Application of the Implicit Relational Assessment Procedure (IRAP) to Evaluate Bias Related to Intimate Partner Violence (IPV) within Child Welfare

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Abstract: Problematic bias evidenced by child welfare professionals in relation to Intimate Partner Violence (IPV) victimization can negatively impact outcomes for children and families in the foster care system. The literature supports malleability of IPV-related bias in response to training interventions. These studies rely heavily on self-report measures. Self-report tools capture extended responses (explicit bias). These measures are less likely to reflect immediate responses (implicit bias). Combining explicit and implicit measures may inform a more comprehensive understanding.

Purpose of Study: We employed a multi-method protocol to measure bias evidenced by dependency professionals in relation to IPV victimization. *Method:* Participants completed the Implicit Relational Assessment Procedure - Intimate Partner Violence (IRAP-IPV), an explicit analog of the IRAP-IV, and a gender-neutral version of the Domestic Violence Myth Acceptance Scale (GN-DVMAS).

Principle Results: Results show expected divergence between explicit and implicit measures, with stronger positive valuation reflected on the explicit tools. We compared IRAP-IPV scores across in person and virtual groups. While statistical analyses indicate no significant between-group differences, divergence is evident upon visual inspection.

Conclusion: This study supports the importance of multi-method measurement when evaluating IPV-related bias. We discuss results in terms of social and contextual factors within child welfare that may influence how dependency professionals respond to IPV. We offer recommendations for promoting a more equitable child welfare experience for victim-survivors, their families, and the professionals who serve them.

Keywords: Child welfare, Implicit bias, implicit relational assessment procedure IRAP, intimate partner violence IPV.

INTRODUCTION

Intimate Partner Violence (IPV) is physical or sexual assault, intimidation, and/or other abusive behavior willfully perpetrated by one intimate partner against another intimate partner within a systematic pattern of power and control (National Coalition Against Domestic Violence, n.d.). Across the United States, there are an average of 20 incidents of physical IPV every minute (National Coalition Against Domestic Violence, n.d.). Greater than 43 million women and 38 million men report being psychologically abused by an intimate partner (Centers for Disease Control and Prevention, n.d.).

IPV is differentiated from other forms of violence in that it is marked by a chronic pattern of coercive control functioning to maintain one partner's power over the other (Notestine *et al*., 2017). Over time, experienced violence, threats, and intimidation paired with controlled access to social and financial resources function to diminish a victim-survivor's freedom and autonomy and to violate their sense of self. A poor understanding of coercive control contributes to problematic biases toward victim-survivors of IPV (Perrin, 2017; Tarzia *et al*., 2021).

Bias related to IPV

Bias is behavior in relation to a category of stimuli systematically influenced by social and contextual cues (De Houwer, 2019). An individual's bias represents their history of direct experiences with contingencies in the environment (Stockwell *et al*., 2017) as well as rules established through the verbal community (Buranosky *et al*., 2012). Bias may be considered problematic when the behavior produces adverse outcomes (De Houwer, 2019). Problematic bias evidenced by professionals adversely contributes to outcomes for victim-survivors of IPV.

Problematic IPV-related bias perpetuates intimate partner violence through denial, minimization, and justification of the abuse (Donnelly *et al*., 2016; Peters, 2008). Victim blaming is the most prevalent form of IPV-related bias (Maiuro *et al*., 2000). Victim blaming implies that a victim-survivor of IPV is responsible for and deserving of abuse, typically because of their behavior or character. Victim-blaming biases transform a target of IPV from a victim-survivor in need of

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community support into an individual who "chooses" to be battered by provoking violence or by remaining in a violent situation (Peters, 2008). For example, questioning why a victim-survivor "stays with" an abuser implies he or she could *choose* to leave the abusive relationship (Perrin, 2017). This viewpoint does not adequately account for contextual factors (e.g., terror tactics, restricted access to resources) likely impacting a victim-survivor's stay-leave decision.

