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The role of attention in the affective life of people with severe or profound intellectual disabilities

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ABSTRACT

Although it is shown that attention plays an important role both in the onset and in the regulation of emotions in people without disabilities there is no information about how attention is related to emotions in people with severe or profound intellectual disability (ID). Therefore, in our study, we investigated the role of attention in the onset and regulation of the emotions of persons with severe or profound ID. We presented 27 participants with 4 staff-selected negative and 4 staff-selected positive stimuli. The situations were videotaped and their heart rate and attention was measured. Contrary to the expected higher attention to negative stimuli during the onset of negative emotions, we did not find differences in attention in the fourth to sixth second of stimulus presentation. However, in support of the emotion regulation theory of Gross (2008) we did find less attention to the negative stimuli than to the positive stimuli after these first 6 s of stimuli presentation. As expected from research in people without disabilities, there was also a negative relationship between the heart rate and the probability of being attentive. Our results suggest that people with severe and profound ID use attentional deployment to regulate their emotions and that, as in people without disabilities, a low heart rate is associated with attention.

1. Introduction

Identifying the emotions shown by people with severe or profound intellectual disabilities (ID) who communicate at a presymbolic level[2] is a great challenge (Adams & Oliver, 2011; Green & Reid, 1996, 1999; Hogg, Reeves, Roberts, & Mudford, 2001). Although observations are the most frequently used source of information about this population's emotions, we have shown in a previous study that physiology can give information about the valence of their emotions independently of observations (Vos et al., 2012). In that study we found, parallel to the findings in the general population, the heart rate (HR) of people with severe or profound ID to be lower in the fourth to sixth second during the presentation of negative stimuli than during the presentation of positive stimuli. Research in the general population has shown that a possible mechanism behind these results can be found in a difference in the attention to negative and positive stimuli (Bradley, 2009). Although it is often

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[2] From now on, if we refer to people with severe or profound ID, we mean the subgroup that communicates at a non-symbolic level.

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presumed that attention and emotions are two separate constructs which do not overlap (Bradley, 2009), Bradley and colleagues have shown that attention and emotion are closely related (Bradley, 2009; Bradley, Codispoti, Cuthbert, & Lang, 2001; Bradley, Moulder, & Lang, 2005). More specifically, the orienting response (which is the attention response to a novel stimulus) is larger for negative than for positive stimuli during the first 3 s of the presentation of a novel stimulus, resulting in a larger HR deceleration (Bradley et al., 2001). This effect disappears when the stimulus is presented repeatedly either within a series or several days later (Bradley, Lang, & Cuthbert, 1993). Between the fourth and sixth second HR will continue to be lower for the negative stimuli than for the positive stimuli. This larger deceleration in HR is due to a higher attention to the negative stimuli (Bradley & Lang, 2007; Gomez & Danuser, 2009). In our previous study we did not find the larger heart rate deceleration for the negative than for the positive stimuli in the first 3 s of stimuli presentation. Still, we did find the lower HR for negative stimuli in the fourth to sixth second of stimuli presentation. This could indicate a higher attention to negative than to positive stimuli. Nevertheless, we did not test this assumption directly. Therefore, in this study, we want to investigate whether we can find an indication of higher attention when people are presented with negative than with positive stimuli in the fourth to sixth second of the stimuli presentation.

Next to the importance of attention in the onset of emotions, attention is also important in the regulation of emotions (Gross, 2008, 2001). In his process model of emotion regulation Gross (2008) includes five ways in which people can regulate their emotions. First of all, people can select a situation in which the possibility of negative emotion is low. Secondly, they can modify the situation in such a way that it does not elicit negative emotions. Thirdly, they can redirect their attention within the situation. This can be a redirection to another stimulus in the situation or a withdrawal of their attention. Fourthly, they can cognitively reappraise the situation and lastly, they can influence their physiological, experiential or behavioural responses. The importance of attention in the regulation of emotions clearly emerges from the third way of emotion regulation, the attention deployment. This attention deployment is used particularly when it is not possible to change or modify one's situation (Rothbart, Ziaie, & O'Boyle, 1992). People with severe or profound ID have severe communicative and often motor limitations (Nakken & Vlaskamp, 2007). These limitations can make it very difficult for the communication partner to pick up signals which indicate that the person with severe or profound ID wants to avoid or alter a situation (Adams & Oliver, 2011; Hogg et al., 2001; Maurer & Newbrough, 1987). To our knowledge there is no research investigating the way people with severe or profound ID regulate their emotions. Therefore, we use the emotion regulation theory of Gross (2008) to make predictions about this population. Since attention deployment is used when a person cannot alter or choose a situation, we expect that people with severe or profound ID will use attention deployment to regulate their emotions when a negative stimulus persists to continue. Consequently, we expect persons with severe or profound ID to redirect their attention more when presented with a negative stimulus than when presented with a positive stimulus when the stimulus continues to be presented. As we hypothesize that in the first 6 s there will be more attention to the negative stimuli due to the role of attention in the onset of emotions, we chose to investigate the attention deployment to regulate the emotions after these 6 s. To this end, we will investigate if we would find less attention to the presented stimuli and more attention to something else or withdrawal of attention when the participants are presented with negative stimuli than when they are presented with positive stimuli after the first 6 s of stimuli presentation.

Measuring attention in people with severe or profound ID is not an easy task (Munde, 2011). Due to their pre- or protosymbolical communication through idiosyncratic vocal and bodily utterances, it is extremely challenging to track, understand, direct and share their focus of attention and interest (Olsson, 2005; Wilder & Granlund, 2004). Although there have been several studies investigating the alertness, attention and behavioural states of people with severe or profound ID (e.g., Guess, Roberts, & Rues, 2002; Lancioni, Dijkstra, & O'Reilly, 2000; Lancioni, Singh, O'Reilly, Oliva, & Severini, 2005), there are problems with their conceptualisation and with the inter-observer reliability of the observations (for a review see Munde, Vlaskamp, Ruijssenaars, & Nakken, 2009). Posner, Rueda, and Kanske (2007) propose the division of attention in three interrelated components. The first component is related to the level of attention and is called alerting. This can go from sleeping to waking, and within waking from being sluggish to being highly alert. According to Posner et al. (2007), the alertness deals with the intensity aspect of attention related to how an organism achieves and maintains an alert state. The second and third components have to do with the selection of attention. The second component consists of orientation and deals with the selective mechanisms operating on the sensory input. The third component is the executive attention, which is closely related with self-regulation and deals with conflict amongst competing responses (e.g., during a stroop task). In our study we are not interested in the executive attention, but only in the first component, the alertness, and the second component, the orientation. Therefore we will use the term alertness to indicate whether a person has attention (which is being alert) or is withdrawn (which is being not alert). This alertness corresponds to the first component of Posner et al. (2007) in which the difference in the intensity of attention is expressed. We will use the term orientation to indicate, if a person is alert, on what component of his or her environment the attention is directed. This is conform with the second component of Posner et al. (2007) in which, if there is alertness, the direction of this alertness is described.

We expect the greater heart rate deceleration for the negative than for the positive stimuli in the fourth to sixth second to be due to more alertness (as indicating the level of attention) when presented with negative stimuli than with positive stimuli. Therefore it is important to examine if, as in the general population (Casey & Richards, 1991; Lansink & Richards, 1997; Lacey, 1967), alertness is associated with a longer heart period (which is equivalent to a lower heart rate) than withdrawal (or no alertness). To summarize we will examine if there is:

(a) More alertness when presented with negative stimuli than with positive stimuli in the fourth to sixth second of stimuli presentation.