

Evidence-Based Mandated Reporter Training in Early Childhood: Synthesizing the iLookOut Findings

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Funding: This work was supported by the National Institutes of Health [5R01HD088448-10] and the Social Science Research Institute at The Pennsylvania State University.

Conflict of Interest Disclosure: In accordance with Penn State University's intellectual property policy, Dr. BH Levi receives royalties related to iLookOut-related products that have been licensed for commercial use. The licensing and royalty arrangements are managed by Penn State and all iLookOut-related research and publications are in compliance with institutional policies.

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Abstract

Early childcare and education providers and professionals play a critical role in identifying and reporting suspected child maltreatment, yet global evidence shows persistent gaps in training, confidence, and decision-making among mandated reporters. *iLookOut*, an evidence-based online training program, was developed to address these gaps through immersive scenarios, micro-learning, and theory-driven design. This paper synthesizes findings from a decade of *iLookOut* research, including randomized controlled trials, large open-enrollment cohorts, and mixed-methods validity studies. Across studies, *iLookOut* consistently improved early childhood educators' knowledge and attitudes toward mandated reporting, with large effect sizes and demonstrated generalizability across states. Implementation analyses showed that learner characteristics and perceptions of acceptability and appropriateness significantly shaped training outcomes, underscoring the importance of contextualized, user-responsive design. Recent refinements—including enhanced micro-learning, gamification, and validated cross-state assessment tools—aim to strengthen long-term retention and reporting accuracy and program evaluation. The paper concludes with key research priorities for advancing evidence-based mandated reporter training, including evaluating behavioral outcomes, understanding differential impacts among diverse learners, and testing cross-jurisdictional applicability to address semantic drift. These efforts position *iLookOut* as a promising, scalable approach to strengthening child protection within early childhood settings.

Keywords: mandated reporter training; early childhood education; iLookOut program; maltreatment; child abuse and neglect; child protection; violence against children

Ensuring safety in the face of pervasive violence against children is a global priority as outlined in Goal 3 of the United Nation's Sustainable Development Goals. According to the UNICEF (2024a) Global Annual Results Report, more than half of the world's children experience at least one form of violence (e.g., maltreatment and interpersonal violence) each year. That is, about 1.6 billion children or two-thirds of all children globally are subjected to violent discipline (e.g., physical punishment and psychological aggression) and neglect at home (UNICEF, 2024a). Even more striking, about 400 million children, or six in 10 children, who regularly experience maltreatment are under the age of 5 (UNICEF, 2024b; World Health Organization, 2022). These rates are mirrored in the United States where children under 5 make up the largest proportion of maltreatment victims (Stacks et al., 2024; U.S. Department of Health and Human Services, 2025). Such experiences of maltreatment during early childhood occur during a sensitive period in children's development that result in enduring effects across multiple developmental outcomes (DePasquale et al., 2019; Herrenkohl et al., 2013). These rates underscore the sheer scale of maltreatment worldwide and signal an urgent need for effective protective measures, particularly within the early childhood period.

Mechanisms to Protect Children

In a resource for evidence-based strategies to end violence against children published by the World Health Organization (WHO, 2016), one recommendation is the implementation and enforcement of laws that ban and criminalize maltreatment. In the United States, for example, the Child Abuse Prevention and Treatment Reauthorization Act (CAPTA, 2010) provides a federal definition of maltreatment while allowing variability in how states define what constitutes child abuse and neglect. Guidance on what constitutes maltreatment, child welfare and justice system responses, and professionals who are required by law to report (i.e., mandated

reporters) have been enshrined in CAPTA. Globally, many countries have adopted similar approaches though variability exists in scope of child protection policies. In a survey of 72 countries by Mathews and Kenny (2008), 49 countries have some form of mandated reporting law while 12 countries rely on voluntary systems. Within countries, definitions of maltreatment, who must report, and thresholds for suspicion differ markedly. For example, England lacks a general statutory duty to report. Instead, professionals are expected to act under codes of practice, and proposals to introduce mandatory reporting remain under debate (Foster, 2025).

Advocates argue such laws increase detection, yet critics warn they may overwhelm systems with reports and foster a “tick-box” mentality. Similar debates play out in Australia, Canada, and the United States (U.S.), where universal mandatory reporting is mandated in some jurisdictions, but evidence of its effectiveness is mixed (Ho et al., 2017). A growing body of research questions whether mandatory reporting laws, on their own, effectively protect children. One U.S. study comparing states with and without universal mandatory reporting found no difference in total or confirmed physical-abuse reports. Moreover, while non-professionals were more likely to make reports in universal states, their reports were less likely to be substantiated (Ho et al., 2017), suggesting that the effectiveness of reporting laws may hinge less on mandate breadth and more on training and the ability to identify signs of maltreatment.

