ECPQIM:

EARLY CHILDHOOD PROGRAM QUALITY IMPROVEMENT AND INDICATOR MODEL

| Richard Fiene, Ph.D. |

Introduction

The contents of this anthology contain the key articles written supporting the ECPQIM: Early Childhood Program Quality Improvement and Indicator Model. These articles provide the theory and the background research to ECPQIM. The articles are drawn from research done in the professional development, licensing, regulatory science, and the early childhood quality initiatives fields.

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A Treatise on the Theory of Regulatory Compliance

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Abstract

This treatise provides some insights into certain assumptions related to regulatory compliance and the implications for regulatory researchers and policy-makers for the future development of rules and regulations. Once regulatory compliance decision making moves from requiring full compliance with all rules to a substantial regulatory compliance decision making approach, the measurement and monitoring systems employed to assess programs and facilities change dramatically.

Keywords: regulatory compliance, risk assessment, key indicators, licensing, monitoring, measurement

1. Introduction

Regulatory compliance is a sub-discipline within regulatory science that focuses on measurement, monitoring systems, risk assessment, and decision making based on regulatory compliance scoring. Regulatory compliance is dominated by nominal scale measurement, that is, either a facility is in or out of compliance with specific rules. There is no middle ground with regulatory compliance as there is with most quality measurements, which are generally made on an ordinal scale. However, some regulators feel that certain regulations are not or should not be subjected to nominal measurement.

A factor with regulatory compliance data is that they generally follow a very skewed frequency distribution, which limits analyses to non-parametric statistics. Because of the skewed data distribution, dichotomization of data is warranted, given the lack of variance in the regulatory compliance frequency distribution - the majority of facilities [1] are either in full or substantial regulatory compliance.

An assumption within regulatory compliance is that full regulatory compliance, that is, 100 percent compliance with all rules [2], is the best (i.e., risk is minimized) possible scenario for the services being delivered and assessed. It is also assumed that all promulgated rules have an equal weight in their relative impact on the desired service delivery model, although this thinking has been changing over time regarding how rules are reviewed and complied with. This short treatise will examine the past 40 years of research delving into regulatory compliance measurement, and will provide some guidance to regulatory researchers and policy-makers as they move forward with both research and policy development related to rules. The data from these research studies have led to a Theory of Regulatory Compliance that demonstrates that substantial regulatory compliance - and not full regulatory compliance - is a more effective and efficient public policy as it relates to decision making on monitoring and licensing.

The results reported herein are drawn from human services delivery systems in the United States and Canada, such as early care and education, as well as child and adult residential services. The results are from state and provincial level licensing systems involving over 10,000 facilities serving over 100,000 clients. All the data are part of an international regulatory compliance database (https://data.mendeley.com/datasets/kzk6xssx4d/1) maintained at the Research Institute for Key Indicators and the Pennsylvania State University.

2. Methods

Alternate methodologies, logic models, and algorithms were developed directly from the Theory of Regulatory Compliance once it was determined that substantial regulatory compliance produced better results than full regulatory compliance. These methodologies created a differential monitoring or targeted monitoring approach based on risk assessment, which measures client morbidity and/or mortality when individual rule

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[1] The term "facilities" is used when referring to programs and/or facilities.

[2] The term "rules" is used when referring to rules and/or regulations.

non-compliance is assessed, and the determination of key statistical predictors for overall regulatory compliance [3].

Briefly, the above methodologies provide cost-effective and efficient means for the ongoing monitoring of human service delivery systems by selecting and reviewing only those rules that either have a positive impact on clients, statistically predict overall regulatory compliance, or protect the health and safety of clients [3]. Based on regulatory compliance historical data, decisions could be made as to the frequency and depth of the reviews or inspections. Abbreviated reviews (inspections in which a subset of rules are measured), such as licensing key indicator rules or risk assessment rules, would only be done in those facilities having a history of high regulatory compliance. Those facilities with a history of high regulatory non-compliance would continue to receive full regulatory compliance reviews as they did in the past.

3. Results

Prior to 1979, it was always assumed that there was a linear relationship between regulatory compliance measures and program quality measures of human service facilities. In a study conducted in that year, which compared results from early care and education programs, in particular child care centers, this assumption did hold up when one went from low regulatory compliance to substantial regulatory compliance. However, the results from substantial regulatory compliance to full (100 percent) regulatory compliance did not show the same linear relationship. Rather, it showed that those programs that were in substantial instead of full compliance were actually scoring higher on the program quality measures.

Since 1979, this result has been replicated in many other early care and education delivery system studies, both nationally in the United States (Head Start) [1] and in several states (Georgia, Indiana, Pennsylvania) [2]. In all these studies, one finds a non-linear - rather than a linear - relationship between regulatory compliance and the overall quality of the facilities being assessed.

4. Discussion

Based on the results above, there are several assumptions within regulatory compliance that need to be reconsidered:

1. Public policies that require full (100 percent) compliance with all rules may not be in the best interest of the clients being served, nor an effective use of limited regulatory resources. Potentially, emphasis on substantial regulatory compliance may be a more effective and efficient public policy related to client outcomes when it comes to their health, safety, and quality of life. Note that substantial compliance is still very high regulatory compliance (99-97 percent compliance with all rules) and produces positive client outcomes. As stated above, regulatory compliance data are extremely skewed and not normally distributed. There is very little variance in the data and the majority of programs are in either full or substantial regulatory compliance.

2. If a jurisdiction focuses on a substantial regulatory compliance public policy it opens up many system enhancements, such as differential or targeted monitoring, risk assessment analysis, and statistical key indicator rules that have been demonstrated to be cost effective and efficient approaches to reviewing program performance. In a full regulatory compliance public policy approach, none of these system enhancements can be employed, with the possible exception of the key indicator approach as delineated in number four below.

3. If a jurisdiction takes the position that all rules are not equal, then a risk assessment or weighting approach becomes an alternative based on the assumption that certain rules place clients at greater risk of death, serious injury, or other types of harm.

4. Even if a jurisdiction does not have a licensing law that allows issuing licenses on the basis of substantial compliance, there is the possibility that key indicators could still be used for abbreviated reviews or inspections, if there is no prohibition in statute or regulation that expressly forbids the use of this approach, since key indicators statistically predict full regulatory compliance. In other words, all rules are statistically predicted to be in regulatory compliance based on the results of the key indicators. Therefore, technically, all rules have been reviewed albeit short of a full review or inspection.

5. Based on previous research, utilizing a risk assessment approach along with a key indicator approach is the most cost effective and efficient differential monitoring system model. The reason is that both predictive rules and those rules that place clients at greatest risk are always assessed when a site visit review or inspection is done. Many more jurisdictions use a risk assessment approach at this point, but there is a loss of predictive regulatory compliance by just using it.

6. Based on previous regulatory compliance history, only those facilities in high regulatory compliance would be eligible for abbreviated key indicator and risk assessment reviews, whereas those with a history of high regulatory non-compliance would continue to receive full regulatory compliance reviews. This gets at the essence of the differential monitoring approach, which is cost neutral. Regulatory resources may then be re-allocated from the abbreviated reviews to more in-depth full regulatory compliance reviews.

7. Based on the use of the key indicator and risk assessment methodologies within a differential monitoring approach, it is possible to identify over multiple jurisdictions if there are generic rules that meet the criteria of risk abatement and prediction. Such an application has occurred in the United States with the creation of early care

and education standards entitled *Caring for Our Children Basics*, published by the Administration for Children and Families, US Department of Health and Human Services (2015).

5. Conclusion

Regulatory compliance is relatively new in applying empirical evidence and basic scientific principles to its decision making. In the past, it had been dominated by case studies and long narrative reports that did not lend themselves to quantitative analysis. There is a need to more clearly apply empirical evidence and the scientific method to rule development. Certain assumptions, such as full regulatory compliance as a sound public policy, are lacking in empirical evidence. This treatise on a theory of regulatory compliance is provided for its heuristic value for both regulatory researchers and policymakers in rethinking some basic regulatory compliance assumptions. It is not about more or less, rules but finding the "right rules" that protect clients, predict overall regulatory compliance, and produce positive client outcomes.

6. Declaration of Conflicting Interest

The authors declare no conflicts of interest.

7. Article Information

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8. References

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Regulatory Compliance Monitoring Paradigms and the Relationship of Regulatory Compliance/Licensing with Program Quality: A Policy Commentary

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Abstract

This policy commentary deals with two key issues within regulatory science related to the best methods for measuring regulatory compliance: Program monitoring paradigms and the relationship of regulatory compliance/licensing with program quality. Examples from program monitoring paradigms include: 1) Substantial versus Monolithic. 2) Differential Monitoring versus One size fits all monitoring. 3) "Not all standards are created equal" versus "All standards are created equal". 4) "Do things well" versus "Do no harm". 5) Strength based versus Deficit based. 6) Formative versus Summative. 7) Program Quality versus Program Compliance. 8) 100-0 scoring versus 100 or 0 scoring. 9) QRIS versus Licensing. 10) Non-Linear versus Linear. Examples from the relationship of regulatory compliance/licensing with program quality include: 1) "Do no harm" versus "Do good". 2) Closed system versus Open system. 3) Rules versus Indicators. 4) Nominal versus Ordinal measurement. 5) Full versus Partial compliance. 6) Ceiling effect versus No Ceiling effect. 7) Gatekeeper versus Enabler. 8) Risk versus Performance.

Keywords: regulatory compliance, program monitoring, licensing, program quality.

Introduction

This commentary on policy will deal with two key issues within regulatory science that need to be dealt with by licensing researchers and regulatory scientists as they think through the best methods for measuring regulatory compliance: 1) Program monitoring paradigms; 2) Relationship of regulatory compliance/licensing and program quality. The examples drawn are from early childcare and education but the key elements and implications can be applied to any field of study related to regulatory science that involves rules/regulations/standards. For the purposes of this manuscript "rules" will be used to

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describe or refer to "rules/regulations/standards".

Program Monitoring Paradigms:

This section provides some key elements to two potential regulatory compliance monitoring paradigms (Differential/Relative versus Absolute/Full) for regulatory science based upon the Regulatory Compliance Theory of Diminishing Returns (Fiene, 2019).

As one will see, there is a need within regulatory science to get at the key measurement issues and essence of what is meant by regulatory compliance. There are some general principles that need to be dealt with such as the differences between individual rules and rules in the aggregate. Rules in the aggregate are not equal to the sum of all rules because all rules are not created nor administered equally. And all rules are to be adhered to, but there are certain rules that are more important than others and need to be adhered to all the time. Less important rules can be in substantial compliance most of the time but important rules must be in full compliance all of the time (Fiene, 2019).

Rules are everywhere. They are part of the human services landscape, economics, banking, sports, religion, transportation, housing, etc... Wherever one looks we are governed by rules in one form or another. ***The key is determining an effective and efficient modality for negotiating the path of least resistance in complying with a given set of rules***[2]. It is never about more or less rules, it is about which rules are really productive and which are not. Too many rules stifle creativity, but too few rules lead to chaos. ***Determining the balance of rules is the goal and solution of any regulatory science paradigm.***

Differential/Relative versus Absolute/Full Regulatory Compliance Paradigms: this is an important key organizational element in how rules are viewed when it comes to compliance. For example, in an absolute/full approach to regulatory compliance either a rule is in full compliance or not in full compliance. There is no middle ground. It is black or white, no shades of gray as are the cases in a differential/relative paradigm. It is 100% or zero. In defining and viewing these two paradigms, this dichotomy is the organizational key element for this paper. In a differential/relative regulatory compliance paradigm full compliance is not required and emphasis on substantial regulatory compliance becomes the norm.

Based upon this distinction between differential/relative and absolute/full regulatory compliance paradigms, what are some of the implications in utilizing these two respective approaches. Listed below are the basic implications that occur when selecting either of the two approaches on program monitoring systems: differential/relative versus absolute/full regulatory compliance paradigms.

There are ten basic implications that will be addressed: 1) Substantial versus Monolithic. 2) Differential Monitoring versus One size fits all monitoring. 3) "Not all standards are created equal" versus "All standards are created equal". 4) "Do things well" versus "Do no harm". 5) Strength based versus Deficit based. 6) Formative versus Summative. 7) Program Quality versus Program Compliance. 8) 100-0 scoring versus 100 or 0 scoring. 9) QRIS versus Licensing. 10) Non-Linear versus Linear.

1) Substantial versus Monolithic: in monolithic regulatory compliance monitoring systems, it is one size fits all, everyone gets the same type of review (this is addressed in the next key element below) and is more typical of an absolute paradigm orientation. In a substantial regulatory compliance monitoring system, programs are monitored on the basis of their past compliance history and this is more typical of a relative paradigm orientation. Those with high compliance may have fewer and more abbreviated visits/reviews while those with low compliance have more comprehensive visits/reviews.

2) Differential Monitoring versus One Size Fits All Monitoring: how does this actually look in a program monitoring system. In differential monitoring (Differential/Relative Paradigm), more targeted or focused visits are utilized spending more time and resources with those problem programs and less time and resources with those programs that are exceptional. In the One Size Fits All Monitoring (Absolute/Full Paradigm), all programs get the same type/level of review/visit regardless of past performance.

3) “Not all standards are created equal” versus “All standards are created equal”: when looking at standards/rules/regulations it is clear that certain ones have more of an impact on outcomes than others. For example, not having a form signed versus having proper supervision of clients demonstrates this difference. It could be argued that supervision is much more important to the health and safety of clients than if a form isn’t signed by a loved one. In a differential/relative paradigm, all standards are not created nor administered equally; while in an absolute/full paradigm of regulatory compliance, the standards are considered created equally and administered equally.

4) “Do things well” versus “Do no harm” (this element is dealt with in the second component to this paper below as well): “doing things well” (Differential/Relative Paradigm) focuses on quality of services rather than “doing no harm” (Absolute/Full Paradigm) which focuses on protecting health and safety. Both are important in any regulatory compliance monitoring system but a balance between the two needs to be found. Erring on one side of the equation or the other is not in the best interest of client outcomes. "Doing no harm" focus is on the "least common denominator" – the design and implementation of a monitoring system from the perspective of focusing on only 5% of the non-optimal programs ("doing no harm") rather than the 95% of the programs that are "doing things well".

5) Strength based versus Deficit based: in a strength-based monitoring system, one looks at the glass as “half full” rather than as “half empty” (deficit-based monitoring system). Emphasis is on what the programs are doing correctly rather than their non-compliance with standards. A strength-based system is non-punitive and is not interested in catching programs not doing well. It is about exemplars, about excellent models where everyone is brought up to a new higher level of quality care.

6) Formative versus Summative: differential/relative regulatory compliance monitoring systems are formative in nature where there is an emphasis on constant quality improvement and getting better. In absolute/full regulatory compliance monitoring systems, the emphasis is on being the gate-keeper (more about the gate-keeper function in

the next section on regulatory compliance/licensing and program quality) and making sure that decisions can be made to either grant or deny a license to operate. It is about keeping non-optimal programs from operating.

7) Program Quality versus Program Compliance: (this element is dealt with in greater detail in the second component of this manuscript) differential/relative regulatory compliance monitoring systems focus is on program quality and quality improvement while in absolute/full regulatory compliance monitoring systems the focus in on program compliance with rules/regulations with the emphasis on full, 100% compliance.

8) "100 – 0 scoring" versus "100 or 0 scoring": in a differential/relative regulatory compliance monitoring system, a 100 through zero (0) scoring can be used where there are gradients in the scoring, such as partial compliance scores. In an absolute/full regulatory compliance monitoring system, a 100% or zero (0) scoring is used demonstrating that either the standard/rule/regulation is fully complied with or not complied with at all (the differences between nominal and ordinal measurement is dealt with in the next section on regulatory compliance/licensing and program quality).

9) QRIS versus Licensing: examples of a differential/relative regulatory compliance monitoring system would be QRIS – Quality Rating and Improvement Systems. Absolute/full regulatory compliance systems would be state licensing systems. Many programs talk about the punitive aspects of the present human services licensing and monitoring system and its lack of focus on the program quality aspects in local programs. One should not be surprised by this because in any regulatory compliance system the focus is on "doing no harm" rather than "doing things well". It has been and continues to be the focus of licensing and regulations in the USA. The reason QRIS - Quality Rating and Improvement Systems developed in early care and education was to focus more on "doing things well" rather than "doing no harm". This is not the case in many Canadian Provinces and European countries in which they have incorporated program quality along with specific regulatory requirements.

10) Non-Linear versus Linear: the assumption in both differential/relative and absolute/full regulatory compliance monitoring systems is that the data are linear in nature which means that as compliance with rules increases positive outcomes for clients increases as well. The problem is the empirical data does not support this conclusion. It appears from the data that the relationship is more non-linear where there is a plateau effect with regulatory compliance in which client outcomes increase until substantial compliance is reached but doesn't continue to increase beyond this level. There appears to be a "sweet spot" or balancing of key rules that predict client outcomes more effectively than 100% or full compliance with all rules – this is the essence of the Theory of Regulatory Compliance (Fiene, 2019) – substantial compliance with all standards or full compliance with a select group of standards that predict overall substantial compliance and/or positive client outcomes.

As the regulatory science and administrative fields in general continue to think about the appropriate monitoring systems to be designed and implemented, the above structure should

help in thinking through what these measurement systems' key elements should be. Both paradigms are important, contexts, but a proper balance between the two is probably the best approach in designing regulatory compliance monitoring systems.

Regulatory Compliance/Licensing and Quality

This part of the policy commentary will delineate the differences between regulatory compliance and quality. It will provide the essential principles and elements that clearly demonstrate the differences and their potential impact on program monitoring. Obviously, there is some overlap between this section and the above section dealing with regulatory compliance monitoring paradigms. When we think about regulatory compliance measurement, we are discussing licensing systems. When we think about quality, we are discussing Quality Rating and Improvement Systems (QRIS), accreditation, professional development, or one of the myriad quality assessment tools, such as the Classroom Assessment Scoring System (CLASS) or Environment Rating Scales (ERS's). All these systems have been designed to help improve the health and safety of programs (licensing) to building more environmental quality (ERS), positive interactions amongst teachers and children (CLASS), enhancing quality standards (QRIS, accreditation), or enhancing teacher skills (professional development).

There are eight basic principles or elements to be presented (they are presented in a binary fashion demonstrating differences): 1) "Do no harm" versus "Do good". 2) Closed system versus Open system. 3) Rules versus Indicators. 4) Nominal versus Ordinal measurement. 5) Full versus Partial compliance. 6) Ceiling effect versus No Ceiling effect. 7) Gatekeeper versus Enabler. 8) Risk versus Performance.

1) Let's start with the first principal element building off what was discussed in the above section, "Do No Harm" versus "Do Good". In licensing, the philosophy is to do no harm, its emphasis is on prevention, to reduce risk to children in a particular setting. There is a good deal of emphasis on health and safety and not so much on developmentally appropriate programming. In the quality systems, such as QRIS, accreditation, professional development, Environmental Rating Scales, CLASS, the philosophy is to do good, its emphasis is looking at all the positive aspects of a setting. There is a good deal of emphasis on improving the programming that the children are exposed to or increasing the skill set of teachers or improving the overall environment or interaction that children are exposed to.

2) Closed system versus Open system. Licensing is basically a closed system. It has an upper limit with full compliance (100%) with all rules. The goal is to have all programs fully comply with all rules. However, the value of this assumption has been challenged over the years with the introduction of the Regulatory Compliance Theory of Diminishing Returns (Fiene, 2019). With quality systems, they tend to be more open and far reaching where attaining a perfect score is very difficult to come by. The majority of programs are more normally distributed where with licensing rules

the majority of programs are skewed positively in either substantial or full compliance. It is far more difficult to distinguish between the best programs and the mediocre programs within licensing but more successful in quality systems.

3) Rules versus Indicators/Best Practices. Licensing systems are based around specific standards/rules/regulations that either are in compliance or out of compliance. It is either a program is in compliance or out of compliance with the specific rule. With quality systems, there is more emphasis on indicators or best practices that are measured a bit more broadly and deal more with process than structure which is the case with licensing. It is the difference between hard and soft data as many legal counsels term it. There is greater flexibility in quality systems. With this said, if we can look at other service types, such as adult-residential services, there has been some limited success with blending structural and process elements but it still remains a measurement issue on the process side.

4) Nominal versus Ordinal measurement[3]. Licensing systems are nominally based measurement systems. Either you are in compliance or out of compliance. Nothing in-between. It is either a yes or no response for each rule. No maybe or partial compliance. With quality systems, they are generally measured on an ordinal level or a Likert scale. They may run from 1 to 3, or 1 to 5, or 1 to 7. There are more chances for variability in the data than in licensing which has 1 or 0 response. This increases the robustness of the data distribution with ordinal measurement.

5) Full or None versus Gradients or Gray Area. Building off of the fourth element, licensing scoring is either full or not. As suggested in the above elements, there is no in-between category, no gradient or gray area. This is definitely not the case with quality systems in which there are gradients and substantial gray areas. Each best practice can be measured on a Likert scale with subtle gradients in improving the overall practice.

6) Ceiling effect versus No Ceiling. With licensing there is definitely a ceiling effect because of the emphasis on full 100% compliance with all rules. That is the goal of a licensing program, to have full compliance. With quality systems, it is more open ended in which a ceiling effect is not present. Programs have many ways to attain excellence.

7) Gatekeeper versus Enabler: Licensing has always been called a gatekeeper system. It is the entry way to providing care, to providing services. It is a mandatory system in which all programs need to be licensed to operate. In Quality systems, these are voluntary systems. A program chooses to participate, there is no mandate to participate. It is more enabling for programs building upon successes. There are enhancements in many cases.

8) Risk versus Performance: Licensing systems are based upon mitigating or reducing risks to children when in out of home care. Quality systems are based upon performance and excellence where this is rewarded in their particular scoring by the addition of a new Star level or a Digital Badge or an Accreditation Certificate.

There has been a great deal of discussion in the early care and education field about the relationship between licensing, accreditation, QRIS, professional development, and technical

assistance. It is important as we continue this discussion to pay attention to the key elements and principles in how licensing and these quality systems are the same and different in their emphases and goals, and about the implications of particular program monitoring paradigms and measurement strategies. For other regulatory systems outside the human services field, the same type of model can be applied positioning compliance and quality as a continuum one building off of the other because I feel that with the introduction of more quality into a regulatory context will help to ameliorate the ceiling and plateau effect of diminishing returns on performance and outcomes.

Reference:

Fiene, R. (2019). A Treatise on Regulatory Compliance. *Journal of Regulatory Science*, Volume 7, 2019

Notes:

1. This manuscript should be read along with *A Treatise on Regulatory Compliance* which is referenced above because the two articles build off one another. In the *treatise* description, the specific idiosyncrasies of regulatory compliance data and other key implications of the theory are pointed out that enhance the presentation in this article, such as the extreme nature of skewness that is present in regulatory compliance data, nominal data measurement, the differences between full and substantial regulatory compliance, designing the most cost effective and efficient differential monitoring system, and the need to dichotomize data because of the skewed nature of the data distribution.

2. The ultimate goal is the most cost effective and efficient differential monitoring system for negotiating the path of least resistance in complying with a given set of rules which will provide the proper balance of rules. This should be the goal of any regulatory science paradigm. By using the previous *Treatise* article along with this article should provide a blueprint for the regulatory science field in designing a program monitoring system to measure regulatory compliance where an emphasis on differential monitoring should occur in licensing systems and full-scale monitoring should occur in program quality systems. Another approach is to have both regulatory compliance and program quality built as a continuum in the program monitoring system similar to what Head Start is attempting.

3. There are instances in which this dichotomy is not as clear or straightforward where licensing systems do allow partial compliance as a facility has opportunities to correct non-compliances on their way to achieving full compliance with specific rules. The problem is that this is not necessarily a standardized process and it is difficult to determine if it is used often in licensing agencies' monitoring efforts.

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A Comparison of International Child Care and US Child Care Using the Child Care Aware – NACCRRA (National Association of Child Care Resource and Referral Agencies) Child Care Benchmarks

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This is a first of its kind study comparing the USA to other world countries utilizing the Child Care Aware – NACCRRA Child Care Benchmarks related to health and safety rules and regulations. A team of researchers analyzed the child care/early care & education rules and regulations from the USA and a selected group of countries to do a comparative analysis using the Child Care Aware – NACCRRA benchmarking scoring protocol. The results from the analyses were somewhat unexpected in that the scores between the USA and the other countries were not as statistically significant in the overall scores. However, when more specific benchmarks were compared statistically significant differences did appear in the health & safety and professional development areas.

Key words: Child Care Quality, Comparisons of USA and International Child Care, Child Care Regulations.

Introduction

The purpose of this paper is to compare several countries (N =20) and the United States on the Child Care Aware – formerly NACCRRA (National Association of Child Care Resource and Referral Agencies) Child Care Benchmarks that have used extensively in the USA to compare state regulatory and monitoring policy and implementation. The use of these benchmarks has been very useful in comparing states in the USA on an agreed upon series of child care benchmarks that have a great deal of support in the research literature (AAP/APHA, 2012, 2013; NACCRRA 2007, 2009, 2011). Previous research (OCED, 2006) has focused on early care and education policies in other countries which was a very important

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first step in making comparisons across countries. This paper will expand upon this comparison in order to begin applying the NACCRRA benchmarks to other countries and establish a baseline between the USA and other countries related to regulatory review and analysis. This study is important because it provides a common rubric for making comparisons between the USA and other countries that is reliable and valid (NACCRRA 2007, 2009, 2011) related to regulatory analysis. As far as the author can determine from his extensive review of the literature, similar studies of this type have not been attempted utilizing a standardized rubric created by a major national child care organization. There have been other studies completed in which comparisons were made of other countries, the OCED (2006) Starting Strong II study and report is an excellent example of this type of

DIFFERENTIAL MONITORING LOGIC MODEL & ALGORITHM (DMLMA©) (Fiene, 2012): A 4th Generation ECPQIM – Early Childhood Program Quality Indicator Model

CI x PQ => RA + KI => DM

Definitions of Key Elements:

CI = Comprehensive Licensing Tool (Health and Safety)(***Caring for Our Children***)
PQ = ***ECERS-R, FDCRS-R, CLASS, CDPES*** (Caregiver/Child Interactions/Classroom Environment)
RA = Risk Assessment, (High Risk Rules)(***Stepping Stones***)
KI = Key Indicators (Predictor Rules)*(13 Key Indicators of Quality Child Care)*(NACCRRA Benchmarks)
DM = Differential Monitoring (How often to visit and what to review)

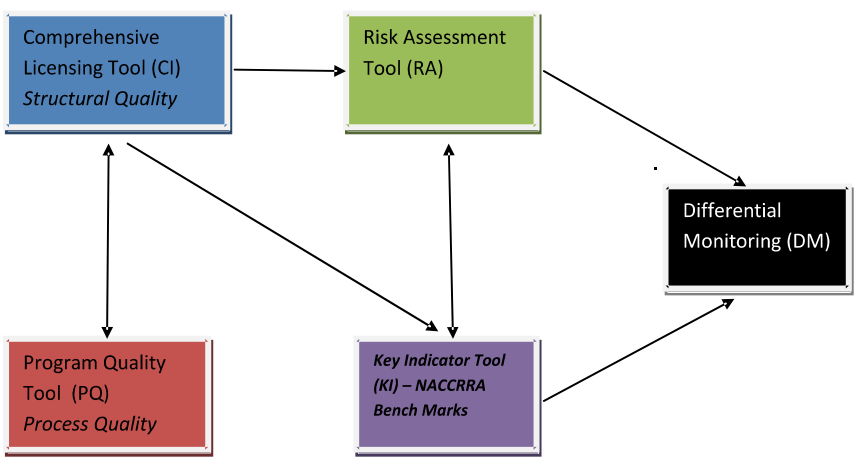

Figure 1.

analysis and is recommended reading for anyone interested in reviewing public policy analyses.

The child care benchmarks[1] utilized in this study are based upon the following key indicators: prevention of child abuse, immunizations, staff child ratio, group size, staff qualifications and training, supervision/discipline, fire drills, medication administration, emergency plan/contact, outdoor playground, inaccessibility of toxic substances, and proper hand washing/ diapering (NACCRRA 2007, 2009, 2011). These benchmarks are more based upon the structural aspects of quality rather than on the process aspects of quality. This is an important distinction between the USA approach and the other countries approaches that becomes important in the explanation of results later in this paper.

This paper also supports and expands the development of an Early Childhood Program Quality Indicator Model (ECPQIM)(Fiene & Nixon, 1985) which is in a 4th generation (Fiene, 2013) as a differential monitoring logic model & algorithm helping to guide the program monitoring of child care/early care & education programs (see Figure 1).

Method

Data Collection Process

Data collection was done on a 100 point scale which is delineated in Appendix 1 as developed by the Child Care Aware - NACCRRA Research Team. The same scoring protocol that was utilized in developing the 2007, 2009, and 2011 Reports and comparisons of states by Child Care Aware - NACCRRA was employed in this study in comparing the average scores of the states and the 20 countries. The 100 point scale consisted of 10 child care benchmarks each worth 10 points: ACR = Staff child ratios NAEYC Accreditation Standards met (R1); GS = Group size NAEYC Accreditation Standards met (R2); Director = Directors have bachelor's degree (R3); Teacher = Lead teacher has CDA or Associate degree (R4); Pre = Initial orientation training (R5); Inservice = 24 hours of ongoing training (R6); Clearance = Background check (R7); Devel = Six developmental domains (R8); Health = Health and safety recommendations (R9); and Parents = Parent Involvement (R10).

Data Scoring

The scoring protocol employed a total raw score approach of 100 points that was used to compare the countries on the 10 child care benchmarks in the aggregate. The scoring protocol also employed a standardized scoring approach (0 to 2 points) on each of the 10 child care benchmarks utilizing the following scale: 0.0 = Does not meet the Child Care Aware – NACCRRA Benchmarks; 0.5 = Marginally meets the Child Care Aware – NACCRRA Benchmarks; 1.0 = Partially meets the Child Care Aware – NACCRRA Benchmarks; 1.5 = Substantially meets the Child Care Aware – NACCRRA

Benchmarks; 2.0 = Fully meets the Child Care Aware – NACCRRA Benchmarks.

Data Collectors

A team of undergraduate and graduate research assistants[2] at the Pennsylvania State University were the data collectors in which each of them reviewed the child care/early childhood rules/regulations/standards from a specific country and scored the rules/regulations/standards on the Child Care Aware – NACCRRA 100 point raw score protocol and the standardized (0 – 2) scoring approach.

Data Sources

The child care regulations selected were for preschool age children only in child care center setting in the 20 countries. Geographically the governmental jurisdiction closest to the national capital was used if applicable national regulations could not be found. More than the final 20 countries selected were reviewed but several countries needed to be dropped because they did not meet the above criteria or the regulations could not be found in English. This was more a convenience sample rather than a stratified scientific sample, a limitation of this study.

Results

The results from this study and analysis were totally unexpected. The results indicated no statistically significant differences between the USA and the other countries selected (Australia, Belgium, Norway, Finland, Sweden, Ireland, United Kingdom, Italy, France, New Zealand, Mexico, Greece, Canada, Austria, Portugal, Philippines, Turkey, Pakistan, Nigeria, Denmark, and Spain – these countries were selected because of their availability of child care/early care & education rules and regulations as described previously above in Data Sources) when comparing the total scores on the 100 point scale; the USA average for all 50 states scored 58 while the 20 countries average score was 56. However, a very different scenario occurs when looking at the ten individual child care benchmarks using the standardized 0 – 2 scoring protocol. The 20 countries selected in this study scored statistically higher on the following child care benchmarks: Director ($t = 7.100$; $p < .0001$) and Teacher ($t = 7.632$; $p < .0001$) qualifications. The USA scored statistically higher on the following child care benchmarks: Health/Safety ($t = 6.157$; $p < .0001$), Staff Clearances ($t = 3.705$; $p < .01$), and Pre-Service ($t = 4.989$; $p < .001$) /In-Service training ($t = 2.534$; $p < .02$) (See Table 1 & Figure 2).

The results showed that both the USA and all other countries mean scores were 58 and 56 respectively on the 100 point scale – this is a raw scale score and not the standardized score (0 – 2 – see Table 1 and Figure 2) which was used in the comparisons for each benchmark. This is not a particularly good score if you think in terms of exams, but for states and countries with

Table 1

Mean Comparisons between USA and Twenty Countries on Child Care Aware – NACCRRA Benchmarks

Benchmark	Countries	USA	Significance
ACR (R1)	1.122	0.8462	not significant
GS (R2)	0.4063	0.5865	not significant
Director (R3)	**1.5625**	0.5	t = 7.100; p < .0001
Teacher (R4)	**1.6563**	0.4038	t = 7.632; p < .0001
Preservice (R5)	0.9375	**1.6731**	t = 4.989; p < .001
Inservice (R6)	0.6563	**1.0481**	t = 2.534; p < .02
Clearances (R7)	0.6094	**1.2404**	t = 3.705; p < .01
Development (R8)	1.6406	1.4519	not significant
Health(R9)	0.9844	**1.7404**	t = 6.157; p < .0001
Parent(R10)	1.5000	1.5385	not significant

Legend:
Child Care Aware - NACCRRA Benchmarks:
Parent = Parent Involvement (R10)
Health = Health and safety recommendations (R9)
Development = Six developmental domains (R8)
Clearances = Background check (R7)
Inservice = 24 hours of ongoing training (R6)
Preservice = Initial orientation training (R5)
Teacher = Lead teacher has CDA or Associate degree (R4)
Director = Directors have bachelor's degree (R3)
GS = Group size NAEYC Accreditation Standards met (R2)
ACR = Staff child ratios NAEYC Accreditation Standards met (R1)

Scoring:
0.0 = Does not meet Child Care Aware – NACCRRA Benchmarks.
0.5 = Marginally meets Child Care Aware – NACCRRA Benchmarks.
1.0 = Partially meets Child Care Aware – NACCRRA Benchmarks.
1.5 = Substantially meets Child Care Aware – NACCRRA Benchmarks.
2.0 = Fully meets Child Care Aware – NACCRRA Benchmarks.

vastly complex bureaucracies maybe this isn't as bad as it looks. Could it be that the USA is better than we think or is it that the USA and all other countries are providing just mediocre child care?!

