies when researchers control for language comprehension ability? The same thing that happens in figurative language studies when researchers control for language comprehension ability: differences between autistic and non-autistic participants disappear (Capps, Kehres, & Sigman, 1998; Norbury, 2005b; Tager-Flusberg & Sullivan, 1994).

As science writer Vaughan Bell (2006) notes, the assumption that autistic people lack a theory of mind "infuriates people with autism, especially when it gets translated into the more everyday, and, perhaps, even less accurate claim, that autism involves a 'lack of empathy'." A bevy of passionate arguments against this widespread stereotype can be found on the Autism and Empathy website (http://www.autismandempathy.com/), where autistic scholar Rachel Cohen-Rottenberg curates essays from scores of autistic persons, autistic and non-autistic researchers, and autistic and non-autistic parents of autistic offspring, all of whom bristle heartily at the assumption that autistic people lack empathy.

In addition to its unsteady empirical basis (e.g., virtually always dependent on questionnaires susceptible to problems of social desirability, Crowne & Marlowe, 1960, and stereotype threat, Steele & Aronson, 1995), we find the argument that autistic persons lack empathy, much less that empathy drives figurative language comprehension, to be sociologically suspect.

Autistic people are a minority, just like any other minority. When a member of any other minority agrees that it's sometimes "hard to know what to do in a social situation" populated by members of a majority group; that he's not always "good at predicting" what members of the majority group will do; that social situations with members of a majority group can be "confusing;" and that it's not always "easy [to] work out" what a member of the majority group might want to talk about, we interpret those statements as honest reflections of the difficulty a minority member experiences when interacting with members of the majority. We don't interpret those statements as indicating that the person lacks empathy. But those statements are taken from Baron-Cohen's Empathy Quotient (Baron-Cohen & Wheelwright, 2004), and when autistic people respond in the way that any minority member would presumably respond, autistic people are deemed to lack empathy.

We imagine that most non-autistic people tend to find social situations with autistic people "confusing;" that non-autistic people also "find it hard to know what to do in a social situation" populated solely by autistic people; that non-autistic people are not very "good at

predicting" what autistic people will do; and that non-autistic people can't always "easily work out" what an autistic person might want to talk about. Should we deem that a lack of empathy?

Hobson (this issue) claims that autistic people lack "a propensity to identify with … others towards a shared world" (p. 10). Are we talking about a propensity to identify with non-autistic persons toward a non-autistic world, or are we talking about a propensity to identify with autistic persons toward an autistic world (Gernsbacher, 2006)? Hobson (this issue) also writes about "specifically human forms of social engagement," which he claims autistic persons are incapable of enacting (p. 10). Are we to infer that only non-autistic forms of social engagement are "specifically human" while autistic forms are subhuman or not quite human or just not human at all (cf. Gernsbacher, 2007b)? The fields of sociology, anthropology, and even linguistics teach us that differences are not deficits; they're merely differences.

Hobson (this issue) also talks about autistic persons' tendency to use "unconventional and idiosyncratic" expressions (p. 8). Kanner, in a 1946 article, supplies several examples, including, seven-year-old Donald T.'s response to the following test question: "If you were to buy four cents worth of candy and give the storekeeper ten cents, how much money would you get back?" Donald knew the correct answer, but rather than responding conventionally ("six cents"), he offered to draw a hexagon.

Of course, non-autistic language also involves "transfers of meaning through substitutions, generalizations and restrictions;" in fact, autistic persons' unconventional and idiosyncratic phrases could actually be considered "poetical … metaphors" (Kanner, 1946, p. 244). Thus, the "novel metaphors" used as stimuli in Gold and Faust's study (e.g., *wilting hope* or *conscience storm*) are prime examples of unconventional and idiosyncratic language. As Gold and Faust explain, these novel word pairs appear in published poetry, but because they're taken out of the poets' intended context, they're hard to understand. Indeed, nearly half of them aren't even considered meaningful by non-autistic participants. Undoubtedly the same is true of autistic persons' so-called idiosyncratic language; stripped of the context that the answer Donald was communicating was six, his offer to draw a hexagon would seem meaningless.