A cross-national meta-synthesis of 24 studies covering 1,088 mandated reporters from twelve countries revealed that reporters struggle to identify subtle forms of maltreatment, and negative experiences, such as damaged therapeutic relationships and even child deaths following removal, appear in 73 % of the studies. Frontline professionals often lack adequate training, which contributes to underreporting or inappropriate reporting. For example, in one survey, 38 % of emergency medical staff were unaware of their agency’s reporting protocols (Lynne et al.,

2015). Together, these findings underscore that strengthening awareness, education, and training, especially within early childhood education, is essential to improving child protection outcomes.

Effectiveness Outcomes of Mandated Reporter Training

Given that mandated reporting policy is still considered to be an effective strategy to mitigate violence against children (Mathews & Bross, 200), perhaps the question should not be whether these policies exist or not, but to ask how effective education and training efforts are. According to Mathews and colleagues (2015), the aim of mandated or child protection training is “...to improve the reporting of cases where abuse or neglect exists or can reasonably be thought to exist; and to reduce the making of clearly unnecessary reports where there are insufficient grounds on which a knowledgeable reporter would make a report” (p. 2).

Walsh and colleagues (2022) recently published a systematic review of mandated reporter training programs to rate the certainty of the evidence for program effectiveness. Only 11 studies published between 1987 and 2017 met inclusion criteria where five were considered RCTs, four were quasi-experimental, and two were pre-post designs. Ratings of effectiveness ranged from very low certainty (i.e., very little confidence in the effect estimate) to high certainty (i.e., very confident that the true effect lies close to the estimated effect). Results indicated that the 11 studies included were rated as only having low to very low confidence in the evidence. Only six studies reported changes on primary outcomes related to number of reported cases of maltreatment as measured by self-report or subjective responses to vignettes, with no studies reporting on objective surveillance data on maltreatment rates from the population. All studies reported on secondary program outcomes related to changes in knowledge, skills, and attitudes related to maltreatment and mandated reporting.

Given the aforementioned lack of training, the state of the evidence of program effectiveness for mandated reporter training is that much more concerning. Low confidence in the evidence of effectiveness makes it difficult to engage in evidence-informed decision-making (EIDM) as proposed by the WHO (2022). According to the WHO (2022), evidence is defined as “factual knowledge gained through observation or experimentation in support of a conclusion” (p. 6). Of relevance to mandated reporter training is scientific evidence that is needed to help stakeholders in early childhood education (ECE) understand what programs are available to increase awareness of maltreatment and subsequent protection of young children. EIDM requires that decisions be informed by scientific evidence and include other factors such as implementation outcomes and context. Inclusion of implementation outcomes is especially important given the potential incongruence between measuring effectiveness outcomes at the policy level versus the individual person level.

Implementation Outcomes for Mandated Reporter Training Programs

The field of ECE relies on professional development education as a core dissemination and implementation strategy that aims to change knowledge, skills, and attitude around child protection policies. Given the multiple contextual levels being considered in such efforts (e.g., policy, childcare center, school, community, individual providers), there is a need to incorporate an implementation outcomes framework that clearly delineates the role of implementation outcomes across different levels vis-à-vis program effectiveness outcomes.

One such example framework is the implementation outcomes framework that delineates across multiple contextual levels within which intervention strategies are implemented (Proctor et al., 2009; Proctor et al., 2011). According to this framework, the routinization of evidence-based practices and interventions into daily organizational operations require that we

consider the distinct but interrelated components of implementation processes and outcomes. Specifically, there needs to be a clear differentiation across the proposed level of change that a specific intervention is purported to address. In the U.S. for example, CAPTA is a policy intervention implemented at a larger system or environment aimed at addressing maltreatment at a national level. The assumptions about change in this case are financial/budgetary and regulatory policies. In the case of mandated reporter training, professional development education programs are implemented at the individual level where assumptions about change include knowledge, skill, attitude, and expertise. The other two levels include organization, where structure and strategy are key assumptions about change, and the group/team, where cooperation, coordination, and shared knowledge are important assumptions for change. Given that the studies reviewed by Walsh and colleagues (2022) only showed changes across secondary outcomes (i.e., individual level) but not primary outcomes (i.e., large system/environment level), it may be worth considering the distance between these levels and possible mediators leading up to each key mechanism of change.