The reason for using aggregate data in this study was to be consistent in how data have been collected in the USA utilizing the Child Care Aware – NACCRRA Scoring Protocol. This did delimit the potential analyses for this study and the recommendation would be made in future studies to unbundle

the results so that more detailed comparisons could be made. As mentioned in the introduction, the purpose of this study was to provide an initial baseline comparison between the USA and other countries on the Child Care Aware – NACCRRA Scoring Protocol.

Discussion

The purpose of this study was to extend the Child Care Aware - NACCRRA Child Care Benchmarks Scoring Protocol to an international sample comparison. As has been done by the National Science Foundation with math and science testing, these same types of comparisons have been made with the USA not fairing all that well on the math and science comparisons.

It appears that when it comes to child care benchmarks the USA actually appears to be in better shape than many advocates and experts would have thought when compared to other countries or is it that the other countries are providing the same form of mediocre care as it relates to these child care benchmarks. Remember that these benchmarks are heavily weighted towards the structural side of quality

Legend:
Child Care Aware - NACCRRA Benchmarks:
Parents = Parent Involvement (R10)
Health = Health and safety recommendations (R9)
Devel = Six developmental domains (R8)
Clearance = Background check (R7)
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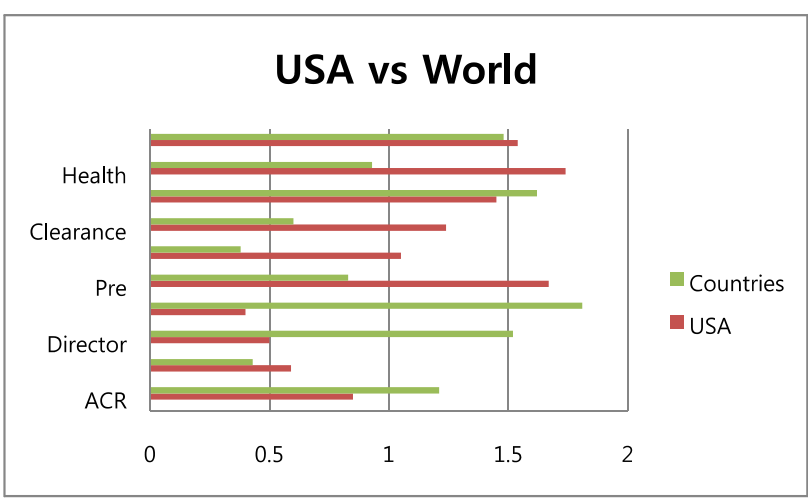

Figure 1. *Mean Comparisons between USA and Twenty Countries on Child Care Aware – NACCRRA Benchmarks*

rather than the process side of quality.

However, when the individual benchmarks are analyzed then certain patterns occur which seem very consistent with the previous research literature. The 20 countries scored higher on the staffing benchmarks while the USA scored higher on the training and health/safety benchmarks. Clearly this is an indication reflecting public policy in the other countries as versus the USA. Many other countries place more emphasis on the process aspects of quality which involve staff and staff interactions with children. The USA has focused more on the structural aspects of quality which involve health & safety especially in the state licensing of child care. These structural aspects of quality are more easily quantifiable in state rules and regulations which is the locus of control for the licensing of child care. Since the USA does not have national standards that are required (the USA does have national health and safety standards that are recommended practice, such as Caring for Our Children (2012)) as is the case in so many of the countries in this study, this may provide a possible explanation for the results of this study. It will be interesting to see how Quality Rating and Improvement Systems (QRIS) which usually have some process standards impact this overall balance of structural and process aspects of quality. This is an area that needs additional research and more in-depth analysis.

So what does this tell us. I think it is a warning call as has been put forth by Child Care Aware - NACCRRA that we still have a lot of additional work to do in improving child care, not only in the USA, but worldwide. Just as the Child Care Aware -NACCRRA Report Cards (2007, 2009, 2011) have played a role in making positive change in the child care benchmarks over time; we need to expand this reporting and change to a world wide focus. There is clearly the need to expand from the present analysis of 20 countries and the USA to other countries throughout the world and to track changes over time as Child Care Aware/NACCRRA has done.

Another area of concern within the USA and I am sure in other countries as economies have begun their slow recovery from the economic downturn of 2008 – 2010 is to do more with less. One such approach being explored in the USA is called differential monitoring which helps to re-allocate limited resources in a more cost effective and efficient manner via a risk assessment and key indicator approach. I hope that this comparison utilizing the Child Care Aware – NACCRRA Benchmarking Scoring Protocol and introducing the Early Childhood Program Quality Indicator Model/Differential Monitoring Logic Model and Algorithm (Fiene, 2013) within an international context as first steps in making that happen.

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Notes

[1] In the licensing literature these child care benchmarks are usually referred to as key indicators (Fiene, 2013). Please see Figure 1 which delineates where within a program monitoring system these benchmarks would appear and could be utilized.

[2] The following individuals played key data collection roles as research assistants in the compilation of this study: Melissa Cave, Ashley Le, Breanna Green, Corrie Podschlne, Sherrie Laporta, Ashley Edwards, Laura Hartranft, Gissell Reyes, Janet Lazur, Kayma Freeman, Jessica White, Karen Mapp, and Lindsay Bitler.

Appendix 1

Benchmark criteria for *We Can Do Better: NACCRRA Ranking of State Child Care Center Regulations:2011 Update* were developed by Child Care Aware - NACCRRA and have been used for the 2007, 2009 and 2011 We Can Do Better reports. The rationale for each standard, including research evidence of its importance in quality care, is noted in each section of the report and in previous reports. Each of the 10 regulation benchmarks were scored with a value ranging from one to 10 points, depending on how closely the state met the benchmark, for a maximum total of 100 points. In cases where states permit several different options for complying (e.g., complying with director or teacher qualifications), the minimum allowed was used. This information was used to generate state sheets with scores for each standard.

Scoring Methods for NACCRRA Ranking of State Child Care Center Regulations (R)

Question	Scoring method
Regulation 1. Staff:child ratio requirements comply with NAEYC accreditation standards.	

6 mo	9 mo	18 mo	27 mo	3 yr	4 yr	5 yr
1:4	*1:4*	*1:4*	*1:4*	*1:9*	*1:10*	*1:10*

Number of ratios in compliance with NAEYC standards	Score
7 ratios	10
6 ratios	9
5 ratios	8
4 ratios	7
3 ratios	5
2 ratios	3
1 ratios	1

R2. Group size requirements are in compliance with NAEYC accreditation standards.

6 mo	9 mo	18 mo	27 mo	3 yr	4 yr	5 yr
8	*8*	*8*	*8*	*18*	*20*	*20*

Number of group sizes in compliance with NAEYC standards	Score
7 ratios	10
6 ratios	9
5 ratios	8
4 ratios	7
3 ratios	5
2 ratios	3
1 ratios	1

R3. Center directors are required to have a bachelor's degree of higher in early childhood education or a related field.

Director education requirement	Score
Bachelor's degree in any field	10
College directors certification	7
Any associate degree	5
CDA	5
Clock hours/less than associate degree	2
High school or less	0

R4. Lead teachers are required to have a Child Development Associate (CDA) credential or an associate degree in early childhood education or related field.

Lead teacher education requirement	Score
CDA/associate degree or better	10
State Credential	5
Clock Hours in ECE	2
High School/GED	2
Less than High School	0

R5. Lead teachers are required to have initial training, including:

- Orientation.
- Fire safety.
- Other health and safety issues.
- At least one staff member certified in first aid must be present when children are in care.
- At least one staff member who is certified in CPR must be present when children are in care.

Number of areas training is required	Score
Five areas	10
Four areas	8
Three areas	6
Two areas	4
One area	2
None	0

R6. Lead teachers are required to have 24 hours or more of annual training.

Ongoing training ≥	Score
24 Hours	10
18 hours	7
12 hours	5
6 hours	2
None	0

R7. A comprehensive background check is required for child care providers.

- Use of fingerprints to check state records.
- Check FBI records.
- Check state child abuse registry
- Check sex offender registry.
- Criminal history check.

Number of Background checks completed	Score
Five checks	10
Four checks	8
Three checks	6
Two checks	4
One check	2
None	0

R8. Child care centers are required to offer program activities that address all six child development domains

- Language/literacy.
- Cognitive.
- Social.
- Emotional.
- Physical.
- Cultural.

Developmental domains addressed	Score
6 domains	10
5 domains	9
4 domains	7
3 domains	5
2 domains	3
1 domain	1
None	0

R9. Child care centers are required to follow 10 recommended health and safety practices.

- Immunizations.
- Guidance/discipline.
- Diapering and handwashing.
- Fire drills.
- Medication administration.
- SIDS prevention.
- Emergency preparedness.
- Playground surfaces.
- Hazardous materials.
- Incidence reporting.

Standards addressed	Score	Standards addressed	Score
10	10	5	5
9	9	4	4
8	8	3	3
7	7	2	2
6	6	1	1
Allowing corporal punishment is an automatic zero			

R10. Child care centers are required to:

- Encourage parent involvement.
- Require daily or ongoing communication with parents.
- Allow parental access any time their children are in care.

Number of items required	Score
Three items	10
Two items	7
One item	3
None	0

Appendix 2

These were the countries included in these analyses: Australia, Belgium, Norway, Finland, Sweden, Ireland, United Kingdom, Italy, France, New Zealand, Mexico, Greece, Canada, Austria, Portugal, Philippines, Turkey, Pakistan, Nigeria, Denmark, Spain, and the USA which included all 50 states.

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The nagging issues of quality, accessibility, and affordability

Searching for a Solution to the Child Care Trilemma

by Richard Fiene

Every day we read about child care crises: Parents cannot find adequate care. There is not nearly enough quality child care. Qualified teachers are leaving for public school jobs where they can increase their salaries by 20-30%. Staff turnover is at 30-40%. Research tells us the majority of care in the United States is mediocre at best. All these issues point to the trilemma of quality, accessibility, and affordability that has been nagging at American child care for at least the past decade or two.

A solution to the trilemma equation in child care of quality, accessibility, and affordability has been difficult to address. In their campaign for adequate compensation for early childhood staff, the National Association for the Education of Young Children has documented the loss of the most highly qualified early childhood professionals to public school early childhood programs and to other professions. Because of low wages, early childhood staff cannot live on their teaching salary alone without supplementing it with other forms of employment. This is an impassioned issue because so much is at stake — staff-child ratios, ability of parents to afford child care, and availability of sufficient care. Staff-child ratios, for certain, has been one of the sacrosanct surrogates of quality viz a viz the regulatory system and is the key to the solution of the trilemma. The research over the past 20 years clearly demonstrates the relationship between the number of children and the number of adults in a child care setting.

In the past as one alters the quality portion of the child care trilemma equation, this impacts both the accessibility and affordability portions of the equation. If the accessibility or affordability portions are altered in any way, the quality portion of the equation is changed. There is a winner on one side of the equation but there are also always losers on the other side of the equation. There has not been a viable solution in which compensation can be increased to staff with no equivalent cost increase to parents, while at the same time increasing the number of children served. This article proposes a potential solution to this nagging problem.

A new concept (trilemma solution — tying compensation to staff quality without increasing cost to parents) is being proposed. This concept needs to be well researched, it is not one that state licensing administrators should think of in terms of making changes in policy at this point. There

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are too many issues related to waiving regulations, burnout of staff, and impact on children and teachers — short term and long term — that need to be ascertained before the policy implications are discussed. As a footnote to this proposal, this concept being proposed is for preschool care and not for infant or toddler care.

Trilemma Solution: A New Concept

The potential solution to the trilemma is to begin with the quality sector. Quality of the program is tied to staff quality and the number of staff to children (the staff line item is the most costly portion of a child day care budget as well). Higher education, direct training in early childhood or child development, and more years of experience generally correlate with a higher quality level of care. The more highly qualified staff a program has, the higher the quality of the overall program.

Most regulations address the adult-to-child ratio from an absolute (linear) standpoint. There is a specific ratio based upon the ages of children served. The adult-to-child ratio does not take into account any qualifications related to staff. In fact, most states cancel out the difference in education by equating it to experience so that the following scenario plays out:

Staff Qualifications			Children-to-Adult Ratio
Education		Experience	
AA	+	4 years	10-1
BA	+	2 years	10-1
MA		none	10-1

However, another spin on the above is the following example, a staff person with a master's degree in early childhood, with 30 hours per year of in-service workshops and 10 years of experience cares for the same number of children as an entry level bachelor degree staff person, with 6 hours per year of in-service workshops and no experience:

Staff 1 = MA + 30 hours in-service + 10 years experience = 10-1 ratio

Staff 2 = BA + 6 hours in-service + no experience = 10-1 ratio

If a state were to address the adult-to-child ratio from a relative (non-linear) standpoint, taking into account the qualifications of staff, a very different scenario could occur. For example, the following could occur (for ease of presentation, only educational qualifications and years of experience are addressed here):

	Year of Experience									
Staff Qualifications	1	2	3	4	5	6	7	8	9	10
AA	10-1				10-1->11-1					11-1
BA	11-1				11-1->12-1					12-1
MA	12-1				12-1->13-1					13-1

In the research literature, more advanced degrees by themselves do not necessarily correlate with a higher level of care. Direct in-service training in ECE/CD needs to be entered into the equation. (See Figure 1.)

The implications for such a model have tremendous cost and availability enhancements. On the availability side, as ratios go higher, more children can be served. As these ratios increase, more revenue can be brought into a program which can then be used to pay for the higher qualified staff person. By using this approach, however, no additional cost of service is passed on to the parents or the program. The unit cost stays the same, only more children per qualified staff person are served.

At a practical level, taking Figure 1 into consideration, how would this really work? Let's take a classroom of 4 year olds — 10 children with a 10-1 ratio. The teacher has a master's degree with 10 years of experience and has been taking continuing education credit. The teacher has an annual salary of $20,000 per year. The unit cost for preschool care is $3,500 per year. To implement the concept, the teacher with the master's degree would be the individual we want to potentially impact in the following manner:

The ratio in the classroom would move from 10-1 to 11-1 with an additional 4 year old being allowed to enroll. It is assumed that there is sufficient space (35-40 square feet per child) for the additional child. It is also assumed that $500 of the $3,500 is for the additional cost related to having the child in the classroom. The remaining $3,000 would go to the teacher as a permanent salary increment (the center would have to agree to this) — the teacher's salary would go from $20,000 to $23,000 per year. This would be a 15% increase in salary.

By using the relative adult-child ratio as stated above, taking quality of staff into account when determining ratios, this model could provide a potential solution to the child day care trilemma of quality, accessibility, and affordability. Quality increases by having more qualified staff in those classrooms with lower ratios.

It could be argued that by having lower ratios, quality will be lowered as well. This has been demonstrated in the research literature. However, with the model presented here, this would only occur when the most highly qualified staff were in these classrooms. Higher ratios would have to be maintained in those classrooms with

Figure 1
Qualifications and Training Tied to Compensation

Staff Qualifications	Years of Experience or Number of Training Courses: 1	2	3	4	5	6	7	8	9	10
	Resultant Ratios									
AA	10-1			10-1->11-1 + $3,000 salary increase						11-1
BA	11-1 + $3,000			11-1->12-1 + $3,000						12-1 + $3,000
MA	12-1 + $3,000			12-1>13-1 + $3,000						13-1 + $3,000

No additional cost would be charged to parents. Compensation for staff increases are totally from the additional children served per classroom.

staff who have lower qualifications. More children in the end could be served. Program income would increase. The additional dollars would go to pay the higher qualified teacher. This would also help to promote a professional development system. The more highly trained, experienced, and educated teachers would be paid a higher salary based upon the additional children. Parents, however, would not have to pay more because the additional income is from more children rather than a higher unit cost.

Conclusion

As dollars become tighter, more creative regulatory policy based upon research will need to be employed. This model takes into account the latest early childhood research and suggests a revision in how states' regulatory policies related to staff-to- child ratios are determined. Research clearly shows the linkage between the quality of programs being directly influenced by staff quality and number of staff to children. This model takes this into account and addresses several issues related to affordability and accessibility at the same time. (See Figure 2.)

This concept is one that needs to be fully researched. Hopefully, researchers, center based administrators, and state policy administrators can partnership together. This concept has as many questions as it does promise and potentially as many drawbacks if not well researched. As stated earlier, and I want to emphasize this, this is not a suggestion for state licensing administrators to begin to waive staff-child ratio regulations and make this state policy. It is suggested, however, that on a limited basis within a research context this concept be tested to examine the benefits and the drawbacks. Will this impact staff turnover? Will the additional dollars be sufficient to keep our most qualified early childhood teachers in child care?

As a final footnote or afterthought to what has been proposed in this article, I want to be very clear that this proposal is an intermediate solution but not a long-term solution to solving the trilemma in child care. This is a very controversial proposal. I have had professionals argue passionately on both sides. However, given the present state of economics, I see this as a solution to hopefully keep our most qualified staff in child care until additional dollars can be found. Increased compensation not tied to staff-child ratios is the solution, but I do not see that happening realistically in the near future.

Figure 2
Child Day Care Trilemma's Potential Solution

- ✔ Links training to compensation
- ✔ Develops a professional development system
- ✔ No additional cost to parents
- ✔ Links training to quality
- ✔ Ties quality to regulations through increased responsibility
- ✔ Links quality to accessibility and affordability

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Identifying predictive indicators: The state of Washington foster care home study

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ABSTRACT

A mixed method correlational exploratory pilot was conducted in Washington State to determine items within the home study assessment that could be used as indicators to identify baseline requirements of the assessment and suggest anticipated depth (expansion or reduction) within the required topic(s). The purpose of the home study is to assess the caregiver(s)' ability to provide a safe home, the quality of care needed by children and an environment that is nurturing, respectful and supportive. The goal of this study is to identify predicative indicators that will assist in the development of a home study that will increase consistency within home studies and decrease timeliness of completion.

The use of predictive indicators may have the potential to reduce subjective decision making as well as identify inconsistencies when determining the recommendation of approval or denial of a home study. Additionally, with a carefully designed home study system inclusive of predictive analytics, it is possible to reduce the amount of time an assessor uses to approve or deny a home study, saving agency time and resources. Finally, by using focused technical assistance with those applicants who need more or specific support, the use of predictive indicators may increase the success of timely placement and permanency goals. This mixed method study included a case review of 207 home studies where 19 primary and secondary themes emerged as significant. It lays the ground work for methods used to identify predictive elements within the assessment process. Preliminary results are provided along with further recommendations.

1. Introduction

The field of child welfare unites around three major goals for children, youth, and families: safety, permanency, and well-being (Conradi, Landsverk, & Wotring, 2014). Nationwide, when a family wants to become a foster home, they are required to meet individual state requirements ensuring a child is safe and well cared for. Requirements around foster care licensing are designed to reduce predictable risks to the health, safety, and well-being of children placed in foster homes (Cuccaro-Alamin, Foust, Vaithianathan, & Putnam-Hornstein, 2017). These requirements, or state laws and policies vary widely from state to state (Gateway, 2018). Yet, despite the many years of home study practice and state and federal requirements mandating the use of home study, the home study tool itself has received little attention in the research world. With such limited research surrounding the home study process it is yet unknown how the home study process can be completed using tangible data collection and analyses in addition to the professional clinical judgment commonly used (Crea, Barth, & Chintapalli, 2007).

The variation in regulations combined with the vast differences in home study assessors' background and training often leads to assessment results that vary greatly (DePanfilis & Girvin, 2005; Rossi, Schuerman, & Budde, 1999). Rossi et al. (1999) conducted a study using regression analysis and found that while assessors utilized the same characteristics when making decisions, the decisions themselves varied greatly. More recently, some agencies have begun to employ various risk assessment tools throughout child welfare to improve decision making of child removal and placement into out of home care (Cuccaro-Alamin et al., 2017). However, Cuccaro-Alamin et al. (2017), highlight the fact that while standardized tools are often more effective than simple clinical judgement, there are also multiple operational and statistical limitations to using those tools including the tool's validity and reliability, the usability and cost, limited accuracy, and inconsistent use amongst others.

Washington state, like other states and countries employs the use of clinical tools when considering foster care licenses and placement. In

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Washington state, once a child is identified as needing out-of-home placement, removal is determined by law enforcement and/or court order, as recommended by Child Protective Services. Current policy states all placements must complete a home study (Department of Children, Youth, and Families, 2008). Home studies are completed through the Department of Children, Youth and Families (DCYF) Licensing Division. The purpose of the home study is to assess the caregiver(s)' ability to provide a safe home, the quality of care needed by children and an environment that is nurturing, respectful and supportive (Washington Administrative Code 110-148-1320, 110-148-1365).

If a child is placed in general foster care, the provider will have already completed a home study. The home study should be completed within 120 days of assignment. However, a child may be placed in kinship care (defined as a relative or suitable other) or in general foster care. Kinship care providers may elect to become a licensed foster parent, but if they choose not to, they are considered "unlicensed." When a child is placed in kinship care, a home study referral should be made to Licensing Division within 30 days of out-of-home placement. The goal of this study is to identify elements within a home study that are indicators that will assist in the development of a home study that could increase consistency and decrease timeliness of completion.

At any given time, there are approximately 1500 pending applications assigned to Licensing Division staff. Each application requires a completed home study unless the applicant chooses to withdraw from the process. In addition, there are approximately 400 un-referred home studies that will increase the pending workload once referred. The un-referred home studies result from identification of children who have been placed in out-of-home care, but a referral has not yet been made to Licensing Division. Due to the high volume of pending applications and the amount of time it takes to complete the home study, there has been a long standing backlog (pending over 120 days) of incomplete home studies. As of December 2019, there were a total 627 (42% of the total pending application) pending for over 120 days.

Due to the increasing issues surrounding the backlog of home studies, Licensing Division assessed the home study forms and processes for efficiency and consistency. During the review, it was important to consider effectiveness in conjunction with efficiency within the family assessment tools. The problem is there is not a clear understanding of what effectiveness means, in terms of the home study. Broad goals of safety, permanency and well-being of children in foster care are often quoted without a clear indication of what specific items lead to adverse determinations. The purpose of this study was to identify indicators that could assist assessors in the identification of specific concerns earlier in the home study process.

The use of predicative analytics is a relatively new tool being used in child welfare systems in order to assist with decision making tools (Capatosto, 2017). In line with the emerging possibilities, indicators could statistically predict further compliance with licensing rules and systems and do not have a direct connection to risk levels. In other words, they are not the components of a home study that will be the basis of a home study denial or license revocation but may identify the need to look deeper into individual sections. The goal of identifying and incorporating predictive indicators within the home study is to improve decision-making and to support clinical judgment thereby increasing consistency and effectiveness of the tool itself. Furthermore, when an indicator is not found during an inspection it could predict further acceptable findings and could potentially shorten the amount of time spent on the home study itself saving (or reallocating) assessor time. For this purpose, there were two main research questions: (1) What are the singular thematic items within a home study based on the provider type and the licensing actions that inform the need for further investigation, (2) what are the thematic items within a home study that inform the need for further investigation based on frequency or patterns in relation to home study denials and revocations?

1.1. Definitions

- **Licensed Adoptive:** A provider that is licensed, or becoming licensed for the purpose of adoption.
- **Licensed General:** A provider that is licensed and is not identified as a relative or suitable other and is not currently planning to provide permanency (adoption or guardianship).
- **Licensed Kinship**[1]**:** A provider that is licensed and is identified as being a relative to the foster child.
- **Licensed Suitable Other**[2]**:** A provider that is licensed and is identified as having a relationship with the foster child or the child's family prior to placement.
- **Unlicensed Adoptive:** A family member or suitable other that is seeking the home study for the purpose of adoption only and is not seeking licensure.
- **Unlicensed Kinship/Suitable other:** A family member or other that had a relationship with the child prior to placement and wishes to remain unlicensed.
- **Unified Home Study:** A comprehensive assessment that evaluates potential and/or current caregiver(s), and the physical environment and includes a recommendation pertaining to placement and permanency.
- **ICPC:** Interstate Compact on Placement of Children, refer to RCW 26.34

2. Methods and materials

A mixed method correlational exploratory research design was used to identify indicators (Greene, Caracelli, & Graham, 1989). This method was chosen to explore correlations of thematic identifiers within a sample of archived home studies. Through the review of individual home studies, qualitative descriptive themes were identified, both positive and potentially alarming, in order to map common concerns between the various archived home studies and their outcomes. Descriptors were coded into alphabetical (and ultimately numerical) themes allowing for quantitative analysis.

2.1. Participants

All Licensing Division foster care supervisors and area administrators, state administrators and Continuous Quality Improvement (CQI) personnel reviewed a total of 207 home studies. Supervisors from the 15 licensing offices (inclusive of satellite offices) not only participated but also identified one or two assessor(s) from each office to complete the reviews. In total, there were 15 supervisors, 15 licensors, six area administrators, three statewide administrators and three Continuous Quality Improvement (CQI) personnel who reviewed the home studies. Home study reviews were assigned across regions to ensure a limitation of personal bias by any supervisor, area administrator or licensor who may have personal investment or knowledge of any particular case. In addition, participants were asked to request a reassignment for any home study they may have personally worked on. In total, three cases were re-assigned during the process. Each participant reviewed approximately five home studies over a period of two months.

2.2. Sample

Two-hundred and seven (207) case studies were identified through a combination of convenient and proportionate stratified sampling

[1] Relative: As defined in RCW 74.15.020(2)(a), a person who is related to the child, expectant mother, or person with developmental disability…

[2] Suitable other: As defined in RCW 13.34.130, a person who the child or family has a preexisting relationship with…

Table 1
Total Percentage of Licensed State Home VS. Case Reviews per Region.

	Region 1	Region 2	Region 3	Region 4	Region 5	Region 6	Total
Total Licensed Homes	746	390	498	392	381	857	3264
Total Case Reviews	49	23	31	24	24	56	207
Percentage	*23%*	*11%*	*15%*	*12%*	*12%*	*27%*	*100%*

measures ensuring statewide representation. The convenient sample included all home studies that were not recommended for approval (denial) and did not result in a foster care license as well as those that were approved but the license resulted in a revocation, or the cancellation of the license, any time after licensure. Qualifiers for the sample included: (1) Home studies had to be no older than 2013 because prior to that they weren't scanned into the electronic database, (2) Verification that the home study was available in the electronic database and, (3) Home studies had to be un-restricted (accessible to DCYF staff with normal permissions).

Secondly, all providers (licensed or unlicensed) that had an adoption that wasn't completed for any reason, and met the criteria listed above, were added to the convenient sample. The remaining amount of providers needed within regions included approved providers, both licensed and unlicensed, and were selected through proportionate stratified random sampling, assessed for usability and added to the sample ensuring the amount of cases mirrored the percentages of caseloads assigned to each of the state's six regions. Table 1 represents the sample size according to the six regional caseload percentages.

As an added measure to ensure representation of the sample, the license type, or purpose, was also recorded. While the majority of home studies completed in this time period were considered "Unified" (completed for permanency, to include adoption) the identified purpose of the home study by the applicant was often for different purposes. This included; licensed adoptive, licensed general, licensed kinship, unlicensed adoptive, unlicensed kinship, unlicensed ICPC. Table 2 outlines the home study type.

2.3. Tools

A data collection tool, produced in Microsoft Publisher and tested by the Continuous Quality Improvement (CQI) team was provided (in conjunction with detailed instructions) to each of the review teams. Data collectors were instructed to record all individual items listed in a home study, any recorded licensing violations including: intakes and/or findings pertaining to licensing infractions and/or allegations of child abuse, negligent treatment or maltreatment, and any documented concerns outside of licensing violations. For example, an unlicensed home study would not have licensing violations documented, but may include concerns that pertain to safety, well-being and/or permanency. Data collectors were also instructed to record the provider's statement of purpose within the home study (i.e. licensed, unlicensed, kinship, adoption, etc.). Once returned, data from each data collector was input with the corresponding ID number into the Excel tracking sheet specifically designed to identify licensing decisions, final requirements cited in the decision making process, and all individual items documented in the home study leading to the final recommendations. Coding was completed using a combination of Excel for thematic counts and the secondary analysis as well as IBM/SPSS version 26 for statistical analysis in order to determine the modifying effects of the overall demographics as well as identifying the predictors.

2.4. Coding/analytics

In order to create a data set for statistical analysis, it was critical to code qualitative data found within each home study. Each home study was de-identified and assigned a participation number in Excel and all themes were recorded for each case. Once the qualitative data was input into a spreadsheet, each statement was assigned a parent theme (or general classification based on the topic of each theme). Twenty-six parent themes (those qualitative topics that had general likeness) were identified and assigned followed by assignment of child themes (those items within a parent theme with detailed likeness based on the theme). For example, medical needs (MN) was identified as a parent theme and included specific conditions (child themes) such as diabetes, heart conditions, physical limitations and so on. 341 child themes were created to break the parent theme data into specific categories.

Once parent and child themes were assigned, the combination of all adult and child themes resulted in 64 final codes. These codes were then counted individually in each home study for the number of times they were mentioned. Through the coding process it was possible for themes to be mentioned more than once in a single home study. For example, an applicant may have expressed multiple medical needs (MN) such as issues with diabetes and a heart condition resulting in the code mentioned twice in one home study. Another example could be that an applicant mentioned they occasionally drink alcohol, smoke regularly and use marijuana resulting in the code drug and alcohol abuse or use (DAAU) being mentioned three times. The final code legend can be found in Appendix A. Once the coding was completed, statistical analysis was applied.

2.5. Methodology and data analysis plan for indicators

The methodology used to generate the indicators was drawn and modified from the regulatory compliance and licensing research literature where this methodology has been used a great deal in making monitoring decisions (Licensing Key Indicator Methodology – LKIM (Fiene, 1985). The Licensing Key Indicator Methodology (LKIM) was used because it has proven to be very effective in dealing with nominally measured data that are extremely skewed (Fiene & Nixon, 1985).

The first step in the LKIM is to sort the frequency data from the various themes into high and low groups. This created a dichotomization of the frequency distribution that could then be used in a 2×2 matrix where each respective theme was compared to determine if it were in the high or low group (see Chart 1 below). In other words, a Likelihood Ratio was calculated. Only those themes that either reached or exceeded a 0.75 agreement between having been observed and having the ability to distinguish between those homes where this was generally the case or not in the aggregate (total number of themes present). Chart 1 provides a depiction of the relationship between each of the themes and the overall possible aggregate score of all the themes.

Table 2
Sample Provider Types.

Provider Type	Licensed Adoptive	Licensed General	Licensed Kinship	Unlicensed Adoptive	Unlicensed Kinship	Unlicensed ICPC
Count	39	105	14	12	36	1

	High Group – Other Themes present	Low Group – Other Themes not present
Observed	Present	Absent
Not Observed	Absent	Present

Chart 1. Comparison of Individual Themes with High vs Low Group (Aggregated Themes).

2.6. Primary statistical analysis

IBM/SPSS Version 26 was used to analyze the data for this study. Basic demographics, (provider type and recommendation) and frequencies were run as well as a correlational analysis to explore relationships amongst the coded themes, licensing actions (inclusive of licensed revocations and unlicensed home study denials), and licensing violations. Third, analysis of variance (ANOVA) was done using one test to explore differences between provider types and the outcome variable of licensing violation data. And lastly, a 2 × 2 matrix was constructed in order to determine if specific codes could predict overall thematic success or failures by occurrence frequencies in either a high or low grouping. These analyses were performed on approximately 50 coded themes identified earlier in this paper and the various categories of homes: Licensed homes, Unlicensed homes, Licensing status of homes.

2.7. Secondary statistical analysis

Through the coding process it was possible for themes to be mentioned more than once in a single home study. For example, an applicant may have expressed multiple medical needs (MN) such as issues with diabetes and a heart condition resulting in the code mentioned twice in one home study. Another example could be that an applicant mentioned they occasionally drink alcohol, smoke regularly and use marijuana resulting in the code drug and alcohol abuse or use (DAAU) being mentioned three times. A secondary set of analytics was completed in order to identify codes based on frequency or multiple patterns within the same theme of a home study assessment.

This set of analytics was run in order to address how some items are not indicators until a pattern is discovered. This was done by first isolating all rows of the excel dataset indicating a denial (D) or revocation (R) regardless of provider type. Isolated items were placed into a 5 by 5 grid showing each combination of prevalent items. An example can be seen in Chart 2. A divisive approach using complete linkage was then used taking the occurrence of the first matrix and applying it to the primary codes for comparison. This was done to identify the individual activities most commonly found in conjuncture with the codes within the denial and revocation status. Once both analyses were complete, significant codes found in the primary and secondary analyses were cross referenced to narrow the results to one overall set of indicators.

3. Results

It was found that the average number of licensing violations per home was just less than two (1.85 licensing violations), that the average length of a license was 41 months with a range of one to 137 months, and the average number of themed codes mentioned in a home study was eight. Correlational analyses determined there were significant relationships between licensing violations and the licensing status of the homes, $r = -0.66$, $p < .0001$, $n = 207$.

Analysis of Variance (ANOVA) assessed the licensing violations by provider type and a significant difference was found ($F = 3.501$, $p < .005$, $n = 207$) with average violations ranging from 2.45 for licensed general homes to 2.10 licensed adoptive homes to 1.86 for licensed kinship homes. The following results (see Fig. 1) describes the codes found within the 2 × 2 primary analysis (Chart 1) as described in the methodology section above in which specific themes predict that other themes will be present in the aggregate. The results are presented with all the types of homes used, licensed homes, unlicensed homes, revocations, denials, compliant and finally licensed general homes. Note, the plus and minus within Fig. 1 is visual representation that an indicator may or may not be positive or negative. For example, the experience of childhood trauma may be considered positive in a home study if it contributed to a person's resiliency and/or ability to relate to children who have experienced trauma. However, it may be considered negative if the childhood trauma is being re-experienced by the caregiver and it impacts their ability to provide care to children.

