Commentary

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On Social Feedback Loops and Cascading Effects in Autism: A Commentary on Warlaumont, Richards, Gilkerson, and Oller (2014)

Nameera Akhtar[1], Vikram K. Jaswal[2], Janette Dinishak[3], and Christine Stephan[4]
[1]Department of Psychology, University of California, Santa Cruz; [2]Department of Psychology, University of Virginia; [3]Department of Philosophy, University of California, Santa Cruz; and [4]Harrisonburg, Virginia

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Warlaumont, Richards, Gilkerson, and Oller (2014) described a social feedback loop whereby greater contingency of parents' responses to their children's speechlike vocalizations predicts their children's production of more speechlike vocalizations. In applying this model to autism spectrum disorder (ASD), Warlaumont et al. reported two primary findings: First, children with ASD produced fewer speechlike vocalizations than did typically developing (TD) children, and second, the responses of parents of autistic children were less contingent on their children's vocalizations being speech related than were the responses of parents of TD children. The authors proposed that this disruption in the social feedback loop has cascading effects that may help explain the atypical speech development characteristic of ASD. We critique the application of this model to ASD on two grounds: It fails to take into account the well-documented motor difficulties of autistic individuals, and, in privileging speech, it overlooks the dynamic nature of communicative motivation.

Warlaumont et al. acknowledged that motor differences may lead autistic children to produce fewer vocalizations than TD children do. But their model does not account for autistic children's specific difficulty in producing speechlike sounds. There is a high comorbidity between autism and apraxia, a motor disorder affecting the ability to coordinate the movements necessary for speech. The prevalence of childhood apraxia is 0.1% to 0.2% among the general population (Shriberg, Aram, & Kwiatkowski, 1997), but may be as high as 60% among autistic children (Tierney et al., 2015). Additionally, some autistic individuals report difficulty producing speech reliably (e.g., Higashida, 2013; Robledo, Donnellan, & Strandt-Conroy, 2012). If individuals cannot reliably produce speechlike sounds, a model of speech development that assumes they can does not seem relevant or appropriate.

Indeed, an intervention based on this model could in theory be harmful to autistic children's *communicative* development. Parents trained to privilege speechlike vocalizations may not attend to their children's other communicative attempts. In an ongoing study, we have found that parents of nonspeaking autistic children report that their children successfully communicate their physical and emotional needs through proximity, body posture, and touch. Over time, not responding to these communicative bids could have cascading effects whereby children who have difficulty producing speechlike sounds make fewer and fewer attempts to communicate in these other ways.

Warlaumont et al. speculated that another reason for autistic children producing fewer vocalizations than TD children may involve differences in their intrinsic motivation to communicate. This argument is common in the autism literature, but we find it dangerous and circular; often the only evidence cited for differences in "motivation to communicate" is the fact that autistic individuals do not communicate in conventional ways. Some nonspeaking autistics express a strong desire to communicate—except with those who insist that they speak (e.g., Kedar, 2012). Autistic (and nonautistic) individuals' motivation for communication is influenced by their history, their feelings of self-efficacy, and the social and physical contexts in which they find themselves (Zigler, 1967). If

Corresponding Author:
Nameera Akhtar, University of California, Santa Cruz, Department of Psychology, 1156 High St., Santa Cruz, CA 95064
E-mail: nakhtar@ucsc.edu

other people consistently fail to respond to non-speechlike attempts to communicate, this is likely to reduce autistic children's motivation to communicate, and thus result in a kind of learned helplessness.

Warlaumont et al. also found that although parents of both TD and autistic children were more likely to respond to speechlike than to non-speechlike vocalizations, this difference was smaller among parents of TD children. As a consequence, they wrote, children with ASD experience "reduced opportunities to learn about the social effects of their vocal behavior" (p. 1321). An alternative possibility is that the slightly lower level of contingency (a difference of .002) is actually adaptive: Adults interacting with an autistic child may not privilege speechlike sounds to the same extent because they have learned that the child has difficulty producing them. They may even be more responsive than parents of TD children to non-speechlike communicative behaviors (e.g., proximity, posture, touch) that were not measured by Warlaumont et al.

It is uncontroversial that nonverbal communication[1] both precedes and provides the foundation for verbal communication (Tomasello, 2003). The fact that some parent-focused interventions may actually reduce communication in children with ASD (Carter et al., 2011; Green et al., 2015) should lead to caution in advocating for parent training based on models of typical development that do not adequately account for the motor challenges common in autism. In our view, training parents of autistic children to favor speechlike vocalizations over other potentially communicative behaviors is not as obvious a next step as a reader of Warlaumont et al. might conclude (e.g., Zeliadt, 2015). We speculate that it could actually have negative cascading effects on children's development of the nonverbal communicative skills and motivation that provide the foundation for speech development.

When group comparisons are made, there is a tendency to assume that the performance of the majority group represents the standard against which other groups should be measured (Medin, Bennis, & Chandler, 2010). Differences between other groups and the standard are often interpreted as deficits in need of remediation (Akhtar & Jaswal, 2013). But not all differences are deficits. For example, echolalia—repetition of part or all of previously heard utterances—is still often considered merely a "symptom" of autism, but it is used communicatively, parents usually understand what their children mean when they use it, and it can serve as a stepping-stone to further communicative development (Gernsbacher, Morson, & Grace, 2016; Suskind, 2015). Some differences between autistics and nonautistics or between parents of autistics and parents of nonautistics may in fact be adaptive responses to the unique circumstances that are part of being autistic or parenting an autistic child (Prizant, 2015). Eliminating such differences may not be possible (or ethical, even if possible), and attempting to do so could have unintended negative consequences.

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Author Contributions

N. Akhtar and V. K. Jaswal drafted the manuscript, and J. Dinishak and C. Stephan provided critical revisions. All the authors approved the final version of the manuscript for submission.

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Note

1. In typical development, nonverbal communication includes gestures and gaze, both of which are also usually difficult for autistic children. Other forms of nonverbal communication (e.g., touch, posture, non-speechlike vocalizations) are understudied (Akhtar & Gernsbacher, 2008; Ochs, Solomon, & Sterponi, 2005).

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