Three distinct but interrelated outcomes that need to be tailored across each of the levels include implementation outcomes, service outcomes, and individual outcomes. Implementation outcomes precede service and individual outcomes and are important in understanding the processes during implementation of an evidence-based practice. These outcomes include feasibility, fidelity, penetration/reach, acceptability, sustainability, uptake, and costs. Service outcomes are derived from indicators that are typically found in quality improvement ratings and include efficiency, safety, effectiveness, equity, timeliness, client-centered. Finally, individual outcomes provide information on stakeholder experiences with the evidence-based practice and include program satisfaction and key program outcomes of interest such as knowledge change,

improved functioning, or decrease in symptomatology (see Proctor et al., 2011 for more details about implementation outcomes). Within this framework, implementation outcomes are important mediators that might explain why or how innovative practices may work or fail to work given possible implementation challenges.

What follows next is a discussion about the *iLookOut* mandated reporter training program, which is an interactive online curriculum developed for early childhood care and education providers and professionals. The program uses immersive video scenarios and micro-learning modules to build knowledge and critical-thinking about duty to report suspected maltreatment. Our aim for this paper, therefore, is to contribute to the dearth of evidence-based mandated reporter training programs by providing a synthesis on the work to date and what remains in building the evidence that could potentially aid with EIDM in addressing the global challenge to protect children.

The iLookOut Child Protection Training Program

Currently, the *iLookOut* program utilizes a two-phased approach, which offers a Core Training phase followed by an Advanced Training phase delivered in a distance (i.e., online) format (Kapp et al., 2020). The Core Training employs a video-based storyline and practice modules that provide the foundational knowledge around recognizing maltreatment and understanding the legal responsibilities around duty to report. The Advanced Training uses spaced practice and retrieval as micro-learning opportunities to ensure ongoing reinforcement of the knowledge base via email or smart phone application.

The *iLookOut* program has three didactic learning objectives as a function of participation by ECE providers and professionals. These include the following: 1) understand and recognize suspected child maltreatment (e.g., what constitutes abuse and neglect, risk

factors, signs and symptoms, consequences of maltreatment, etc.); 2) understand the responsibilities of being a mandated reporter (e.g., legal responsibilities, steps for carrying out legal responsibilities, consequences for failing to report, etc.); and 3) become empowered and motivated to protect children at risk for maltreatment (Levi et al., 2021a; Levi et al., 2021b). New learners progress through the program chronologically to build their knowledge of mandated reporting and ongoing engagement with the curriculum. Upon registration, the program collects demographic and professional information to understand learner characteristics that aid with later program implementation and effectiveness assessments. Learners then complete a pre-test consisting of validated knowledge and attitude assessments to establish a baseline for measuring learning gains when compared with a post-test assessment at the conclusion of the program.

iLookOut's curriculum design promotes affective engagement through testimonial videos of adults and their experiences with maltreatment. This sets the stage for the core educational component, which is an interactive, video-based storyline that was filmed using a first-person perspective to elicit an immersive experience for the learner. The storyline places the learner in realistic scenarios through the eyes of an ECE provider and her mentor. At any point during the narrative, learners can access supplemental resource files, such as "Types of Child Abuse," "Facts About Abuse," and "Red Flags for Abuse," along with additional videos and text files about the children and their families portrayed in the story. In addition, the interactive nature of the modules includes questions posed to learners throughout the program where responses will determine what additional information will be provided to augment or correct knowledge about maltreatment. The provision of additional information attempts to mimic real life in which more information can deepen an ECE provider's understanding of background information (but not to

investigate the abuse) and aid informed decision-making to make the necessary report to Child Protective Services (CPS).

At the conclusion of the storyline, learners watch a debriefing video that discusses key elements of the scenarios that should have raised or lowered concerns for maltreatment. Learners are then asked to sign a pledge to fulfill their responsibilities as mandated reporters before completing the post-test. Upon successful completion, ECE providers earn professional development credits and satisfy their state's requirement for mandated reporter training. These elements were included as incentives for program completion and for eliciting future behavioral change to act based on knowledge gained from the program.