From Fig. 1, it can be determined that educational success (ES) and positive family relationships (PFR) are the two coded themes that appear as themes in all the above listed categories. Home/Community Safety (HCS) was found in all areas except unlicensed homes: However, because HCS was found significant within denials, which is inclusive of unlicensed providers, this is an issue in unlicensed homes as well. Lack of stability of finances and work (FWUS) along with marriage/partnership issues (MPI) appear as other predictor indicators in four of the categories making them applicable to all provider types.

Logistic regression was then used by pairing the various codes within denial and revocation cases in combinations until there was no observable grouping which occurred in more than 24% of the time. A duplicated regression was done on cases where the same codes were present but the case did not result in a revocation or denial with the same results. This indicated that no grouping of two violations together were statistically relevant when there was a case of denial or revocation. Additionally, while looking at the home studies where single codes were found multiple times, we isolated the denial and revocation cases to remove any findings in non-problematic cases to remove false positives. The purpose of viewing the data through this particular lens was to remove any code that may have been found with multiple findings in cases that were never denied or revoked taken. The fact that some compliant rated home studies also showed some of these codes in duplicate did not disprove the finding's relevance as they are seen as possible predictive indicators that something may be going on that is critical in nature and warrants further investigation. If multiple findings of the same code were found in all three home study results then the number of times it was found in compliant cases and in denial or revocation were compared and only items that happened more in denial

CASES	AC	ANDA	ANDC	AUL	BCCL
AC	**2**	2	3	0	2
ANDA	4	**9**	4	1	3
ANDC	3	2	**4**	0	5
AUL	1	2	1	**12**	3
BCCL	1	3	0	3	**18**

Chart 2. 5 by 5 Secondary Cluster Analysis Example.

	CCI	AC	ES	FWUS	HCS	CTR	MPI	MH	RA	PFR	BCC	MRS	RLA	MI	UF	REN	FWS
1			+	-	+		-		+	+							
2			+	-	+					+	+						
3			+				-		+	+						-	
4	-	+	+	-	+	+-	-	+-	+	+	+	+	+				
5			+	-	+					+				+	+-		
6			+	-	+		-		+	+							
7			+		+		-			+	+	+					+

Fig. 1. Coded Themes and Categories of Homes. *Legend:* 1 = All Homes; 2 = All Licensed Homes; 3 = All Unlicensed Homes; 4 = Revocations; 5 = Denials; 6 = All Compliant; 7 = Licensed General Homes. CCI = CHILDHOOD CHALLENGES OR INSTABILITY; AC = APPLICANT COOPERATIVE; ES = EDUCATIONAL SUCCESS; FWUS = FINANCIAL/WORK UNSTABLE; HCS = HOME/COMMUNITY SAFETY; CTR = CHILD TRAIT REQUESTS; MPI = MARRIAGE/PARTNERSHIP ISSUES; MH = MENTAL HEALTH; RA = RESOURCES AVAILABLE; PFR = POSITIVE FAMILY RELATIONSHIPS; BCC = BACKGROUND CHECKS CLEARED; MRS = MARRIAGE RELATIONSHIP STABLE; RLA = RELIGIOUS AFFILIATION; MI = MILITARY; UF = UNSUPPORTIVE REFERENCES; REN = RELIGION NONE; FWS = FINANCIAL WORK STABLE.

and revocation cases were found.

In the 16 identified secondary indicators, less than 20% of compliant home studies showed multiple secondary indicators which was a factor used in refining all duplicate indicator findings down to the relevant ones for denial and revocation. This secondary cluster analysis of these repetitive codes indicated an overwhelming association that specific codes, considered minor in their own, may lead to denial or revocation when they are identified more frequently within the same home study. When sixteen of the codes used in identifying themes occurred more than once within the same case denial or revocation was recommended. It is important to note that not all violations appeared on each case, and not all had the same multiple findings of a specific code. Overall, home studies with more than one finding of these sixteen codes were denied or revoked in 76.6% of all cases in this study as demonstrated in Fig. 2.

The total 27 codes from the primary and secondary analysis were cross-referenced with one another in order to identify duplicate codes found in both analyses. Results are presented in Fig. 3. Because many of the codes were inherently the inverse of one another (i.e. Marriage/Partnership Instability vs. Marriage/Partnership Stability), each code was classified into three categories on how they were related between the two analyses; direct, indirect and not related. “Direct” means that the two codes found within both analyses were the same. “Indirect” means that while the codes were different, the theme was within the same intent of the parent theme. “Not related” references codes that were unique to the primary or secondary analysis. The purpose was to limit duplicative themes through highlighting bivariate associations.

As can be seen in Fig. 2, six codes from the secondary analysis emerged that were not related, either directly or indirectly, to the primary indicators. They include: abuse, neglect, domestic violence as an adult (ANDA), drug and alcohol abuse or use (DAAU), inappropriate discipline (DI), concerns identified with the family of origin (FOCI), medical needs (MN) and, self-identified challenges/lack of insight (SICLI).

4. Discussion

It is important to provide this preliminary study to introduce the parameters of locating and identifying emergent themes within the home study that could be used to guide depth of assessment as well as possible frequency of support. Through this study, we are able to identify 13 preliminary indicators within the foster care home study currently being used throughout the state. These categories combine both the inclusion and absence of the topic (i.e. educational success and educational challenges). They include; childhood experiences, level of cooperation, educational success, financial/work stability, home and/or community safety, child trait requested, marriage/partnership stability, mental health, availability of resources, current family relationships, background check clearance, religious affiliations, military, references.

Not all indicators within the first analysis applied to all provider types. Due to some codes being more significant within the varied provider types, this study demonstrates a pathway to differentiate a home study based on provider types (licensed versus unlicensed) and outcomes (revoked, denied and good standing). There are some indicators that apply only when considering a licensed general foster home study while others apply to a greater extent in unlicensed home studies. For example, marriage/relationship stable (MRS), background check clearance (BCC), applicant cooperative (AC), and childhood challenges or instability (CCI) only appeared as indicators in licensed general home studies while unsupportive references (UR), lack of religious affiliation (REN) and military (MI) only showed as indicators in unlicensed home studies. Likewise, several indicators are already specific for the type of home study needed. For example, child trait requested (CTR) is only applicable in licensed foster care because kinship care involves an identified family member or friend of the family, making the need to specify age, gender and ability of a child irrelevant.

Finally, the secondary analytics was able to identify items that while not an indicator when mentioned only once within a home study did become an indicator when found more than once. These repeated items

ANDA	ANDC	AUL	BCCL	DAAU	DFR	DI	ES	FOCI	FWUS	HCS	MH	MN	MPI	PFR	SICLI
0.91%	3.64 %	7.27%	9.09%	0.91%	0.91%	1.82%	0.91%	0.91%	2.73%	4.55%	3.64%	0.91%	0.91%	0.91%	3.64%

Fig. 2. Percentage of codes mentioned more than Once in Denied or Revoked Home Studies. *Legend:* ANDA = ABUSE NEGLECT DOMESTIC VIOLANCE ADULT; ANDC = ABUSE NEGLECT DOMESTIC VIOLANCE CHILD; AUL = APPLICANT UNCOOPERATIVE/LIED; BACKGROUND CHECK CLEARED; DAAU = DRUG ALCOHOL ABUSE/USE; DFR = DIFFICULT FAMILY RELATIONSHIPS; DI = DISCIPLIN INAPPRORIATE; ES = EDUCATIONAL SUCCESS; FOCI = FAMILY OF ORIGIN CONCERNS IDENTIFIED; FWUS = FINANCIAL/WORK UNSTABLE; HCS = HOME/COMMUNITY SAFETY; MH = MENTAL HEALTH; MN = MEDICAL NEEDS; MPI = MARRIAGE/PARTNERHSIP ISSUES; PFR = POISTIVIE FAMILY RELATIONSHIPS; SICLI = SELF IDENTIFIED CHALLENGES/LACK OF INSIGHT.

Indicator based on single occurrence	Indicator based on pattern or repeat occurrences	Indirectly related	Directly related	Not related
CCI	ANDC	X		
AC	AUL	X		
ES	ES		X	
FWUS/FWS	FWUS		X	
HCS	HCS		X	
CTR				X
MPI	MPI		X	
MH	MH		X	
RA				X
PFR	DFR		X	
BCC	BCCL	X		
MRS/MPI	MPI	X		
RLA				X
MI				X
UF				X
REN				X
FWS		X		
DFR		X		
ANDC		X		
AUL		X		
BCCL		X		
	DAAU			X
	ANDA			X
	DI			X
	FOCI			X
	MN			X
	SICLI			X

Fig. 3. Primary and Secondary Comparison: Identifying Duplicative and Dependent Findings. *Legend:* CCI = CHILDHOOD CHALLENGES OR INSTABILITY; AC = APPLICANT COOPERATIVE; ES = EDUCATIONAL SUCCESS; FWUS = FINANCIAL/WORK UNSTABLE; HCS = HOME/COMMUNITY SAFETY; CTR = CHILD TRAIT REQUESTS; MPI = MARRIAGE/PARTNERSHIP ISSUES; MH = MENTAL HEALTH; RA = RESOURCES AVAILABLE; PFR = POSITIVE FAMILY RELATIONSHIPS; BCC = BACKGROUND CHECKS CLEARED; MRS = MARRIAGE RELATIONSHIP STABLE; RLA = RELIGIOUS AFFILIATION; MI = MILITARY; UF = UNSUPPORTIVE REFERENCES; REN = RELIGION NONE; FWS = FINANCIAL WORK STABLE; ANDA = ABUSE NEGLECT DOMESTIC VIOLANCE ADULT; AUL = APPLICANT UNCOOPERATIVE/LIED; BACKGROUND CHECK CLEARED; DAAU = DRUG ALCOHOL ABUSE/USE; DFR = DIFFICULT FAMILY RELATIONSHIPS; DI = DISCIPLIN INAPPRORIATE; FOCI = FAMILY OF ORIGIN CONCERNS IDENTIFIED; MN = MEDICAL NEEDS; SICLI = SELF IDENTIFIED CHALLENGES/LACK OF INSIGHT.

began to show patterns within certain codes. The cases in which they did happen showed a significant chance of having other issues which were considered problematic. This leads to the conclusion that items found in groupings also meets the indicator definition and shows that minor findings in key patterns may create scenarios that, while not being serious enough to cause a denial or revocation themselves, warrant further investigation and or mitigation strategies before a home study is approved. For example, an assessor may not have enough information to justify a denial and also have concerns that are preventing them from approving the home study, but upon finding multiple sightings of the same minor indicators it could give reason for further investigation in some areas.

Four specific limitations were identified; sample size, consistency of data collection, individual bias and systematic bias. Each of these limitations were known from the beginning of the project and while addressed throughout could not be completely mitigated.

Because home study data points are not recorded in an electronic database, consideration to the amount of time and limited resources available was considered. There are approximately 2250 homes studies completed each year; this sample (207) represents only 9.2% of the annual statewide home study caseload. Ideally, the sample would be 20% of all home studies totaling closer to 400 home study reviews in order to provide smaller margins for error and increase the capacity of finding significant differences within the codes.

While data collection training was provided, the fact that all 207 home studies were reviewed by 39 data collectors with varying degrees of effort and interpretation resulted in unknown and potentially limited inter-rater reliability. This can be seen by the fact that recorded themes on the homes studies varied between one thematic discovery to 48 discoveries. In order to address this limitation, resources need to be provided to limit data collector numbers as well as provide precision training.

Another challenge identified was individual assessor bias. The fact that home studies are summary assessments with very broad categories inherently lends to predispositions or individual bias. While assessors are provided guidance and general questions to ask the applicants, the results are often open to interpretation and may be influenced by individual bias of the assessor themselves. Due to the racial, ethnic,

cultural, gender, and economical predispositions of the home study team, unintended bias within the home study could have led to a distortion in the original data. The level of impact of individual bias to this study is unknown.

Finally, DCYF is committed to identifying and limiting systematic racial disparity within the agency's entire child welfare system. In a 2018 report, it was found that the rate of children entering placement in Washington varied depending on the ethnic group. For example, children of native American Indian/Alaskan Native (AI/AN) were removed from their homes at a higher proportional rate than children of other ethnic groups. Placement of black children/youth were only slightly higher than white children and children of Asian or Pacific Island ethnicity were less likely to be placed than white children (Graham, 2019). In contrast, the racial and ethnic make-up of the foster care provider community in Washington State is largely white at approximately 75%. Because of this known limitation, it is possible disproportionality and systemic bias will continue to be reflected through the use of the identified indicators.

5. Recommendations

We assume the use of indicators may have the potential to reduce subjective decision making and bias by creating an avenue for consistency in home study assessments and guidance for recommended approvals or denials. This can be done by identifying areas that may predict unsuccessful placement. It is possible this will provide guidance to assessors when further assessment and mitigation is needed. Additionally, with a carefully designed home study tool it should be possible to reduce the amount of time an assessor uses to approve or deny a home study, saving agency time and resources. Finally, by differentiating and focusing technical assistance to those applicants that need more or specific support, the use of indicators may increase the success of timely placement and permanency. However, in order to assess and evaluate if the above assumptions are correct, it is critical to design a system that collects the data for validation and reliability purposes.

In order to use the indicators, they must be systematically and intentionally imbedded in the home study sections as direct questions which could be pre-populated based on the applicant's responses on the application. Due to the potential bias limitations, indicators should not be used as a tool to recommend or not recommend placement or permanency. Therefore, it is recommended that indicators are used as a tool to identify potential areas that need additional information within a home study and require mitigation assessments as needed. There are two recommendations for indicator use: 1) further assessment before determination and, 2) frequency of monitoring post assessment.

Further Assessment: Indicators, when encountered within a home study, could require an assessor to gather further information before assurances of mitigation can be determined. For example, if it is determined one or more applicant did not complete a high school (ES) degree or GED an assessor would ask additional questions pre-identified by the system such as "What were the factors that contributed to the incomplete education?" and "What are the belief systems regarding education for potential foster children?". If an assessor determines a mitigation is successful based on the interview responses, they move onto the next section. If an assessor determines a mitigation is not successful, or there is not enough information, they could require additional actions such as training or the review of a topic-specific resource.

Frequency of Monitoring: A second strategy that could be used with indicators is to set a threshold of key indicators within any one home study whereby additional, or more frequent post licensing monitoring visits should be completed. This strategy would only be applicable for licensed providers as unlicensed providers are not required to have ongoing monitoring. For example, if three different indicators are present determined by the assessor's review of the applicants' answers, the recommendation could be made that a health and safety check will be completed within six months' time, upon placement. If four or more indicators are present, a health and safety check could be required with 4 months of placement, etc.

It is important to continuously evaluate the predicative indicators within the home study assessment. This is to ensure comprehensive and up-to-date data are considered, how changes to policy and practice affect the model, and whether the model needs to be changed or modified. Ongoing evaluation should consider if staff are implementing and using the home study approach as intended. Validation should include a larger data set of home study components inclusive of these identified indicators.

6. Conclusion

There are many potential uses of indicators within the home study process. Once Washington systemizes how they will be used, additional validation studies will be developed to ensure appropriate identification and use as well as identifying any unintended consequences before moving forward with implementation. It is critical to remember that thematic identification of indicators does not definitively inform the assessor of the outcome or determine the recommendation of the home study. However, it is possible indicators may help improve consistency by identifying emerging patterns and limiting variations in decision-making. They could also help ensure applicants statewide are being assessed and treated similarly.

The purpose of the home study is to assess the caregiver(s)' ability to provide a safe home, the quality of care needed by children and an environment that is nurturing, respectful and supportive (WAC 110-148-1320, 110-148-1365). To measure whether or not that goal is being met, ongoing research and validation is needed. This study was conducted to initially identify indicators or predictors that would assist licensors with identification of broader concerns early on in the home study. This study classifies what are considered universal, licensed (general), unlicensed (kinship) and repeat or pattern indicators. All of which will help with identifying what areas of the home study should have more, or less, depth.

There was no additional funding secured for this study

CRediT authorship contribution statement

Sonya Stevens: Conceptualization, Methodology, Data curation, Project administration, Supervision, Writing - original draft, Resources. **Richard Fiene:** Formal analysis, Validation, Writing - review & editing. **Daniel Blevins:** Conceptualization, Formal analysis, Validation. **Amber Salzer:** Resources, Data curation, Writing - review & editing.

Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Appendix A. Code identification sheet

Code	Theme	Description
ACAC	Adult child Adverse Experiences	One or more adult child(ren) of an applicant experienced adverse experiences such as abuse, homelessness, substance use or mental health issues.
ANDC	Abuse Neglect Domestic Violence Child	One or more applicant experiences Abuse and/or neglect as a child which may include inappropriate discipline such as spanking, restraining or withholding food.
CCI	Childhood Challenges or Instability	Applicant reported non-abuse related challenges during childhood such as (but not limited to) instability, bullying at school or difficulty with friends.
BCCL	Background Check Issues Identified (including license actions)	One or more applicant has one or more issues identified during a background check which may have included one or more of the following: Criminal, founded findings, licensing violations, traffic violations, etc.
HB	Healthy Boundaries	The applicant has healthy relationships and boundaries with others
AC	Applicant cooperative	The applicant was cooperative during the licensing process
AUL	Applicant Uncooperative or Lied	One or more applicant was either uncooperative during the licensing process by delaying or refusing to meet requirements or lied or withheld information during interviews or on paperwork.
DA	Discipline appropriate	Discipline and guidance used in the home is appropriate
DI	Discipline Inappropriate	Discipline and/or guidance used in the home is inappropriate including but not limited to spanking, isolation, food restrictions, etc.
ID	Inclusive of Diversity	Inclusive of Diversity including race, ethnicity, ability and sexual orientation
DD	Difficulty Diversity	Difficulty with Diversity including but not limited to race, ethnicity, ability and sexual orientation
ECDO	Educational Challenges or Drop out	One or more applicant experienced challenges in school such as dropping out, being expelled or self-inflicting unrealistic expectations toward education.
ES	Educational Success	One or more applicant was successful in school through high school or GED completion and perhaps completing some or all of a college degree.
FWS	Financial/Work Stable	The applicants reported financial stability as well as having stable employment.
FWUS	Financial/Work Unstable	The applicant reported unstable personal finances and/or unstable work meaning unemployment, frequent changes in employment or inability to work.
HCS	Home/Community Safety	The licensor reported one or more concerns regarding the safety of the home or community such as mold, unstable stairs or floors, elements in or near the home such as bodies of water, highways, or unsafe neighborhoods.
HM	Home Moves	Relocation (frequent or recent)
RM	Roommate	Roommate in the home
CTR	Child Trait Requests	Specific child trait restrictions or requests for placement
FA	Foster/Adoption	Prior foster/adoption
MPI	Marriage/Partnership Issues	One or more applicant reported instability or difficulties in their marriage, domestic partnership or long term relationship.
MC	Medically cleared	The applicant was medically cleared by their physician
MN	Medical Need	Specific medical needs or areas of concern were identified by the physician
MH	Mental Health	Significant mental health issues
DAAU	Drug/Alcohol Abuse/Use	One or more applicant reported using drugs and alcohol either and don't do it anymore or only drink occasionally.
RA	Resources Available	There are resources the applicant reported as available
SICLI	Self-Identified Challenges Lack of Insight	Either the licensor or one or more applicant reported self-behavior challenges such as but not limited to the inability to know how prior experiences affect current behavior or an understanding of parenting.
WEPL	Work/experience parenting limited	One or more applicant reported having limited parenting experience
FP	Family Planning	The applicant reported fostering or adoption as a means to grow the family
FCCSN	Family of creation child(ren) special needs	The applicant has one or more children with disabilities
FC	Foster child(ren)	The applicant has a foster child in the home
OA	Origin Adoption	The family of origin experienced adoption
MI	Military	An applicant has military experience
FOPAR	Family of Origin Parental Relationships	One or more applicant reported their own parents struggled in marital or partnership relationships such as divorce or multiple marriages
UF	Unsupportive References (including children in home)	References were limited or do not support the applicant including formal references and comments made by children in the home and/or adult children.
PFR	Positive Family Relationships	One or more applicant reported positive family relationships including those in both the family of origin and family of creation.
DFR	Difficult Family Relationships	One or more applicant reported difficult relationship(s) between themselves and the family of creation or origin.
FOCI	Family of Origin Concerns Identified	One or more of the applicants reported serious concerns with someone in their family of origin including but not limited to addiction, criminal record or health related issues.
ANDA	Abuse Neglect Domestic Violence Adult	One or more applicant reported experiencing abuse and neglect as an adult including but not limited to domestic violence, physical abuse, emotional abuse. This experience may have been to be a witness.
RU	Resources Unavailable	There are a lack of resources available to the applicant
HG	Home Good	The licensor noted the home is physically good, safe and stable in general
BCC	Background Check Cleared	No issues were identified about one or more applicant during the background check process.
BSP	Blended Shared Parenting	Within the home there are children of creation from multiple relationships usually inclusive of shared parenting with a parent outside the home.
CEPG	Childhood Experiences Positive General	One or more applicant reported generally positive childhood experiences
EHS	Education Home School	The applicant home schools their children.
MRS	Marriage Relationship Stable	The applicants reported a stable marriage, domestic partnership or long term relationship.
REN	Religion None	One or more applicant reported they did not identify as religious or spiritual.
RLA	Religious Affiliation	One or more applicant reported an affiliation to a religion or spiritual community.
RE	Related Experience	One or more applicant reported experience they believe would help them to be a foster parenting either through parenting or through work such as education, medical, civil service, parenting other children, parenting classes, etc.
BRUG	Boundaries/relationship unhealthy general	The licensor reported unhealthy relationships between the applicant and others in general.
VGA	Values/Goal/Attitude Positive	One or more applicant reported strong insight and/or positive goals and values.

Appendix B. Supplementary material

Supplementary data to this article can be found online at https://doi.org/10.1016/j.childyouth.2020.105133.

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ARTICLE

Child Care Health Consultation Improves Infant and Toddler Care

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ABSTRACT

Introduction: Many families enroll their infants and toddlers in early education and child care programs. The Pennsylvania Chapter of the American Academy of Pediatrics recruited 32 child care centers that care for infants and toddlers to be linked with a child care health consultant (CCHC).

Method: Project staff assigned the centers alternately to an immediate intervention or a 1-year delayed intervention (contrast) group. At entry into the project, and then 1 and 2 years later, an evaluator assessed center compliance with 13 standards for infants and toddler care selected from *Caring for Our Children: National Health and Safety Performance Standards* (3rd ed.). Project staff linked the Immediate Intervention centers with a CCHC in Year 1. In Year 2, in a crossover comparison, project staff linked Contrast centers with a CCHC.

Results: Working with a CCHC effectively improved compliance with some selected health and safety standards. J Pediatr Health Care. (2017) ■, ■-■.

KEY WORDS

Child care, child care health consultation, health and safety, infants and toddlers

INTRODUCTION

Nationally, about 48% of children younger than 3 years of age are enrolled in organized child care facilities (Laughlin, 2013). Early educators (child care staff) care for these children for many hours and many days. The quality of their care has lifelong impact on their physical, developmental, and social–emotional well-being (Garcia, Heckman, Leaf, & Padros, 2016).

In 2013, the Early Childhood Education Linkage System (ECELS), a program of the Pennsylvania (PA) Chapter of the American Academy of Pediatrics (AAP)

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received a 3-year grant from the Maternal and Child Health Bureau (MCHB). The purpose of the grant was to "improve state infant/toddler [I/T] child care quality initiatives (Quality Rating and Improvement Systems [QRIS] and professional development)…" MCHB's grant required selection and promotion of 10 or more standards from a list provided by MCHB from *Caring for Our Children: National Health and Safety Performance Standards; Guidelines for Early Care and Education Programs*, 3rd ed. (*CFOC3*; AAP, American Public Health Association, & National Resource Center for Health and Safety in Child Care and Early Education, 2011).

Child care programs in PA's QRIS, called Keystone STARS, are ranked from the entry level at STAR 1 to STAR 4. To earn a rating, programs must comply with state regulations and meet the requirements listed for the designated STAR level on the PA Key Web site (www.pakeys.org). For a STAR 4 rating, a center that serves infants and toddlers must have scores at or above 5 (*good*) on the seven subscales of the Infant and Toddler Environment Rating Scale–Revised Edition (ITERS-R; Harms, Cryer, & Clifford, 2006). The Personal Care Routines subscale of the ITERS-R has some health and safety items. Scores in this subscale and on health and safety items in some of the other subscales are among the lowest scoring ITERS-R items in PA and elsewhere. This finding is reported by the PA Key Program Quality Assessment Team (2016) and by the authors of the ITERS-R (Harms and Cryer, personal communication, 2014).

Child care health consultants (CCHCs) use observation, education, collaborative decision making, coaching, and mentoring to achieve quality improvement in the QRIS (Zaslow, Tout, & Halle, 2012). CCHCs base their work on needs and feasible implementation. For more than a decade, published research has confirmed that child care health consultation is an effective approach to improving health and safety compliance with national child care standards (Alkon & Bernzweig, 2008; Alkon et al., 2008; Alkon, Bernzweig, Kim, Wolff, & Mackie, 2009; Alkon et al., 2014; Alkon et al., n.d.; Alkon, Sokal-Gutierrez, & Wolf, 2002; Banghart & Kraeder, 2012; Carabin et al., 1999; Crowley, 2006; Isbell et al., 2013; Moon & Oden, 2005; Organizational Research Services & Geo Education and Research, 2007; Pacific Research and Evaluation, 2007, 2008; Ramler, Nakatsukasa-Ono, Loe, & Harris, 2006; Roberts et al., 2000a, 2000b) Most of these studies did not specifically target care for infants and toddlers.

Published studies document the following specific improvements associated with involvement of a CCHC. Sanitation and hygiene reduced respiratory and gastrointestinal illness and days absent for illness among young children in group care (Carabin et al., 1999; Kotch et al., 2007; Roberts et al., 2000a, 2000b). Nationally recommended practices related to active play, nutrition, and food handling were adopted (Alkon et al., 2014). Policies and procedures accompanied by staff training reduced hazards and injuries (Kotch, 2002; Organizational Research Services & Geo Education and Research, 2007). Training about safe infant sleep positioning and the infant sleep environment reduced risk of sudden infant death syndrome (Moon & Oden, 2005). Better monitoring and tracking of immunization data in child care programs was associated with more children having up-to-date vaccine documentation (Alkon & Bernzweig, 2008).

The PA AAP established ECELS in 1989. ECELS maintains a CCHC Registry and regularly communicates with registered CCHCs to provide professional development, technical assistance, and tools to enable their implementation of the CCHC role. PA's CCHCs include private and public health service providers and health professionals who teach in academic settings. Funding for CCHC work is unpredictable, making recruitment, education, and retention of CCHCs challenging.

PA's child care regulations require that child care providers have documents showing that enrolled children are up to date with preventive health services recommended by the AAP, including "a review of the child's immunized status according to recommendations of the ACIP [Advisory Committee on Immunization Practices]" (PA Department of Human Services, 2008). This regulation is not enforced. Few providers use any reliable way to ensure that enrolled children are up to date. ECELS encourages child care centers to use a well-tested and routinely updated online software application called WellCareTracker™ (Weinburg, 2002) to check child health records for up-to-date routine preventive health services. It is described, demonstrated, and offered for subscription at www.wellcaretracker.org. Using WellCareTracker™ eases the burden for child care providers to comply with the regulation and remind families to obtain these services in a timely manner.

METHODS

Design

The PA AAP's MCHB-funded Infant-Toddler Quality Improvement Project (ITQIP) was conducted by ECELS using a randomly assigned clinical trial with a crossover comparison of centers assigned to an immediate intervention or delayed intervention (comparison) group. ECELS (a) assessed child care center practices related to I/T care for 13 selected *CFOC3* standards (AAP et al., 2011) and (b) assessed whether compliance with these practices improved when centers were linked with a CCHC.

Selection of the *CFOC3* standards addressed in ITQIP

With input from early care and education stakeholders, ECELS chose 13 *CFOC3* standards (AAP et al., 2011) from a list provided by MCHB (Box 1). The selection criteria were that the standard is (a) associated with the highest and most common risks of harm to I/T (AAP, American Public Health Association, & National Resource Center for Health and Safety in Child Care and Early Education, 2013), (b) measurable and amenable to improvement with technical assistance and professional development provided by a CCHC over a 12-month period, and (c) found by state inspectors to have a high level of noncompliance according to state data (PA Office of Child Development and Early Learning, 2010).

Evaluation plan

The evaluation plan is a classic randomly assigned crossover clinical trial. See Figure 1 for the evaluation plan logic model.

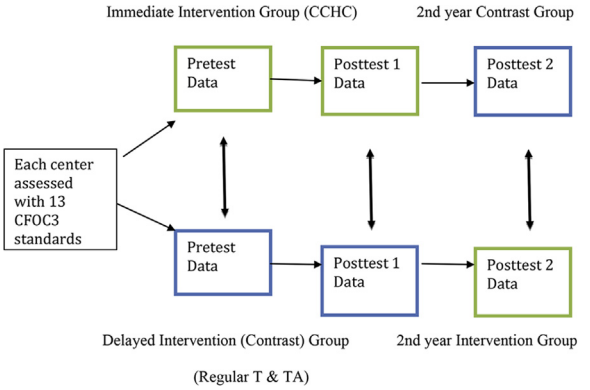
The ITQIP staff and consultants developed the evaluation tool described below. The ITQIP Project Coordinator (first author) and the evaluators collected data from participating centers at three points: when centers enrolled in the study (Pretest) and then 1 year (Posttest 1) and 2 years later (Posttest 2). One of the consultants (fourth author) compared the two groups on the pretest for equivalency and then on each of the two posttests. These data are discussed in the Results: Immediate Intervention Versus Delayed Intervention (Contrast) Group section. One year after the pretest data were collected, the participating centers were switched to a crossover comparison format. At this point, ITQIP ended the subsidy for the CCHCs who were working with the centers in the immediate intervention group and provided the subsidized CCHC linkage to the centers in the delayed intervention (contrast) group.

BOX 1. *CFOC3* standards chosen for ITQIP

1.4.5.2 Child Abuse and Neglect Education
3.4.4.1 Recognizing and Reporting Suspected Child Abuse, Neglect, and Exploitation
2.1.2.1 Personal Caregiver/Teacher Relationships for Infants and Toddlers
2.2.0.2 Limiting Infant/Toddler Time in Crib, High Chair, Car Seat, and other restraining equipment
3.1.3.1 Active Opportunities for Physical Activity
3.1.4.1 Safe Sleep Practices and SIDS Risk Reduction
3.2.1.4 Diaper Changing Procedure
3.2.2.1 Situations That Require Hand Hygiene
3.2.2.2 Handwashing Procedure
3.6.3.3 Training of Caregivers/Teachers to Administer Medication
3.5.0.1 Care Plan for Children with Special Health Care Needs
5.4.5.2 Cribs
7.2.0.1 Immunization Documentation

Note. CFOC3, *Caring for Our Children: National Health and Safety Performance Standards; Guidelines for Early Care and Education Programs (3rd ed.); ITQIP, Infant-Toddler Quality Improvement Project; SIDS, sudden infant death syndrome*.

FIGURE 1. Evaluation plan logic model. CCHC, child health care consultant; T, training; TA, technical assistance.



When a center enrolled in ITQIP, the ITQIP coordinator interviewed the center director by phone. She gathered demographic data, including the number of enrolled I/Ts, where and when I/T activities occurred in the center, and the number of children who met the MCHB definition of special health needs. She asked the director to submit up to five of any care plans the center had for these children, redacted for confidentiality. The MCHB definition of a child with special health care needs is noted in *CFOC3* standard 3.5.0.1 as "a child who has or is at increased risk for chronic physical, developmental, behavioral or emotional conditions and who requires health and related services of a type or amount beyond that required by children generally" (AAP et al., 2011).

The ITQIP coordinator selected the rooms for the evaluator to observe as those with the largest number of children in the age group. The evaluators recorded observations in one infant and one toddler room at each center.

The evaluator collected a random sample of immunization records for up to 10 infants and 10 toddlers with the names redacted for confidentiality. The ITQIP coordinator used WellCareTracker™ software to check these immunization records. The ITQIP coordinator evaluated the care plans that the director submitted for the presence of the appropriate components from the list of the 14 components specified in CFOC3 standard 3.5.0.1. (AAP et al., 2011) and a 15th component, the presence of the health care provider's signature, that is required by PA regulations (Box 2).

The ITQIP coordinator scored the evaluator's observations of diapering, hand hygiene, and medication administration. She promptly prepared a summary of all the findings for the center and sent the summary to the center director and the linked CCHC before the first CCHC site visit. The summary delineated areas of strengths and areas to improve based on the evaluation tool results. To facilitate use of the data by the center staff and CCHCs, the summary included the text of the evaluation tool item, the center's score on the item, and the reason why the center met or did not meet the standard. The CCHC contacted the center within 2 weeks after receiving the summary to set up the initial site visit.

Evaluation Tool

The ITQIP staff prepared the items on the evaluation tool from performance guidelines specified in the 13 selected *CFOC3* standards (AAP et al., 2011). ITQIP consultants (fourth and fifth authors) and the ECELS staff reviewed the tool for clarity and validity of content. After several rounds of revisions, the ITQIP coordinator and a prospective ITQIP evaluator field-tested the tool, further revised it, and then field-tested it again, this time testing for interrater reliability with two evaluators independently and simultaneously using the tool.

The ITQIP evaluation tool has four sections: (a) Demographic Information collected in the phone interview (35 items), (b) Observations (64 items), (c) Interview Questions (28 items), and (d) Documents (14 items). The score awarded to items on the evaluation tool was based on the criteria listed in Box 3. A score of 2 or 3 for an item was considered a strength, and a score of 0 or 1 for an item was considered an area to improve. This total score was the sum of the scores for each item. The total number of scorable items on the evaluation tool is 106, with a maximum score of 318. The documents assessed include training records, written policies, care plans for children with special needs, immunization data, and PA child abuse clearances.

