

ABSTRACT

Internal and External Attention in Autism Spectrum Disorder

by

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Autism Spectrum Disorder (ASD) is a pervasive neurodevelopmental condition affecting individuals throughout the lifespan. Sensory hypersensitivity and superior perceptual acuity are well documented in individuals with ASD, and may indicate heightened orientation of attention to external stimuli, as attention can augment sensory perception. Recent evidence from mind-wandering research suggests that the ability to disengage attention from the external environment and direct it internally to self-generated mentation is crucial for adaptive cognition and behavior, as it allows for incorporation of past knowledge and experience in the interpretation of novel situations. We hypothesized that ASD is related to an imbalance between externally and internally directed attention, where excessive allocation of attention to external (sensory) information (i.e., external attention) limits spontaneous attention to self-generated mentation (i.e., internal attention). This attention bias restricts accessibility of internal information (e.g., memories, thoughts, knowledge) and consequently, the ability to form adaptive predictions and interpretations of the world. To test this hypothesis, three studies were conducted, examining both spontaneous and voluntary allocation of attention to internal and external stimuli, with and without competing external and internal information. Sixteen high-functioning adults with ASD and 15 typically-developing control (TDC) participants were recruited for the studies. Results demonstrated that participants with ASD had an overall reduced cognitive efficiency compared to TDC. Importantly, performance in the ASD group was less influenced by presentation of conflict and incongruency. However, no statistical evidence was found for group differences in internal or external attention across tasks. Thus, the findings suggest reduced utilization of contextual information and previous experience (i.e., internal information) in interpretation of external stimuli, but do not support the hypothesis that this deficit is related to external over internal attention bias. Multiple factors, such as within-group variability, small sample-size, and limited ecological validity of the tasks may account for these results. Our findings are discussed in relation to a range of potential explanations, as well as to other cognitive models of ASD.