Cognitive mapping was conducted to ensure that the learning objectives are achieved throughout the program and to ensure alignment throughout the curriculum content (Kapp, 2020; Levi, 2021b). Cognitive maps are mental models that provide a linear progression of a concept and the relationships between conceptual nodes or factors. In the case of *iLookOut*, these cognitive maps not only guide an understanding of learner characteristics that improve learning (e.g., self-regulation, goal attainment, motivation) but also help with program evaluation by understanding how different program elements should be related with one another. Specifically, the cognitive map for *iLookOut* helped with coordinating learning content across Core and Advanced Training phases, implementing a plan, predicting likelihood of future success, providing feedback, monitoring and measuring progress, evaluating learner achievement, organizing data, and finding patterns (Kapp, 2020). This carefully sequenced structure has been informed by a set of learning theories designed to maximize learning and retention, especially for adult learners.

Theoretical Foundations Guiding *iLookOut*

A major strength of the *iLookOut* program is the use of foundational learning theories that guided its development and continues to guide implementation and evaluation efforts. Specifically, *iLookOut*'s design is grounded in adult learning theory (Knowles, 1984), which acknowledges that adult learners enrolled in professional development education learn most effectively when the material is problem-focused, immediately relevant, and experiential. Moreover, the program challenges ECE providers to learn within their zone of proximal development (i.e., the space between a learning task that is too easy or too difficult), employs exercises to reinforce their knowledge base around maltreatment, and allows learners to proceed at their own pace (Levi et al., 2021a).

The *iLookOut* program employs best practices for adult learning (Billington, 2000) by promoting key elements of the four-stage experiential learning cycle (Kolb & Kolb, 2009). The first is *concrete experience* wherein the video-based storyline immerses learners in realistic scenarios and allows them to reinterpret professional experiences they may have previously encountered. Second, *reflective observation* where learners are prompted to consider and problem-solve the inherent tension between their role as a caregiver and their responsibility as a mandated reporter. Third is *abstract conceptualization* where the program encourages reflection on the meaning and implications of complex concepts like "abuse" and "reasonable suspicion," moving beyond simple definitions. Finally, *active experimentation* occurs through interactive exercises and decision points within the storyline that provide a safe environment for learners to practice applying new information and understanding.

The inclusion of motivational constructs in the design of *iLookOut* was guided by self-determination theory (Deci & Ryan, 1985; Deci & Ryan, 2008), which posits that people are primarily driven by autonomous motivation comprised of intrinsic motivation and extrinsic

motivational factors identified as aligned with learners' values and sense of identity. According to the theory, there are three core psychological needs that foster motivation and engagement when met through a learning activity. These include *autonomy* (i.e., feeling of being in control of one's actions and choices), *competence* (i.e., drive to take on challenges and achieve a sense of mastery), and *relatedness* (i.e., the experience of feeling meaningfully connected with others).

Within the *iLookOut* program, autonomy is realized by providing learners with opportunities to make meaningful choices in response to video-based scenarios. This gives learners a sense of agency and control over their learning path and fosters a deeper sense of engagement. Competence occurs as a result of numerous opportunities to be challenged, demonstrate new skills, and earn digital badges that offer visible acknowledgment of their achievements. This satisfies the learner's innate desire to feel effective and capable. Finally, relatedness is promoted by ensuring that ECE providers identify with being part of a larger professional community united in its goal of promoting children's well-being, which creates a sense of shared purpose and responsibility. The utility of these theories has been evident in the effectiveness of the *iLookOut* program to date. What follows next is a review and synthesis of what the state of the evidence is and where we go next.

Effectiveness of the *iLookOut* Program

Pilot RCT. The initial round of evidence for *iLookOut* was published in Mathews et al. (2017) and included in the review by Walsh et al. (2022). The initial study recruited a sample of 762 childcare providers in 2014 from the state of Pennsylvania in the United States who were randomized in a single-blind controlled trial. A test-retest design was used to measure changes in knowledge and attitude for participants assigned to the *iLookOut* intervention group ($n = 388$) and control ($n = 374$). The *iLookOut* program employed during this randomized controlled trial

(RCT) was the pilot version that is akin to the Core Training phase of the current iteration. Results from the 741 participants who completed the study showed a significant increase in knowledge scores for ECE providers in the *iLookOut* group (i.e., 13.54 to 16.19 points out of 21) relative to the control group, which did not show any changes. In addition, the large effect size (Cohen's $d = 0.95$) showed a meaningful and practical difference from pre- to post-test, indicating a positive impact from participating in the *iLookOut* program. Similar results were found with changes in attitudes toward duty to report with the intervention group showing positive changes from pre- to post-test (Cohen's $d = 0.98$), while the control group's scores remained the same.