ITQIP assigned each scorable item to one of the 10 topic areas addressed by the 13 *CFOC3* standards selected for the project (AAP et al., 2011). See Table 1.

Sampling design: Recruitment, random assignment, and retention of centers

ECELS recruited Keystone STAR 2 and STAR 3 centers by distributing a flyer about the project. Programs with higher STARS ratings qualify for higher payments for children whose care is state subsidized. The highest payments are for children enrolled in STAR 4 centers. The increased payment for a higher rating is a quality improvement incentive. Also, ECELS offered participating centers three free $10 credit–awarding reviews for ECELS self-learning modules. The flyer was included in the newsletters of a variety of organizations: four of the five regional state-supported sources of professional development (Regional Keys), the PA Child Care Association, the Pittsburgh Association for the Education of Young Children, and United Way. Because the northwestern region of the state has the fewest centers, recruitment from that region was not attempted.

As the centers joined ITQIP, the project coordinator assigned them alternately to one of two groups, either the immediate intervention group or the delayed intervention (contrast) group. ITQIP enrolled centers from all four targeted regions of the state.

BOX 2. Care plan components evaluated for children with special needs

1. A list of the child's diagnoses
2. Contact information for the child's health care provider and any subspecialists
3. Medications to be administered on a scheduled basis
4. Medications to be administered in an emergency with clearly stated signs and symptoms in lay language about when to give the medication
5. Procedures to be performed while in care
6. Allergies
7. Diet modification that the child requires
8. Activity modifications
9. Environmental modifications
10. Triggers that cause a reaction to avoid
11. Symptoms for caregivers/teachers to observe
12. Behavioral modifications beyond those needed for a typically developing child
13. Emergency response plans for a facility emergency and if the child has an emergency event
14. Special skills training and education required and provided for the staff
15. Health care provider signature (required by Pennsylvania regulation)

Note. *Fourteen components specified in the* Caring for Our Children: National Health and Safety Performance Standards; Guidelines for Early Care and Education Programs *(3rd ed.) standard 3.5.0.1.* (American Academy of Pediatrics et al., 2011) *and a 15th required by Pennsylvania child care regulation*.

BOX 3. Criteria for scores assigned to items on the evaluation tool

0 = Never meets item
1 = Partly (<50%) meets item
2 = Mostly (≥50%) meets item
3 = Fully (100%) meets the item
NA = Not Applicable
NOp = Not observed or no opportunity to obtain data
DK = Don't know (interviewee response)

TABLE 1. Topic areas and number of items to score per topic

Abbreviation	Topic areas	Number of items to score per topic[a]
CA	Preventing Child Abuse	13
PR	Personal Relationships	9
LA	Limited Physical Activity of Infants	3
AO	Active Opportunity for Physical Activity	22
SS	Safe Sleep Practices/SIDS Prevention	19
MA	Medication Administration	8
DC	Diaper Changing Procedure	16
HH	Hand Hygiene	8
IM	Immunization Documentation	3
SN	Care Plans for Children With Special Needs	5

Note. *SIDS, sudden infant death syndrome.*
[a]*See the narrative for an item-by-item explanation of those items with significance levels (*p *values) based on the* t *tests performed on each item.*

Centers enrolled in ITQIP agreed to

- allow a 4- to 5-hour site evaluation once a year for 3 years,
- work with a CCHC for a period of 1 year to improve I/T health and safety,
- accept random assignment to one of the two project groups,
- provide access to redacted immunization records and care plans for evaluation,
- pay $240.00 of the $500 honorarium ITQIP paid to their CCHC, and
- remain in ITQIP for 3 years.

Recruitment and roles of evaluators and CCHCs

Evaluators.

ITQIP recruited 17 evaluators from the list of CCHCs who had previously received CCHC training from ECELS and from the nurses in the Maternal Infant and Early Childhood Home Visiting Program. All evaluators were health professionals with pediatric experience related to observed items. Most had experience working with *CFOC3* standards (AAP et al., 2011). The evaluators learned how to use the evaluation tool by participating in a live Webinar or by using the recording of the Webinar. All evaluators received a copy of the evaluation tool and a training manual with instructions for completing the evaluation. Seven evaluators were also CCHCs in this project. None of the evaluators who were CCHCs in ITQIP were linked with centers they evaluated.

The evaluators gave their completed evaluation tools to the ITQIP coordinator to score and summarize. The coordinator reviewed each submitted evaluation tool and then discussed the documentation with the evaluator by phone to make sure the scoring was as intended.

Child Care Health Consultants.

ECELS recruited 14 registered nurses and one physician as CCHCs. The ITQIP coordinator (first author) has worked as a CCHC for more than 15 years. She and the project's director and primary investigator, a pediatrician (second author) educated, coached, mentored, and supported the work of the CCHCs. The CCHCs participated in a Webinar about the project scope and the use of the selected *CFOC3* standards (AAP et al., 2011). They received a training manual that included the 13 selected *CFOC3* standards (AAP et al., 2011) and resources to support best practice in each of the 10 topic areas. ITQIP provided additional resources and periodic *CFOC3* updates (AAP et al., 2011).

During the site visit, the CCHC compared her observations with those in the summary and solicited concerns about health and safety practices from the center's staff. Then the director, program staff, and CCHC chose three of the 10 topics as the primary focus of the center's improvement. The CCHC helped the center staff prepare an action plan to work on the three topic areas they chose.

> The CCHC helped the center staff prepare an action plan to work on the three topic areas they chose.

Action plans included filling gaps in knowledge, developing policies for staff and family handbooks, and improving staff practices. The CCHCs and center directors arranged all subsequent contacts and visits over the next 12 months.

Quarterly, the CCHCs sent the ITQIP coordinator documentation of their work and progress toward goals. The CCHCs submitted the center's initial action plan and a final action plan at the end of the year that showed what the center accomplished. ITQIP paid $250 to the CCHCs upon receipt of the center's initial action plan and date of the first CCHC visit. ITQIP paid the CCHCs an additional $250 after they submitted the final action plan from their 12-month linkage. Throughout the project, the ITQIP coordinator reviewed quarterly encounter forms that the CCHCs submitted to describe their work with the centers. This enabled the ITQIP coordinator to suggest ways to promote progress on action plans, including use of relevant health and safety resources.

RESULTS

Descriptive Report

ITQIP linked CCHCs with 32 centers. Of these, 16 centers were in the immediate CCHC-linked group, and 16 were in the delayed CCHC-linked group. In all,

59 directors, 348 I/T teachers and 1,490 infants and toddlers were directly involved in ITQIP. Three centers from each group dropped out, leaving 13 centers in each group at the completion of the project (Table 2).

Over the 1-year period of CCHC linkage, 12 of the 32 programs had turnovers of two to four directors. This change in center leadership made the CCHCs' work to improve I/T care very difficult. For the immediate intervention group, three of the original 16 centers withdrew from the project. One center in the delayed intervention (contrast) group closed during the project period; two others withdrew from ITQIP. Some centers dropped out because they were so overwhelmed with maintaining ratios in classrooms and staffing issues that they believed they could not focus on their action plans.

This report compares pretest, Posttest 1 and Posttest 2 scores for the 13 immediate intervention sites and 13 delayed intervention (contrast) sites that remained enrolled in ITQIP for the full 3 years.

ITQIP did not require a specific time spent in the CCHC role for each linkage. The CCHCs in the immediate intervention group provided an average of 14 hours of consultation per site (range = 2.25–28.75 hours). The CCHCs in the delayed intervention (contrast) group provided an average of 12.5 hours of consultation per site (range = 2–32 hours). The CCHCs completed quarterly encounter forms to report the total hours of services to their linked center, including a checklist of onsite, phone, and e-mail services. The most common CCHC interactions with centers included providing health education for the director and staff, onsite consultation at the facility, technical assistance by phone or e-mail, providing print or audiovisual materials, helping the facility comply with state regulations, and developing health policies and procedures.

Topics chosen by the centers in the immediate intervention group and the delayed intervention (contrast) group and the number of centers that chose each topic are shown in Table 3.

Quantitative Comparison of Evaluation Tool Scores on the Pretest Versus the Two Posttests

The scores used in the quantitative comparisons are the sum of all scores on the Evaluation Tool, not only those for the topics that the center chose for special focus (Table 4).

Immediate intervention group

On the pretest, the range in scores was 175 to 267, with an average score of 212 out of a possible 318 points (66%). On Posttest 1, the range in scores was 213 to 297, with an average score of 254 out of a possible 318 points (79%). This change from the pretest to Posttest 1 was statistically significant ($t = -4.62$, $p < .0001$). Postest2 did not show any significant change from the average score on Posttest 1, showing that the initial results from the intervention were sustained in the next year (254 to 254).

Delayed intervention (contrast) group

On the pretest, the range in scores was 164 to 271, with an average score of 218 out of a possible 318 points (68%). On Posttest1, the range in scores was 149 to 257, with an average score of 221 out of a possible 318 points (69%). These changes from the pretest to Posttest 1 were not significant. Posttest2 showed significant change in the average score from Posttest 1 (221 points) to Posttest 2 (243 points; $t = -1.80$, $p < .08$) a year after this delayed intervention (contrast) group had received their CCHC linkage.

Immediate Intervention Versus Delayed Intervention (Contrast) Groups

The comparison of the average scores between the Immediate Intervention (212) and Delayed Intervention (Contrast, 218) groups on the pretest was not significant, showing that the groups were equivalent. The difference between the average scores of the immediate intervention (254) and delayed intervention (contrast, 221) groups on Posttest1 was statistically significant ($t = -3.46$, $p < .002$), showing the effectiveness of the CCHC intervention for the immediate intervention group. Posttest 2 showed no significant difference between the change in the average postintervention scores for the immediate intervention group 12 months after their CCHC-subsidized linkage and the delayed intervention (contrast) group (254 vs. 243) at the end of their 12 months of CCHC-subsidized linkage. See Figure 2 for the crossover comparison results.

TABLE 2. Location and retention of recruited centers

Region of Pennsylvania	Immediate intervention group			Delayed intervention group		
	Centers recruited	Centers dropped out	Centers completed	Centers recruited	Centers dropped out	Centers completed
Southwest Region (Pittsburgh metropolitan area)	1	0	1	3	1	2
South Central Region (Harrisburg metropolitan area)	4	1	3	2	1	1
Northeast Region (Allentown/Bethlehem/Scranton)	3	0	3	4	0	4
Southeast Region (Philadelphia metropolitan area)	8	2	6	7	1	6
Total	16	3	13	16	3	13

TABLE 3. *CFOC3* topics chosen by centers by intervention group

CFOC3 topics	Number of centers in immediate intervention group that chose each topic	Number of centers in delayed intervention (contrast) group that chose each topic
Safe Sleep Practice	11	11
Medication Administration	10	6
Child Abuse Prevention	6	1
Care Plans for Children with Special Needs	5	8
Diaper Changing Procedure	4	4
Limited Physical Activity of Infants	2	1
Hand Hygiene	2	5
Immunization	1	0
Personal Relationships	0	1
Active Opportunity for Physical Activity	0	4

Note. CFOC3, *Caring for Our Children: National Health and Safety Performance Standards; Guidelines for Early Care and Education Programs (3rd ed.).*

The crossover comparison results (Figure 2) show the relationship between the immediate intervention and the delayed intervention (contrast) groups in a crossover design. It clearly shows how effective the intervention (pretest to Posttest 1) was for the immediate intervention group and that the effects persisted after 1 year without a subsidized CCHC linkage (Posttest 1 to Posttest 2). It also shows that the intervention was effective when the delayed intervention (contrast) group was switched to receive the CCHC intervention with targeted training, technical assistance, and collaborative consultation a year after their pretest assessment (Posttest 1 to Posttest 2).

For the Immediate Intervention Group After 1 Year of Linkage With a CCHC

Among the items in each topic area (Table 1), the following items showed statistically significant improvement (pretest to Posttest 1).

Medication administration

The director had documentation that the staff who are authorized to give medications have received medication administration training within the year from a health professional ($p < .001$).

Safe sleep

The number of written safe sleep policies containing the required elements increased ($p < .05$). Teachers ($p < .01$) and parents ($p < .05$) reviewed the safe sleep policies and were educated about safe sleep practices ($p < .05$).

Child abuse

Child abuse policies contained the required elements ($p < .05$). Both infant and toddler teachers were educated about child abuse and how, as mandated reporters, they are required to personally report incidents they suspect might involve child maltreatment ($p < .001$). The number of centers having required clearance documents on file for teachers increased ($p < .05$).

Active opportunities for physical activity

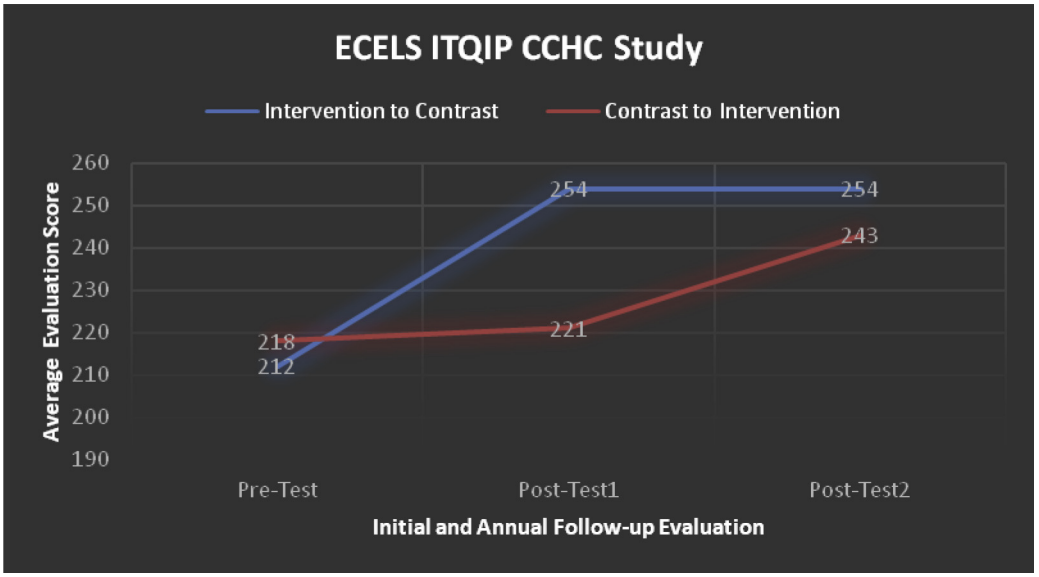
Infants (birth through 12 months of age) were taken outside two to three times per day, as tolerated ($p < .05$). Toddlers (12 months through 3 years)

TABLE 4. Quantitative results of the evaluation from the pretest to two posttests

	Intervention group				Delayed intervention (contrast) group			
	Range	Average	%	Possible total	Range	Average	%	Possible total
Pretest	175–267	212[a]	66	318	164–271	218	68	318
Posttest 1	213–297	254[a,c]	79	318	149–257	221[b,c]	69	318
Posttest 2	137–286	254	79	318	170–283	243[b]	76	318

Note. CCHC, child care health consultant.
[a]*Statistically significant change (*t = −4.62, p ≤ .0001*) from pretest to Posttest 1 for the immediate intervention group after the intervention of a 1-year linkage with a CCHC.*
[b]*Statistically significant change (*t = −1.80, p ≤ .08*) from Posttest 1 to Posttest 2 for the delayed intervention group after the intervention of 1 year of CCHC linkage.*
[c]*Statistically significant change (*t = −3.46; p < .002*) for Posttest 1 between the immediate intervention group and the delayed intervention (contrast) group.*

FIGURE 2. Crossover comparison results. CCHC, child care health consultant; ECELS, Early Childhood Education Linkage System; ITQIP, Infant-Toddler Quality Improvement Project.



went outside except in weather that poses a significant health risk ($p < .05$).

Diaper changing

Before the beginning of the diaper change, changing table paper was placed over the diapering surface, followed by the gathering of supplies needed for the diaper change from the containers in which they are stored and use of gloves ($p < .05$).

Hand hygiene

Observed times when toddlers ($p < .01$) and the toddler teachers/caregivers ($p < .05$) should have washed their hands showed statistically significant improvement after CCHC linkage.

For the Delayed Intervention (Contrast) Group After 1 Year of Linkage With a CCHC

Among the items in each topic area (Table 1), the following items showed statistically significant improvement (Posttest 1 to Posttest 2).

Safe sleep

Safe sleep policies that contained all the elements that should be in a safe sleep policy per *CFOC3* standard 3.1.4.1. ($p < .05$; AAP et al., 2011). The facility had documentation that parents reviewed the center's safe sleep policy and were educated about safe sleep practices ($p < .05$). There was no soft or loose bedding or other objects in a crib when an infant was in the crib ($p < .05$). Caregivers and teachers checked on sleeping infants often enough (about every 5 minutes) to be sure that the infant was still breathing ($p < .05$).

Medication administration

The name of a child to receive medication was verified before the medication was administered to that child ($p < .05$).

Diaper changing

Bottom clothing was removed, including shoes and socks, if feet were unlikely to be kept from contacting soiled skin or surfaces. If clothing was soiled, it was removed and placed in a plastic bag ($p < .05$).

Special needs

The number of care plans submitted that included the required elements in a care plan for children with special needs per the *CFOC3* standard 3.5.0.1 increased ($p < .05$; AAP et al., 2011).

Additional Findings of Interest

Immunization documentation

Only one center chose to work on documentation of up-to-date immunization status as an action plan focus. Overall, the immunization data for the two groups showed low compliance with *CFOC3* standard 7.2.0.1 (AAP et al., 2011) and PA's immunization regulations (PA Department of Human Services, 2008). On the pretest, in the immediate intervention centers, 22% of the immunization records for infants and 43% of the immunization records for toddlers were up to date.

Little change occurred for this group on Posttest 1 (36% for infants, 43% for toddlers.) On the pretest for the delayed intervention (contrast) centers, 25% of the immunization records for infants and 40% of the immunizations records for toddlers were up to date. On Posttest 1 the delayed intervention (contrast) centers improved from 25% to 38% for infants but dropped from 40% to 27% of the records for toddlers showing up-to-date vaccines.

Care plans for children with special needs

The data for the two groups showed low compliance with *CFOC3* standard 3.5.0.1 (AAP et al., 2011) that lists the components for care plans. Combining the immediate intervention and delayed intervention (contrast) center findings for this topic, the pretest showed that 66 I/Ts were identified with special health care needs in the 32 centers initially enrolled in ITQIP. Only 15 (23%) of I/Ts with identified special health care needs had any care plan signed by a health care professional. Only 1 of 66 I/Ts with special health care needs had a care plan signed by a health care professional that had all necessary components for optimal daily and/or emergency care. Posttest 2 showed that 39 I/Ts were identified with a special health care need in the remaining 26 centers. For children identified by the centers as having a special health care need, 62% did not have a care plan. Fifteen (38%) of those with identified special health care needs had a care plan signed by a health professional. Four of the 15 care plans had all the required elements. Examples of children who had special needs and had no care plan signed by a health care provider included children with gastroesophageal reflux taking Ranitidine, febrile seizures, asthma, multiple epinephrine autoinjectors onsite, autism, nonfebrile seizures, and torticollis and plagiocephaly, which required that the child wear a helmet each day.

DISCUSSION AND CONCLUSIONS

Quality early education and child care have been shown to be associated with lifelong benefits (Garcia et al., 2016). Young children are especially vulnerable to infectious diseases and injuries because of their age-appropriate behavior and abilities, their immature immune systems, and their lack of understanding of risk. Maintaining safe and healthful environments and practices involves removal of hazards and provision of policies and procedures, as well as compliance with quality standards by everyone in the group.

Numerous studies have shown the effectiveness of child care health consultation. This study focused on I/T care. The immediate intervention group showed significant improvement in policy development for safe sleep and child abuse and in education about safe sleep practices, preventing child abuse, and medication administration training. Some improvement in diaper changing and hand hygiene procedures occurred. The delayed intervention (contract) group showed significant improvement in safe sleep procedures, policies and education, medication administration procedure, diaper changing procedures, and care plans for children with special needs with appropriate information and signed by a health care provider.

The immediate intervention group showed significant improvement in policy development for safe sleep and child abuse and in education about safe sleep practices, preventing child abuse, and medication administration training.

The data collected by ITQIP show that many children with special needs lacked appropriate care plans. After finding little improvement in the immediate intervention group for centers having care plans with needed elements, ITQIP chose this topic as the focus of an MCHB-required continuous quality improvement initiative. ITQIP provided an audioconference for the CCHCs and gave them resources for teaching what should be in a care plan. CCHCs reported that they were most successful at helping the centers have complete, useful care plans for children with disease-specific conditions.

The areas chosen to target varied from center to center. Immunization was chosen by only one center. At the time of the study, neither regulation inspectors nor quality rating assessors were checking whether the center had documentation that the enrolled children were up to date with their vaccines. With little incentive or sanctions, documentation of up-to-date immunization status was poor.

Improvements occurred in some practices specified in selected *CFOC3* standards. Many of the directors said they appreciated the help they received from the CCHCs that ITQIP linked with their centers. The director of one center, part of a corporation with centers in 12 states, advocated for improving sleep policies for all the centers in her company. This advocacy could lead to widespread improvement.

Many of the directors said they appreciated the help they received from the CCHCs that ITQIP linked with their centers.

The centers that participated in this project were STAR 2 and STAR 3 programs that responded to an invitation to participate in ITQIP to improve. They were willing to contribute a modest copayment to work with a CCHC and wanted to raise their STAR rating and consequent higher payments for subsidized enrollees.

This selection bias is likely to have influenced the observed improvements.

A limitation of the study is the small sample size due to limited funding for the project. Also, although the study assessed practices for 13 *CFOC3* standards (AAP et al., 2011), the centers addressed only three topic areas. Little improvement was seen in topics that were not chosen or chosen less frequently. Change in leadership at the centers with varying levels of interest in working on the action plans made improvement difficult.

Another limitation of the study is the variability in child care operation from one facility to another and from year to year. Evaluators were unlikely to have been evaluating the same children from pretest through Posttest 2. Different teachers/caregivers and children may occupy designated rooms in a facility. ITQIP did not require that the CCHCs spend a specific amount of time with their centers. The time and type of service provided by CCHCs varied widely. Although CCHCs reported the total time and types of services they provided, they were not asked to report the time spent in each type of service (onsite visits, phone calls, or e-mails).

CCHCs support health and safety practices and environments that prevent harm and promote health and development of children, as well as overall wellbeing for families and early education staff. Currently, only 17 U.S. states have a statutory requirement for early childhood education programs to have child care health consultation (Honigfeld, Pascoe, Macary, & Crowley, 2017). Of these, two states require CCHC involvement only if the facility cares for sick children (Honigfeld et al., 2017).

None of the centers in this project continued their relationship with their CCHC after the year of subsidized linkage. Some directors stated that although they found the CCHC very helpful and informative, the cost of the CCHC was prohibitive. Some said they would continue the CCHC on a fee basis if they could budget for it in the future. Other studies have shown that linkage of centers with CCHC improves health and safety compliance. ITQIP showed this is true for I/T programs, too.

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Improving Child Care Quality Through an Infant Caregiver Mentoring Project

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ABSTRACT: An evaluation of a mentoring training program for infant caregivers is described. Fifty-two infant caregivers from 27 childcare center-based programs were involved in a four month long intervention in which they were paired with an experienced early childhood educator. The focus of the mentoring program was to improve the overall quality of the classroom environment, as well as making the caregivers more sensitive to the needs of the infants. The results clearly indicated that the mentoring program was very effective in improving the overall quality of the classroom, as well as making caregivers more sensitive to infants' needs.

KEY WORDS: infant caregivers; childcare; mentoring; training.

Introduction

This paper describes a child care mentoring project designed to improve the quality of infant and toddler child care programs in south central Pennsylvania. The goal of the mentoring project was to improve the quality of the child care environment and specifically the quality of caregiver-child interactions. As most caregivers in Pennsylvania only receive workshop training, the goal of this project was to compare the mentoring approach to the more typical workshop training. Mentoring is being explored because of its targeted intensive one-on-one nature in delivering training to caregivers based upon needs assessments. The project was conducted during the later half of 2000 and the beginning of 2001. The results presented in this paper are part of the pre- and post-test data collection phase (summer 2000 and winter 2000–2001) of this mentoring project. The actual mentoring intervention occurred from September through December 2000.

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Mentoring in childcare has been documented in the literature for the past 10–15 years (Breunig & Bellm, 1996; Fenichel, 1992). It has been demonstrated to be an effective mode of training/technical assistance (Breunig & Bellm, 1996). However, in the majority of studies conducted there are few, if any, demonstrations that utilize a randomized trial design (Breunig & Bellm, 1996). Many studies track the progress of the intervention group, some studies have comparison groups, but few, if any, have employed a randomized design. This research paper will describe the pre- and post-test data collected as part of a study that has employed a randomized design.

The majority of research (Clarke-Stewart, 1987; Goelman & Pence, 1987; Howes, 1987; Phillips, 1987; Kontos & Fiene, 1987; Galinsky, Howes, Kontos, & Shinn, 1994; Scarr, Eisenberg, & Deater-Deckard, 1994; Iutcovich, Fiene, Johnson, Koppel, & Langan, 1997; Helburn, 1995; Fiene, 1995, 1996; Jorde-Bloom, 1988; Love, Schochet & Meckstroth, 1986) completed on early childhood quality has focused on preschool programs, with infant toddler programs rarely as the central focus of the research. The research completed in infant toddler programs has clearly documented the mediocre level of care provided to children in these programs (Iutcovich, Fiene, Johnson, Koppel, & Langan, 1997). In the present study, we focus on the first three years of life. All the centers and the classrooms reported upon in this study serve children from birth to less than three years of age.

This report is organized as follows: a methodology section briefly describes the sample selected with basic demographic information on directors, caregivers and the programs. This is followed by a results section that provides pre- and post-test average scores for each of the assessment tools utilized in this study to measure quality, caregiver behaviors, knowledge, and organizational climate of programs. This section is followed with a discussion section and implications regarding this mentoring project.

Methods

Study Design

This study involved 52 caregivers from 27 sites in south central Pennsylvania. All programs were child care centers licensed by the Department of Public Welfare. Seven of the sites were accredited by the National Association for the Education of Young Children.

This study employed a randomized design in which a self-selected group of programs and caregivers were randomly assigned to two groups, either the mentoring group or the comparison non-mentoring

comparison/control group. Intervention model mentoring group received intensive mentoring from a seasoned early childhood professional (minimum of 5–7 years of experience in the early childhood field as both a director and teacher) from September to December 2000. The mentoring model consisted of a problem solving approach in which the mentor spent a good deal of time observing in the beginning weeks in order to develop a trusting relationship with the protégé. Once both the mentor and protégé felt comfortable then suggestions could be entertained by the mentor.

The comparison group did not receive the mentoring intervention and only had the regular workshop type variety training available to them. However, the comparison group did receive mentoring during the Spring 2001 from March to June 2001. What is of interest in this study is to determine how much the two groups have improved from the pre-test data collection because they were essentially equivalent at that point on all measures.

Programs were recruited by the Capital Area Early Childhood Training Institute, a broad based community focused training institute. Program directors were invited to attend a meeting describing the mentoring project. Of those attending, 95% agreed to participate in the project. Fifty two caregivers started the project, 14 caregivers dropped out of the project between pre- and post-test. There was an equal drop out rate from both the mentoring and the control groups.

Data from the four quality measures used for all the programs are presented in Table 1. The four measures of quality were the Infant Toddler Environment Rating Scale (ITERS), the Arnett Caregiver Observation Scale, the Knowledge of Infant Development (KIDI), and the Bloom Scales of Organization Climate.

The program directors' average age is 31 with a range from 24–53

Table 1
ITERS, Arnett, KIDI, Bloom Scale Scores

All Programs (n = 38)	Pre-Test	Post-Test	Change	Significance
ITERS	134	140	+6	ns
Arnett	30	40	+10	ns
KIDI	14	14	-0-	ns
Bloom	78	79	+1	ns

years of age. They are predominantly Caucasian (81%). Eight percent have associate degrees, 78% have bachelor's degrees, and 14% have master's degrees. They had been employed as directors in their program for an average of 31 months with a range from 1 month to 120 months. Their average pay is between $20000–25000 per year. Sixty percent have health insurance and 45% have some form of dental or life insurance. Forty-five percent are in a retirement system.

The average age of caregivers in the programs was 36 with a range from 18–68. They are predominantly Caucasian (77%). Fifty-seven percent have high school diplomas, 16% have some college credits, 5% have CDA's, 16% have associate degrees, 5% have bachelor's degrees, and 2% have master's degrees. They have been employed as caregivers in their program for an average of 34 months with a range from 1 month to 153 months. They have worked in the early childhood field as caregivers for an average of 71 months with a range from 1 month to 312 months. Their average pay is between $10000–15000 per year. Fifty percent have health insurance and 33% have some form of dental or life insurance. Thirty-three percent are in a retirement system.

The average size of the centers is 98 children with 17 staff employed either full time or part time at the program. The average weekly fee for infant care is $137.00 per week and for toddler care is $124.00 per week. The majority of staff are employed at the centers for either less than 1 year or greater than 5 years.

Results

Both the mentoring and comparison groups were tested for equivalence at the beginning of the project in the pre-test data collection phase. There were no statistically significant differences on any of these measures at the pre-test. When the programs and caregivers were measured at the post-test, positive changes occurred although none were found to be statistically significant. In the aggregate, the programs that continued with the mentoring project showed improvements in the overall quality of care.

Tables 2 through 5 present the pre- and post-test data for the intervention and control groups.

These results indicate that the mentoring group showed increases on the program quality scales (ITERS and Arnett). This increase is especially noticeable on the ITERS. Further, there was a decrease in program quality with the control group, going from a score of 137 to 132. On the Arnett scale the mentoring group increased greater than the control group (11 point increase versus a 7 point increase).

Although the above results did not reach statistical significance,

Table 2
ITERS

	Pre-Test	Post-Test	Change	Significance
Mentoring Group	134	141	+7	ns
Control Group	137	132	–5	ns

Table 3
Arnett

	Pre-Test	Post-Test	Change	Significance
Mentoring Group	29	40	+11	ns
Control Group	33	40	+7	ns

Table 4
KIDI

	Pre-Test	Post-Test	Change	Significance
Mentoring Group	14	14	-0-	ns
Control Group	14	15	+1	ns

Table 5
Bloom

	Pre-Test	Post-Test	Change	Significance
Mentoring Group	73	74	+1	ns
Control Group	87	91	+4	ns

when specific subscales are analyzed several show significant differences (see tables 6 and 7). Several of the subscales on the ITERS and Arnett reached statistical significance with positive changes in routines (greeting/departing, meals/snacks, nap time, diapering/toileting, health/safety practice/policy) learning activities (eye-hand coordination, active physical play, blocks, pretend play, cultural awareness), sensitivity, and appropriate discipline for the mentoring group. The only statistically significant finding with the control group was in a negative change in interactions in which the scores decreased from pre-test to post-test. Paired t-tests were used in all of these analyses for Tables 6 and 7.

Table 6
Mentoring Group

	Pre-Test	Post-Test	Significance
ITERS subscales			
Routines	36	41	.005
Listening activities	8	9	ns
Learning activities	28	31	.05
Interactions	13	13	ns
Adult needs	17	19	ns
Arnett subscales			
Sensitivity	26	31	.001
Appropriate discipline	7	9	.05

Table 7
Control Group

	Pre-Test	Post-Test	Significance
ITERS subscales			
Routines	41	42	ns
Listening activities	9	8	ns
Learning activities	29	31	ns
Interactions	15	13	.02
Adult needs	17	17	ns
Arnett subscales			
Sensitivity	28	31	ns
Appropriate discipline	6	7	ns

Discussion

These data demonstrate that the sites that were mentored improved on the ITERS and the Arnett. This is an encouraging result in that the intervention was only 4 months long. It is an important finding because the majority of mentoring projects in the past have utilized anecdotal evidence to demonstrate their effectiveness. Very few programs have conducted randomized trials of their interventions.

It is clear from the data that training/technical assistance interventions are needed in infant toddler programs because of the low scores on various program quality measures. It is also discouraging in that the control programs did not improve in which the ITERS went from 137 (pre-test) to 132 (post-test). This is a finding that will be monitored over time to see if this trend continues. Hopefully this was just an aberration in the data; however there does seem to be support when these data are compared to other studies (Iutcovich, Fiene, Johnson, Koppel, & Langan, 1997).

The public policy implications are that an intensive mentoring intervention of only four months can produce positive, although not statistically significant, changes in the overall quality of child care programs both globally and with caregiver interactions. Previous research (Johnson, 1994) has indicated that increasing the number of hours of training produces more developmentally appropriate behaviors in child care staff. Mentoring fits this model because it is an intensive one on one intervention in which the mentor and protégé are engaged in problem

solving activities to improve the overall quality of the interactions and environment of the child care program.

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Mastering course content and learner satisfaction in early childhood education: A comparison of regular classroom instruction with three variations of internet delivery☆

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Abstract

In the spring semester 2000, a Penn State course, ECE 479 (The Young Child's Play as Educative Process), was taught by the same instructor in four delivery formats. One group consisted of a regular classroom, held on campus. A second group, also on campus, was taught in a computer lab via the Internet; and there were opportunities for interaction with peers and the instructor. A third group took the course on the Internet as part of a local distance education group; hence, there were some limited opportunities for face-to-face interaction with peers and the instructor. The fourth group took the course on the Internet, as part of a statewide distance education group, where there were no opportunities for face-to-face interaction. Twenty students who enrolled in the course (5 per group) completed questionnaires and phone interviews. Information was gathered on professional backgrounds, computer experience, and initial level of content knowledge on the topic of the ECE Internet course. Sixteen students who completed the course were interviewed again to evaluate satisfaction with the course and to estimate learning outcomes. Across the four conditions general satisfaction was expressed with the content, activities, and course requirements and with the teacher. However, students in the three computer groups expressed dissatisfaction over technical problems (all four who did not complete the course came from these computer groups). Significant gains in content knowledge occurred for the classroom group, while the learning in the three Internet-based instruction groups did not show the same gains. Concern was expressed related to the lack of face-to-face interaction, making the learning environment less desirable. Although Internet technology provides a great deal of promise, these results suggest that improvements are needed to make this delivery modality more effective for in-service distance learning.