REVIEW OF THE LITERATURE

Problematic IPV-Related Bias in Child Welfare

One in every 15 children witness intimate partner violence between adult caregivers annually (Edleson *et al*., 2008), potentially prompting child welfare involvement. Child welfare refers to a spectrum of services intended to promote and ensure the safety of children within the family. The child welfare professional's role is to assess safety risks and identify supports and interventions appropriate for mitigating risks. When a case includes allegations of IPV, how a professional performs their role is influenced by that professional's biases in relation to IPV (Wong &Vinsky, 2021).

Child welfare professionals demonstrate problematic bias when they hold a victim-survivorresponsible for the perpetrator's abusive behavior and for protecting children from exposure to IPV (Hughes *et al*., 2011; Jenney *et al*., 2014; Saunders & Anderson, 2000). For instance, they may draft case plans that require a victim-survivor to end their relationship with an abuser (Hughes *et al*., 2011; Jenney *et al*., 2014). Victim-survivors of IPV are most at risk when ending an abusive relationship (Eilers, 2019). None the less, remaining with the abuser could be considered justification for removing the children from the care of the victim-survivor (Hughes *et al*., 2011; Saunders & Anderson, 2000).

While children exposed to IPV are at risk for adverse outcomes (Ewen, 2007; Hughes *et al*., 2011), removing a child from the care of the victim-survivor may exacerbate harm to the child. A strong bond with the non-abusing parent contributes to a child's resiliency (Ewen, 2007). Further, victim-survivors who experience threats related to child custody and other system-dictated demands are more likely to recant allegations of IPV victimization (Jenney *et al*., 2014) and to exhibit a reduced willingness to cooperate with child welfare professionals (FIeming & Franklin, 2021). Cooperative relationships between victim-survivors and child welfare professionals are associated with reduced risk of harm (Ewen, 2007). Victim-survivors who receive support and access to resources are more likely to leave an abusive relationship (Bell & Naugle, 2005).

Gaps in the Literature

There is a large volume of research corroborating the efficacy of staff training for reducing problematic IPV-related bias evidenced by professionals. However, variations across studies and between professional disciplines have limited the impact of this work. See Sereno *et al*. (2023) for a systematic review and discussion of this literature. One area identified for collaborative development is measurement of bias. The current literature relies heavily on self-report tools (e.g., surveys, Likert scales) which are susceptible to presentation management. In considering a response to a self-report tool, a participant may consciously adjust their responses to reflect a viewpoint they are more comfortable acknowledging or articulating (Bast & Barnes-Holmes, 2015) or that is in line with a more socially desirable response (Saunders & Anderson, 2000). Tools used in the current literature may not be sufficient for capturing more subtle bias.

Multi-Method Measurement

Measurement protocols incorporating implicit and explicit tools may contribute to a more comprehensive understanding of bias (Notestine *et al*., 2017; Staniec, 2019), thereby informing more efficacious intervention. Whereas explicit measures can be valuable predictors of intentional, overt behavior (Kelly & Barnes-Holmes, 2013; Staniec, 2019), measures of implicit bias may better capture thoughts participants cannot accurately recall or are unwilling to consciously consider (Drake, Codd, & Terry, 2018; Ferroni-Bast *et al*., 2019; Smith *et al*., 2021).

The Gender Violence Implicit Association Test (GV-IAT) is a topic specific version of the Implicit Association test (IAT). It was created to assess implicit biases surrounding intimate partner violence against women (IPVAW), a gendered subcategory of IPV. Three recent studies (Ferrer-Perez, Bosch-Fiol, *et al*., 2020; Ferrer-Perez, Sanchez-Prada, *et al*., 2020; Sanchez-Prada *et al*., 2021) paired the GV-IAT with validated self-report questionnaires to measure bias related to IPVAW evidenced by students in Spanish universities. Across studies, significantly weaker

rejection of IPVAW was reflected on the implicit measure as compared to the explicit measure. Collectively, these studies substantiate the importance of evaluating IPV-related bias using both implicit and explicit tools.