Generalizability. A follow-up study by Yang and colleagues (2020) examined whether the results found from the RCT could be generalized to the broader population. This study recruited ECE participants through an open enrollment call across the entire state of Pennsylvania. Data were analyzed from a large sample ($n = 11,065$) of ECE providers across the entire state who completed the *iLookOut* program between January 2015 and March 2018. The program version employed in this follow-up study was similar to the pilot used in the RCT. Results indicated that knowledge improved as a result of program participation, with a slightly larger effect size (Cohen's $d = 0.96$) than the RCT findings. Findings for the attitude toward duty to report were also significant with an effect size that was still considerably large (Cohen's $d = 0.80$), but relatively smaller than the RCT.

RCT II. To increase confidence in the intended effect of the *iLookOut* program, a second RCT was conducted in the state of Maine where ECE providers participated in the study between October 2017 and January 2020 (Humphreys et al., 2021). Participants were randomized into *iLookOut* ($n = 790$) or standard training ($n = 304$) and were provided with a US\$5 gift card and

professional development credit at the conclusion of the study. Similar to the two previous studies, this second RCT employed the single Core Training program only. Results indicated that ECE providers who completed *iLookOut* outperformed those in the standard training program on knowledge (Cohen's $d = 1.09$ vs. 0.67) and attitude (Cohen's $d = 0.67$ vs. 0.54) scores.

Knowledge test validity. With the expansion of the *iLookOut* program outside of Pennsylvania, and given the variability in state definitions of maltreatment, instrument validity becomes a concern when attempting to collect evaluation data on program effectiveness. More specifically, each statutory definition of maltreatment varies in scope on what constitutes abuse and neglect, which has implications on mandated reporter training quality (Somerville et al., 2022). This scenario introduces *semantic drift* (Nastasi & Hitchcock, 2016), which means that test items may change meaning due to contextual differences across geographic locations or professional roles where instrument validity becomes a major concern. To address this issue of semantic drift, Panlilio et al. (2022) conducted a mixed-methods study that integrated different validity evidence (i.e., content-related, response process, and internal structure) gathered across sequential qualitative (QUAL) and quantitative (QUAN) stages (see Fig. 1) and needed in order to revise tests or measures (American Educational Research Association, American Psychological Association, National Council on Measurement in Education, and Joint Committee on Standards for Educational and Psychological Testing, 2014).

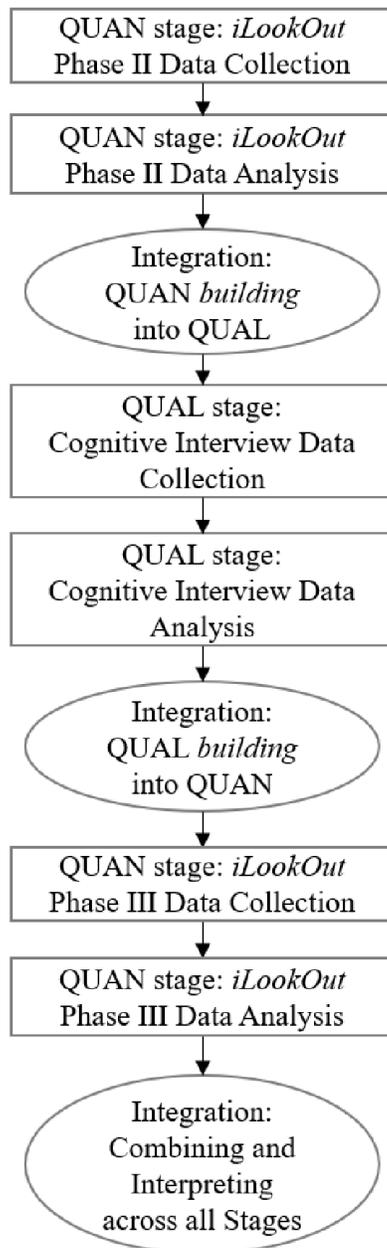


Figure 1. Advanced mixed methods design using elements of an explanatory sequential design (QUAN → qual) and an exploratory sequential design (QUAL → quan) where data integration occurred between stages. Upper case designation of qualitative or quantitative design indicates priority of data collected.