1. Introduction

"I think the thing that I liked least and I know it's inherent in an Internet course is lack of human involvement. Lack of human contact. Not getting to talk with the instructor at all, face to face. That was very tough for me. The other thing was the lack of the immediate feedback. If you had a question you had to type it in and wait for the instructor to log on and read it and then get back to you."

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"My frustration was that I don't like to fall behind in anything. I felt like I was falling behind because I wasn't able to access these readings, wasn't able to do some of the things on the computer that I should have been able to do. I was just getting frustrated and feeling like this isn't worth it for me. And that's why I dropped the course."

"The lack of being able to talk to anybody. The fact that you were doing all of this reading on your own. That was hard. I was used to sitting in classes and having someone lecture to me and then having students to interact with. It was difficult to get used to just reading it and absorbing it by yourself."

"Just simple things like just being able to print the page on my screen out. I didn't, I had no clue how to transfer stuff onto the hard drive and to be able to print something. I'm used to pressing the print button and stuff popping out. I didn't know it was that much involved."

The Internet is a new and ever expanding tool for learning (Benson & Meyers, 2000; Lan, 1999; Owston, 1998), including distance education (Williams, 1996). Whether or not the Internet can be an *effective* tool for training staff within the human services, particularly childcare staff, needs to be explored. Our project evaluated the effectiveness of the Internet training in terms of learning outcomes, its implementation (specifically, the technological aspects), and the student's level of satisfaction with the course. The impetus for our project came from two sources.

First, Pennsylvania delivers childcare training to all licensed and registered childcare providers in the state and is interested in making this system more cost effective and efficient. Discussions related to utilization of the latest technologies, such as the Internet, are being considered. Secondly, a new initiative, CyberStart, will link all licensed childcare centers in Pennsylvania to the Internet. While this initiative is specifically designed to offer Internet access and educational programming for children, it will also make this technology available to childcare staff. Hence, there is a need to evaluate the feasibility and effectiveness of Internet-based distance education as it becomes more available to childcare centers.

2. Research design

A quasi-experimental design was employed, which consisted of four groups of five students who enrolled in the early childhood education (ECE) course ECE 479 *The Young Child's Play as Educative Process,* which focused on play, communication, and curriculum. The first group experienced the traditional lecture/discussion course format. A second group took the course on the Internet, but within the context of a computer lab (located at Penn State York) where they had the opportunity to interact with their peers and the instructor. A third group took the course on the Internet as part of a local distance education (DE) group; this group also had some face-to-face interaction with their peers and knew the instructor. A fourth group took the course on the Internet, but as part of a statewide DE group. This group had no face-to-face interaction with their peers or the instructor.

This research design enabled us to examine the available technology to determine any hardware or software constraints, as well as the efficiency of the technological support services, by comparing groups that took the course via the Internet in different environmental circumstances (i.e., the on-campus computer lab vs. a home-computer set up). The research design also permitted us to evaluate the importance of the human element as a component of the effectiveness of this training modality since participants were in controlled settings with varying possibilities for face-to-face interaction.

Evaluating whether Internet training delivered to childcare staff is an effective training modality has special significance at this time given the paucity of empirical evidence to support or refute such claims. Research is needed to help the Pennsylvania Childcare and Early Childhood Development (PA CC/ECD) Training System, and comparable systems in other states, make more informed decisions about the use of Internet-based distance education for teachers of young children.

Given the exploratory nature of this study, a qualitative approach with a small sample was employed to generate data from questionnaires and interviews, as well as from course assignments completed by students. The questionnaire included items that tapped demographic characteristics (age, sex, and prior education), current position and experience within childcare, and experience with computers. Phone interviews, administered before and after the course, and lasting in duration from 30 to 45 min each, assessed students' knowledge about play and perceptions about the course. In addition, select course assignments were independently graded to assess knowledge.

The course aimed to increase the students' knowledge about play and its practical application. Two measures of the learning outcomes were used: (1) interview responses to questions about play given before and after the course and (2) grades on selected course assignments. The latter were independently evaluated by faculty other than the course instructor. Both measures were scored without knowledge of group membership.

From the phone interviews, students' answers to four questions about play were evaluated. The questions were: (1) What is play? (2) What is the value of play? (3) What is positive play? and (4) How can adults have a positive influence on play? Content analysis revealed that numerous ideas were elicited by these four questions both before and after the course. An empirically based coding system was developed and employed to score students' answers. Appendix A provides the categories and subcategories used in scoring.

3. Course development

The course *The Young Child's Play As Educative Process* (ECE 479), offered by the Department of Curriculum and Instruction in the College of Education at The Pennsylvania State University, was selected for this experimental study of Internet-based instruction. This particular course was chosen because it was viewed as well-developed and because it included both theoretical as well as practical content relating to ECE curriculum and instruction. Developing the course for Internet-based instruction required connecting with the Penn State World Campus (online learning). A contractual relationship was formed involving Keystone University Research Corporation (KURC), the contractor for the PA CC/ECD Training System, the College of Education, and the World Campus. Technicians from the World Campus, in collaboration with ECE faculty and doctoral students, worked to develop the course in time for offering it in the Spring of 2000.

3.1. Stage one – course structure

One of the first tasks was to establish the course syllabus, which included the course objectives and requirements, along with a schedule and sequence of learning activities. Objectives included acquiring a knowledge base of theory, research and practice concerning play and ECE, improving play observation and documentation skills, analyzing playthings for use in ECE settings, planning suitable indoor and outdoor environments for play, understanding and making sound judgments about the use of play facilitation strategies, and learning how and why to become an advocate for play in education. Requirements included an observation project, designing play environments, writing letters explaining play-based teaching to parents and to a 'blue ribbon committee' of educational professionals, as well as doing an implementation project and keeping a journal. *The Instructor's Manual to Accompany Johnson/Christie/Yawkey Play and Early Childhood Development, Second Edition* (Johnson,1999) provided the guidelines for the overall course organization and sequencing, which followed the chapters of the text, with the content going from theory and research to policy and practice.

3.2. Stage two – course content

The course was organized into four modules with a number of online lessons or sessions in each module. There were a total of 26 sessions. Sessions were designed to last 50 min; students had a reading assignment for each session and a self-administered objective-item exam, which produced computer-generated feedback for self-evaluation. Also, open-ended discussion questions were assigned for chat room or bulletin board discussion. The objective items and the open-ended discussion questions came from the instructor's manual. Activities and problems were embedded in sessions and were sequenced and used in the same way across the four groups of students.

3.3. Stage three – course programming

The final formatting and programming of the course for Internet instruction occurred during the Fall of 1999. The course program included some special features to make the on-line learning experience more interesting. For example, an animated pop-in character (a cartoon owl) appeared on screen at various selected points throughout the sessions to ask questions as a real classmate might. The World Campus technical staff, with the assistance of the course instructor (third author), also prepared a home page for the course, which included the course schedule and contact information.

4. Participants

All 20 students were female, ranging in age from 23 to 60 with mean of 39 years. Sixteen students had a bachelor's degree and one a master's and two had a high school diploma or GED certificate. The most common college major was elementary education ($N = 7$). Only three students majored in ECE and had taken any previous courses on play. For the entire group, inservice training hours on this subject ranged from zero ($N = 5$) to 45 hours ($N = 1$), with a mean of 10.5 hours.

Fifteen students held the position of center director and three were assistant directors. One student had the title of childcare coordinator, and another was a personnel training coordinator and an assistant group supervisor. The length of time that the students worked at their current childcare center ranged from

a minimum of six months to a maximum of 23 years with the mean 9 years. The length of time that students had worked in the early childhood field ranged from 2 years to 25 years, with mean 11.9 years.

5. Findings and discussion

5.1. Prior computer experience

Students reported prior experience using personal computers ranged from no experience to 15 years. The mean value was 4.1 years. Seventeen students had a personal computer at home and were asked to indicate which specific activities they had used. Those uses included: word processing (15 responses); recreational software (12 responses); Internet (12 responses); and spreadsheets and/or databases (4 responses).

A questionnaire item asked who usually provided technical support for their home PC (e.g., installing new software or hardware, answering software questions, and fixing problems). No more than five students usually relied on themselves for technical support for their home PCs. Of the four students who chose "other," three students usually relied on a friend, and one usually relied on another teacher in her childcare center.

5.2. Knowledge about play

For the following four play questions, each student's answers given in the postcourse interview were compared with the precourse answers in order to evaluate whether there were response improvements, defined by an increase in positive responses and/or a decrease in negative responses (items 1 and 3), by an increase in the total number of distinct acceptable benefits of play given (item 2), or of distinct teacher's roles (item 4) cited.

5.2.1. Question 1: what is the definition of play?

Responses were coded into the categories and subcategories and summed into two groups. *Positive responses* tallied the number of Attributes, Distinctions, and Realizations (A, D, R), while a second group of *negative responses* summed the total of overly-inclusive, mistakes, slogans, and vague replies (X, M, S, V). Other codes were considered "neutral" answers and were not used in this evaluation.

All classroom and computer lab students improved, as did the three statewide DE students who stayed in the course. Of the three remaining local DE group students, one failed to exhibit a positive response at both times of measurement; they gave five negative responses at precourse time of measurement and three negative responses at postcourse time of measurement.

Table 1
Pre- and post-course mean scores for benefits of play across four conditions

Groups	Classroom	Computer lab	Local DE	Statewide DE
Pre-course	5.2	4.0	3.8	3.0
Post-course	8.4	7.2	3.3	5.6

Classroom students gave a total of 25 positive responses after the course compared to only 3 positive responses before the course. This averages five positive responses per student and exceeds the averages on this index for the other three groups (1.2, 1.6, and 2.3 for lab, local DE, and statewide DE, respectively). Classroom and lab students showed few negative responses before or after the course, while local DE students gave 8 negative responses and statewide DE students gave 13 negative responses before the course. However, in postcourse interviews the six DE students made only five negative replies.

5.2.2. Question 2: what are the benefits of play?

Total scores for number of distinct benefits were derived from the coding system employed in the study. All general and expressive answers given (G and E) were added with all functional answers to yield a total benefits (G&E + F) score. Benefits of play results are shown in Table 1.

As can be seen in Table 1, the classroom and lab students performed better than the local DE and statewide DE students on this item. They were able to identify significantly more functions of play, especially after the course was taken. Nine of ten students in the classroom/lab groups improved, but only 3 of 6 in the DE groups did. Note also slight decrease in scores by local DE group.

5.2.3. Question 3: what is good play?

Here *positive responses* were the number of Nominal and Process (N and P) ideas from each student, while a second group of *negative responses* summed the total of Failure (F) responses exhibited. Other codes were considered "neutral" and were not used here.

Only seven of 16 students improved. Evidently, the course did not impact very much how well students could answer this question. The best answer, the P answer, was given by only three students, all at postcourse time. Failure to distinguish good play from play (e.g., "all play is good") happened six

Table 2
Mean scores for total roles across groups before and after the course

Groups	Classroom	Computer lab	Local DE	Statewide DE
Pre-course	3.8	2.4	4.0	3.6
Post-course	7.0	4.6	3.3	5.6

times at precourse time and eight times by the end of the course. Most students talked about types, functions and characteristics of play and failed to differentiate good play from play in an acceptable manner as determined by the coding and scoring system used in this study. This discouraging result may be because the scoring criteria were too harsh, or perhaps because interviewees did not understand the question. Also, it is possible that the course as taught, as well as the textbook as read, did not highlight the distinction well enough. In previous courses, this question has proven to be a "power question," distinguishing the "gold from the dross" in student performances.

5.2.4. Question 4: how can adults make child's play better?

Responses were analyzed with scores derived from the coding employed in the study. All general or attitudinal answers (G) per student were counted. Another group of answers covered the sum of all adult role responses (R). Total roles (G&R) were examined in the analysis. Table 2 shows mean scores across groups.

There were 11 students who improved, with all but one of them coming from the classroom or computer lab research groups. Only one student in a DE improved. Five students in DE groups actually performed more poorly in answer to this question after the course was over. In sum, the course influenced students' performance in identifying adult roles in children's play differentially depending on which research group they were in—classroom and lab students outperformed DE students.

5.3. Assessment of course requirements

There were three assignments that were graded for all the students: implementation activity (A), a parent letter (B), and a blue ribbon letter (C). As shown in Table 3, a comparison of the grades on these assignments across all four groups did not reveal that any one group consistently scored higher than the others. However, the traditional classroom group did score the highest on assignment B and had the second highest set of scores on assignments A and C.

Table 3
Scores on course assignments across four groups

Groups	Assignment A	Assignment B	Assignment C	Total
Classroom	2.86	3.86	2.75	9.47
Lab	1.90	2.63	3.00	7.53
Local DE	2.69	3.37	2.50	8.56
Statewide DE	2.99	3.61	2.35	8.95

For assignments A and B the differences in scores for the four groups were statistically significant (Assignment A, $F=5.574$, $p < .012$ and Assignment B, $F=4.628$, $p < .023$). No significant differences were found for Assignment C. The computer lab group scored the lowest on assignments A and B while the other three groups of students all scored about the same. When all the assignments are totaled for an overall score, the traditional classroom performed significantly better than the other three groups ($F=5.221$, $p < .015$).

Students were also asked a series of questions about their expectations regarding the course, the benefits from taking the course, and their experiences in taking the course. The majority of the responses were very positive about the course in general, but the students who had taken the course via the Internet experienced a number of computer problems in either getting online or with the software. Everyone experienced problems and this delayed the start of the course for them for several weeks. There were problems with signing on, with the chat room, with passwords not being accepted, and so forth. However, once these problems were worked out, the course started and proceeded fairly well.

In sum, respondents revealed general satisfaction with the content of the course, the course activities, and course requirements. Moreover, there was a strong appreciation and high evaluation for the teacher. On the other hand, almost everyone (one or two exceptions) in the three computer groups expressed dismay over serious and continuing technical difficulties throughout the entire semester. However, even with a good course content, instructional design, teacher, and technical delivery, there were several people who clearly indicated reservations about Internet learning because it lacked face-to-face interaction. These people indicated that even if there were no technical difficulties, they would miss the human contact and would prefer courses or training taken in a classroom where there was greater opportunity for interpersonal interaction and contact.

6. Conclusion

This evaluation provides insights into offering ECE courses over the Internet. Clearly, it seems that the success of this technology is dependent upon the persistence and knowledge of the student for learning to occur. Four students who did not complete the course were from the local ($N = 2$) and statewide ($N = 2$) Internet-based distance education groups; none were from the traditional classroom or computer lab settings. The students were administrators of childcare programs, fairly familiar with computers and knowledgeable of the course content. However, even with these pluses, the students still had considerable difficulty in accessing and doing the course online. Possibly the dropout rate would have been greater if the students were at a beginning stage of their career (Cohen, 2000; but see Schrum, 1992). Students in the traditional classroom and in the computer lab groups, where there was more face-to-face interaction, scored the best on the interview play evaluations. Evidently, these two training modalities were more effective than were the local and statewide distance education training modalities where there was little or no face-to-face contact with other students or with the instructor.

On the three course requirements, the classroom group scored the highest on assignments summed together (9.47); but the computer lab group scored the lowest on the assignments (7.53), with the two distance education groups in the middle. This is inconsistent with the results from the analyses of the interview responses to the four questions about play. Here both the classroom group and the computer lab group gained the most. Although it is perhaps encouraging to see that the students in the two distance education groups scored higher on the course assignments compared to the computer lab group, their results were still lower than the students' scores from the traditional classroom group.

What have we learned from this study? For Internet instruction to be effective it seems that students must be technologically literate and knowledgeable about course content to some degree, and they must be persistent and highly motivated. Without these personal characteristics, the Internet course experience may not be a positive learning experience. The results of this study further suggest not utilizing Internet training across-the-board for childcare staff. It needs to be very targeted, beginning with directors of programs, who generally have the greatest experience and education and potential exposure to computer technology. More generic, across-the-board training for the beginning level practitioner does not make training sense at this point.

Internet technology provides a great deal of promise for reaching childcare staff with needed specialized in-service training in ECE. But first it is necessary that the technology gets the fine-tuning to ensure its effectiveness as a training modality for the majority of childcare providers. Also, what is best for on-line learning? Professional attention must be given to criteria for deciding the kinds of training content (e.g. learning facts like state regulations or understanding and applying concepts like play in ECE) in relation to its packaging (e.g., a full course like in this study, or modules, or single sessions analogous to workshops). Setting up realistic expectations for learners and designing the right means of instruction and assessment are both very important. Finally, we recommend that priority be given to designing orientation modules to prepare potential users for Internet-based distance education.

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Appendix Table 1

Question 1: What is play?

A1 Attribute of play given. For example, play is process-oriented, marked by positive affect, often non-literal, active, intrinsically motivated, etc.
A2 Tangential attribute of play given. For example, play is something adults like to see in children; child and adult do play of own free will, etc.
E Example of play is given. For instance, play is like playing with dolls or blocks.
F Function of play is noted as a way to define it. A way to learn things. A way to release feelings.
C Context of play is noted. Play can be solitary or done in a social group.
X Overly inclusive or general statement about play is made, such as "it is a creative process."
D Distinction is made, contrasting play with other similar behaviors such as imitation or exploration.
R Realization is indicated, such as play is multidimensional, complex, or hard to define.
T1 Type of specific play is given, such as constructive or dramatic play.
T2 Type of general play is noted, such as educational play, dark play, and recreational play.
M Mistake is made, a falsehood is uttered.
S Slogan is cited; such as play is the child's work.
V Vague pronouncement is made, unclear or hard to decipher.

Question 2: What is the value of play? What are its benefits?

General (educational) values include:
G1 Teaches skills and abilities or is a learning experience
G2 School preparation
G3 Allows for the practice of skills
G4 Generates further learning and development; allows children to go as far as they can with what they are learning
G5 Avenue for creativity
G6 Creates a well-rounded child
G7 Allows child to explore and discover on one's own
G8 Allows child to experiment

Expressive values include:
E1 Enjoyment, fun, makes happy, love of life
E2 Relaxation, release energy, tension
E3 Vent frustration
E4 Be self
E5 Express self

Functional values include:
F1 Cognitive: abstract thinking * imagination * learning content * creativity * learn on own terms-relevancy, meaningfulness * problem-solving * meta-cognition * memory * social cognition, empathy, perspective-taking * theory of mind * sense of self * sense of others * assimilation, integration, application of learning
F2 Affective: motivating, feel good about self * self empowerment, sense of control * reduce anxiety, therapeutic, cathartic * self confidence, sense of self-assuredness
F3 Social: learn to resolve conflicts * cooperation * group cooperation, team member * leadership skills * learn to share * learn to take turns * learn to help
F4 Physical: gross motor * fine motor * learn to challenge self physically * self-help skills
F5 Attentional: concentration * attention regulation * persistence
F6 Assimilation
F7 Language: communication skills * literacy * become good story-teller * vocabulary
F8 Academic: reading and writing * shapes for math * science
F9 Life skills, careers

Question 3: What is good play? Positive play?

N Nominal answer is given, like educational play is good play.
P Process of play is said to be important, "perking along", playing up to capacity.
C Characteristic of play in general is given without really answering the question.
T Type of play in general is given without really answering the question.
F1 Function of play in general is given without really answering the question.
F2 Failure to provide sensible reply, such as, "all play is positive."

(*continued on next page*)

Appendix Table 1 (*continued*)

Question 4: How can adults make play better for children?

There are many roles to perform in the ECE profession with respect to children's play. Some are general or attitudinal such as:

G1 Value play, allow it to happen, be aware of your biases and those of others
G2 Realize when attitude change about play occurs in self or others
G3 Show an interest in play as a matter of public or educational policy
G4 Lobby and advocate on behalf of children's right to play as an integral part of childhood

Other roles in the ECE profession with respect to children's play pertain to classroom or home or child development center situations where young children learn and are cared for. These include:

R1 Stage manager, set up over-all positive and attractive environments, provide materials, playthings, space, toys, storage areas, time for play, literacy props, allow children choice of areas and activities, organize settings, rotate toys
R2 Be a careful and systematic observer, evaluate play, change own behavior as a result of observations, document play process and products
R3 Provide preparatory experience, bring in guest visitors, field trips
R4 Play facilitator, scaffold, support, challenge children at play, do not be overbearing, ask questions, offer comments, suggestions, ideas for play, teach play
R5 Co-player, be a play leader, model play behavior
R6 Supervise play, make sure play is safe, monitor activities, mediate conflicts, enforce rules, help children negotiate, guide and discipline, be a referee

Other roles inherent in the ECE profession connected with play have to do not with the children but with other adults. These include:

R7 Help adults be comfortable with play of children in educational settings, train teachers, educate staff about play in ECE
R8 Inform and involve parents in quality play with young children in formal and informal educational settings

AN INTERACTIVE ONLINE LEARNING PROGRAM ON CHILD ABUSE AND ITS REPORTING

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ABSTRACT

This article describes the content and pedagogical foundations of iLookOut for Child Abuse, an interactive, online learning program that was designed for early childhood professionals and others who provide childcare to young children. It also describes how an online intervention can address a complex social and behavioral issue––viz., how to identify and appropriately respond to concerns of possible child abuse.

Keywords: early childhood professional, professional development, online education, mandated reporter, experiential learning, child abuse

INTRODUCTION

Early childhood professionals (ECPs, a term used here to describe early childhood educators, daycare providers, childcare workers, preschool teachers, and others who work with young children) need better preparation to help them protect young children from abuse (Ayling et al., 2019; Dinehart & Kenny, 2015; McKee & Dillenburger, 2012). Only a very few trainings have any evidence-base for changing knowledge or attitudes (e.g., Gushwa et al., 2019; Kenny, 2007; Townsend & Haviland, 2016). For the vast majority, purported efficacy is based on self-report (e.g., "I feel like I learned a lot"), involves nonvalidated measures, and fails to evaluate for sustained effects on knowledge or attitudes, much less actual behavior (Ayling et al., 2019; Sokolowski, 2005). Even newer online training typically consists of little more than linear recitations of information regarding the various types of child abuse and their consequences, legal definitions and requirements for reporting, and contact information (Goldman & Evans, 2015; New York State Office of Child and Family Services, n.d.; University of Pennsylvania, n.d.). It is in fact rather surprising that the potential of online learning has not been effectively leveraged for an issue as important and far reaching as child abuse.

Over 675,000 cases of child abuse (physical, sexual, and emotional abuse, and neglect) are confirmed annually in the U.S. (U.S. Department of Health & Human Services, 2018), with evidence that the true incidence is much higher (Finkelhor et al., 2010). The long-lasting and sometimes severe consequences of abuse include physical disabilities, cognitive impairment, neurological damage, mental health problems (depression, anxiety, posttraumatic stress, etc.), maladaptive behaviors (alcoholism, drug abuse, intimate partner violence), and of course further victimization (Norman et al., 2012; U.S. Department of Health & Human Services, 2018). In short, abuse can have a devastating impact on a child's life and the adult they become. Young children (0–5 years) are particularly vulnerable to victimization, accounting for more than 75% of deaths from abuse and a greater proportion of abuse than older

children for all categories of maltreatment except sexual abuse (U.S. Department of Health & Human Services, 2018). Despite 10 to 12 million American children being under their watchful eyes, ECPs identify fewer than 1% of all substantiated cases of child abuse in the United States each year (McKee & Dillenburger, 2012; U.S. Department of Health & Human Services, 2018).

There is little question that identifying and appropriately responding to suspected child abuse involves a number of complexities, but the dearth of well-grounded interventions to help people carry out this responsibility is a significant problem. This article describes how the online learning program, *iLookOut* for Child Abuse (*iLookOut*), was designed (conceptually and pedagogically) to help ECPs identify and appropriately respond to possible child abuse. Our hope is that sharing its structure and design can help others in higher education and learning technology develop evidence-based interventions that promote child well-being. *iLookOut* was developed under the aegis of Penn State's Center for the Protection of Children, with support from the National Institute of Child Health and Human Development. *iLookOut* is provided free of charge to ECPs and is currently available in the United States in the states of Pennsylvania and Maine.

EARLY CHILDHOOD PROFESSIONALS (ECPS)

The population of ECPs is diverse in terms of age, education, work setting, and available resources, but almost all are strategically positioned to identify and respond to child abuse. ECPs may be the only people outside of the immediate family to have extended opportunities to observe children on a daily basis, and thus they have the potential to both help prevent patterns of abuse from taking hold and act as key supports for children/families (Dinehart et al., 2013). Yet ECPs face considerable obstacles in recognizing signs of abuse, differentiating normal childhood injuries from abuse, and knowing when and how to report concerns about abuse. So it is not surprising that ECPs have identified "reporting possible abuse" as one of the most troubling ethical issue they face in their workplace (Ayling et al., 2019; Clyde & Rodd, 1989; Feeney & Sysko, 1986; Feng et al., 2009; McKenna, 2011).

Studies of ECPs' reporting habits for child abuse are relatively few compared with the many studies involving other mandated reporters (e.g., teachers, nurses, doctors). The small body of research that examines the reporting experiences of ECPs (Bishop et al., 2002) reveals high levels of uncertainty about the decision to report, perceived "conflicts of loyalty" (Svensson & Janson, 2008), and a plethora of complexities that cause some ECPs to feel as if they are "dancing on the edge" (Feng et al., 2009). The challenges arise in part from ECPs' desire to preserve relationships with families and avoid causing harm while also meeting their legal, professional, and ethical responsibilities to protect children. One study found that ECPs are less likely to have ever reported child maltreatment compared to other professionals who work with children (Zellman & Bell, 1990), in part due to inadequate education regarding the circumstances and level of concern that warrant reporting (Ayling et al., 2019; Kenny, 2007). Even when ECPs do report, there is considerable report latency, (Svensson et al., 2015), with one older study finding an average lag time of 14 months between ECPs having suspicion and actually making a report (Sundell, 1997), a situation that if left unaddressed risks dire outcomes for many young children.

Professional training has been the chief mechanism for trying to improve ECPs' recognition and reporting of child abuse, the presumption being that increased knowledge will promote reporting. But due to the lack of rigorously evaluated interventions, little is known about the actual effect of education on ECPs' recognition of abuse, reporting behavior, or how to best prepare them to meet their responsibilities to protect children (Christian, 2008; Mathews et al., 2015). That said, research suggests that ECPs' lack of education contributes to their reports of suspected abuse having lower yields—with substantiation rates of just 6.3% compared to 25–33% for other mandated reporters (King et al., 2013; Pennsylvania Department of Human Services, 2017).

NEED FOR ONLINE INTERVENTIONS

Any intervention to help ECPs meet their professional, ethical, and legal responsibilities as mandated reporters must deal with multiple widely recognized challenges: wide variability in entry level training of ECPs; variability in the quality of professional development opportunities; logistical barriers to providing professional

development during working hours (be it a lack of down time during the workday or limited access to training); bureaucratic challenges to ensuring quality education across settings (from family-based daycares to corporate chains to church-based facilities); as well as short-staffing and 20%–40% annual turnover rates (Melusky et al., 2013; Whitebook et al., 2014). All these factors make it more difficult to establish childcare environments that are well prepared to protect young children (especially infants and toddlers) from harm (Zaslow, 2014).

The Advantages of Online Learning

That said, well-designed training programs can succeed, provided they deliver standardized, high quality curricula and reinforce learning (Lunenberg, 2011). Online education has particular advantages for meeting the needs of ECPs and overcoming key challenges. Online learning lends itself to standardization is eminently scalable; provides ready, low-cost access to multimedia learning; can easily employ interactive exercises for experiential learning; can be accessed more flexibly than workshop based training; is as effective as in-person training at enhancing ECPs' knowledge, skills, and professional competencies; and provides ready means for tracking results (Ackerman, 2017; Barnes et al., 2018; Durden et al., 2016; Stone-MacDonald & Douglass, 2015).

To be effective, a training program needs to help ECPs understand the different forms of child abuse and their presenting signs and symptoms (Dinehart & Kenny, 2015), given that child abuse can be challenging to discern and perceptions of abuse can be mistaken (Christian & States, 2017; Reece & Christian, 2008). Effective training must also teach ECPs about their professional and legal responsibilities—which can be confusing (Mathews & Kenny, 2008; Mathews et al., 2015)—and also promote appropriate attitudes and behavior about reporting suspected abuse (Ajzen & Fishbein, 2005; Mathews et al., 2015). If done well, education can help ECPs be more aware, better prepared, and more inclined to appropriately recognize and effectively report suspected abuse (Crenshaw et al., 1995; Fraser et al., 2010; Yang et al., 2020). Importantly, this entails not only reducing missed cases of abuse but also minimizing over-reporting (Ho et al., 2017). Because child abuse is protean in its various presentations, it is at best misinformed to suggest that ECPs should report whenever child abuse is "possible." A child who is anxious or withdrawn or angry, or small, or tired, or slow to develop, or any number of other common things "may" be being abused. But it is neither warranted, practical, nor helpful to report every such child.

iLookOut for Child Abuse (iLookOut) Intervention

iLookOut is an online, interactive educational program that was designed to help better prepare ECPs for the challenging and important responsibility of protecting society's most vulnerable members from harm. A randomized controlled trial has shown that *iLookOut* improves ECPs' knowledge and changes ECPs' attitudes (in the desired direction) about child abuse and its reporting, and that ECPs very much like *iLookOut*. Previously published work describes those results and how the knowledge and attitudinal measures were developed and validated (Mathews et al., 2017), with more recent data demonstrating *iLookOut*'s efficacy in a real-world trial involving more than 11,000 ECPs (Yang et al., 2020). In the present article we describe the *iLookOut* learning program and its pedagogical underpinnings.

1. Understand and recognize possible child abuse
   - What does and does not constitute child abuse
   - How and where abuse occurs
   - Risk factors for abuse
   - Signs and symptoms of abuse
   - Consequences of abuse
   - Strategies and resources for responding to suspected abuse
2. Understand your responsibilities as a mandated reporters of suspected abuse
   - Legal responsibilities as a mandated reporter
   - Steps for carrying out these responsibilities
   - Consequences of failing to report suspected abuse
   - legal immunity so long as a report is made in good faith

Figure 1. iLookOut's Didactic Learning Objectives

Learning Objectives

As with most standard training on reporting child abuse, *iLookOut's* didactic learning objectives are to help ECPs:

1. Understand and recognize possible child abuse, and
2. Understand the responsibilities of being a mandated reporter (see Figure 1).

An additional learning objective, however, is affective in nature:

3. Become empowered and motivated to protect children who are at risk for abuse.

This includes helping ECPs engage with colleagues when concerns arise about the possibility of abuse, and helping them navigate barriers to reporting suspected abuse.

Structure of the Learning Program

Learners first complete a registration section covering a broad range of demographic items (professional and personal), including prior experience with child abuse education and reporting suspected abuse. Learners then complete a pretest of knowledge (23 items) and attitudes (13 items) regarding child abuse and its reporting. As previously described (Mathews et al., 2017), the validated knowledge instrument examines whether learners know the signs and symptoms of abuse, the laws governing reporting, and the penalties for failing to report. The validated instrument assesses learners' views about reporting suspected abuse, including its value/utility, potential barriers, concern over legal liabilities and parental backlash, and their willingness to report over the objections of a supervisor. The Getting Started section begins with two separate videos of a young man and a young woman (both actors) talking about their experience of being abused as a child. While these testimonials do not contain any graphic descriptions or images of abuse, learners are alerted beforehand that "some people may find the videos upsetting, particularly if their own lives have somehow been affected by abuse." (Of note, no objections or negative comments about these testimonial videos have been received from any of the more than 13,000 ECPs who have completed *iLookOut*.) The purpose of these videos is to impress on learners the very real human impact that our actions (or failures to act) can have for children who are abused, as well as their families. At the end of the learning program, this connection is further reinforced with a brief video of a young girl who asks: "If you don't protect me, who will?"

Learner Interface

In this initial version of *iLookOut*, learners are asked to imagine being an early childhood educator working with four- and five-year-olds. Then, using an interactive, video-based storyline filmed with point-of-view videography (i.e., the camera functions as the learner's eyes), key events unfold through interactions with children, parents, and coworkers (all played by actors). As more is revealed about each child's situation over the storyline's two-day time frame, the learner has to decide what, if any, action to take. In-depth information is provided for 5 of the children depicted, each of whom demonstrates risk factors for a particular form of abuse.

At different junctures in the story, resource files become available for learners to access attitudes. These include: 1) Types of Child Abuse (which defines and provides examples of each type of child abuse), 2) Red Flags for Abuse (see Figure 2), 3) Facts About Abuse (which includes state and national statistics about the incidence of abuse, physical and psychological consequences of abuse, tips for identifying abuse, legal penalties for failure to report suspected abuse, and links to useful websites), and 4) Reporting Suspected Abuse (which explains the threshold for reporting, how to operationalize the term "reasonable suspicion," and that mandated reporters have legal immunity so long as a report is made in good faith).

Figure 2. Red Flags for Abuse Handout

Learners also can choose to view additional videos and text files to learn more about the children portrayed in the storyline, including back stories

on the children and their families (see Figure 3). Part of the lesson here is that, as in real life, the more information one has, the better informed one's choices. That said, it is also made very clear that it is not the ECP's role to investigate whether child abuse has in fact occurred.

Figure 3. iLookOut Back-stories on Children

Throughout the *iLookOut* program, learners are posed questions, and based on their responses are provided information to augment (and/or correct) their understanding of child abuse and its reporting. At the end of the storyline, a video is shown in which narrators discuss elements within the storyline that could (or should) have raised or lowered the learner's concern about abuse for each of the children they encountered in the story. Learners are then asked to sign a pledge that they will fulfill their responsibilities as mandated reporters. They are also given follow-up materials (e.g., case scenarios for discussion, handouts) that they can print, download, and share with others in their work setting.