As it turns out, autistic person's tendency to use "peculiar … metaphorical" language (Kanner, 1946) isn't so incredibly frequent or consistently characteristic that it serves as a strong diagnostic feature (Cox et al. 1999; Le Couteur et al., 1989; Lord et al., 1989). But most studies do show a slight advantage for autistic persons (Dereu et al., 2011; Gilchrist et al., 2001; Mildenberger, Sitter, Noterdaeme, & Amorosa, 2001; Volden & Lord, 1991), which could well explain the slight advantage autistic participants hold in finding the atypical meaning of words pairs that Gold and Faust (2010) deem unrelated (e.g., *sink dispute* or *salty rescue*).

The Hindu elephant parable is taught in classrooms world wide not only to encourage students to look for the big picture but also to sharpen students' ability to detect biased assumptions (World Wise Schools, 1998). Students learn that a blind-folded scholar is likely

to misinterpret an elephant's tusk to be a deadly spear if the scholar preconceives of elephants as dangerous. But if the scholar preconceives of elephants as protective – after all, beloved princesses are allowed to ride upon them – the elephant's torso might be misperceived as a retaining wall. If the scholar thinks elephants are dangerous, its trunk might be mistaken for a terrifying snake; if elephants are majestic, its ear might be envisioned as a magic carpet.

Several contemporary brain imaging studies draw similarly piecemeal and biased assumptions. A recent study reported in *The New York Times* claims that iPhone owners "literally" love their iPhones (Lindstrom, 2011). The basis for this claim? Activity in a brain region known as the insula was observed when iPhone-owning participants watched or listened to videos of iPhones ringing or vibrating. According to the study's author, activity in the insula "is associated with feelings of love and compassion," therefore, iPhone owners "respond to the sound of their phones as they would respond to the presence or proximity of a girlfriend, boyfriend or family member."

To this brazen claim, nearly fifty scientists protested – directly on the pages of *The New York Times* (Poldrack, 2011a, 2011b) and elsewhere (Bell, 2011; Bennett, 2011; Dobbs, 2011; Hickok, 2011). "The mere fact that the insula is active gives very little basis for saying anything concrete about what people are experiencing," explains cognitive neuroscientist Tal Yarkoni (2011). That's because activity in the insula is also observed during tasks as everyday as memory retrieval and motor sequencing, and during responses as antithetical to love and compassion as pain and anger.

Some bloggers speculate tongue-in-cheek that had the participants been Android rather than iPhone aficionados, the same insula activity apparent during the viewing or listening to iPhones would have been interpreted as manifesting the "hate circuit" (e.g., Neuroskeptic, 2008).[3]

Cognitive neuroscientist Russell Poldrack, in an editorial for the Dana Foundation, implores researchers to remember that "brain areas do not correspond uniquely with mental functions." Just because activity in a particular region is associated with a certain process or response, such as memory or fear, "it does not follow that these regions are 'memory areas' or 'fear areas.'" That's because the same brain regions "are probably involved in other functions as well; conversely, other brain areas are probably involved in memory and fear" (Poldrack, 2009).

With this caution in mind, let's examine the claim upon which Colich et al.'s contribution to the special issue is based: that the brain contains a 'theory of mind area.' Colich et al. base their claim on previous brain imaging studies, most prominently Happé et al.'s (1996, p. 197) study, which is itself based on the claim of "a previous [brain imaging] study of normal volunteers, performing a 'theory of mind' task [that] was associated with activity in left medial prefrontal cortex." When Happé et al. (1996) administer the same task to five autistic

[3]See also Gernsbacher, 2007a, for a similar example of insula and amygdala activity interpreted in one study as "brain regions involved in sexual/aggressive behavior" and in another as brain regions involved in "intense attachment, vigilant protectiveness, and empathy that characterize normal maternal attachment" (p. 5).

participants, and "no task-related activity was found in this region, but normal activity was observed in immediately adjacent areas," Happé et al. (1996, p. 197) conclude that "a highly circumscribed region of left medial prefrontal cortex … underlies the normal understanding of other minds." Or, as Colich et al. claim, the brain contains a 'theory of mind area'; it's the left medial prefrontal cortex.

