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Understanding Children’s Visual Attention to Personal Protective Equipment Using Eye-Tracking

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Abstract : Background: The personal protective equipment (PPE) requirements for health care workers (HCWs) have changed significantly during the COVID-19 pandemic. Aim: To ascertain, using eye-tracking technology, what children notice the most when seeing HCWs in various PPE. Design: A Tobii nano pro-eye-tracking camera tracked 156 children's visual attention while they viewed photographs of HCWs in various PPEs. Eye Movement analysis with Hidden Markov Models (EMHMM) was employed to analyse 624 recordings using two approaches, namely (i) data-driven where children's fixation determined the regions of interest (ROIs), and (ii) fixed ROIs where the investigators predefined the ROIs. Results: Two significant eye movement patterns, namely distributed(85.2%) and selective(14.7%), were identified($P<0.05$). Most children fixated primarily on the face regardless of the different PPEs. Children fixated equally on all PPE images in the distributed pattern, while a strong preference for unmasked faces was evident in the selective pattern ($P<0.01$). Conclusion: Children as young as 2.5 years used a top-down visual search behaviour and demonstrated their face processing ability. Most children did not show a strong visual preference for a specific PPE, while a minority preferred PPE with distinct facial features, namely without masks and loupes.

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