The first quantitative stage used the *iLookOut* knowledge test modified from the pilot and consisted of 23 items drawn from the Pennsylvania sample ($n = 5,379$). Results indicated low

reliability ($\alpha = .68$) due to a violation of a unidimensional assumption in the knowledge structure, which prompted the specification of a bi-factor exploratory factor analysis (EFA) model where each test item loaded on one of three subscales (i.e., actions that constitute abuse, bruising on the child, and legal information) and the remaining variance loaded on an overall latent factor designated as knowledge of child abuse and neglect. Although the three-factor model fit the data well (RMSEA = .03, CFI = .97, SRMR = .04), test items did not cleanly load on their hypothesized factors. Further analyses indicated that a five-factor (i.e., five subscales) was a better fit to the model. The knowledge test was therefore revised to include the five subscales (i.e., actions by adults that constitute abuse, bruises that may indicate abuse, concerning signs or behaviors, legal requirements, and legal penalties).

The subsequent qualitative stage employed cognitive labs to collect response process validity evidence. Cognitive labs provide insight into how participants comprehend test items and help identify validity concerns by examining participant understanding of the items compared with the intended meaning by test developers. Participants ($n = 26$ ECE providers) were recruited from Pennsylvania, California, and Maine. Qualitative results were coded, and problematic items and instructions were restructured for clarity, yielding a modified *iLookOut* knowledge test that was used in the subsequent quantitative study.

The final quantitative stage used the *iLookOut* knowledge test modified from the previous two stages, which included 28 items drawn from the Maine sample ($n = 719$). The revised instrument showed better reliability compared with the first iteration ($\alpha = .73$) but still indicated modest acceptability. Results of the confirmatory factor analysis (CFA) indicated that a four-factor model with a general knowledge factor fit the data well (RMSEA = .03, CFI = .95, SRMR = .08) after several problematic items ($n = 4$) were excluded from the model. A

model-based reliability (ω_H or omegaH) that accounted for the multidimensional structure of the test also showed acceptable reliability ($\omega_H = .72$), which indicates that individual differences in knowledge of mandated reporting were due to the general knowledge factor rather than the individual subscales alone. Taken together, this showed that the *iLookOut* knowledge test revision accounts for possible contextual differences across geographic regions and professional roles and shows promise as a valid measure of knowledge gained from mandated reporter training. This sets the stage for dissemination and implementation beyond the initial development context of Pennsylvania.

Implementation outcomes. Given the variability of learners who enrolled in the *iLookOut* program, it was important to examine implementation outcomes that allowed an understanding of how program components may have worked differently based on ECE provider characteristics (Barnett et al., 2023). Data from this study were collected from ECE providers ($n = 12,705$) who completed the Core Training in Pennsylvania as part of an open enrollment trial from November 2014 to December 2018. Project-developed questions asked about learner experience with the *iLookOut* program and each item was then mapped onto the implementation outcomes framework (Proctor et al., 2009; Proctor et al., 2011). Specifically, a CFA model was initially conducted to empirically test whether each item loaded as hypothesized on the implementation outcomes of acceptability (i.e., perception that the program was agreeable or palatable) and appropriateness (i.e., perceived fit or relevance of the program).

Using structural equation modeling, the authors then examined how implementation outcomes mediated learner characteristics and change in knowledge from pre- to post-test as a result of participation in the *iLookOut* program. Results indicated good data-model fit (CFI = .97, RMSEA = .03). In terms of race and ethnicity, the path model showed that relative to White

learners, acceptability mediated knowledge gains for Hispanic learners, whereas appropriateness mediated knowledge gains for Hispanic and Black learners, but not for Asian learners. Gender did not show any direct association with knowledge gains, but female learners reported higher acceptability of the program. In terms of age, younger learners reported lower gains in knowledge overall. Acceptability and appropriateness were only significant mediators of knowledge gain for learners aged 30-44 years old where lower ratings of appropriateness and acceptability were associated with lower knowledge gains. For education, learners with higher levels of educational attainment showed larger knowledge gains compared with learners who reported having a high school degree. Acceptability was not a significant mediator. Appropriateness mediated the relationship between education and knowledge gain toward a positive direction. ECE providers with 15 or more years of experience rated the program to be more appropriate, which mediated gains in knowledge. Compared with ECE providers working in a commercial setting, participants in non-commercial centers, religious centers, or other types of childcare settings exhibited larger gains in knowledge as a result of program participation. Appropriateness only partially mediated the relationship between religious facility or other setting and knowledge gain. Acceptability was not a significant mediator. Finally, prior training was associated with smaller knowledge gains where those with prior training found the program to be less acceptable and less appropriate. Acceptability, but not appropriateness, only partially mediated prior mandated reporter training and knowledge gain.

