

Eyewitness Testimony:
Pain and Free Memory Recall
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Eyewitness testimony is relied upon to be a critical form of evidence in police investigations and the forensic process (Jack, Leov, & Zajac, 2014; Sarwar, Allwood, & Innes-Ker, 2014). How accurate is that information recalled after a victim has experienced pain or emotional arousal? It is noted that eyewitness error has been reported as a major cause in suspects being falsely convicted (Sarwar, et. al., 2014). Important information about actions and details are commonly misconstrued or simply forgotten.

Wang (2015) describes item and source memory. “Item memory refers to memory for the previously presented information itself (e.g., recall or recognition of a word itself), whereas source memory refers to memory for the context under which an item or fact was acquired.” Within item memory, information can be recalled or familiarized. Recollection refers to the conscious retrieval of details associated with an event or by which qualitative information is retrieved through process (Wang, 2015). Within recollection, actions and details are attempting to be retrieved with accuracy. Action refers to the timeline of events and what took place. Details are people, objects, time, and place associated with the event. It is noted that “people in general are better at describing actions than describing details (Sarwar, et. al., 2014).” Each of these memory types can change differently over time. Wang (2014) with other researchers (Robinson & Rollings, 2011) suggests that item recognition memory can be enhanced by positive emotional arousal. This suggestion is similar for source memory, but also it is suggested that the presence of a primarily negative arousal has this effect.

Research has disagreed on whether arousal will increase or decrease the ability to recall information accurately. This may be determined by when the arousal is experienced, age, type of recall information, and other factors. Lindberg, Jones, Collard, and Thomas (2001) compares this discrepancy. Citing three research studies from 1992 and 1999, it is discovered that personal

injury and high stress levels can lead to poorer memory recollection. As stated elsewhere, “people who encode information while experiencing high levels of stress and arousal appear to have greater difficulty in retrieving the information later (Robinson & Rollings, 2011). In Robinson and Rollings’ research from 2011, a significant negative correlation was found between stress at encoding and retrieval and memory performance as well as poorer recognition and recall memory. Compared to a study from 1991, it found that higher levels of recall occurred when levels of stress were higher (Lindberg, et. al., 2001). In 1992, Lindberg, et. al., found through their research, by watching a video of someone else experiencing pain, the group induced with pain had superior memories after a time lapse compared to those just experiencing stress. All these results reflected the memory of a child age demographic.

In Jack, Leov, and Zajac’s research in 2014, child, adolescent, and the adult demographic was compared to determine which age group provided the most quantity compared to accurate information. It was found after watching three short video clips (less than 1 minute a piece), adults reported more details than adolescents who in return, produced more than children. Although the amount of information recalled differed among these groups, they were no less accurate (Jack, et.al., 2014). Past research suggests that the type of information attempting to be retrieved at memory recollection also influences accurate retrieval; Because pictures are better recalled and recognized than words, research results may differ depending on the method (Robinson & Rollings, 2011).

Reasons for these discrepancies have been researched. It is suggested that an increase in memory may be due to the ability to internalize and reflect on the experience after the event occurs (Lindberg, et. al., 2001). Also, the “flashbulb hypothesis” which suggests that during a high emotionally arousing event, the mind produces a vivid memory of internal and external details (Lindberg, et. al., 2001).

In regards to the inability to recall accurately during high arousal situations, Lindberg, et al., (2001) suggests that the questions asked which are attempting to retrieve information about external actions or details, do not focus directly on the stressor; a person in pain will not remember their external stimuli but rather the internal effects. It is also suggested that a mismatch between the environment in which learning takes place and the retrieval environment can be a cause of memory impairment (Robinson & Rollings, 2011). Other reasons include the manipulation of mood in a laboratory setting, increased level of cortisol, increase in environmental stimuli and anxiety at time of retrieval, physiological and cognitive changes, mood impairment, and the idea that high stress prevented the mind to process the external material (Robinson & Rollings, 2011). Other research suggests age, general intellectual functioning, language, general memory skills, verbal intelligence factors (Jack, et. al., 2014) and time passage (Potter, Staub, Rado, & O'Connor, 2002) contribute to low eye witness performance during recollection activities. Aside from an arousal factor, those experiencing persistent pain are susceptible to cognitive deficits; chronic pain impairs memory as well (Smith & Ayres, 2014).

How can investigators set up a victim or witness for the best possible situation to access details in their memory? Research suggests reinstating the environment, physical cues, or mental context in which the event took place (Jack, et. al., 2014; Robinson & Rollings, 2011). This includes placing the individual at the site of the incident or similar by adjusting the lighting, temperature, or by participating in the same physical actions at the time of event. Physical cues such as odor or chewing can be relived in hopes to enhance memory. Wang (2014), has found that by inducing positive arousal at time of recollection or placing the interviewee in a calming environment, memory has shown to increase. As recited by Robinson & Rollings (2011), reinstating a mild stressor has resulted in enhancement in recall, however, reinstating a more

extreme stressor has not. Also, those “who experienced the same internal mood state (either neutral or high stress/arousal) at learning and retrieval fared significantly better on both the recognition and recall tasks than those who experienced mismatch context (Robinson & Rollings, 2011).”

The ischemic, or tourniquet, pain procedure is clinically safe when induced for many minutes long (Lenox, 1970). It resembles pain produced in clinical settings such as surgical pain and allows a lower pain intensity but still reaches levels of “unbearable pain” levels. The procedure consists of a band sphygmomanometer cuff (blood pressure cuff) and a hand exercise tool. In Lenox’s (1970) study, he found that “unbearable pain” was not reached until 19 minutes within the procedure, thus allowing for safe measures while inducing pain for a decent amount of time. The ischemic pain method does not confuse or surprise participants such as other methods do (e.g., cold pressure, radiant heat, and shocks) because pressure is applied consistently thus increasing discomfort levels instead of increasing direct intensity.

Because the procedure focuses more on overall discomfort than intensity, both factors require measuring. Burns, et. al. (2010) suggest a pain severity rating and distress rating be used to rate the degree to which physical pain is felt compared to upsetting or distressing pain. A visual analog scale (VAS) can be used. This is an unlabeled scale that provides an allows reliable measurement in centimeters instead of pictures or provided numbers.

Previous research has led to the current interest and hypotheses. It is hypothesized that in college aged adults, pain will impair memory recollection. After one-week time passage, further significant impairment will be revealed during memory recollection.

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