



Author response

Friends, friendlessness, and the social consequences of gaining a theory of mind

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Fink, Begeer, Peterson, Slaughter, and de Rosnay (2014) conducted a prospective longitudinal study showing that theory-of-mind (ToM) development at school entry (mean age 5.61 years) significantly predicted friendlessness both concurrently and 2 years later. Friendlessness (defined as lacking any friendship that is mutually reciprocated) is conceptually and empirically distinct from group popularity and independently predicts adverse mental health outcomes throughout life. Here, we respond to the thoughtful commentaries by Wellman (*Brit. J. Dev. Psychol.*, 2015; 33, 24–26), Mizokawa and Koyasu (*Brit. J. Dev. Psychol.*, 2015; 33, 21–23), and Lerner and Lillard (*Brit. J. Dev. Psychol.*, 2015; 33, 18–20) with a focus on three key issues, namely (a) the definition and measurement of friendship, (b) the measurement of advanced ToM development beyond the preschool years, and (c) the exciting future potential for ToM-based training and intervention studies to combat chronic friendlessness.

We are grateful for the thoughtful and insightful commentaries on our paper by Lerner and Lillard (2015), Mizokawa and Koyasu (2015), and Wellman (2015). Taken collectively, all three highlight some of the exciting new directions that contemporary theory-of-mind (ToM) research is taking in its search for the practical relevance of ToM understanding for children's everyday lives. At the same time, each commentary addresses specific aspects of our study, particularly its key finding that chronic friendlessness was predicted both cross-sectionally and longitudinally by ToM understanding at age 5. Given limited space, we focus here on three of these.

Mutual friendship versus group popularity

Wellman (2015) highlights the important distinction between acceptance by the peer group in general versus mutually reciprocated friendship, noting that a particularly valuable contribution of our study is its demonstration that 'child friendships and in

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particular friendlessness matters' (p. 2). We agree it is crucial to understand the difference between reciprocated friendship versus popularity with the peer group at large both to make sense of ToM's influence on child social life and also because, as Mizokawa and Koyasu (2015) point out, childhood friendlessness (and hence possibly ToM) has relevance to adult mental health. (Recall that having had a mutual friendship in childhood uniquely predicts adult marital quality and clinical problems such as isolation and depression even after controlling for childhood group popularity: Bagwell, Newcomb, & Bukowski, 1998). Empirically, also, these two constructs are quite distinct. In our sample, 52% of group-rejected children had a mutual friend while 23% of popularity stars were friendless. Yet the two constructs are often conflated in discussions of children's peer relations, and we believe this may explain Lerner and Lillard's (2015) puzzling suggestion that a limitation of our methodology was that our key variable, friendlessness, was 'modelled categorically not continuously' (p. 2). In fact, it is not possible to measure or model friendlessness continuously. It is inherently categorical. Just as one cannot be 'only a little bit pregnant', by definition one cannot be 'just a little bit friendless': Either you have a reciprocated friendship (meaning you are *not* friendless) or you do not. Given the above-noted importance of friendlessness for the child's current and future well-being, this was the variable we chose to study. This is not to deny the possibility of continuously measuring other aspects of children's dyadic relationships. Indeed, we did measure and model group popularity continuously (via standard sociometric procedures). Yet it was friendlessness that showed the clearest cross-sectional and longitudinal links to ToM. Thus, as Lerner and Lillard do acknowledge, our findings for the categorical friendlessness measure are 'all the more impressive' (p. 2).

Measuring advanced ToM development

Also from a methodological standpoint, the question of how best to measure advanced ToM growth beyond preschool is noted in all three commentaries. Because we assessed ToM in children aged 5 to 6 years, we were fortunate in being able to use the battery of advanced and basic ToM tests that Hughes *et al.* (2000) previously showed were ideally suited to this age range. Our results confirmed Hughes *et al.*'s earlier findings that the battery as a whole was psychometrically sound and free from ceiling effects at this age. However, we hope that future research on ToM and friendship will encompass even older age groups, and here, new ToM measures will certainly be needed. Several promising possibilities suggest themselves, including Peterson, Wellman, and Slaughter's (2012) 6-step ToM Scale. It has the salient advantage of measuring the ToM acquisition as a series of developmental steps spanning from age two (O'Reilly & Peterson, 2014) to 13 years (O'Reilly, Peterson, & Wellman, 2013). The scale begins with the understanding of diversity of people's desires, extends through opinion diversity, knowledge access, and then false belief as a middle step, and culminates with the understanding of hidden emotion and then sarcasm understanding. These two 'post-false-belief' scale steps have been shown to be difficult even for typically developing children as old as 12 years (e.g., Peterson *et al.*, 2012). The final step (sarcasm) was failed by 59% of Peterson *et al.*'s (2012) Australian typically developing 8- to 12-year-olds, and hidden emotion was failed by 20%, similar to a finding for Japanese 6- to 7-year-olds reported by Mizokawa and Koyasu (2015, p.2). Thus, the 6-step ToM Scale is to be recommended for studies of friendship in

older children, not only for the challenges it can pose at advanced ages but also for its measurement of ToM development as a genuinely continuous sequential progression.

ToM training research

All three commentaries consider the possibility of ToM training for children who are slow to master ToM and/or slow to gain mutual friendships. This seems a promising avenue not only for intervention research with clinical samples (Fletcher-Watson, McConnell, Manola, & McConachie, 2014) but also, theoretically, to help unravel complex questions of causality in typical development. Relevant to the latter, Wellman (2015, p. 2) describes a study of 3-year-olds who not only failed false belief but could not convincingly tell lies. A causal path from ToM to lying was suggested when, after 6 days of practice on false belief tests with feedback, many children became more skilled at lying successfully. While the social benefit of teaching children to lie is arguable, were ToM training to have similar effects in overcoming childhood friendlessness, the social benefits would be indisputable.

Conclusion

We appreciate this opportunity for a friendly exchange of ideas with expert colleagues about the role of ToM understanding in childhood friendlessness. Consistent with points made in the commentaries, we acknowledge the limitations of our relatively small sample, the unmeasured potential effects of other moderator variables besides those we chose to look at, and the prematurity of drawing firm conclusions about causality even from well-controlled prospective longitudinal findings like these. Despite these limitations, we believe our study has value as a launching point for future research, in line with the recommendations above. Ultimately, we hope findings like these will encourage future researchers to further specify the cognitive antecedents and correlates of chronic friendlessness in childhood and, via this means, to discover new ways to remedy this serious obstacle to lifelong developmental and emotional well-being.

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