Learners then complete a knowledge and attitudes posttest (identical to the pretest) and a survey evaluating the learning experience. If any items on the knowledge test were answered incorrectly, the learner must identify the correct answer in order to complete the *iLookOut* program. The learning program then finishes with a disclaimer about the characters (children and adults) depicted in *iLookOut*, explaining that 1) *iLookOut* was written and casted to demonstrate diversity (race/ethnicity, gender, socio-economic status, awareness, temperament, etc.); 2) various of the depicted behaviors and personal characteristics may inadvertently reinforce negative stereotypes; and 3) the creators welcome suggestions for avoiding such negative characterizations, provided they do not simply shift them to another group. To date, no complaints or suggestions on this matter have been received.

Completing *iLookOut* earns ECPs three hours of professional development credit and also satisfies their state requirement for mandated reporter training. ECPs' valuation of *iLookOut* is perhaps best demonstrated by the fact that more than 13,000 learners have completed it since open access began in January 2015, constituting a greater than 98% completion rate. Of these learners, more than 95% accessed all the supplemental resource files, and 94% reported being very satisfied with the learning program (mean = 8.8, where 10 = highest—manuscript forthcoming).

Pedagogical Approach

iLookOut was created by an interdisciplinary team with expertise in child abuse, pediatrics, early childhood education, online learning (including instructional designers and experts in teaching and learning technology), mandated reporter training, law, ethics, child advocacy, and victim services. Its interactive storyline was designed to 1) engage ECPs emotionally and intellectually, 2) increase their awareness about child abuse, and 3) help them feel both empowered and responsible to contact child protective services when there is reasonable suspicion of child abuse.

The opening testimonial videos set the stage for these goals. Prior to the first video, text appears on the screen rhetorically asking "Do you remember a time when YOU felt hurt and scared?… and nobody helped you?" Prior to the second video, the same question appears in text on the screen: "Do you remember a time when YOU felt hurt and scared?" But this time, the follow-on text reads: "… and someone asked the right questions and did the right thing to protect you?" The purpose of this sequence is to encourage learners not only to identify with the vulnerability of children who are at-risk but also to identify as being part of a system that, however imperfect, is the only system we have for protecting children. As the learning program then moves into the video-based storyline, ECPs are immersed in realistic scenarios that both teach them new information and challenge them to put into practice what they are learning. In addition to helping learners operationalize new information,

this approach encourages important affective skills to encourage ECPs to be more proactive in protecting real children from harm.

This is one example of how *iLookOut* is grounded in an experiential learning, conceptual model that is a key feature of adult learning theory. Drawing on the work of Knowles (1984), Billington (2000), and Kolb (2009), *iLookout's* design recognizes that adults learn best when 1) they know why they need to learn the material, 2) the learning process is experiential, 3) learning is framed as problem-solving, and 4) the material to be learned has immediate value (Knowles, 1984). In keeping with Billington's key factors for promoting adult development, *iLookOut* 1) challenges ECPs just beyond their present level of ability so they are pushed to grow but not pushed so far that they give up; 2) uses exercises to reinforce facts and frameworks regarding suspected child abuse; and 3) allows learners to proceed and digest information at their own pace. Because *iLookOut* is accessible 24/7 and can be paused/resumed as desired, including across multiple sessions, it also leverages ECPs' preference for flexibility in professional development (Kyzar et al., 2014). Additionally, *iLookOut's* online platform provides an emotionally safe environment for experiential learning, which has been shown to improve knowledge acquisition and implementation among ECPs (Kyzar et al., 2014).

By interweaving an interactive storyline with didactic information, decision-points, and critical feedback to learners' responses, *iLookOut* aims to reflect adult learning best practices (Billington, 2000) and embody the key elements of Kolb's experiential model (Kolb & Kolb, 2009). In the context of helping ECPs become responsible, mandated reporters of child abuse, these key elements manifest as follows:

- **"Concrete Experience"**—helping ECPs reinterpret experiences they have previously encountered.
- **"Reflective Observation"**—helping ECPs consider and problem-solve any tension/conflict between the lived experience of being a ECP and their responsibilities to protect children.
- **"Abstract Conceptualization"**—promoting reflection about the meaning/implications of concepts such as abuse and suspicion.
- **"Active Experimentation"**—providing practice opportunities to apply new information/understanding.

Taken together, these elements are intended to provide a nuanced, yet practical, educational experience expressly designed for early childhood educators and caregivers. In particular, *iLookout's* interactive storyline, pairing of questions with immediate critical feedback, posttest reinforcement, reflective debriefing, and follow-up engagement capitalize on Kolb's observation that critical thinking skills develop best when learners transform their own experience into knowledge by acting on their learning.

iLookOut's Evidence Base

The *iLookOut* program is integrated with a learning management system that tracks pre- and posttest data, responses to questions within the learning program and a postprogram evaluation of the learning experience. In both randomized controlled trials (Mathews et al., 2017; National Library of Medicine, n.d.) and a real-world study (Yang et al., 2020), *iLookOut* has been shown to significantly improve knowledge (effect size = 0.96) and change attitudes (effect size = 0.8), such that learners are more predisposed to seeing reporting as the right thing to do when they suspect that a child may have been abused. In an ongoing randomized controlled trial (Humphrey et al., 2021), the interactive, experiential learning approach employed by *iLookOut* resulted in significantly higher effect sizes regarding both knowledge (1.09) and attitudes (0.67) compared to standard didactic online training (0.67 and 0.54, respectively). Additionally, preliminary data suggest that reports from ECPs who complete *iLookOut* are more likely to be screened-in for further consideration, and when formally assessed they are more likely to result in findings of abuse and/or social services being recommend for the child/family in question. Because the learner's responses within the various learning modules are also recorded by the learning management system, it is also possible to study patterns of learning; however, this has not been a focus of inquiry to date.

By design, all legal/policy-related content in *iLookOut* is contained within discreet learning modules (as opposed to the video-based storyline). So, while *iLookOut* was originally developed

for use in Pennsylvania, state-specific content can be readily revised to comport with legal and policy-related requirements of other states, as has already been done for the state of Maine. This adaptability provides opportunities to study the efficacy of *iLookOut* with diverse populations and to experiment with different ways of framing the learning material.

IMPLICATIONS FOR PRACTICE

Where child well-being is concerned, educational interventions should aim not only to impart knowledge but also to help learners feel more empowered and motivated to act when needed. Because interactive, story-based learning can help engage learners and facilitate skill-building, it is a particularly promising approach for achieving such affective and behavioral goals. Moreover, when experiential learning is not only problem-based but practical in its application, learners are more likely to appreciate the relevance of what is being taught and draw the connections needed to apply it in real life. Online interventions have the additional advantage of being accessible, adaptable, and open to analysis, as well as a ready mechanism for promoting a greater, shared understanding about how to effectively support child well-being.

For projects with even quite modest budgets there are several general techniques for optimizing learner engagement and increasing scholarship on which elements are best suited to various purposes (Boller & Kapp, 2017). Such techniques include introducing characters and/or storylines that are likely to resonate with the perspectives and experiences of learners, providing (safe) opportunities for learners to practice and fail at applying newly acquired knowledge, and employing digital badging as a way to leverage people's desire for recognition. Advances in technology have also made immersive educational experiences increasingly affordable through the use of off-the-shelf animated scenarios that can be tailored to the desired setting and content such as Gamelearn (www.game-learn.com). Such gamification techniques can be very effective at augmenting educational interventions, particularly when coupled with a clear understanding of adult learning theory.

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COGNITIVE MAPPING FOR ILOOKOUT FOR CHILD ABUSE: AN ONLINE TRAINING PROGRAM FOR EARLY CHILDHOOD PROFESSIONALS

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ABSTRACT
This article delineates the theory and framework for an innovative child abuse training program for mandated reporters called '*iLookOut*'. *iLookOut* is an online learning delivery system that utilizes mastery learning and self-determination theory in the Core Training program, along with spaced retrieval and retrieval practice in a follow-up micro-learning program that reinforces learning from the Core Training. A cognitive mapping model provides the structure for documenting and organizing the learning content in both the Core training and the follow-up micro-learning program. The article provides a conceptual framework for designing and implementing effective and efficient online learning programs.
Keywords: distance learning; cognitive mapping; learning; engagement; online learning

INTRODUCTION

There are relatively few studies of Early Care & Education (ECE) professionals' child abuse reporting practices, particularly compared with published studies on other mandated reporters who have high levels of contact with children (e.g., teachers, nurses, doctors). In those that have been done, ECE professionals are less likely to have ever reported child maltreatment compared to other professionals who work with children (Zellman & Bell, 1990); this was due in part to the minimal education ECE professionals received about child abuse and what regarding the level of concern and/or circumstances warrant reporting (Alvarez, Kenny, Donohue, & Carpin, 2004; Kenny, 2007; Carter, Bannon, Limbert, Docherty, & Barlow, 2006).

The small body of quantitative and qualitative research examining reporting experiences of ECEs (including kindergarten and pre-school teachers (Sundell, 1997; Bishop, Lunn, & Johnson, 2002) has revealed high levels of uncertainty about the decision to report, perceived "conflicts of loyalty," (Svensson & Janson, 2008) and complexities that, taken together, have caused some ECE professionals to feel as if they are "dancing on the edge."(Feng, Chen, Wilk, Yang & Fetzer, 2009).

ECE professionals report wanting to preserve relationships with families and avoid causing harm, but at the same time meet their legal, professional, and ethical responsibilities. One consequence of such uncertainty and conflict is report latency, with one study finding an average time of 14 months between ECE professionals having suspicion and making a report (Sundell, 1997) -- a situation that, if left unaddressed, risks dire outcomes for many young children.

The emergence of the internet and other technological advances provide a mechanism for educating ECE professionals about child abuse and its reporting, even in remote areas. But evidence-based curricula are lacking. This paper describes a methodology for crafting an integrated curriculum that meets the needs of ECE professionals and can be delivered via online learning modalities.

The Need

Every day, thousands of children experience one form of child abuse or another at the hands of a parent or other caregiver. Annually, there are 680,000 confirmed cases in the United States, and research provides strong evidence that this number is likely much higher (Finkelor, Turner, Ormrod, & Hamby, 2010; Hussey, Chang, & Kotch, 2006, Kohl, Jonson-Reid, & Drake, 2009; Stoltenborgh, Bakermans-Kranenburg, van Ijzendoorn, & Alink, 2013; Stoltenborgh, van Ijzendoorn, Euser, & Bakermans-Kranenburg, 2011; Stoltenborgh, Bakermans-Kranenburg, Alink, & van Ijzendoorn, 2012; Stoltenborgh, Bakermans-Kranenburg, & van Ijzendoorn, 2013; Sedlak, Mettenburg, Basena, Peta, McPherson, & Greene, 2010).

The youngest children –those under 5 years of age– are more likely to be victims of all forms of child abuse other than sexual abuse. Because they are more vulnerable, these children experience serious injuries –including death– at much higher rates than older children. (U.S. Department of Health & Human Services, 2018). However, not all consequences of abuse are as immediate as broken bones and black eyes. Each of the various forms of abuse can have profound effects on children's physical, psychological, developmental, and overall emotional well-being –with conclusive evidence of the strong relationship between child maltreatment and subsequent anxiety, depression, substance use, intimate partner and family violence, as well as heart disease, strokes, and cancer (Norman, Byambaa, De, Butchart, Scott, & Vos, 2012, Flaherty et al., 2013; Jonson-Reid, Kohl, & Drake, 2012; Mills et al., 2011; Danese & McEwen, 2012; Shonkoff & Garner, 2012; Hadland et al., 2015).

In the face of these staggering facts, it is perhaps surprising that ECE professionals –who provide care to 8-12 million children in the U.S.– (Laughlin, 2013; Laughlin, 2006) report only about half of 1% of confirmed cases of child abuse. (U.S. Department of Health & Human Services, 2018).

Because ECE professionals interact with so many young children on a daily basis, they are in a unique position to identify and respond to suspected child abuse. They may be the only people outside of a child's immediate family to have extended opportunities to discern red flags and/or subtle signs of abuse that might lead to early detection, the potential to help prevent patterns of abuse from taking hold, and the opportunity to support over-worked and overwhelmed families before abuse occurs. With the right preparation and resources, ECE professionals can also serve as key supports for children and families who are struggling (Dinehart, Katz, Manfra, & Ullery, 2013). Yet protecting children is far from straight-forward or low stress task –to the extent that some ECE professionals have identified "reporting possible abuse" as the most troubling ethical issue they face in their workplace (Clyde & Rodd, 1989; Feeney & Sysko, 1986).

Two-Phased Approach

The *iLookOut for Child Abuse* learning program *(iLookOut)* has two distinct phases. The first is the Core Training, which uses a video-based storyline, experiential learning theory, and practice modules to provide ECE professionals a strong, standardized foundation for understanding what child abuse is, what to look for, and what to do (and not do).

The second phase provides Advanced Training using spaced practice and spaced retrieval to augment the original instruction and provide continuing reinforcement delivered via email or a smart phone application. We have used the term "pinging" for as shorthand to represent the combination of spaced practice and spaced retrieval. We chose the term "pinging" because we think of the process as similar to the sound waves that submarines send out to gauge progress and location. In our case, rather than sound waves, our Advanced Training pings offer micro-learning opportunities, reminders about what to look for in cases of child abuse and feedback on progress toward completing the training. Such continual reinforcement related to child abuse encourages ECE professionals to re-process, synthesize and (most importantly) apply what they have learned about child abuse and what can be done to help protect children and promote their well-being. Because *iLookOut*'s pinging is iterative, and dispatches brief messages over time, this micro-learning can be tailored to the availability and needs of individual learners.

This paper describes *iLookOut*'s two phases, and explains how the distance learning curriculum that is now deployed to ECE professionals across Maine and Pennsylvania (Core Training only/Phase I) can serve as a model for others looking to deliver trainings and associated resources and reinforce learning over broad

geographic regions. . In this context, "Core Training" refers to the initial 3-hour *iLookOut* learning program, while "Advanced Training" refers to the micro-learning activities sent out as pings to smart-phones or other mobile technologies.

Core Training

Given the broad and dispersed population of ECE professionals in Maine, and the acute need for mandated reporter training, we sought to create an online program that could be delivered to ECE professionals where they worked. The *iLookOut* Core Training uses a video-based storyline and game-based techniques to more effectively engage ECE professionals, along with pre/post-testing to measure knowledge, attitudes, and satisfaction (Levi et al., 2019)

Like other online programs. *iLookOut*'s Core Training provides ready, low-cost access to multi-media learning 24/7, and can be paused/resumed as desired. *iLookOut*'s content is written at an 8th grade level, and provides standardized education for a workforce known for wide variability in entry level training, skill-sets, work environment, and professional development opportunities.

Mastery Learning

The *iLookOut*'s Core Training was designed to ensure that all ECE professionals could master basic information about how to identify signs of child abuse. This mastery learning philosophy recognizes that under appropriate instructional conditions virtually all learners can master what is being taught (Block & Burns, 1976; Bloom, 1971). *iLookOut*'s Core Training creates those conditions by organizing the curriculum into discrete units; providing interactive instructional activities along with various didactic exercises and resource handouts; embedding assessments within these activities; and requiring learners to master the learning objectives before moving to the next discrete unit. (Bloom, 1971; Melton, 2008).

Mastery learning is an approach that recognizes that aptitude for learning may be more closely linked to an individual's perseverance and time spent than to any notion of "ability" (Bloom, 1971; Melton, 2008). As with criterion-referenced tests, which assess the performance of each test-taker without regard to the performance of others (Shrock & Coscarelli, 2007), there is no limit to the number of ECE professionals who can excel in completing the *iLookOut* curriculum.

Self-Determination Theory

Motivationally, *iLookOut*'s Core Training program is based on Self-Determination Theory (SDT). This macro-theory which has been used to explain human motivation in many endeavors (including sports, healthcare, religion, work, and education) posits that human beings primarily perform tasks/activities because of an internal drive rather than some externally driven theory of operant conditioning (Ryan & Deci, 2000a; Ryan & Deci, 2000b). Among other things, SDT has helped to identify factors that either facilitate or undermine human motivation. For example, one of SDT's sub-theories, cognitive valuation theory, proposes that events and conditions that enhance a person's sense of autonomy and competence intrinsically support motivation, while factors that diminish perceived autonomy or competence undermine intrinsic motivation.

In the context of SDT, autonomy involves a person feeling that they are in control of their actions, and can influence the outcome of those actions. To help foster this sense of autonomy, the *iLookOut* Core Training provides ECE professionals with opportunities to make meaningful choices in response to the scenarios playing out in the video-based storyline –particularly with regard to possible signs of child abuse.

Another key aspect of SDT involves the human drive to take on challenges and achieve a sense of mastery. SDT describes this as striving for competence, and posits that factors that enhance an individual's ability to experience competence (e.g., opportunities to acquire new skills or overcome challenges) are intrinsically motivating. *iLookOut*'s Core Training provides ECE professionals many such opportunities to be challenged, to demonstrate mastery, and to earn digital badges that offer visible acknowledgement of their achievements.

iLookOut also incorporates SDT's third major element, relatedness –the experience of feeling meaningfully connected with others. *iLookOut*'s Core Training does this by helping ECE professionals identify with being part of a profession and community that is united in its goal of promoting children's well-being.

Pinging and Advanced Training

Despite the many strengths of *iLookOut*'s Core Training, it is well established that gains in knowledge are quickly lost unless they are somehow reinforced (Murre & Dros, 2015). Because decades of research show that spaced practice and spaced retrieval optimize learning (Ausubel, & Youssef, 1965; Caple, 1996; Kerfoot, 2010),

the *iLookOut* programs were designed to include reminders of interactive micro-learning activities that are sent to learner's smart-phones and emails. These pings serve to reinforce and augment the concepts that were originally taught in the Core training.

Spaced Retrieval

Broadly speaking, the concept of ***spaced retrieval*** involves providing learners with course content spaced over time. Spaced retrieval has been shown to be an effective tool for aiding student retention (Carpenter & DeLosh, 2005), and has been more widely promoted through computer-based adaptive instructional models such as ALEKS (Doignon & Falmagne, 1985) and LearnSmart (McGraw-Hill, 2013). In contrast to the standard practice of asking learners to digest large amounts of content all at one time, spaced retrieval avoids learner fatigue, as well as setting unrealistic expectations. For *iLookOut's* Advanced Training phase, spaced retrieval also allows learners time to process and reflect on new information at multiple points in time, rather than simply moving on.

Spaced retrieval helps learners retain access to memorized information over long periods of time because the spacing promotes deeper processing of the learned material. Ideally, the time between the learning events is greater than 24 hours, but shorter times have also been found to be effective. As long as eight years after an initial training, learners who engaged in spaced retrieval exercises showed better retention than those whose learning was more concentrated time period (Clark & Mayer, 2011).

iLookOut's Advanced Training sends participants weekly pings, each constituting a learning module that includes an activity (reading, game, video, etc.) along with various question-items. Learners must complete the modules in succession, and may review their content after completion; but learners may not proceed to the next module until its predetermined release date. Successful completion of a set number of modules ultimately earns learners a badge.

Retrieval Practice

By design, our use of retrieval practice requires ECE professionals to recall or retrieve information they have learned, and complete both "knowledge checks" and In-Practice exercises that provide opportunities to apply newly acquired knowledge. The benefits of retrieval practice are well-established across diverse groups (Larsen et al., 2009). But the advent of computer technology has added the ability to not only record learner responses and performance, but also standardize and formally integrate spaced practice into learning curricula.

Retrieval practice improves recall performance in part because the act of retrieving information from memory actually strengthens the existing memory trace, and often creates additional retrieval routes (Dobson, 2013). Because these changes increase the probability of successful retrieval in the future (Roediger & Butler, 2013), retrieval practice can significantly enhance long-term retention of what ECE professionals have learned.

Despite the known efficacy of spaced practice and retrieval practice, it was not obvious how best to apply them vis-à-vis *iLookOut*'s overall curriculum. To develop a systematic approach for doing so –i.e., to determine the appropriate sequencing and content for Phase 2 of *iLookOut*–we adopted a "Cognitive Mapping" approach to design a comprehensive pinging curriculum.

Cognitive Mapping

Cognitive Mapping was first introduced in 1948 by educational psychologist, Edward Tolman (Tolman, 1948) to explain how rats learned the locations of rewards in a maze, and as such generated a practical model for mapping their environment. Cognitive mapping is now in wide use in many different venues (including health research (Stadler, et al, 2013) and engineering (Dixon & Lammi, 2014)), not only to identify and illustrate how key elements are (or should be) inter-related, but also to create strategies for integrating, measuring, and analyzing various factors and outcome.

Cognitive mapping helps explore learner characteristics that improve learning (e.g., self-regulated learning components of goal-directedness, motivation, goal feedback, etc.). One such characteristic involves outcome expectations (Schunk & Zimmerman, 2006). Rooted in Tolman's concept of field expectancies, a learner's outcome expectations are based in their ability to anticipate particular relationships between a (e.g., lightning) stimulus and a response (e.g., thunder). Such expectancies help people form cognitive maps, which are internal representations of these expectancies, along with a catalogue of actions that are more (or less) likely to help individuals attain their goals.

Cognitive maps are particularly important for latent learning –i.e., learning that occurs after the initial period of teaching/exploration/etc. Latent learning may occur at any number of points in time, but may be most pronounced when the learner realizes how what has been taught applies in real-world settings –which in the case of ECE professionals is likely to be when they are working with infants and toddlers.

According to a Social Cognitive framework, learners will act in a manner they believe is likely to be successful, and will adopt observational and behavioral frameworks that conduce to success. As such, *iLookOut*'s cognitive map was designed to both 1) help our research team understand the relations between the various components of the Core Training and the subsequent pings, and 2) create a prototype of the internal model we hoped our learners would develop over the course of *iLookOut*'s two phases. In this way, the cognitive map developed for *iLookOut* provides a template to help ECE professionals more effectively connect and integrate information, ways of observing/interpreting, and particular practices so as to optimize and take full advantage of latent learning.

By definition "cognitive maps" are mental or conceptual models, "thinking maps" that, like other forms of cartography, map territory. But here it is cognitive "territory" rather than geographic terrain that is being characterized. Sometimes, cognitive maps provide a linear progression of a concept, or the relationships between various factors. They also can serve a developmental purpose, by helping people (be they researchers, policy makers, teachers, or learners) develop a deeper understanding of how different elements are (or should be) related to one another.

There are many applications of cognitive maps. *Perceptual* applications tend to focus on a) inquiring and/or gathering information; b) noticing/attending to; or c) differentiating/distinguishing. *Cognitive* applications tend to focus on a. organizing data and/or finding patterns/relationships; b) interpreting/understanding data; c) analyzing data; d) troubleshooting/diagnosing; e) drawing conclusions; f) framing; g) illuminating; or h) estimating probability/confidence levels. *Evaluative* applications focus on a) assessing/judging; b) measuring effectiveness; c) predicting future success; d) assigning importance/priority; or e) providing feedback. *Volitional* applications include a) identifying desires; b) defining/clarifying purposes; or c) planning. *Behavioral* applications include a) performing/behaving; b) implementing a plan; c) communicating; d) learning; e) improving skills; or f) developing.

Of these, *iLookOut*'s cognitive map was developed for the following purposes: coordinating learning content (Core Training and Advanced Training), implementing a plan, predicting likelihood and degree of future success, providing feedback, monitoring and measuring progress, evaluating and assessing achievement, organizing data, and finding patterns. This allowed us to both fully align existing content, strategies, and outcomes, and also identify critical areas that were not sufficiently fleshed out or appropriately integrated. For *iLookOut*'s Advanced Training in particular, this involved 1) distinguishing the learning points for the different concepts; 2) demonstrating associations between various components; 3) mapping individuals' actual progress through different stages of learning; 4) clarifying the purposes of various components of the learning program; and 5) creating a framework for how learners will progress through various activities so as to develop their skills. Figure 1 provides a very simplified cognitive map showing how key elements from *iLookOut*'s Core Training and Advanced Training fit together to create a unified whole. Such integration is crucial because any misalignment could potentially confuse or demotivate learners, fail to leverage spaced retrieval/practice, and/or undermine latent learning.

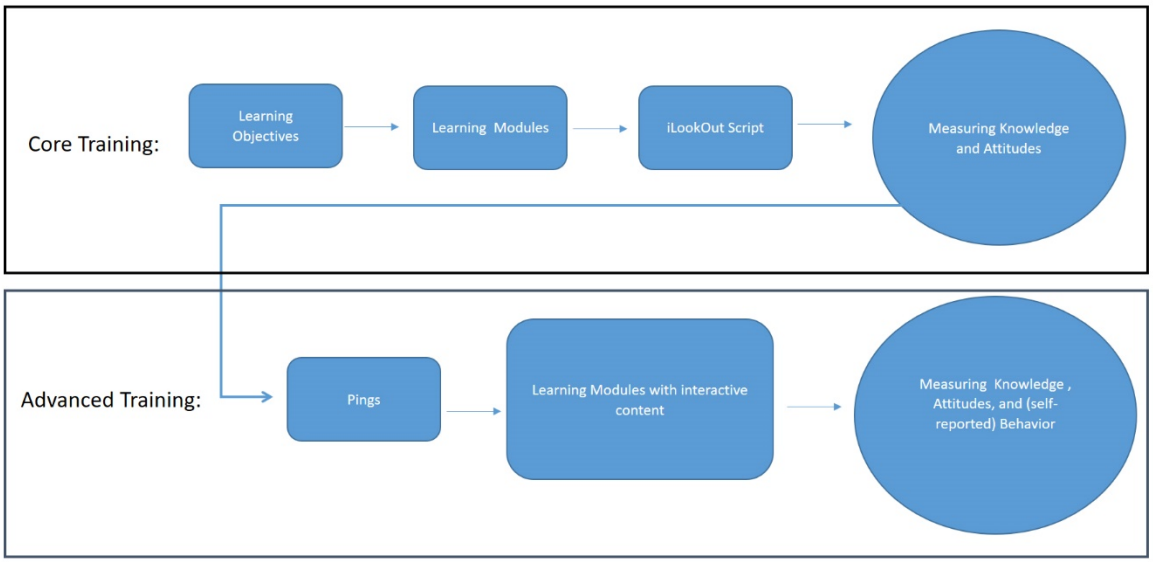
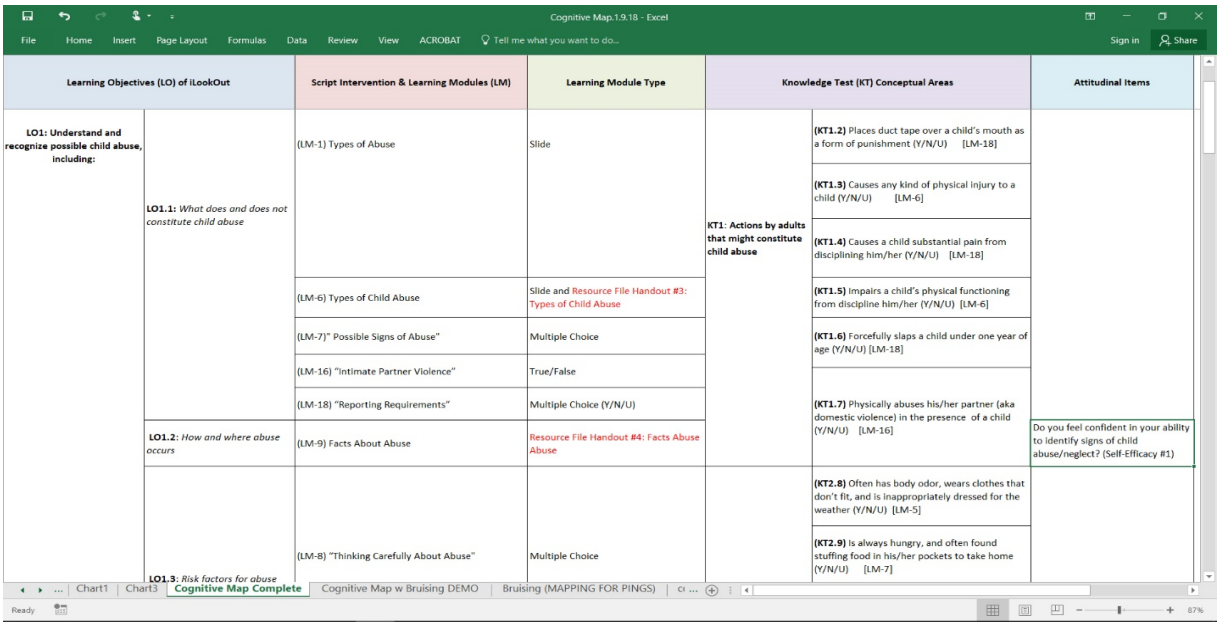


Figure 1. Simplified Overview Cognitive Map

Figure 2 provides more detailed mapping of the Core Training, showing where and how learning objectives manifest in the storyline, discrete learning modules, and post-training knowledge tests.



Learning Objectives (LO) of iLookOut		Script Intervention & Learning Modules (LM)	Learning Module Type	Knowledge Test (KT) Conceptual Areas		Attitudinal Items
LO1: Understand and recognize possible child abuse, including:	**LO1.1:** *What does and does not constitute child abuse*	(LM-1) Types of Abuse	Slide	**KT1: Actions by adults that might constitute child abuse**	**(KT1.2)** Places duct tape over a child's mouth as a form of punishment (Y/N/U) [LM-18]	
					(KT1.3) Causes any kind of physical injury to a child (Y/N/U) [LM-6]	
					(KT1.4) Causes a child substantial pain from disciplining him/her (Y/N/U) [LM-18]	
		(LM-6) Types of Child Abuse	Slide and Resource File Handout #3: Types of Child Abuse		**(KT1.5)** Impairs a child's physical functioning from discipline him/her (Y/N/U) [LM-6]	
		(LM-7)" Possible Signs of Abuse"	Multiple Choice		**(KT1.6)** Forcefully slaps a child under one year of age (Y/N/U) [LM-18]	
		(LM-16) "Intimate Partner Violence"	True/False			
		(LM-18) "Reporting Requirements"	Multiple Choice (Y/N/U)		**(KT1.7)** Physically abuses his/her partner (aka domestic violence) in the presence of a child (Y/N/U) [LM-16]	
	LO1.2: *How and where abuse occurs*	(LM-9) Facts About Abuse	Resource File Handout #4: Facts Abuse Abuse			Do you feel confident in your ability to identify signs of child abuse/neglect? (Self-Efficacy #1)
					(KT2.8) Often has body odor, wears clothes that don't fit, and is inappropriately dressed for the weather (Y/N/U) [LM-5]	
		(LM-8) "Thinking Carefully About Abuse"	Multiple Choice		**(KT2.9)** Is always hungry, and often found stuffing food in his/her pockets to take home (Y/N/U) [LM-7]	
	LO1.3: *Risk factors for abuse*					

Figure 2. Sample Cognitive Map for Core Training

Figure 3 provides a more detailed mapping of a portion of the Advanced Training, corresponding to the learning content in Figure 2. In addition to listing the topic and content for each week's pings, this cognitive map shows the kind of activity and teaching modality learner will experience.

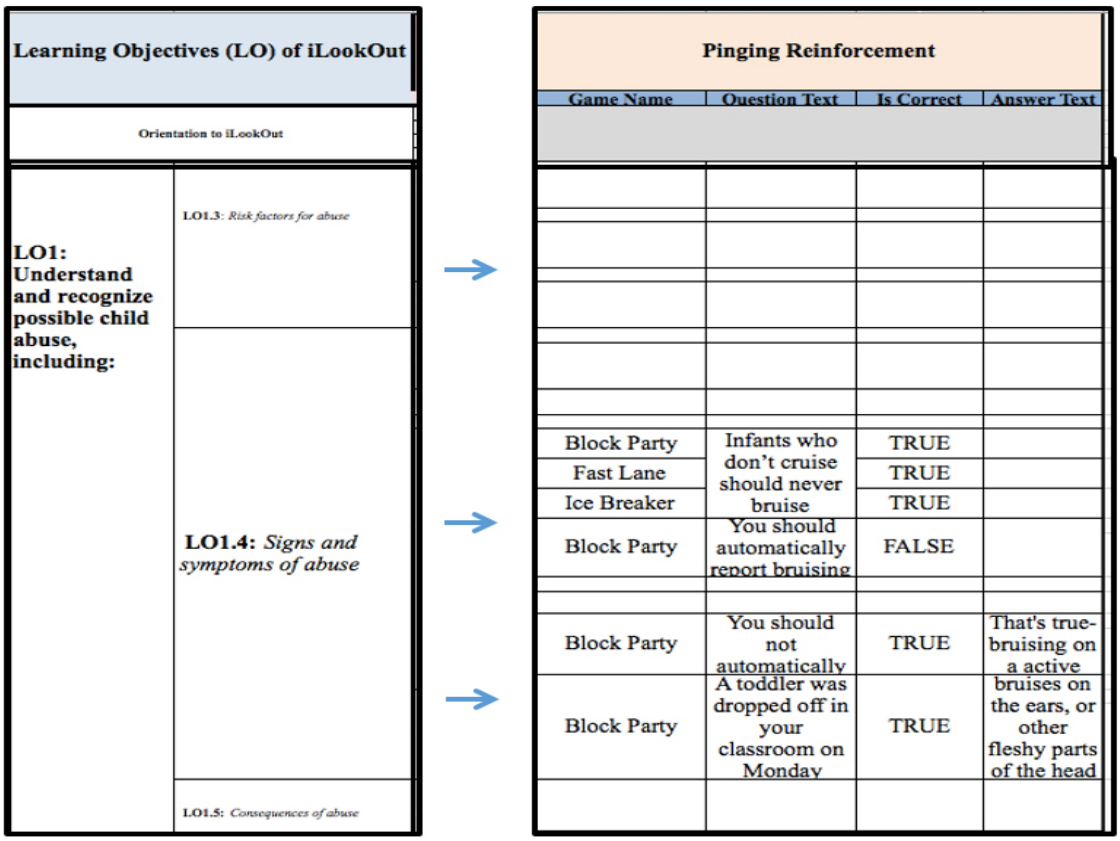


Figure 3. Sample Cognitive Map for Advanced Training

Conclusion

The mapping process is critical for ensuring that key learning objectives are aligned with both content and teaching modalities, and that concepts and educational activities are appropriately sequenced to support the developmental goals of *iLookOut*. This cognitive mapping also helps to ensure consistency, cohesiveness, and alignment of the Core and Advanced Trainings.

