ABSTRACT

Integrating Affect Perception Tasks from the New York Emotion Battery into a Comprehensive Measure of Neuropsychological Change across the Lifespan

by

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The ability to perceive others’ emotions is a vital skill for social competency, impacting the success of personal and professional relationships (Brinton & Fujiki, 2011; Cassidy et al., 1992; Côté & Miners, 2006). According to Socioemotional Selectivity Theory (SST; Carstensen, 1991), human motivation develops to become more discerning in choosing milieus that yield the most gratifying return on the investment of personal resources (e.g., time, attention, and effort), perhaps explaining why some research findings indicate that older adults may demonstrate an affect perception (AP) bias described as a positivity effect (Reed et al., 2014). Moreover, AP predicts cognitive and functional status in a range of clinical populations (Ghosh et al., 2012; Irani et al., 2012; Stout et al., 2011), but little is known about the link between AP and other aspects of neuropsychological (NP) functioning among healthy and developmentally-typical populations across the adult lifespan. Thus, mixed research findings of a diminution in AP as a function of age (Ruffman et al., 2008; Slessor et al., 2010) are especially salient when considering their wide-ranging implications for a workforce retiring later and living longer than any previous generation (Silverstein, 2008). This may be particularly true among women, for whom there is an added societal expectation of interpersonal skill (Timmers et al., 2003). Operationalizing skills that comprise social competence has been highlighted as one important target for improving the ecological validity of NP testing (Van der Elst et al., 2008).
The New York Emotion Battery (NYEB; Borod et al., 1992) includes measures of individuals’ ability to correctly label a wide range of affect (i.e., happiness, interest/excitement, pleasant surprise, sadness, anger, fear, disgust, and unpleasant surprise) as conveyed via three distinct communication channels: facial, prosodic (i.e., vocal tone), and lexical (i.e., word and sentence content). In addition to Ekman and Friesen’s standardized facial image stimuli displaying basic emotions (1976), novel images were created (Borod et al., 1992) to convey facial expressions of pleasant surprise, unpleasant surprise, and interest/excitement. Prosodic stimuli were audio recordings of actors using vocal intonation to convey emotional context. Neutral and emotionally-laden sentences and words served as the lexical stimuli. Having demonstrated its utility in both clinical and healthy adult populations (Borod et al., 2000b), administration of affect perception tasks from the NYEB as part of a comprehensive NP evaluation may be an important contributor for identifying subtle aspects of functional decline that impact global quality of life and informing best practices for the maintenance of neurocognitive health.

Aims:

1. The primary aim of this study was to extend previous research findings by examining affect perception as a function of age in a large, diverse sample of healthy adult participants.

2. The secondary aim of this study was to evaluate how well Socioemotional Selectivity Theory predicted affect perception as a function of age.

3. The third aim was exploratory in nature and evaluated patterns of affect identification accuracy and response bias (i.e., false-positives) in terms of demographic factors (e.g., gender, education, socioeconomic status [SES], and birth-year cohort).
Method: One hundred twenty-four typically developing, healthy, right-handed adults, aged 21-88, were recruited for a larger study and evaluated for visual and auditory discrimination, laterality dominance, cognition, mood, emotional expression, experience of emotion, and emotion perception. All participants were either native English-speakers or had become fluent in English before the age of seven; the sample was ethnically diverse. Cognitive measures assessed fund-of-knowledge, attention, executive function, memory, language, visuospatial perception, and psychomotor function. Select tasks from the NYEB were used to evaluate the perception of affect in the facial, prosodic, and lexical communication channels.

Analyses were carried out using a general linear model (GLM) that was extended by general estimating equations (GEEs), as these data did not meet the assumptions of ANOVA (i.e., gamma distribution and heteroscedasticity).

Results: Findings indicated a significant main effect of age, such that AP became less accurate among older participants, overall, and in each of the three communication channels. The lexical channel was the most accurate across age-groups and was the least vulnerable to age-related decline. The facial channel was the next most accurate across age groups and showed decline with increasing age. In contrast, the prosodic channel was the least accurate across age groups and was the most vulnerable to age-related decline. Anger in the prosodic channel and happiness in the facial channel were among the most universally accurate emotion affect-types to be identified. Disgust was the only emotion affect-type that did not significantly decrease as a function of age in any communication channel.

Additionally, SST was applied to test its utility in predicting age-related changes in AP as a function of valence (i.e., pleasant or unpleasant) and motoric direction (i.e., approach or
withdrawal). Perception for pleasantly-valenced affect was not significantly more accurate than perception for unpleasantly-valenced affect, nor did differences emerge as a function of age. Further, affect perception was not significantly more accurate for withdrawal-oriented unpleasant valence (e.g., fear) in comparison to approach-oriented unpleasant valence (e.g., anger). Thus, the application of SST did not yield evidence of utility for predicting AP among older adults.

Finally, demographic variables (i.e., gender, education, SES, and birth-cohort) were evaluated for their contributions to AP accuracy and response biases. Neither gender nor SES was predictive of AP accuracy or valence biases. However, more years of education were associated with higher AP accuracy for affect communicated in the Lexical channel. Among the oldest participants (i.e., ≥ 60 years), birth-year cohort associated with acute financial hardship in early childhood predicted elevated anger false-positives, a response bias that has been associated with remote history of physical abuse in studies with participants 25 years old and younger, but has not been evaluated in healthy older adults.

Conclusion: This study contributes to several aspects of the existing emotion literature. Previous research findings were expanded by characterizing age-related changes in AP with a diverse sample of adult participants, across three discrete channels of affect communication. Results are discussed in terms of their generalizability, innovation, relevance for clinical practice, and implications for future directions in research. Better and more specific understanding of affect perception in older adulthood could help characterize aspects of typical development in later life that are still not well understood. Moreover, such elucidation may suggest targets for intervention that lead to prolonged functional independence, decreased reliance on caregiving resources, and increased quality of life.
Keywords: emotion, affect, perception, recognition, Socioemotional Selectivity Theory, facial expression, prosody, valence, approach, withdrawal, positivity bias, negativity bias, lifespan development