Future Directions for *iLookOut*

Taken together, the above studies related to the *iLookOut* program show a progression in the state of the evidence on its effectiveness, generalizability, and implementation process. Of note is that the impact on knowledge appears to be significantly larger (one standard deviation)

than the first and second studies, but the effect size for attitude appears to be smaller. This indicates possible variability in practical impact once the intervention is expanded to the general state-level population. It is especially important to note that when looking at implementation outcomes, there appears to be variability in individual-level program outcomes based on learner characteristics signaling that a “one-size-fits-all” approach may need to be reconsidered and that individual differences in learning need to be accounted for. Moreover, it is important to note that variability in geographic and professional context means that evaluation efforts using knowledge test items should account for semantic drift to allow for a direct, one-to-one comparison of program effectiveness.

Given the lessons learned to date on the effectiveness of the Core Training phase of *iLookOut*, the study team’s next step was to apply these insights into the subsequent iteration of the program by adding the Advanced Training phase, which is offered in its current form. Research indicates that even excellent training interventions are seldom effective with a single exposure (Alvarez et al., 2004; Garet et al., 2001) often characterized as a discrete implementation strategy (Leeman et al., 2017; Powell et al., 2017). Accordingly, we employed Micro-Learning as part of the Advanced Training phase to examine the impact on knowledge and behavior with regard to children at risk for maltreatment. This multi-faceted implementation strategy ensures that the Core Training phase is supplemented by Micro-Learning activities within the Advanced Training phase to reinforce knowledge gains about mandated reporting. To our knowledge, *iLookOut*’s Core Training + Advanced Training (i.e., Micro-Learning) would constitute the first multi-faceted implementation strategy around child protection training to be tested with ECE providers and professionals. Thus, findings from this study could help establish

a standard for how to sustain long-term gains in knowledge about what child abuse involves and what to do to protect children from abuse.

Creating and evaluating a fully developed and integrated Micro-Learning course is a necessary next step to understand its effectiveness as a strategy for optimizing learning and changing subsequent ECE provider behavior, a primary outcome of importance as discussed in Walsh et al. (2022). By serving as scaffolding to improve self-directed learning, rehearsal for applying new knowledge, and skill building, these applied learning exercises, interactive games, badging, and gamified components will engage ECE providers in deeper learning over extended periods of time, promoting retention and meaningful implementation of mandated reporting knowledge learned. The use of enhanced gamification will allow *iLookOut*'s Micro-Learning to challenge ECE providers to apply their knowledge to discern when children are at risk, and receive expert feedback to develop their judgment for those times when they will need to take action to protect a child from abuse. In addition, enhanced Micro-Learning will explore the impact of expert feedback on judgment and decisions of ECE providers around suspected maltreatment. We have developed several exercises involving paired scenarios in which key features are varied to represent the various types of abuse across a wide range of conditions, and variable degrees of likelihood. Expert feedback will include evidence-based information about the risk of abuse, as well as information about contextual features the learner should understand—including how to interpret these features, and how child protective services would likely respond if a report were to be made.

The current two-phased iteration of *iLookOut* is recruiting all eligible ECE providers and professionals across Pennsylvania to complete (at no cost) *iLookOut*'s Core Training to meet the state requirement for training on mandated reporting. Completing the Core Training involves

downloading the *iLookOut* App, which then positions ECE providers to receive notifications linked to subsequent Micro-Learning as part of the Advanced Training phase. Upon completion of the Core training, participants are randomized to 1 of 4 study arms (see Fig. 2) to receive Micro-Learning notifications either immediately, or after a delay of 3, 6, or 9 months.

Stratification will be based on childcare program type (i.e., Family-based, Head Start, Center, Pre-school/Nursery school), as well as size, quality rating and improvement system (QRIS) rating, and rurality.

SUMMARY: Early childhood professionals (ECPs) in PA complete measures on **K**nowledge, **B**ehavior, **C**onfidence, **A**ttitudes, and **P**reparedness before (**KBCAP**¹) and after (**KBCAP**²) *iLookOut*'s Core training. After being randomized to receive micro-learning --either immediately, or after a delay (3, 6, or 12 months, respectively)-- ECPs then complete the measures before (**KBCAP**³) and immediately after (**KBCAP**⁴) the micro-learning course, and again 3 months after (**KBCAP**⁵) completing the micro-learning course.