The use of cognitive mapping is not common in non-academic settings. Yet, as described in this paper, this process can have great value for developing conceptually rich and well-integrated training programs, particularly for those wishing to leverage the power of spaced retrieval and spaced practice. This can be particularly valuable for topics like child abuse that are both contextually nuanced and emotionally complex. As such, this description of *iLookOut* is presented as a prototype that other researchers, designers, and developers of curricula may wish to consider and improve upon.

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PLOS ONE

RESEARCH ARTICLE

Generalizing findings from a randomized controlled trial to a real-world study of the *iLookOut*, an online education program to improve early childhood care and education providers' knowledge and attitudes about reporting child maltreatment

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Abstract

In recent years, real-world studies (RWS) are gaining increasing interests, because they can generate more realistic and generalizable results than randomized controlled clinical trials (RCT). In 2017, we published a RCT in 741 early childhood care and education providers (CCPs). It is the Phase I of our *iLookOut for Child Abuse* project (*iLookOut*), an online, interactive learning module about reporting suspected child maltreatment. That study demonstrated that in a RCT setting, the *iLookOut* is efficient at improving CCPs' knowledge of and attitudes towards child maltreatment reporting. However, the generalizability of that RCT's results in a RWS setting remains unknown. To address this question, we design and conduct this large RWS in 11,065 CCPs, which is the Phase II of the *iLookOut*. We hypothesize replication of the earlier RCT findings, i.e., the *iLookOut* can improve CCPs' knowledge of and attitudes toward child maltreatment reporting in a real world setting. In addition, this RWS also explores whether demographic factors affect CCPs' performance. Results of this RWS confirmed the generalizability of the previous RCT's results in a real world setting. It yielded similar effect sizes for knowledge and attitudes as were found in the earlier RCT. Cohen's d for knowledge improvement was 0.95 in that RCT, 0.96 in this RWS; Cohen's d for attitude improvement was 0.98 in that RCT, 0.80 in this RWS. Also, we found several

had no role in study design, data collection and analysis, decision to publish, or preparation of the manuscript.

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significant differences in knowledge and attitude improvement with regard to age, race, education, and employment status. In conclusion, *iLookOut* improves knowledge and attitudes of CCPs about child maltreatment prevention and reporting in a real-world setting. The generalizability of the initial RCT findings to this RWS provides strong evidence that the *iLookout* will be effective in other real world settings. It can be a useful model for other interventions aimed at preventing child maltreatment.

Clinical trial registration for the original RCT: NCT02225301 (ClinicalTrials.gov Identifier)

Introduction

While randomized controlled trials (RCT) have long been seen as the "gold standard" for evaluating the efficacy of interventions, there are well-known limitations to their generalizability [1]. Accordingly, there have been growing interests in real-world studies (RWS) to generate real-world evidence (RWE) that are more realistic and generalizable [2–9], and RWE is increasingly valued by regulators and payers [10]. In addition, RWE and the RCT can happily co-exist and complement each other [9].

Recently, we published data from an RCT about the online educational intervention, the *iLookOut for Child Abuse* (*iLookOut*), showing that it improved early childhood care and education providers (CCPs) knowledge and attitudes about child maltreatment and its reporting [11]. In this follow-up study, through an RWS, we evaluate whether these results are generalizable to a broad population of CCPs in a real-world setting.

There are more than 675, 000 confirmed cases of child maltreatment annually in the United States [12], but less than 1% of these are reported by CCPs (U.S. DHHS, 2017). This extremely low report rate by CCPs is alarming, given the fact that about 12 million U.S. children are served in some form of a child care setting, that children five years-old or younger account for 46% of confirmed maltreatment and more than 75% of maltreatment-related deaths (U.S. DHHS, 2017), and that the true incidence of child maltreatment is likely much higher than currently detected [13, 14]. Such underreporting suggests a need for CCPs to become better prepared to protect young children from maltreatment by improving their knowledge and attitude towards child maltreatment reporting. As has been identified by the Institute of Medicine and others, a key obstacle to improving awareness and reporting is the lack of evidence-based interventions [15–17]. In addition, the US Preventive Services Task Force (USPSTF) recently called for more evidence-based primary care interventions to prevent child maltreatment [12]. Several small studies have evaluated in-person training for CCPs [18, 19], and a brief online intervention [20, 21]. However, large studies involving scalable interventions are still lacking.

To meet this need, we created *iLookout*, an interactive online learning program designed specifically for CCPs (https://ilookoutproject.org/). An initial RCT using a test and re-test design with 741 participants demonstrated the feasibility of this three-hour online training, as well as its efficacy at increasing knowledge and changing attitudes about child maltreatment and its reporting [11]. Though this initial trial was promising, with large Cohen's d effect sizes for knowledge (0.95) and attitudes (0.98), its generalizability was limited by several factors, notably the potential for selection bias. Participants were enrolled only if the director of the child care program responded to the recruitment mailing. Family- and home-based CCP programs were under-represented, as were racial and ethnic minorities. In addition, enrollment was limited to a four-week period in early summer. Also, the sample size limited the opportunity for in-depth comparisons among subgroups.

To address these limitations, the present RWS used a statewide, open-enrollment design to enlist a larger, more representative sample of CCPs. We hypothesized that *iLookOut*'s efficacy at increasing knowledge and attitudes would be confirmed in this real-world sample, and our exploratory aim was to evaluate the impact of key demographic characteristics.

Materials and methods

Design

The Penn State College of Medicine Institutional Review Board approved this study prior to its initiation (IRB #: 1243). This RWS employed an open enrollment, single group, pre- and post-test design. Participants completed a demographic questionnaire, as well as previously validated knowledge and attitude measures regarding child maltreatment and its reporting [11]. Given the observational feature of this RWS, we have ensured that the manuscript adheres to the appropriate Equator Network guidelines, such as the STROBE (*Strengthening the Reporting of Observational Studies in Epidemiology)* Statement [22].

Participants

As an open-enrollment RWS, participants were not actively recruited to this study. However, all mandated reporters in Pennsylvania (including CCPs) are required by law to complete a mandated reporter training, and *iLookOut* was one of more than a dozen state-approved trainings listed on Pennsylvania's Department of Human Services website, and was available online at no charge. As such, online searches and word of mouth were the means for dissemination. Participant data reported here are from CCPs who completed *iLookOut* between January 2015 and March 2018. CCPs provided online informed consent prior to participating, and earned three hours of professional development credit for completing the learning program. No other incentives or remuneration were provided.

Intervention

The *iLookOut* online learning program uses an interactive, video-based storyline in which the learners take the role of a teacher of 4–5 year-olds at a child care facility. As key events unfold through interactions involving children, parents, and co-workers (all played by actors), the learners have to decide how to best respond. At different points, learners are posed questions. Based on their answer, they are provided didactic material to educate them about various aspects of child maltreatment. Other times, the learners must choose how to respond to events in the story. Throughout the learning program, CCPs can access multiple resource files covering definitions of maltreatment, facts about maltreatment, red flags, etc.[11].

Measures

The pre- and post-test comprise two parts. The first is a 21-item, true or false, expert-validated instrument previously described [11]. It measures individuals' knowledge about what constitutes child maltreatment, risk factors for maltreatment, and legal requirements for reporting suspected maltreatment. Correct answer to each of the 21 true or false items is scored as 1 point, and wrong answer is scored as 0 point. Therefore, the total score of the knowledge scale ranges from 0 to 21, which higher score representing more knowledge about child maltreatment. The second part contains 13 items, rated on 7-point Likert-style scales, from a previously validated instrument [23] adapted to comport with Pennsylvania jurisdictional standards. It measures individuals' attitude towards reporting potential child maltreatment. An individual's attitude score is the average score of the 13 items, ranges from 1 to 7, with higher score

representing more positive attitude towards reporting potential child maltreatment. The pre- and post-test question items were identical, but to minimize recall bias, their sequencing orders were changed between the pre- and the post-test.

Sample size and statistical analysis

Given the RWS nature of this study, no a priori sample size estimation was planned. However, post-hoc power analyses were implemented to check the statistical power for some important subgroup analyses [4]. We also compared participant demographics between the initial RCT and this RWS.

As with the RCT, the statistical analysis of this RWS examined *iLookOut*'s impact on CCPs' knowledge and attitudes related to child maltreatment and its reporting. The two primary outcome variables were the total knowledge score and the total attitude score, both measured as "change", i.e., total score at post-test minus at pre-test. The analysis focused on whether the present RWS confirmed the results of the initial RCT. To compare effect sizes between the RCT and the RWS, we used two measures: 1) the absolute difference, i.e., the measured change in pre- to post-test score for the RWS, minus the measured change in initial RCT; and 2) the Cohen's d calculation [24]. In addition, we explored the impact of demographic factors on these two primary outcome variables through analysis of covariance (ANCOVA), framing demographic variables as covariates, and adjusting for pre-measurement scores. These demographic variables include age, gender, race/ethnicity, education, employment, parent/guardian status, prior trained status, work environment, years as practitioner, primary job responsibilities, and religiosity. We used the SAS software package, version 9.4, for statistical analyses, and the G*Power software package, version 3.1.9, for post-hoc power analyses.

Results

During the 38 months of the RWS reported here, 11,605 CCPs completed the *iLookOut* online training. Compared to those CCPs in the initial RCT, these RWS participants were more representative of the general population of CCPs in Pennsylvania, particularly for its enrollment of Blacks (20.8% vs. 8.0%) and males (10.9% vs. 2.3%). In addition, the CCPs in this RWS were younger (48.0% vs. 40.4% aged below 30), and a greater proportion worked in more urban area (36.4% vs. 22.1%). Table 1 illustrates comparisons of full demographics between these two studies.

Table 2 illustrates comparisons of the *iLookOut* training's effect sizes on knowledge and attitude scores between this RWS and the RCT, demonstrating improved knowledge and attitudes about child maltreatment reporting for both studies. Pre- to post- changes in knowledge score increased by 2.80 for RWS participants, compared to 2.65 in the initial RCT, a 5.7% relative change. The Cohen's d on the total knowledge score was 0.96 in this RWS versus 0.95 in the RCT, a 1% relative change. The pre-to post- change in attitude average score was 0.5 for RWS participants, versus 0.59 in the initial RCT, a -15.3% relative change. The Cohen's d on the average attitude score was 0.80 in this RWS, versus 0.98 in the RCT, a relative change of -18.4%.

Table 3 summarizes the results of exploratory multivariate analyses (ANCOVA) for each of the two outcome variables (knowledge and attitude scores) with all of the demographic variables. After adjustment for pre-measurement scores and all the other demographic variables, only four demographics (age, race, education, and employment) showed impacts on either of the two outcome variables, with age and education being positively correlated with increase in knowledge scores.

Table 1. Comparisons of demographic characteristics of early childcare professionals.

		Phase II: RWS	Phase I: RCT	Difference	p-value
Sample Size		11,065	741	10,324	
Age	18–29	5309 (48.0%)	299 (40.4%)	7.6%	<0.001
	30–44	2912 (26.3%)	216 (29.1%)	-2.8%	
	45+	2844 (25.7%)	226 (30.5%)	-4.8%	
Gender	Male	1210 (10.9%)	17 (2.3%)	8.6%	<0.001
	Female	9855 (89.1%)	724 (97.7%)	-8.6%	
Race/Ethnicity	Non-Hispanic White	7605 (68.7%)	624 (84.2%)	-15.5%	<0.001
	Non-Hispanic Black	2296 (20.8%)	59 (8.0%)	12.8%	
	Hispanic	658 (6.0%)	25 (3.4%)	2.6%	
	Asian	227 (2.1%)	15 (2.0%)	0.1%	
	Other	279 (2.4%)	18 (2.4%)	0.0%	
Education	Below High School	82 (0.7%)	0 (0.0%)	0.7%	<0.001
	High School or GED	4611 (41.7%)	197 (26.6%)	15.1%	
	Child Development Associate (CDA)	765 (6.9%)	101 (13.6%)	-6.7%	
	Associates	1483 (13.4%)	149 (20.1%)	-6.7%	
	Bachelors	2983 (27.0%)	229 (30.9%)	-3.9%	
	Masters or Doctoral	1141 (10.3%)	65 (8.8%)	1.5%	
Employment	Permanent Full-Time	6276 (56.7%)	534 (72.1%)	-15.4%	<0.001
	Permanent Part-Time	2943 (26.6%)	169 (22.8%)	3.8%	
	Contract for special services	177 (100.0%)	0 (0.0%)	100.0%	
	Substitute Teacher	206 (1.9%)	6 (0.8%)	1.1%	
	Seasonal	793 (7.2%)	28 (3.8%)	3.4%	
	Volunteer	334 (3.0%)	0 (0.0%)	3.0%	
	Other	336 (4.6%)	4 (0.5%)	4.1%	
Parent/Guardian	Yes	6089 (55.0%)	452 (61.0%)	-6.0%	0.002
	No	4976 (45.0%)	289 (39.0%)	6.0%	
Prior Trained	Yes	7371 (66.6%)	582 (78.5%)	-11.9%	<0.001
	No	3694 (33.4%)	159 (21.5%)	11.9%	
Work Environment	Rural	2191 (19.8%)	206 (27.8%)	-8.0%	
	Suburban	4848 (43.8%)	371 (50.1%)	-6.3%	<0.001
	Urban	4026 (36.4%)	164 (22.1%)	14.3%	
Years as Practitioner	<1	3272 (29.9%)	68 (9.2%)	20.7%	
	1–2	1652 (14.9%)	112 (15.1%)	-0.2%	<0.001
	3–5	2034 (18.4%)	145 (19.6%)	-1.2%	
	6–10	1657 (15.0%)	154 (20.8%)	-5.8%	
	11–15	887 (8.0%)	75 (10.1%)	-2.1%	
	>15	1563 (14.1%)	187 (25.2%)	-11.1%	
Primary job responsibilities	Teacher/caregiving staff (infant–grade 4)	7049 (63.7%)	555 (75.0%)	-11.3%	
	Early intervention specialist	184 (1.7%)	0 (0.0%)	1.7%	<0.001
	Support staff	651 (5.9%)	25 (3.4%)	2.5%	
	Director/Assistant Director	781 (7.1%)	95 (12.8%)	-5.7%	
	Other	2400 (21.7%)	66 (8.8%)	12.9%	
Religiosity	Extremely unreligious	198 (1.8%)	10 (1.4%)	0.4%	
	Unreligious	689 (6.2%)	54 (7.4%)	-1.2%	<0.001
	Somewhat unreligious	436 (3.9%)	13 (1.8%)	2.1%	
	Neutral	2568 (23.2%)	117 (15.9%)	7.3%	
	Somewhat religious	2503 (22.6%)	215 (28.8%)	-6.2%	

(*Continued*)

Table 1. (Continued)

		Phase II: RWS	Phase I: RCT	Difference	p-value
	Religious	4017 (36.3%)	287 (38.9%)	-2.6%	
	Extremely religious	654 (5.9%)	45 (5.9%)	0.0%	

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Post hoc power analysis indicates that with a total sample size of 11,065, at an alpha level of 0.05, with 80% power, the ANCOVA with 11 covariates would be able to detect an effect size as small as 0.04 among six groups; and using an effect size cut-off of 0.25, then the power would approach to 99.5%.

Discussion

The results from this RWS demonstrate that in a large, representative sample of child care professionals (CCPs), the online *iLookOut* learning program is effective at improving knowledge and changing attitudes about child maltreatment and its reporting. These findings confirm the conclusions from the initial RCT of *iLookOut*, and demonstrate the feasibility of scaling this evidence-based, online mandated reporter training. This is notable insofar as more than 11,000 CCPs completed *iLookOut*, even when no special incentives were offered, and they reported being highly satisfied with the learning experience (paper forthcoming). No significant differences were identified with regard to CCPs' parenting status, previous training, work environment, years as practitioner, primary job responsibility, or religiosity. However, age, race, education, and employment affected changes in knowledge or attitude scores, with older and more educated CCPs achieving increased gains in knowledge scores.

The generalizability of the initial RCT findings provides supporting evidence that the *iLookout* online learning program will be effective in other real world settings, and may be a useful model for other interventions aimed at preventing child maltreatment [12]. *iLookOut*'s general storyline and overall format are generalizable for all kinds of CCPs in all U.S. states, in part because state-specific information is housed in discrete learning modules (within the learning program) that can be readily adapted to comport with the laws and policies of different states. The efficacy of *iLookOut* does not appear to be affected by previous training, work environment, years as practitioner, primary job responsibility, parenting status, or religiosity. However, larger gains in knowledge were seen in CCPs who were older, more highly educated, employed seasonally, or white. More research is warranted to better understand the underpinnings of these differences, and how best to optimize gains in knowledge for all CCPs.

The statistical analyses reported here focus on effect sizes, instead of p-values, for several reasons. First, p-values are not a good measure of evidence [25]. Second, the misuse and maltreatment of p-values has led both researchers and the American Statistical Association to raise concerns about the limitations of p-value-driven conclusions [26, 27]. Third, the very large sample size (over 11,000) of this RWS could yield findings of statistical significance for even very small effect sizes that have no clinical significance [28]. Fourth, the large difference in

Table 2. Comparisons of effect sizes on knowledge and attitude scores.

	Post–Pre in Phase II: RWS	Post–Pre in Phase I: RCT	Difference: Phase II–Phase I	Relative Change	Cohen's d in Phase II: RWS	Cohen's d Phase I: RCT	Difference: Phase II–Phase 1	Relative Change
Knowledge: Total Score (Range: 0–21)	2.80 ± 2.90	2.65 ± 2.78	0.15	5.7%	0.96	0.95	0.01	1.0%
Attitude: Average Score (Range: 1–7)	0.50 ± 0.63	0.59 ± 0.60	-0.09	-15.3%	0.80	0.98	-0.18	-18.4%

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Table 3. Summary of analysis of covariance (ANCOVA) results.

	Total Knowledge Score (0–21)			Average Attitude Score (1–7)		
Variable**	**Pre (Mean ± SD)**	**Post (Mean ± SD)**	**Mean Change (95% CI)***	**Pre (Mean ± SD)**	**Post (Mean ± SD)**	**Mean Change (95% CI)***
Age						
18–29	13.7 ± 2.7	16.6 ± 2.9	2.9 (2.8, 2.9)	5.9 ± 0.7	6.4 ± 0.7	0.5 (0.5, 0.5)
30–44	14.1 ± 3.0	17.2 ± 2.9	3.2 (3.1, 3.3)	5.9 ± 0.8	6.4 ± 0.7	0.5 (0.5, 0.5)
More than 44	13.9 ± 3.1	17.4 ± 2.8	3.5 (3.4, 3.6)	5.8 ± 0.8	6.4 ± 0.7	0.5 (0.5, 0.5)
Gender						
Male	13.8 ± 3.0	16.9 ± 3.0	3.0 (2.8, 3.1)	5.9 ± 0.7	6.4 ± 0.7	0.5 (0.4, 0.5)
Female	13.9 ± 2.9	16.9 ± 2.9	3.1 (3.1, 3.2)	5.9 ± 0.7	6.4 ± 0.7	0.5 (0.5, 0.5)
Race						
White	14.0 ± 2.9	17.4 ± 2.8	3.5 (3.4, 3.5)	5.9 ± 0.7	6.4 ± 0.6	0.6 (0.5, 0.6)
Black or African American	13.5 ± 2.9	15.8 ± 2.9	2.2 (2.1, 2.3)	5.8 ± 0.8	6.2 ± 0.8	0.3 (0.3, 0.4)
American Indian or Alaska Native	13.5 ± 3.2	16.1 ±2.6	2.7 (1.9, 3.5)	6.1 ± 0.8	6.3 ± 0.7	0.4 (0.2, 0.5)
Hispanic	13.3 ± 2.8	16.0 ± 2.8	2.5 (2.4, 2.7)	5.9 ± 0.8	6.3 ± 0.7	0.4 (0.4, 0.5)
Asian	13.2 ± 3.4	16.0 ± 3.3	2.0 (1.7, 2.4)	5.8 ± 0.8	6.3 ± 0.7	0.4 (0.4, 0.5)
Native Hawaiian/ Pacific Islander	13.6 ± 3.6	16.1 ± 3.1	2.3 (1.1, 3.5)	5.6 ± 1.0	6.1 ± 1.1	0.4 (0.2, 0.7)
Other	13.2 ± 3.4	16.4 ± 3.3	2.9 (2.5, 3.2)	5.8 ± 0.8	6.3 ± 0.8	0.5 (0.4, 0.6)
Education						
8th Grade	12.8 ± 3.4	15.2 ± 3.2	1.7 (1.1, 2.2)	5.6 ± 0.9	6.0 ± 0.9	0.2 (0.1, 0.4)
High School Diploma or G.E.D.	13.4 ± 2.9	16.3 ± 3.0	2.6 (2.6, 2.7)	5.8 ± 0.8	6.3 ± 0.7	0.4 (0.4, 0.5)
Child Development Associate	14.0 ± 3.1	16.4 ± 2.9	2.6 (2.4, 2.8)	5.8 ± 0.8	6.3 ± 0.7	0.5 (0.4, 0.5)
Associate's Degree	13.9 ± 2.9	16.8 ± 2.7	2.9 (2.8, 3.1)	5.9 ± 0.7	6.4 ± 0.7	0.5 (0.5, 0.5)
Bachelor's Degree	14.2 ± 2.9	17.8 ± 2.7	3.8 (3.7, 3.9)	5.9 ± 0.7	6.5 ± 0.6	0.6 (0.6, 0.6)
Masters or Doctoral Degree	14.5 ± 3.0	18.0 ± 2.7	3.9 (3.7, 4.0)	6.0 ± 0.7	6.5 ± 0.6	0.6 (0.6, 0.6)
Employment						
Permanent full-time	14.0 ± 2.9	16.9 ± 2.9	3.0 (2.9, 3.0)	5.9 ± 0.7	6.4 ± 0.7	0.5 (0.5, 0.5)
Permanent part-time	13.5 ± 2.9	16.7 ± 3.0	3.1 (3.0, 3.2)	5.9 ± 0.8	6.3 ± 0.7	0.5 (0.5, 0.5)
Contract for special services/care	14.8 ± 2.4	18.0 ± 2.5	3.3 (2.9, 3.7)	6.0 ± 0.7	6.5 ± 0.6	0.5 (0.4, 0.6)
Substitute teacher	13.6 ± 3.1	17.3 ± 2.9	3.5 (3.1, 3.9)	6.0 ± 0.7	6.5 ± 0.7	0.5 (0.5, 0.6)
Seasonal or short-term	13.6 ± 2.7	17.4 ± 2.8	3.9 (3.7, 4.1)	5.9 ± 0.7	6.5 ± 0.6	0.6 (0.6, 0.7)
Volunteer	13.7 ± 3.2	17.7 ± 2.8	3.7 (3.4, 4.0)	5.9 ± 0.7	6.5 ± 0.6	0.6 (0.5, 0.6)
Other	13.5 ± 3.1	17.2 ± 2.9	3.4 (3.2, 3.7)	5.9 ± 0.7	6.4 ± 0.7	0.5 (0.4, 0.6)
Parent or guardian of child						
Yes	14.0 ± 3.0	17.0 ± 2.9	3.0 (3.0, 3.1)	5.9 ± 0.8	6.4 ± 0.7	0.5 (0.5, 0.5)
No	13.7 ± 2.8	16.9 ± 3.0	3.2 (3.1, 3.3)	5.9 ± 0.7	6.4 ± 0.7	0.5 (0.5, 0.5)
Previously trained						
Yes	14.2 ± 2.8	17.1 ± 2.8	3.1 (3.0, 3.1)	5.9 ± 0.7	6.4 ± 0.7	0.5 (0.5, 0.5)
No	13.1 ± 2.9	16.6 ± 3.0	3.2 (3.1, 3.3)	5.8 ± 0.8	6.3 ± 0.7	0.5 (0.5, 0.5)
Work Environment						
Rural	14.1 ± 2.9	17.1 ± 2.8	3.2 (3.1, 3.3)	5.9 ± 0.7	6.4 ± 0.7	0.5 (0.5, 0.5)
Suburban	13.8 ± 3.0	17.2 ± 2.9	3.3 (3.2, 3.4)	5.9 ± 0.7	6.4 ± 0.7	0.5 (0.5, 0.5)
Urban	13.7 ± 2.9	16.5 ± 3.0	2.9 (2.8, 3.0)	5.9 ± 0.8	6.3 ± 0.7	0.5 (0.5, 0.5)
Years as practitioner						
Less than 1	13.6 ± 2.8	16.9 ± 2.9	3.2 (3.1, 3.3)	5.9 ± 0.7	6.4 ± 0.7	0.5 (0.5, 0.5)
1–2	13.6 ± 2.9	16.7 ± 3.0	3.1 (3.0, 3.3)	5.9 ± 0.7	6.3 ± 0.7	0.5 (0.5, 0.5)
3–5	13.9 ± 2.9	16.8 ± 2.9	3.0 (2.9, 3.1)	5.9 ± 0.7	6.4 ± 0.7	0.5 (0.5, 0.5)

(*Continued*)

Table 3. (Continued)

	Total Knowledge Score (0–21)			Average Attitude Score (1–7)		
Variable**	**Pre (Mean ± SD)**	**Post (Mean ± SD)**	**Mean Change (95% CI)***	**Pre (Mean ± SD)**	**Post (Mean ± SD)**	**Mean Change (95% CI)***
6–10	14.0 ± 3.0	17.1 ± 2.9	3.2 (3.0, 3.3)	5.8 ± 0.8	6.4 ± 0.7	0.5 (0.5, 0.5)
11–15	13.9 ± 3.2	17.0 ± 3.0	3.0 (2.8, 3.2)	5.8 ± 0.8	6.4 ± 0.7	0.5 (0.5, 0.5)
More than 15	14.3 ± 3.0	17.5 ± 2.8	3.0 (2.9, 3.2)	5.9 ± 0.8	6.4 ± 0.7	0.5 (0.5, 0.5)
Primary Job Responsibility						
Teacher/caregiving staff (age 0–5)	13.7 ± 2.9	16.8 ± 2.9	3.1 (3.1, 3.2)	5.9 ± 0.7	6.4 ± 0.7	0.5 (0.5, 0.5)
Early intervention specialist	14.7 ± 2.8	17.6 ± 2.9	2.9 (2.5, 3.3)	6.0 ± 0.7	6.4 ± 0.7	0.4 (0.3, 0.5)
Kindergarten teacher	13.1 ±3.0	16.6 ± 3.6	2.9 (2.5, 3.4)	5.7 ± 0.7	6.2 ± 0.8	0.4 (0.3, 0.5)
Early elementary teacher	13.5 ± 2.8	16.8 ± 3.1	3.1 (2.8, 3.3)	5.9 ± 0.7	6.4 ± 0.7	0.5 (0.5, 0.6)
Support staff	13.6 ± 2.8	16.6 ±2.9	3.0 (2.8, 3.2)	5.8 ± 0.7	6.4 ± 0.7	0.5 (0.5, 0.6)
Assistant Director	14.5 ± 2.9	17.2 ± 2.9	3.0 (2.7, 3.3)	5.9 ± 0.8	6.4 ± 0.6	0.5 (0.4, 0.6)
Director	15.0 ± 2.8	17.8 ± 2.6	3.1 (2.7, 3.3)	6.0 ± 0.7	6.5 ± 0.6	0.5 (0.4, 0.5)
Other	14.0 ± 2.9	17.3 ± 2.9	3.1 (3.0, 3.2)	5.9 ± 0.7	6.4 ± 0.7	0.5 (0.5, 0.5)
Religiosity						
Extremely Unreligious	14.4 ± 2.9	17.4 ± 3.0	3.3 (2.9, 3.6)	5.9 ± 0.7	6.4 ± 0.7	0.5 (0.4, 0.5)
Unreligious	13.9 ± 3.1	17.0 ± 2.9	3.1 (2.9, 3.3)	5.9 ± 0.7	6.4 ± 0.7	0.5 (0.5, 0.6)
Somewhat unreligious	14.1 ± 2.9	16.9 ± 2.8	3.0 (2.8, 3.3)	5.9 ± 0.7	6.4 ± 0.7	0.5 (0.5, 0.5)
Neutral	13.7 ± 2.9	16.5 ± 3.0	2.9 (2.8, 3.0)	5.9 ± 0.8	6.3 ± 0.7	0.5 (0.5, 0.5)
Somewhat religious	13.9 ± 2.9	17.0 ± 2.9	3.1 (3.0, 3.2)	5.9 ± 0.7	6.4 ± 0.7	0.5 (0.5, 0.5)
Religious	13.8 ± 3.0	17.0 ± 2.9	3.2 (3.1, 3.2)	5.9 ± 0.7	6.4 ± 0.7	0.5 (0.4, 0.5)
Extremely religious	13.9 ± 2.9	17.8 ± 2.8	3.7 (3.5, 3.9)	5.9 ± 0.7	6.5 ± 0.7	0.5 (0.5, 0.6)

* The mean changes come from a multivariable model for the change in the outcome adjusted for the pre-measurement and including all of the following demographic variables as covariates: age, gender, race/ethnicity, education, employment, parent/guardian status, prior trained status, work environment, years as practitioner, primary job responsibilities, and religiosity. As a result, the mean changes displayed are adjusted for all of the other variables.

** All of the variables have p-values less than 0.05, except for gender (p = 0.061), and primary job responsibilities (p = 0.641).

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sample size between the initial RCT and this RWS renders effect sizes a more meaningful comparison than p-values. Finally, for proposed sub-group analyses involving many demographic covariates, p-values are less likely to yield meaningful findings [29]. Accordingly, we compared effect sizes by examining the overlap of their confidence limits.

The present findings are limited by potential biases encountered in all RWS, including selection bias, information bias, and confounding [3]. Multivariate analysis (ANCOVA) was used to try to account for these factors, and the initial RCT does provide additional reassurance that the present findings are valid. However, without qualitative data, an explanatory model for the present findings will remain incomplete.

Conclusion

This real-world study of more than 11,000 early childhood professionals (CCPs) who were neither recruited nor incentivized to complete the *iLookOut for Child Maltreatment* confirms that *iLookOut* significantly improves knowledge and attitudes regarding child maltreatment and its reporting. These results provide strong evidence that interactive, online interventions for helping prevent child maltreatment are both effective and scalable. A 5-year randomized controlled trial (https://clinicaltrials.gov/ct2/show/NCT02225301?term=NCT02225301&rank=1) is

currently underway to evaluate how well *iLookOut* helps CCPs identify and report true child maltreatment.

Supporting information

S1 Dataset.
(CSV)

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Comparison of State Online Mandated Reporter Trainings

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Key words: Mandated reporter training; Online learning; Child abuse, Child protection; Evidence-based training

Abstract

This article presents the results of a comparative analysis of online mandated reporter trainings regarding child abuse. Programs from 47 U.S. states and the District of Columbia were reviewed and their content and features compared with iLookOut for Child Abuse's Core Training. Significant variation was identified in terms of the scope, content, didactic approach, delivery method, and outcome measures across different trainings. These findings raise concern that while all children need protection from abuse, not all mandated reporters are receiving comparable preparation to fulfill this important moral and legal responsibility.

Introduction

As individuals required by law to report suspected *child abuse* (a term used here to denote all forms of child maltreatment, including neglect), mandated reporters play an important role in protecting victimized and at-risk children (Child Welfare Information Gateway, 2019). Though most states require mandated reporters to complete state-approved training on how to recognize and report suspected child abuse, there are currently no standards for such training in terms of content or delivery (Kenny et al., 2016). The lack of national consensus for child abuse training along with the potential for major differences in training across jurisdictions raise concern that not all mandated reporters are receiving comparable preparation and that some are being inadequately prepared (Kenny, 2015). Many states use online training for instruction in mandated reporting, but little is known about how these trainings vary in terms of content and delivery. This article reports on the findings of such a comparison and discusses some of the implications of the variability that was found.

Research has shown that online training is effective for educating adults and that it has particular advantages over in-person training (John et al., 2020). Specifically, online training is accessible (in terms of both timing and content), enables standardized evaluations of learning and satisfaction, facilitates storage and analysis of data, and can readily promote continuous learning (Kenny et al., 2016; Scott et al., 2016; Shendell et al., 2016).

Particularly when in-person training is not feasible, well-designed evidence-based online training can ensure that quality education is available to a multitude of people.

In response to the need for evidence-based online mandated reporter training (Ayling et al., 2019), a research team at the Penn State College of Medicine developed the iLookOut for Child Abuse (iLookOut) Core Training—a free online, interactive learning program designed to help mandated reporters better recognize, report, and respond to suspected child abuse (www.ilookoutproject.org). iLookOut also delivers an Advanced Training module. Although the iLookOut training was initially developed for early childhood professionals, it includes general information to meet the needs of all mandated reporters (e.g., in Pennsylvania) and can be adapted for use in any state. iLookOut's Core Training uses an experiential learning framework, a video-based storyline, and gamification to engage users (Levi et al., 2019). In addition to a standard registration page, the iLookOut Core Training includes validated pre/post measures that evaluate (1) knowledge and attitudes about child abuse and its reporting, (2) individuals' sense of preparedness (to identify and report suspected abuse), and (3) learners' satisfaction with the iLookOut Core Training. In-depth descriptions have been published on iLookOut's content and structure, practical and conceptual considerations in creating iLookOut, and its strategy for ensuring that its educational material is fully integrated (Kapp et al., 2020; Levi et al., 2019; Levi et al., in press). Also published are data from a randomized controlled trial (n=741) and a real-world study (n=11,065) demonstrating that the iLookOut Core Training significantly improves knowledge and changes attitudes regarding child abuse and its reporting compared with a standard mandated reporter training (Humphreys et al., n.d.; Mathews et al., 2017; Yang et al., 2020). While the iLookOut learning program's effects are well documented, there is little research on the effectiveness of other online mandated report trainings. In light of these findings, we sought to compare iLookOut's Core Training with other existing online mandated reporting trainings in all 50 U.S. states.

