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Redefining Super Recognition in the Real-World:

Face or Person Identity Verifiers?

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Abstract

While there has been growing interest in the deployment of superior face recognizers in policing and security settings, it is likely that most real-world tasks tap person rather than face recognition skills. We suggest that changes in real-world screening tasks and terminology are required to distinguish these individuals from laboratory-identified superior face recognizers, who have more potential in developing our theoretical understanding of the face recognition system.

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Ramon, Bobak and White (this issue) offer a timely review of superior face recognition, concluding that current interest in real-world deployment of "super-recognizers" (SRs) is not supported by the current academic literature. Here, we agree with the authors' caution, not only because of the sparsity of SR investigations, but also in light of recent empirical work from our group that questions the consistency (Bate et al., in press; Bate & Dudfield, 2019), homogeneity (Bate et al., 2018) and limitations (Bate et al., 2019) of superior face recognition performance. Ramon and colleagues also recommend a "continuous feedback loop" (p.15) between scientists and practitioners, simultaneously developing academic theory and screening tools. Here, we suggest that laboratory-identified *superior face recognisers* may differ substantially from those who excel at the rather different task of real-world *person identity recognition*. We propose a corresponding adjustment in scientific approach and nomenclature to reflect the professional task.

Our argument is grounded in the motivations of the early SR studies, where identification of people who "are about as good (at face recognition) as many with prosopagnosia are bad" (Russell, Duchaine & Nakayama, 2009, p. 256) presented evidence for a much wider continuum of face recognition ability. Subsequent work has begun to reveal the specificity, development and underpinnings of individual differences in face recognition performance (e.g. Bennetts, Mole & Bate, 2017); necessarily adopting tight experimentally-

controlled paradigms that assess face recognition itself. Thus, laboratory-identification of superior *face* recognisers has begun to make important theoretical developments.

Suggestions that laboratory-identified SRs could be useful in real-world settings gained weight following publication of a limited number of papers that consider performance in forensically-relevant tasks (e.g. Bobak, Hancock & Bate, 2016). However, usage of "SRs" in policing settings pre-dates these publications, and Ramon and colleagues quite rightly highlight its prematurity. Not only has recent work questioned current screening protocols and identified limitations in performance, but a more profound problem persists in the underlying assumption that the same individuals are proficient at both lab-based tests of facial recognition and real-world person identification tasks.

Our group has been approached by many commercial and police organisations seeking advice on the deployment of SRs. In most instances, these agencies are interested in tasks of "person identity verification" – deciding whether two instances of a person (e.g. in two static images, or one image compared to dynamic in-person viewing) are the same identity. In few circumstances would this process replicate laboratory tests that present only the inner facial features of individuals without distinguishing features (i.e. scars or blemishes). On the contrary, most real-world situations contain a wide range of extra-facial information such as body shape, gait, face or body motion, and even tattoos or accessories. In addition, contextual factors and response bias may create variability in performance across tasks that probe the same process.

It is highly likely, then, that *skilled person identity recognition* draws on a wider set of visual and cognitive processes than are typically examined in studies of *superior face recognition*. Our very recent work supports this notion (Bate et al., 2018, in press): not all laboratory-defined SRs excelled on a face memory test that presented uncropped ambient facial images for recognition, and different individuals surpassed controls on target-present

versus target-absent trials. In a second study, laboratory-defined SRs were asked to identify a real face in a crowd from an artificial composite, and only a minority of individuals achieved higher scores than controls. Thus, it is important that screening tasks mimic not only the process, but also the content (i.e. containing all available visual information) and context (e.g. expected likelihood of outcome) of real-world tasks. While it is already accepted that different individuals excel at different processes (e.g. face memory versus matching: Bate et al., 2018), it is possible that even more diversity exists. If future screening protocols accommodate such findings they may not only become labour-intensive to implement, but also include large numbers of variables that are difficult to disentangle for theoretical purposes.

From a practical perspective, the need for different individuals for many different tasks may be less important if effect sizes are small and can be mostly eliminated by a "wisdom of crowd" approach (Phillips et al., 2018). However, this suggestion raises a wider issue that is supported by Ramon et al.'s data simulation: there may only be mild-to-moderate benefits of using proficient versus typical performers in the real-world, which would not justify labour-intensive screening processes. At least until adequate screening tests are developed, it may be more prudent to limit personnel screening to the elimination of individuals who struggle with face recognition – particularly as the prosopagnosia literature and tool-set are relatively much more developed.

Finally, there are still substantial hurdles to overcome for real-world proficient performers to be influential in legal settings. It is now recognised more than ever that human face recognition performance is fallible, and eyewitness identifications should carry less weight than biological evidence[1]. Correspondingly, there is little evidence that superior face recognisers consistently perform at ceiling (i.e. make absolutely no errors) in laboratory tests,

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introducing grounds for uncertainty in a court of law. A recent paper also suggests that SRs' performance is on par with trained forensic face examiners and automated technology – alternative sources of evidence that are currently well-used and may appear more "objective" and "scientific" (Phillips et al., 2018). To some extent, this reflects the rather informal "SR" label that has thus far been applied in the real-world. A change in terminology to *skilled person identity recognisers* (SPIRs) may address this issue of professionalism, and more accurately reflect the skillset in question. Beyond this, we strongly concur with Ramon and colleagues that the acceptance of the legal community will not be gained unless commercial "SR" organisations curtail their unsubstantiated claims, and operate with complete transparency in line with the findings of scientific research.

In the meantime, while further research is clearly needed to justify and accurately identify SPIRs – work that may proceed with little theoretical value – laboratory standard theoretical investigation of superior face recognisers should continue uninterrupted.

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