INTERVENTION = *iLookOut*'s **Core** training (3 hr) + follow-up gamified **Micro-Learning** (3 hours total, delivered over a 3-month period in 5-10 minute units to ECPs' mobile devices)

MEASURES

- Knowledge re. child abuse & reporting (**K**)
- Behavior re. at-risk children (**B**)
- Confidence, Attitudes, Preparedness (**CAP**)
- Implementation Measures (**IM**)(*Acceptability, Appropriateness, Net Promoter*)

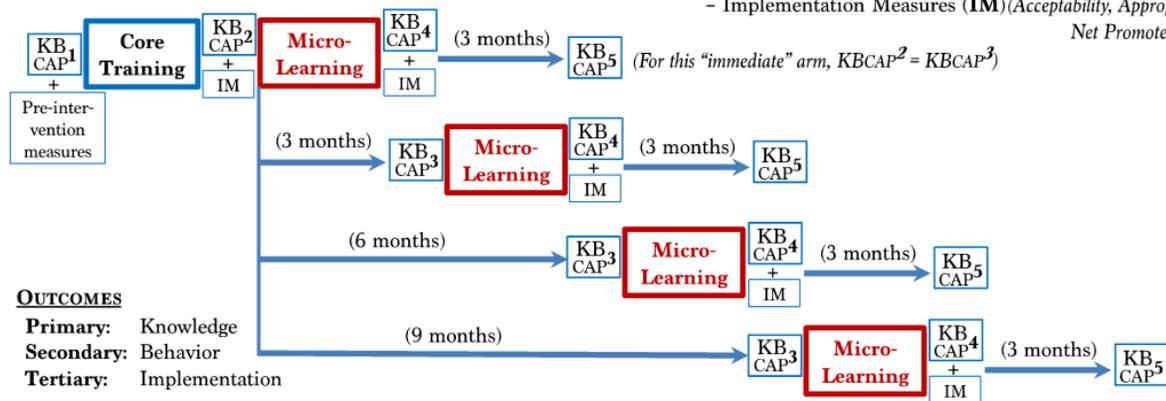


Figure 2. *iLookOut* Advanced Training phase (Micro-Learning) study design

To address the gap in primary outcomes (Walsh et al., 2022) related to a decrease in population-level prevalence of maltreatment, the current study will collect distal outcomes related to ECE provider behaviors regarding mandated reporting. We will measure reporting practices in two ways. First, as part of the Knowledge, Behavior, Confidence, Attitudes, and

Preparedness (KBCAP) measures, we will survey ECE providers about the number of children they have reported over the preceding 3 months. ECE providers' responses after completing Micro-Learning will be compared to reporting practices both before and after the Core Training phase, as well as prior to starting the Advanced Training phase. Second, in collaboration with Pennsylvania's Child Protection Services (CPS), we will assess whether reports of suspected maltreatment were more likely to be substantiated if the person who made the report had completed *iLookOut's* Advanced Training. To accomplish this, a CPS administrator will cross-check the names of ECE providers who completed the Advanced Training with the names of providers who reported suspected child abuse. We will then compare substantiation rates for those reports versus reports from ECE providers who did not engage in the Advanced Learning phase.

Conclusion

Violence against children remains a pervasive global challenge, disproportionately impacting children under five during sensitive developmental periods. These high rates of early maltreatment highlight the urgent need to translate policy mandates into effective frontline practice, positioning mandated reporter training as a critical child rights and public health priority. Across jurisdictions, legal reporting requirements vary widely, and the existence of a mandate alone is insufficient; outcomes depend on professionals' ability to recognize subtle indicators of risk and act with confidence. In this context, *iLookOut* offers an evidence-informed approach that strengthens knowledge, shapes attitudes, and supports sound reporting judgments among early childhood education (ECE) providers. Findings from randomized controlled trials and large open-enrollment cohorts demonstrate consistent, meaningful gains in knowledge and attitudes across diverse populations, while implementation studies show that learner

characteristics and perceptions of acceptability and appropriateness meaningfully influence outcomes. Ongoing refinements—such as addressing semantic drift and incorporating Micro-Learning—illustrate responsiveness to diverse legal, professional, and organizational contexts. Together, these results position *iLookOut* as a scalable, theory-grounded, and context-responsive model that supports ECE professionals in fulfilling their ethical and legal responsibilities to protect children in ways that extend beyond statutory requirements.

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