Methods

A primary reviewer from the iLookOut research team performed a comparative analysis of 48 online mandated reporter trainings, including the iLookOut Core Training, and the findings were then reviewed and confirmed. Specifically, the primary reviewer registered for and completed (in full) each and every online training examined, and the reviewer then binary coded (present or absent) each of the 40 characteristics for every training. The process for generating the list of characteristics is described in the next section. Each training was further assessed for overall Level of Engagement, based on the presence or absence of several interactive features (see Table 4) as well as the scope of information present in each training. The initial coding process was completed by the primary reviewer, cross-checked for accuracy by two additional reviewers (no disagreements were identified), and discussed and confirmed according to the findings by a larger multi-disciplinary team.

Identification of Training

The initial step to identify online mandated reporter (MR) training for each state involved querying the Child Welfare Information Gateway (2019), a service of the U.S. Department of Health and Human Services that provides online resources to professionals in child welfare and related fields. Their webpage, State Training Resources for Mandatory Reporters of Child Abuse and Neglect, provides a state-by-state list of online MR trainings and other resources (e.g., toolkits, guidelines, protocols) for mandated reporters of child abuse. For the 35 states for which this listing identified a specific state-sponsored, publicly available MR online training, that training was used for the present comparison.

For states where no such program was identified, a subsequent search was performed for trainings sponsored by non-profit agencies whose primary focus was child protection/child abuse prevention, such as CARE House, Michigan (CARE House of Oakland County, 2020). If this search did not identify an online MR training, a new search was conducted for MR trainings offered by more broad-based organizations, such as SafeSchools Training, Ohio (SafeSchools, 2020), for whom child protection was not the primary focus. For states in which there were multiple state-*approved* MR trainings, but no state-*sponsored* MR trainings, the state-approved training that was both most accessible (e.g., free, user-friendly) and most extensive (in terms of content and delivery/presentation) was selected for inclusion and comparison. The various state trainings and their classifications are shown in Tables 1 and 2.

Inclusion/Exclusion Criteria

Only MR trainings that were publicly available online (either open access or with registration) were examined. With the exception of Kansas, Nebraska, and Oklahoma (which charged $5, $15, and $15, respectively), none of the trainings required a fee for access or to obtain a certificate of completion. All sites were accessed between January 3, 2020, and October 26, 2020. To enable maximal comparability, only English-version trainings were evaluated; however, Table 2 identifies states that also provided MR training in multiple languages.

Subject Matter for Comparison

According to expert recommendations (Damashek et al., 2011; Chen et al., 2013), effective MR training should (1) imbue *knowledge* about the various types of child abuse, risk factors, and the long-term epidemiology and impact of child abuse and also (2) cultivate *skills* for recognizing both physical signs of abuse and behavioral indicators of child abuse (for both children and perpetrators). Based on published recommendations, and using iLookOut as the reference training, an iteratively constructed list of 40 characteristics was created to account for the kinds of content and functionality present in each training. The list was developed by the primary reviewer in collaboration with a multi-disciplinary team whose research focuses on child protection. Content, which accounted for 21 of those 40 characteristics, included both fact-based information (e.g., types of abuse, risk factors for abuse, legal responsibilities of mandated reporters, steps for making a report) as well as education about processing (e.g., how to ask better questions, respond to disclosures by children, interpret "reasonable suspicion"). Matters involving Delivery/Functionality accounted for the remaining 19 characteristics and included the presence of a pre- and/or post-test, handouts, videos, voice narration, links to resources, as well as elements that promoted engagement (e.g., user-friendly format, interactive games, stories). A full list and description of these 40 characteristics can be found in Table 3.

MR trainings were then categorized as Limited, Basic, Moderate, or Advanced based on their level of engagement, as per the inclusion criteria shown in Table 4. Because there are no published consensus criteria for grading MR trainings, these three categories were intended to broadly categorize the different tiers of training as they currently stand. It is our hope that the present examination encourages others in the field to develop evidence-based, outcomes-driven criteria for a quality rating system of MR trainings.

Results

Format

In addition to the iLookOut Core Training, MR trainings were identified and examined for all U.S. states plus Washington, D.C., with the exception of Mississippi, Rhode Island, and Wyoming, for which no online MR trainings were identified. A list of all 49 trainings examined and the agencies and organizations that sponsored each training are

included in Table 2. The amount of time it took to complete each MR training ranged from 30 minutes to 3 hours. While some of the trainings allowed users to click through modules at their own pace, others required users to remain in a given module for a fixed amount of time. Most provided some form of overview to orient the user (n=32), and most included video-based content (n=32). However, over one third of MR trainings (n=17) presented information using only slides or text.

Table 1. Providers of Online Mandated Reporter Trainings.

Type of training	Number of states	Which states
State-sponsored mandated reporter trainings (*provided by state university)	35	AL, AK, AZ, AR, CA, CO, CT, DC, DE, FL, HI, IL, IN, IA, KS, LA, ME, MD, MN, NV, NJ, NM*, NY, ND, OK, OR, PA, SC, SD, TN, TX, VT, VA, WA, WI
Non-profit, primary focus on child abuse	11	ID, KY, MA, MI, MO, MT, NC, NE, NH, UT, WV,
Non-profit, broader focus on child well-being	2	GA, OH
No online training found	3	MS, RI, WY

Table 2. State Mandated Reporting Training Sources.

State	Agency
Alabama	Alabama Dept. of Human Resources https://aldhr.remote-learner.net/ Last accessed: July 2020
Alaska	Alaska Department of Health and Human Services http://training.dhss.alaska.gov/mandatoryreporter/training/multiscreen.html Last accessed: July 2020
Arizona	Arizona Child Abuse Info Center – Children's Justice Program https://childhelpinfocenter.org/ Last accessed: July 2020
Arkansas	Arkansas Commission on Child Abuse, Rape and Domestic Violence https://ar.mandatedreporter.org/UserAuth/Login!loginPage.action Last accessed: July 2020
California	California Department of Social Services https://mandatedreporterca.com/ (also available in Spanish) Last accessed: August 2020
Colorado	Colorado Department of Human Services https://coloradocwts.com/mandated-reporter-training Last accessed: July 2020
Connecticut	Connecticut Department of Children and Families https://www.proprofs.com/training/course/?title=connecticut-mandated-reporter-training-for-community-providers-jan-2020-version-3_5e260a8c470e8 Last accessed: July 2020
Delaware	Delaware Office of the Child Advocate https://ocade.server.tracorp.com/novusii/application/login/

State	Agency
District of Columbia	District of Columbia Children and Family Services Agency https://dc.mandatedreporter.org/pages/Welcome.action Last accessed: July 2020
Florida	Florida Department of Children and Families https://fl-dcf.org/RCAAN/_media/RCAAN/index.html#SPLASH Last accessed: July 2020
Georgia	Georgia Division of Family and Children's Services https://www.prosolutionstraining.com/store/product/?tProductVersion_id=1093 (also available in Spanish) Last accessed: August 2020
Hawaii	Department of Human Services- Social Services https://humanservices.hawaii.gov/ssd/home/child-welfare-services/ Last accessed: July 2020
Idaho	IdahoStars https://idahostars.org/portals/61/Docs/Providers/ApprovedTrain/ICCP/ICCP_ReportAbuse_Inst_2018.pdf Last accessed: July 2020
Illinois	Illinois Department of Children and Families https://mr.dcfstraining.org/UserAuth/Login!loginPage.action Last accessed: July 2020
Indiana	Indiana Department of Child Services https://reportchildabuse.dcs.in.gov/ Last accessed: August 2020
Iowa	Iowa State University Extension and Outreach https://training.hs.iastate.edu/course/view.php?id=731#section-2 Last accessed: July 2020
Kansas	Kansas Child Care Training Opportunities https://kccto.org/product/strengthening-families-through-positive-connections/ Last accessed: August 2020
Kentucky	Kosair Charities® https://education.ky.gov/teachers/Documents/CANtraining_FaceIt.pdf Last accessed: April 2020
Louisiana	Louisiana Department of Children and Families http://www.dcfs.louisiana.gov/index.cfm?md=newsroom&tmp=detail&articleID=575#undefined Last accessed: April 2020
Maine	Maine Office of Child and Family Services https://www.maine.gov/dhhs/ocfs/mandated-reporters.shtml Last accessed: April 2020
Maryland	Maryland's Resource for Mandated Reporters https://training.reportabusemd.com/ Last accessed: August 2020
Massachusetts	Middlesex Children's Advocacy Center https://51a.middlesexcac.org/ Last accessed: April 2020
Michigan	CARE House of Oakland County https://mandatedreportertraining.carehouse.org/welcome/?profession=1 Last accessed: July 2020
Minnesota	Minnesota Department of Human Services https://mn.gov/dhs/people-we-serve/children-and-families/services/child-protection/programs-services/mandated-reporting-training-overview.jsp Last accessed: July 2020
Missouri	Missouri Kids First https://protectmokids.com/ Last accessed: July 2020
Montana	Child Care Resources, Inc. https://www.childcaretraining.org/mod/page/view.php?id=4007 Last accessed: July 2020
Nebraska	Project Harmony https://projectharmony.learnupon.com/store?utf8=%E2%9C%93&ss=1&ct=93426&commit=Filter aining.org/?pageid=84 Last accessed: September 2020

Mandated Reporter Training

State	Agency
Nevada	The Nevada Registry http://www.nevadaregisNtry.org/ Last accessed: April 2020
New Hampshire	Know and Tell https://knowandtell.org/educate/ Last accessed: April 2020
New Jersey	New Jersey Department of Education https://www.state.nj.us/education/students/safety/socservices/abuse/training/ Last accessed: April 2020
New Mexico	New Mexico State University https://swrtc.nmsu.edu/educators/
New York	New York State Office of Children and Family Services http://www.nysmandatedreporter.org/ Last accessed: April 2020
North Carolina	Prevent Child Abuse North Carolina https://preventchildabusenc-lms.org/ (also available in Spanish) Last accessed: April 2020
North Dakota	North Dakota Department of Human Services http://www.pcand.org/NDDHS/mandatedreportertraining/index.html Last accessed: April 2020
Ohio	SafeSchools Training https://www.safeschools.com/courses/child-abuse-mandatory-reporting-ohio/ Last accessed: April 2020
Oklahoma	The University of Oklahoma Health Sciences Center https://www.ouhsc.edu/okcantraining/ Online-Training Last accessed: July 2020
Oregon	Oregon Department of Human Services https://www.oregon.gov/DHS/ABUSE/Pages/mr_employees.aspx Last accessed: April 2020
Pennsylvania	Pennsylvania KeepKidsSafe https://www.reportabusepa.pitt.edu/webapps/portal/execute/tabs/tabAction?tab_tab_group_id=_91_1 Last accessed: April 2020
South Carolina	University of South Carolina School of Law https://dss.sc.gov/child-well-being/mandated-reporters/ Last accessed: April 2020
South Dakota	South Dakota Department of Social Services https://apps.sd.gov/SS60ReporterVideoTraining/Introduction.aspx Last accessed: September 2020
Tennessee	Tennessee State Government https://www.tn.gov/dcs/program-areas/training/tpd/cw-resources/cwr/mandated-reporter-training.html Last accessed: October 2020
Texas	Texas Dept. of Family and Protective Services http://www.dfps.state.tx.us/training/reporting/ (also available in Spanish) Last accessed: July 2020
Utah	Prevent Child Abuse Utah https://pcautah.org/ Last accessed: July 2020
Vermont	KidsSafe Collaborative, Vermont Agency of Human Services https://goto.webcasts.com/starthere.jsp?ei=1087433 Last accessed: April 2020
Virginia	Virginia Department of Social Services https://www.dss.virginia.gov/abuse/mr.cgi
Washington	Washington State Department of Children, Youth and Families https://www.dcyf.wa.gov/safety/mandated-reporter Last accessed: April 2020
West Virginia	Prevent Child Abuse West Virginia https://teamwv.org/prevent-child-abuse-wv-landing/mandated-reporter-training-information/ Last accessed: April 2020
Wisconsin	Wisconsin Child Welfare Professional Development System https://media.wcwpds.wisc.edu/mandatedreporter/ Last accessed: April 2020

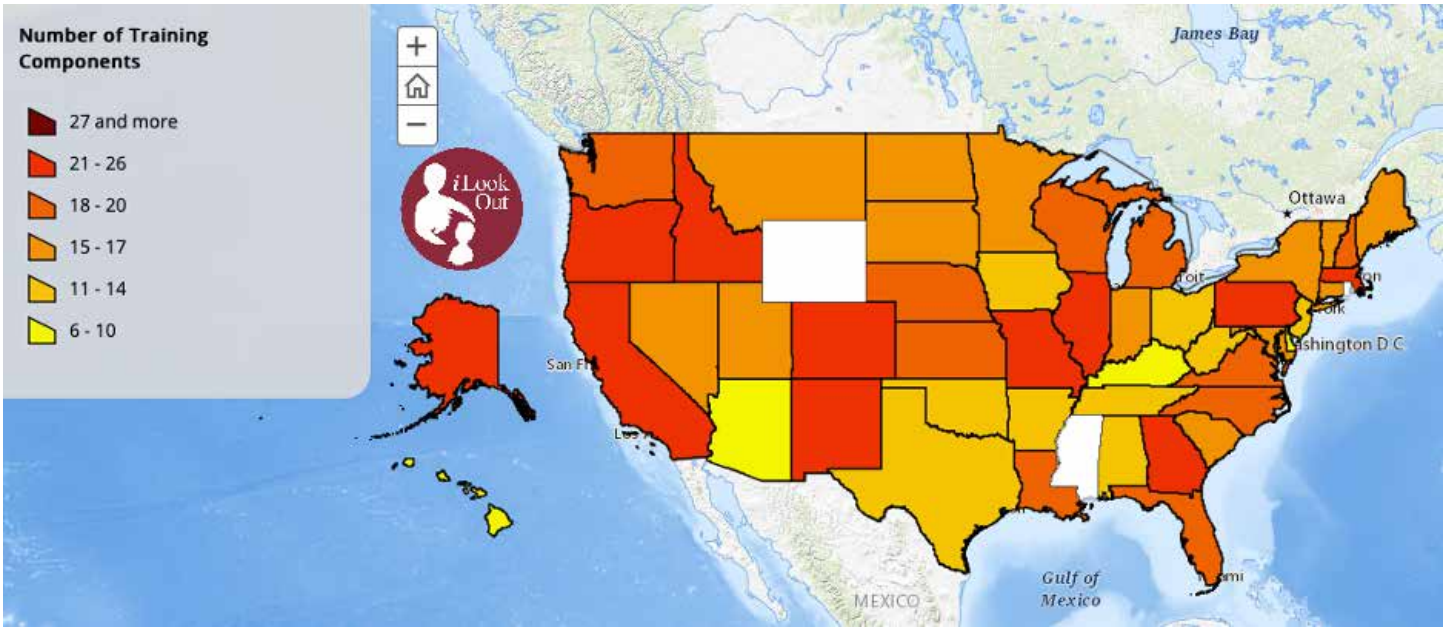
Testing

Knowledge checks (i.e., fact-based questions) were present at various junctures in 30 of the MR trainings, while only nine MR trainings included *skill-testing activities* (e.g., recognizing abuse, identifying risk factors for abuse). Though 30 of the MR trainings included a *post-test* to evaluate user knowledge, only 12 of these contained a *pre-test* such that they could measure pre-/post-test changes in knowledge. *Real-world scenarios* in the form of short stories and multiple-choice questions (Errington, 2008) were present in 24 MR trainings, and 32 trainings included some element of voice narration, but only seven MR trainings provided any form of extended *scenario-based storyline.*

Content

MR trainings also varied considerably in terms of specific content. The vast majority (n=42) provided detailed information about the process for *making a report* of child abuse, but only 10 MR trainings provided explanations about interpreting the statutory threshold for when mandated reporting is required (colloquially referred to as *reasonable suspicion*) (Levi & Loeben, 2004). Relatively few MR trainings included information about *domestic violence* or *animal abuse* being risk factors for child abuse (n=13), how to determine when *reasonable suspicion* is present (n=8), or what kinds of questions are *better* (n=17) or *worse* (n=14) to ask when responding to a child's disclosure of abuse.

Figure 1. Number of Training Components by State.



(States colored white do not have an online MR training.)

Table 3. Training Components and Their Presence in State MR Trainings.

Component	Definition	States that have this component	States
Training features			
Pre-test	Pre-training fact-based questionnaire that tested knowledge about child abuse and its reporting	14 (29%)	AZ, AR, DC, GA, IL, IA, KS, LA, MO, MT, NH, OK, UT, iLookOut
Post-test	Post-training fact-based questionnaire that tested knowledge about child abuse and its reporting	30 (61%)	AL, AK, AZ, AR, CO, DC, GA, ID, IL, IN, KS, LA, ME, MD, MI, MO, NE, NV, NH, NC, OH, OK, OR, PA, SC, TN, TX, UT, VT, iLookOut
Training overview	Introduction that explains the purpose, content, and format of the training	32 (65%)	AK, CA, CO, DE, DC, FL, GA, ID, IL, IN, KS, LA, MA, MI, MN, MO, MT, NE, NH, NJ, NY, OH, OR, OK, PA, SC, TX, VT, VA, WV, WI, iLookOut
Individualized learning path	Individualized pathway that learners choose to guide their training content	2 (4%)	CO, ND
PDF handouts	Informational handouts that can be downloaded	10 (20%)	FL, ID, IA, MO, NJ, OK, OR, WA, WI, iLookOut
Reporting worksheet	Form that can be downloaded and used to take notes in preparation for making a report	4 (8%)	FL, OR, WI, iLookOut
Questions/knowledge checks throughout training	Short quizzes that follow each lesson	30 (61%)	AL, AR, CA, CO, CT, DC, GA, IL, IN, IA, KS, ME, MA, MI, MO, MT, NE, NV, NJ, NM, NC, ND, OR, PA, SC, TX, UT, VT, VA, iLookOut
Skill testing activities	Interactive games or activities (i.e., matching activity, crossword puzzle) that test knowledge of various topics	9 (18%)	CO, GA, MO, NM, NY, OR, SC, WI, iLookOut

Component	Definition	States that have this component	States
Feedback/explanation after questions	Explanations of correct/ incorrect answers following knowledge checks	18 (37%)	AL, CA, CO, CT, DC, ID, IN, ME, MA, MO, NE, NM, OH, OR, PA, UT, VT, iLookOut
Real-world scenarios	Real-world applications that provide context for training content	24 (49%)	AL, AK, AR, CO, DE, GA, IL, IN, LA, MI, MT, NE, NH, NM, NC, ND, OR, PA, SC, SD, UT, VA, WI, iLookOut
Scenario-based storyline	A storyline used to engages learners in the training	7 (14%)	AL, AK, MI, NM, ND, WI, iLookOut
Voice narration	A spoken commentary accompanies text throughout the training	32 (65%)	AL, AK, CA, CO, CT, DC, FL ID, KY, LA, ME, MD, MA, MI, MN, MO, NE, NV, NY, NC, ND, OK, OR, SD, TN, TX, UT, VT, VA, WA, WI, iLookOut
Videos	Informational videos included throughout the training	32 (65%)	AL, AK, AZ, CA, CO, DC, HI, ID, KY, MD, MA, MI, MN, MO, MT, NE, NV, NH, NM, NY, ND, OH, OK, OR, SC, SD, TN, TX, VT, WA, WI, iLookOut
Videos with real actors	Video scenarios that are acted out by live actors	7 (14%)	AK, KS, NH, NM, TX, VT iLookOut
Audio clips	Short voice-clips to narrate slides and/or modules	12 (24%)	CO, CT, IL, IN, IA, ME, MO, NJ, NM, NC, WI, iLookOut
Links to online resources	Links to additional resources such as state laws, definitions, or further information about the topics covered in training	21 (42%)	AK, CA, CO, CT, DC, FL, GA, ID, IL, IN, KS, MD, MI, NH, NM, OR, PA, SC, SD, TX, iLookOut
Resources for ongoing training (ie, micro-learning)	Resources that promote on-going learning beyond the initial training (e.g., follow-up micro-learning activities)(18).	1 (2%)	iLookOut

Mandated Reporter Training

Component	Definition	States that have this component	States
Evaluation of mandated reporter training	A survey given at the end of the training to gauge the user's overall experience	15 (31%)	DC, GA, ID, IL, KS, LA, NE, NH, NC, PA, SC, SD, UT, VT, iLookOut
Discussion forum	An online forum that allows for ongoing discussion between learners	1 (2%)	KS
Mandated reporter content	**Content**		
Types of abuse	Definition of the main types of child abuse/neglect, as state definitions	48 (98%)	AL, AK, AZ, AR, CA, CO, CT, DE, DC, FL, GA, ID, IL, IN, IA, KS, KY, LA, ME, MD, MA, MI, MN, MO, MT, NE, NV, NH, NJ, NM, NY, NC, ND, OH, OK, OR, PA, SC, SD, TN, TX, UT, VT, VA, WA, WV, WI, iLookOut
Common signs and symptoms of abuse	Common signs and symptoms of each of the main types of child abuse/neglect	44 (90%)	AL, AK, AR, CA, CO, CT, DE, DC, FL, GA, HI, ID, IL, IN, IA, KS, LA, ME, MD, MA, MI, MN, MO, MT, NE, NV, NH, NJ, NM, NY, NC, ND, OH, OR, PA, SC, SD, TN, VT, VA, WA, WV, WI, iLookOut
Risk factors	Factors that put certain children/families at greater risk for experiencing maltreatment	20 (41%)	AR, CA, CO, CT, DC, GA, ID,IL, KY, LA, ME, MA, MO, NE, OR, PA, UT, VT, VA, iLookOut
Red flags/indicators for abuse	Physical/behavioral indicators that should raise concern about child abuse	41 (84%)	AL, AK, CA, CO, CT, DC, FL, GA, ID, IL, IN, IA, KS, KY, LA, ME, MD, MA, MI, MN, MO, MT, NE, NV, NH, NJ, NM, NY, NC, ND, OH, OR, PA, SC, SD, UT, VT, VA, WA, WV, iLookOut

Component	Definition	States that have this component	States
Things that should NOT raise concern	Physical/behavioral signs that should NOT raise concern about child abuse (i.e., Mongolian spots, normal locations where toddlers bruise)	17 (35%)	AR, CA, CO, GA, IL, KS, ME, MN, MT, NM, NC, ND, VT, VA, WA, WI, iLookOut
Parent/caregiver behavior that should raise concern	Behavior seen in child care providers that should raise concern about possible abuse	24 (49%)	AK, CA, DE, DC, FL, ID, KS, KY, LA, MI, MO, NE, NV, NH, NY, NC, ND, OR, PA, SC, UT, VT, WA, iLookOut
Prohibited child care provider behavior	Behavior seen in parents or caretakers that should raise concern about possible abuse	1 (2%)	ID
Epidemiology of child abuse	Statistics that describe the scope of child maltreatment on a national or state level	25 (51%)	AK, CA, DE, DC, GA, IN, IA, KS, LA, ME, MD, MA, MO, NE, NV, NH, NM, OH, OR, PA, TN, UT, VA, WV, iLookOut
Long-term impact of child abuse	Long-term physical, psychological or behavioral consequences of child maltreatment, as well as costs to society as a whole	23 (47%)	AL, AK, CA, DE, GA, ID, KS, LA, ME, MD, MA, MI, MN, MO, NV, NH, ND, OH, OR, PA, UT, WV, iLookOut
Domestic violence/animal abuse	Domestic violence and/or animal abuse presented as risk factors for abuse	13 (27%)	CA, CT, DC, IL, ME, MN, MT, NH, NM, NC, VT, WA, iLookOut
Explication of reasonable suspicion mean	Explanation of what "reasonable suspicion" means (with regard to making a report of suspected abuse)	10 (20%)	AZ, CT, FL, MA, MO, NM, NY, OK, PA, iLookOut
Determining whether reasonable suspicion is present	Examples are given of how to determine whether or not a situation rises to the level of reasonable suspicion	8 (16%)	FL, ID, MT, NY, OK, PA, VT, iLookOut

Mandated Reporter Training

Component	Definition	States that have this component	States
Information gathering—good questions	Examples of better questions to ask when responding to a disclosure of child maltreatment from a child	17 (35%)	AK, AZ, FL, GA, IL, KY, ME, MA, MO, NE, NH, UT, VA, WA, WV,WI, iLookOut
Information gathering—bad questions	Examples of worse questions to ask when responding to a disclosure of child maltreatment from a child	14 (29%)	AK, GA, ID, IL, MA, MO, NE, NH, TN, VA, WA, WV, WI, iLookOut
How to respond to disclosures by children	How to talk to a child who has disclosed that they have been abused	32 (65%)	AK, AZ, AR, CA, CO, DE, DC, FL, GA, ID, IL, KY, LA, MD, MA, MO, MT, NE, NV, NH, NM, NC, OH, SC, SD, TN, UT, VA, WA, WV, WI, iLookOut
Legal responsibilities of mandated reporters	State laws that designate which professionals are required to report cases of suspected child abuse/neglect	44 (90%)	AK, AZ, AR, CA, CO, CT, DC, FL, GA, HI, ID, IL, IN, IA, KS, LA, ME, MD, MA, MI, MN, MO, MT, NE, NV, NH, NM, NY, NC, OH, OK, OR, PA, SC, SD, TN, TX, UT, VT, VA, WA, WV, WI, iLookOut
Consequences for failing to report	Penalties for mandated reporters who fail to report cases of suspected child abuse/neglect	37 (76%)	AZ, AR, CO, CT, DC, FL, GA, HI, ID, IL, IN, IA, KS, LA, ME, MD, MA, MI, MN, MO, MT, NE, NV, NJ, NY, NC, OH, OK, OR, PA, SC, SD, TN, VT, VA, WA, iLookOut
Legal protection for good faith reports	Explanation that mandated reporters are protected from liability if a report is made in good faith, regardless of the outcome of the report	41 (84%)	AL, AK, AZ, AR, CA, CO, CT, FL, GA, HI, ID, IL, IN, IA, LA, ME, MD, MA, MI, MN, MO, MT, NE, NV, NJ, NM, NY, NC, ND, OH, OK, OR, PA, SC, SD, TN, TX, UT, VA, WI, iLookOut

Component	Definition	States that have this component	States
Preparing to make a report	Specific information that should be gathered before making a report of suspected child abuse	43 (88%)	AL, AK, CA, CO, CT, DE, DC, FL, GA, HI, ID, IN, IA, KS, LA, ME, MD, MA, MI, MN, MO, MT, NV, NH, NJ, NM, NY, NC, ND, OH, OK, OR, PA, SC, SD, TN, TX, UT, VA, WA, WV, WI, iLookOut
Mechanics of making a report	Specific steps involved in making a report of suspected abuse to child protective services	42 (88%)	AL, AK, AR, CA, CO, CT, DE, DC, FL, GA, ID, IL, IN, IA, KS, LA, MD, MA, MI, MN, MO, MT, NE, NV, NH, NJ, NM, NY, NC, ND, OK, OR, PA, SC, SD, TN, TX, VA, WA, WV, WI, iLookOut
Explanation of what happens after a report is made	Description of the process following the mandated reporter's conversation with a child protective services intake worker (i.e., potential outcomes of the report, timeline for next steps)	40 (82%)	AL, AK, AR, CA, CO, CT, DC, FL, GA, ID, IL, IN, IA, KS, ME, MD, MA, MI, MN, MO, MT, NV, NH, NJ, NM, NY, NC, ND, OK, OR, PA, SD, TN, TX, VT, VA, WA, WV, WI, iLookOut

Additional Resources

A smattering of MR trainings provided additional resources to promote ongoing learning, such as *PDF handouts* that reinforced important learning points (n=10), *reporting worksheets* to help guide users through the process of making a report of suspected child abuse (n=4), and *links to online resources* such as government websites and state laws (n=21). Despite strong evidence that learning requires reinforcement—ideally using spaced retrieval and spaced practice (Burns & Gurung, 2020; Karpicke & Bauernschmidt, 2011)—only iLookOut provided additional learning exercises designed to reinforce and augment its MR training. These micro-learning exercises comprise iLookOut's Advanced Trainings 1 and 2 (Kapp et al., 2020; Levi et al., 2019), which learners can access following the completion of the iLookOut Core Training. For a comprehensive inventory of characteristics of the 49 mandated reporter trainings reviewed, see Table 3 and also https://webgis.pop.psu.edu/iLookOut/.

Gamification and Engagement

In the context of education and learning, gamification (e.g., storylines with hidden information, badges, points, avatars, matching exercises) has been shown to improve learner engagement and motivation, and contribute to higher learning outcomes (Dichey & Dicheva, 2017; Jang et al., 2015; Mohammed et al., 2018). Of the

49 MR trainings in this comparative assessment, only nine made use of gamified activities. From an experiential standpoint, trainings were categorized based on their overall level of engagement. Of the 49 MR trainings reviewed, six were evaluated as Limited, 33 Basic, nine Moderate, and one Advanced. As detailed in Table 4, what distinguished more engaging MR trainings was their scope and use of audio-visual content and interactivity.

Table 4. Level of Engagement.

Level of engagement	Definition	States at this level	States
Advanced	Training includes multiple interactive* features, engaging multi-media formats, a wide array of resources, a scope that is considerably broader than just mandated reporting (e.g., trauma-informed care, mindfulness, critical thinking, support for families), both pre- and post-tests, and interactive feedback on knowledge test.	1 (2%)	iLookOut
Moderate	Training includes one or more interactive* features, requires participant engagement through frequent knowledge checks, may include a pre- or post-test, and includes information that goes beyond mandated reporter training.	9 (19%)	CA, GA, IN, KS, MD, MO, NM, UT, WI,
Basic	Training includes videos or audio-clips, a few minor interactive* features, and expanded information (typically as text) related to mandated reporting, such as legal requirements, signs of abuse, and prevention.	33 (67%)	AL, AK, AZ, AR, CO, CT, DC, FL, ID, IL, IA, LA, ME, MA, MI, MN, MT, NE, NH, NV, NY, NC, ND, OH, OR, PA, SC, SD, TX, VT, VA, WA, WV

Level of engagement	Definition	States at this level	States
Limited	Training does not include interactive* features and presents information simply as text, a slideshow, and/or a single video.	6 (12%)	DE, HI, KY, NJ, OK, TN

Discussion

This comparative assessment identified significant variation in both content and delivery/functionality among 49 online (English language) mandated reporter (MR) trainings. Because all children deserve protection from abuse regardless of where they live, such variation raises concern over just how many mandated reporters in the U.S. have access to comprehensive preparation for recognizing and reporting suspected child abuse. This is particularly relevant if in-person MR training is not easily accessible, be it due to cost, timing, location, or other barriers.

iLookOut was designed to provide an evidence-based, standardized MR training that can be adapted to meet any given state's laws and policies. Included in this design is an emphasis on helping learners develop and apply critical thinking skills as they apply to suspected child abuse and, more generally, promoting child well-being. Whether it involves distinguishing poverty from neglect or raising awareness about cultural differences, we believe that well-designed MR trainings should include strategies for countering systemic racism and implicit bias. There was no ready metric for coding MR trainings on this goal, and so it was not evaluated in this comparative assessment.

Clearly, not all online MR trainings are created equal with regard to educating, engaging, and motivating mandated reporters. Perhaps the most glaring finding from this study is that 37 MR trainings failed to include both a pre- and post-test, and 17 MR trainings contain neither. This means that it is not possible to measure whether any one of these 37 state-approved MR trainings has any effect on mandated reporters' knowledge about child abuse and its reporting. In fact, a subsequent literature review found no published evaluation or outcomes studies for any of the 48 online MR trainings that we compared with iLookOut's Core Training. Further, for those MR trainings that had a pre- or post-test, we found no evidence that any of these other than iLookOut (Levi, et al., in press; Panlilio et al., in press) had validated their measures—as is needed to ensure that question items are truly evaluating their intended construct. So, too, no MR training other than iLookOut employed gamification or spaced retrieval/practice to promote learner engagement. To the extent that we want to both engage mandated reporters and optimize knowledge gain and retention, online trainings should take advantage of evidence-based practices shown to improve knowledge, change attitudes, and (ideally) affect people's actual behavior.

Limitations

Despite the breadth of our examination, there are several limitations to the present study. First, because only English versions of online MR training were reviewed, the content and functionality of MR trainings in other languages were not assessed. Second, because we did not continue searching MR training programs after identifying a state-sponsored training, it is possible that higher quality MR trainings exist in those states that had a state-sponsored MR training. Third, because there are no established criteria of what components should be included in MR training, the list of 40 components used to code the trainings may be neither

comprehensive nor quintessential. Finally, because there is no existing standard for evaluating a MR training's level of engagement, there may be more appropriate criteria than were used in this study.

Conclusion

The findings of this comparative assessment show major state-to-state differences in the content and delivery/functionality of state-approved mandated reporter trainings. Because, as has been noted in prior research (Mathews & Kenny, 2008), there are non-trivial differences between the states in terms of policy, legal definitions, and reporting requirements, some amount of variability is to be expected. That being said, if it is worth investing the time, energy, and resources to educate mandated reporters, it is certainly worth ensuring that key concepts and strategies for protecting children are conveyed effectively. Otherwise, there may be little reason to believe that such training will actually help mandated reporters protect children.

Recommendations

Based on the study findings, we recommend the following suggestions to practitioners and policy makers:

- Establish national standards for what should be covered in MR training.
- Establish a national standard for rating the quality of online MR training, including criteria for what counts as an evidence-based training.
- Increase funding to devleop MR training that incorporates best practices for online learning (e.g., spaced retrieval/practice) as well as innovations (e.g., gamification) that make such training genuinely engaging (and thereby more effective) for users.
- Encourage states to accept only MR training that is evidence based.
- Develop online evidence-based training that helps parents and other caregivers better understand the parameters of child abuse and its reporting.

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