The problem is, like similarly claimed love areas, memory areas, or fear areas, activity in the 'theory of mind area' – left medial prefrontal cortex -- isn't specific to theory of mind tasks at all; it's not even specific to so-called mentalizing processes. Rather, medial prefrontal cortex is renowned for being "not very selective to any one condition or process" (Neurosynth.org; Yarkoni, Poldrack, Nichols, Van Essen, & Wager, 2011).

Even the task Colich et al. use to assay theory of mind doesn't reliably activate the 'theory of mind area' (i.e., left medial prefrontal cortex). Colich et al.'s study, as well as their previous study, Wang et al. (2007), use comprehension of sarcastic sentences as their assay of theory of mind. They claim that left medial prefrontal cortex is "normally recruited automatically" whenever a person "infer[s] the communicative intent of another person" (Wang et al., 2007, p. 706). But while some studies do report activity in left medial prefrontal cortex when participants comprehend sarcastic/ironic sentences compared to literal sentences (e.g., Rapp et al., 2010; Uchiyama et al., 2006); other studies report activity in right medial prefrontal cortex (e.g., Shibata, Toyomura, Itoh, & Abe, 2009), and still other studies report no task-related activity in either left or right medial prefrontal cortex when "normal" participants comprehend sarcastic versus non-sarcastic sentences (e.g., Eviatar & Just, 2006).

More troubling are the varied attributions provided by Colich et al. and their research team for the varied results collected from their own autistic and non-autistic participants – particularly with regard to differences in the 'theory of mind area,' left medial prefrontal cortex. When their non-autistic participants exceed their autistic participants in left medial prefrontal activity during sarcasm detection, Wang et al. (2007, p. 706) attribute the difference to autistic persons' "primary impairment in social interest." When both their autistic and non-autistic participants are encouraged to focus on cues to the sarcasm, and the two groups no longer differ in left medial prefrontal activity, Wang et al. (2007, p. 706) attribute the lack of difference to the autistic participants having "normalized" their "neurocircuitry." And, when their autistic participants exceed their non-autistic participants in left medial prefrontal activity during sarcasm detection, Colich et al. attribute the difference to their autistic participants having "hacked out" (Wang et al., 2006, p. 938) a "compensatory" neural circuitry (this issue, p. 72).

In other words: When non-autistic persons exceed autistic persons in left medial prefrontal activity during sarcasm detection, it's due to an autistic deficit. And when autistic persons exceed non-autistic persons, it's due to an autistic deficit. In fact, Colich et al. oddly attribute their autistic participants' exceeding their nonautistic participants in left medial prefrontal activity to sarcasm detection being "more difficult" for their autistic participants, "perhaps because relevant information from the social cues .. are not automatically processed [by autistic persons] when inferring a speaker's communicative intent." But if

autistic participants' greater left medial prefrontal activity in Colich et al.'s study is due to sarcasm detection being "more difficult" for autistic participants, then why isn't non-autistic participants' greater left medial prefrontal activity in Wang et al.'s study due to sarcasm detection being more difficult for non-autistic participants?

Even Colich et al.'s behavioral data fail to support their varied interpretations of their brain imaging data. The autistic participants perform the task faster and with fewer errors than the non-autistic participants, although only the autistic participants' advantage in speed is statistically significant. Such excellent performance fails to support Colich et al.'s attribution that detecting sarcasm is "more difficult" for the autistic participants, unless we assume a priori that autistic persons have a specific deficit in figurative language comprehension. That's an assumption we hope our commentary negates.

Although Colich et al.'s interpretation is odd, it's not unusual. In the field of autism research, differences between autistic and non-autistic persons are frequently interpreted as autistic deficits; Giora's preface makes this point. And tasks on which autistic persons excel over non-autistic persons are frequently interpreted as autistic persons' compensating for their deficits; Gernsbacher, Dawson, and Mottron (2006) make this point. Such biased interpretations are commonly drawn about members of atypical groups (Miller, Taylor, & Buck, 1991). We urge researchers to take a few steps back from their a priori assumptions and remove any blindfolds that can lead to their own and the public's misinterpretations, both literally and figuratively.

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