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Commentary

People with and without prosopagnosia have insight into their face recognition ability

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Palermo et al. (2017) recently investigated whether adults with and without prosopagnosia have insight into their face recognition ability. In a study published in a special issue on Developmental Prosopagnosia (see Bate & Tree, 2017, for an editorial), they concluded that adults have only modest insight into their ability to recognize faces. Here, we evaluate Palermo et al.'s study and re-examine recent data on self-reported face recognition ability (Shah, Gaule, Sowden, Bird, & Cook, 2015). Taken together, we suggest that people with and without prosopagnosia have sufficient insight to justify the inclusion of self-report questionnaires in face perception research.

Palermo and colleagues' study was a timely addition to the face perception literature, in which there is debate concerning the relationship between behavioural and self-reported face recognition ability (Bindemann, Attard, & Johnston, 2014; Grüter, Grüter, & Carbon, 2011; Tree, 2011; Tree & Wilkie, 2010). Using well-powered analyses, they found small but significant associations between questionnaire and behavioural measures (e.g., Cambridge Face Memory Test; CFMT; Duchaine & Nakayama, 2006) of face recognition ability. Palermo et al. used two self-report measures of face recognition ability: a questionnaire measure previously used to "diagnose" prosopagnosia (Kennerknecht et al., 2006) and a newly devised 77-item questionnaire. However, Kennerknecht et al.'s instrument is not an ideal measure (see Shah, Gaule, et al., 2015, for discussion), particularly as it contains items unrelated to face recognition. Furthermore, the scoring guidelines, factor structure, and psychometric properties of Palermo et al.'s new questionnaire were not fully reported. For example, it was not clear whether responses on non-face object recognition questions (e.g., *I have difficulties recognizing common objects*) were included in the overall questionnaire scores. Such questions likely measure a latent factor that is loosely related to face recognition ability and could therefore have weakened associations between the questionnaire and CFMT scores. As it stands, it is unclear whether the questionnaire used by Palermo et al. represent a valid and reliable index of face recognition ability, and it is important that this is clarified by future research. Additionally, it would be interesting to see an item analysis to determine which of the 77 items were most strongly associated with the CFMT. Doing so, and thereby refining this questionnaire, may yield a stronger instrument that could then be used in subsequent research.

Palermo and colleagues also drew upon, and pitch their findings against, recent research showing that adults have good insight into their face recognition difficulties when measured using the 20-item prosopagnosia index (PI20; Shah, Gaule, et al., 2015; Shah, Sowden, Gaule, Catmur, & Bird, 2015). Specifically, Palermo et al. noted that, by mixing people with and without prosopagnosia, Shah, Gaule, et al.'s (2015) correlations between the PI20 and face recognition tasks could "be purely driven by mean differences between groups" (Palermo et al., 2017, p. 220).[1] This was echoed in a recent article suggesting that Shah, Gaule, et al.'s finding "is a likely result of a statistical omission on the authors' part" (Bobak, Pampoulov, & Bate, 2016, p. 3). Palermo and Bobak et al. did not use the PI20, which limits the extent to which their data speak against this questionnaire. However, they correctly highlight that Shah, Gaule et al. (2015) failed to examine the relationship between the PI20 and behavioural tasks separately in groups with and

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without prosopagnosia. Shah, Gaule et al.'s (2015) data are freely available (see supplemental data) and, when re-examined (Study 3 and 4), demonstrate that even in people without prosopagnosia, the PI20 is correlated with performance on the CFMT ($r=-.34$, $p=.001$) and an additional behavioural task, the Famous Face Recognition Test ($r=-.53$, $p<.001$). The same pattern of results was observed in a group of individuals suspected to have prosopagnosia ($r=-.68$, $p<.001$; $r=-.31$, $p=.007$, respectively). Following Palermo et al.'s argument, the aforementioned analyses were based on data from participants who were *suspected* to have prosopagnosia and unmatched typical individuals. However, such analyses are best performed in a group of individuals who, according to current "diagnostic" procedures, have been confirmed as prosopagnosic and a closely matched control group. This was also possible by reanalysing Shah, Gaule et al.'s (2015) dataset (Study 2), which revealed a correlation between the PI20 and the CFMT in the prosopagnosic ($r=-.62$, $p=.006$) and matched control groups ($r=-.70$, $p=.001$). In addition, the relationship between the PI20 and the Famous Faces Recognition Test was observed in both the typical and prosopagnosic groups ($r=-.47$, $p=.047$; $r=-.61$, $p=.007$, respectively). Together, this pattern of results suggests that Shah, Gaule et al.'s (2015) report of a relationship between questionnaire and behavioural measures of face recognition is unlikely to be a statistical artefact, but instead indicates that both participants with and without prosopagnosia have considerable insight into their face recognition ability.

These findings accord with data emerging elsewhere in the literature. A significant correlation between the PI20 and face matching ($r=-.49$, $p<.001$) was found in healthy volunteers without prosopagnosia (Shah, Sowden, et–al., 2015), and the PI20 was recently shown to correlate with the CFMT ($r=-.39$, $p<.001$) in participants who have never received feedback on their face recognition ability (Gray, Bird, & Cook, 2017). The new Italian Face Abilities Questionnaire also correlates well with performance on the CFMT (Turano, Marzi, & Viggiano, 2016; Turano & Viggiano, 2016). Together, this provides further evidence—from various samples and multiple research groups—that individuals with and without prosopagnosia do have insight into their face recognition ability.

It is hoped that these findings will assuage concerns with the use of self-reported questionnaires in face perception research and leave open the possibility for their use in future work in this field. The extent, however, to which humans have *good* insight into their face recognition ability remains debateable and warrants further investigation. Indeed, self-report measures, including the PI20 and Palermo et al.'s instrument, will need refinement to address this issue more comprehensively. Nonetheless, we believe that the current evidence suggests that individuals have *sufficient* insight to justify inclusion of self-report measures in face perception research. This will be particularly important for improving understanding of, and developing formal diagnostic procedures for, developmental prosopagnosia (see Shah, 2016).

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Note

1. There is an error in Palermo et al.'s description of Shah, Gaule et al. (2015) study. The association between the PI20 and the CFMT and Famous Face Recognition Test was reported as "$r=-.68$, $N=173$" and "$r=-.81$, $N=110$", respectively. These should read "$r=-.68$, $N=110$" and "$r=-.81$, $N=173$, respectively."

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