My research program focuses on determining the causes of and interventions to attention and memory failures in person searches and eyewitness memory. My research is guided by a metacognitive perspective to understanding when attention and memory processes are successful and when they fail.

Locating Missing and Wanted Persons

Hundreds of thousands of people go missing in the U.S. every year. Missing and wanted person alerts enable the public to search for them. I investigate the cognitive mechanisms underlying these searches (for review see Moore et al., 2021). In field studies, participants search for a target, who they are, unknowingly, guaranteed to encounter, for a cash reward. Developing mechanistic knowledge is important given the low sighting rates (5-15%). I have theorized and found that attention is a major cause of failure in prospective person memory (Lampinen & Moore, 2016a; Moore & Lampinen, 2019).

Meta-cognition. I developed the theory and have found that low expectations of encountering the target reduce attention and sightings (Lampinen & Moore, 2016b; Moore & Lampinen, 2019; Moore et al., 2016, 2018). Top-down expectations, such as expectations about the prevalence of encountering a target, affect sightings of target persons (Lampinen & Moore, 2016b; Moore et al., 2016; Moore et al. 2018; Moore et al., 2016). Specifically, spatial and contextual information regarding a target person's whereabouts impact expectations of encounter, self-reported attention to searching, and sightings (Moore et al., 2016; Moore et al., 2018). Similarly, bottom-up experience with target prevalence impacts prospective person memory. Prior experience failing to encounter targets leads to reduced attention to searching and sightings (Lampinen & Moore, 2016b; Moore et al., 2022).

Attention & Face Recognition. One explanation is that expectations impact attention and memory mechanisms. Inducing attention capture (by having participants speak to the target) increased sightings by 5%, up to 10% total (Moore & Lampinen, 2019). Attending to the target person while searching for her (i.e., being in retrieval mode) increased sightings to up to 60%. Most participants (~70%) recognized the target from a post-task lineup. These findings suggest that participants may experience inattentional blindness, or looking without conscious awareness, for the target.

I have initiated research on attention and memory interventions to enhance sightings. Empathy did not impact attention to search efforts, but did impact reported willingness to search (Saraqini, Stear, & Moore, 2022). Interventions to face recognition show more promise. The similarity between study-test appearances enhances sightings more than studying the variability in a person's face (Moore et al., 2024). I am investigating whether photographs that showcase a target's similarity to their appearance or general likeness perform best at enhancing sightings. Similarly, I have investigated ways to mitigate phenomena that harm face recognition. Adults, but not children, exhibit an own-age bias (Moore et al., 2023).

Our methods have a control-realism tradeoff; cognitive failures occur in field studies but cannot be measured. To eliminate this trade-off, I developed a search paradigm using a real 360º video embedded in VR headsets with eye tracking. This will enable me to identify attention and memory mechanisms in person searches. I submitted an NSF standard grant in July for this project.

Broadening the Paradigm. I created new paradigms to account for different types of person searches. I have examined how search performance varies in vigilance versus prospective memory conditions. Task importance instructions impacted attention to searching and sightings, but intention presence had no impact on searching. We also found that law enforcement had higher discriminability, more liberal response bias, and allocated more attention to searching than laypersons. In a study using a visual search paradigm, we found that participants with higher expectations made more false alarms and responded more quickly on trials than participants who had low expectations. Feedback eliminated this effect. We are finalizing manuscripts for both projects for (re)submission this Fall.

Future Directions. I aim to understand the attentional mechanisms underlying prospective person memory and to go beyond the prospective memory framework to develop a holistic understanding of person searches. I am developing theory on realistic and important visual searches that lie at the intersection of prospective memory, visual search, vigilance, and face recognition. From an applied perspective, my work will enhance well-being by increasing the apprehension of fugitives and greater wellbeing by increasing the recovery of missing people.

<u>(Eyewitness) Memory Accuracy</u>

Understanding the mechanisms underlying memory fallibility can prevent memory errors. I study meta-cognitive processes that impact children's and adults' acceptance of false information.

False Memories. Adults use meta-cognitive strategies to reject false information, such as *recollection rejection* which relies on logical exclusivity (if X happened then Y could not) and *diagnostic monitoring* which relies on expectations (I would remember A if it occurred). Metacognition develops across childhood, so we examined the development of metacognitive processes to prevent false memories. I recruited an ethnically, racially, linguistically, and socioeconomically diverse sample by translating materials and using a multitude of recruitment methods. By 5 years old, children use *recollection rejection* and *diagnostic monitoring* to reject false information, and 8–9-year-olds perform similarly to adults (Moore et al., 2018; Lampinen et al., 2020; Moore et al., 2022). I have extended this research to suggested false information. I harnessed multiple measures including memory accuracy and confidence (to construct ROC curves) and self-report responses to obtain converging evidence that adults use *recollection rejection* to reject suggested information (Moore & Lampinen, 2016). Adults and children as young as 6 years old use *recollection rejection* to prevent suggested false memories, but 6–7-year-olds did not use the strategy as well as older children or adults (Moore et al., 2018). We recently published a set of studies showcasing that the extent to which suggested information prompts metacognitive processes influences the acceptance of false information (Moore et al., 2024). My PhD student Dara Zwemer is conducting their master's thesis on the metacognitive processes underlying this effect. They also received an NSF GRFP to study the impact of narrative cohesion on false memories.

Eyewitness Identification. Recently, I began researching how metacognition affects an eyewitness' accuracy at identifying a culprit from a lineup. Using a Many-Lab approach, I co-led a project to test whether pre-crime instructions may bias people's meta-cognition and impact their accuracy and confidence (Baldassari, Moore et al., 2023). Instructions impacted decision criterion.

In 2021, I was awarded an NSF grant to test the influential pristine conditions hypothesis, which claims that when lineups are conducted correctly that high confidence suspect identifications will be highly accurate, even if viewing conditions are poor. This hypothesis assumes that people's metacognition about viewing conditions is accurate, which is often not the case. Legal stakeholders do not know whether an eyewitness has identified the culprit, but they may be able to rely upon confidence as an indicator of accuracy. To promote ecological validity, we are using real 360-degree video embedded in virtual reality headsets using eye tracking and other physiological measures. Since arriving at the U, I have established relationships with the Discovery Gateway and the Leonardo where we are hosting VR exhibits to collect data. We have recently concluded data collection on our first study which investigated how viewing conditions impact the confidence-accuracy relationship in children and adults. Regardless of viewing conditions, children's memory was not highly accurate when they were highly confident. We are preparing this research for publication and working to initiate the next experiment of the grant. Additionally, we have recently had an invited paper on the topic of eyewitness confidence-accuracy published in Policy Implications for the Behavioral and Brain Sciences. Our paper provides a novel synthesization of the literature for practitioners and advises that research suggests that confidence is not necessarily indicative of accuracy and cautions practitioners from relying on it (Moore et al., 2024).

Meta-cognitive strategies can preserve eyewitness memory, so I will identify factors that enhance the use of these strategies and the processes that underlie the use of these strategies. Knowing the processes that predict the use of meta-cognitive strategies will aid in predicting the reliability of eyewitnesses and will increase understanding of memory reliability. This line of work advances our understanding of the human memory system and its development. It has implications for several societal concerns including education, eyewitness memory, and misinformation in the news.

<u>Conclusion.</u> My research program seeks to advance our theoretical understanding of attention and memory errors and to use this understanding to improve memory in the real world. My research has been funded, and I continually pursue funding to answer questions related to these topics. My research is methodologically rigorous, novel, contributes to basic cognitive research, and it has applied value.