Limitations of the Implicit Association Test (IAT)

Application of the GV-IAT toward addressing IPV-related bias is limited by the capabilities of the IAT. The IAT measures the relative strength of associations between two target stimuli (Golijani-Moghaddam *et al*., 2013). Differences in response times across trials are presumed to indicate a participant's relative preference for one stimulus category over the other (Baker *et al*., 2016; Drake, Codd, & Terry, 2018; Hussey *et al*., 2015; Hussey *et al*., 2016). For example, the GV-IAT measures acceptance or rejection of IPVAW and the strength of that stance (e.g., null-mild, mild, moderate-strong, or strong) (Ferrer-Perez, Sanchez-Prada, *et al*., 2020). However, biases are more than associations between stimuli. Biases represent relational networks comprised of complex, directional, and often conditional relations between stimuli (Barnes-Holmes *et al*., 2006).

Implicit Relational Assessment Procedure (IRAP)

The Implicit Relational Assessment Procedure (IRAP) is a behavior analytic procedure informed by Relational Frame Theory (RFT), a behavior analytic approach to understanding human language and cognition. RFT provides a functional account for the relational interconnectedness between stimuli (Bast & Barnes-Holmes, 2015). Beyond associations measured by the IAT, the IRAP evaluates the direction and strength of conceptual relations between stimuli (Bast *et al*., 2020; Hussey *et al*., 2015).

The IRAP Procedure

A typical IRAP procedure includes a minimum of eight testing blocks (at least two practice blocks and six test blocks) with 24 trials per block. There are two block types: consistent (with social conventions) and inconsistent (with social conventions). There are four trial-types within each block (consistent, positive; consistent, negative; inconsistent, positive; inconsistent, negative). In each trial, a sample concept stimulus (e.g., Healthy Parent) and a specific relational target stimulus (e.g., weak) are presented simultaneously (See Figure **1** for a schematic representation of trial-types). The participant responds to the relation between the sample and target stimuli by selecting one of two response options (e.g., "same, opposite"). The rule for a given block (consistent or inconsistent) determines whether the participant's response is correct.

IRAP as a Measure of Implicit Bias

The IRAP has been argued to measure implicit bias to the extent that it captures spontaneous evaluations, or implicit cognition. Relational Elaboration and Coherence (REC), a model within RFT, distinguishes between explicit and implicit cognition. Given a stimulus, an individual will emit a brief and immediate relational response (BIRR). An elaborated and extended relational response (EERR) follows consideration and reflection upon response options. Participants respond to IRAP stimulus pairings under time and accuracy constraints, which reduces the opportunity for extended and elaborated relational responding (Bast *et al*., 2020). As such, data collected by the IRAP indicates a participant's brief and immediate response (BIRRs) to each stimulus pairing trial. The IRAP effect is calculated as the comparative median latency across each trial-type (Baker *et al*., 2016). Trial-types with a faster median response latency are thought to be more representative of the participant's verbal history (Ferroni-Bast *et al*., 2019). Essentially, the IRAP measures implicit bias as the relative probability of a BIRR response. The larger the IRAP effect, the more probable the BIRR (Bast & Barnes-Holmes, 2015).

The literature supports the IRAP as a valid measure of implicit bias evidenced by professionals in relation to client populations (See Sereno *et al*., 2022, for a review of this literature). Studies employing the IRAP procedure as part of a multi-method protocol commonly report differential responding across explicit and implicit measures, bolstering a multi-method approach to measuring bias. The authors are not aware of any studies in the literature using the IRAP to measure bias evidenced by professionals in relation to IPV.

Current Study: Research Questions and Objectives

The current study is the first phase of a project applying the IRAP as a component in a multi-method approach to evaluate bias evidenced by child welfare professionals related to IPV. We sought to validate the IRAP-IPV as a measure of problematic IPV-related bias in child welfare. We asked how aggregate scores on the IRAP-IPV would correlate with explicit measures of bias. We hypothesized that child welfare professionals would demonstrate problematic bias related to parents with a history of IPV victimization, with greater

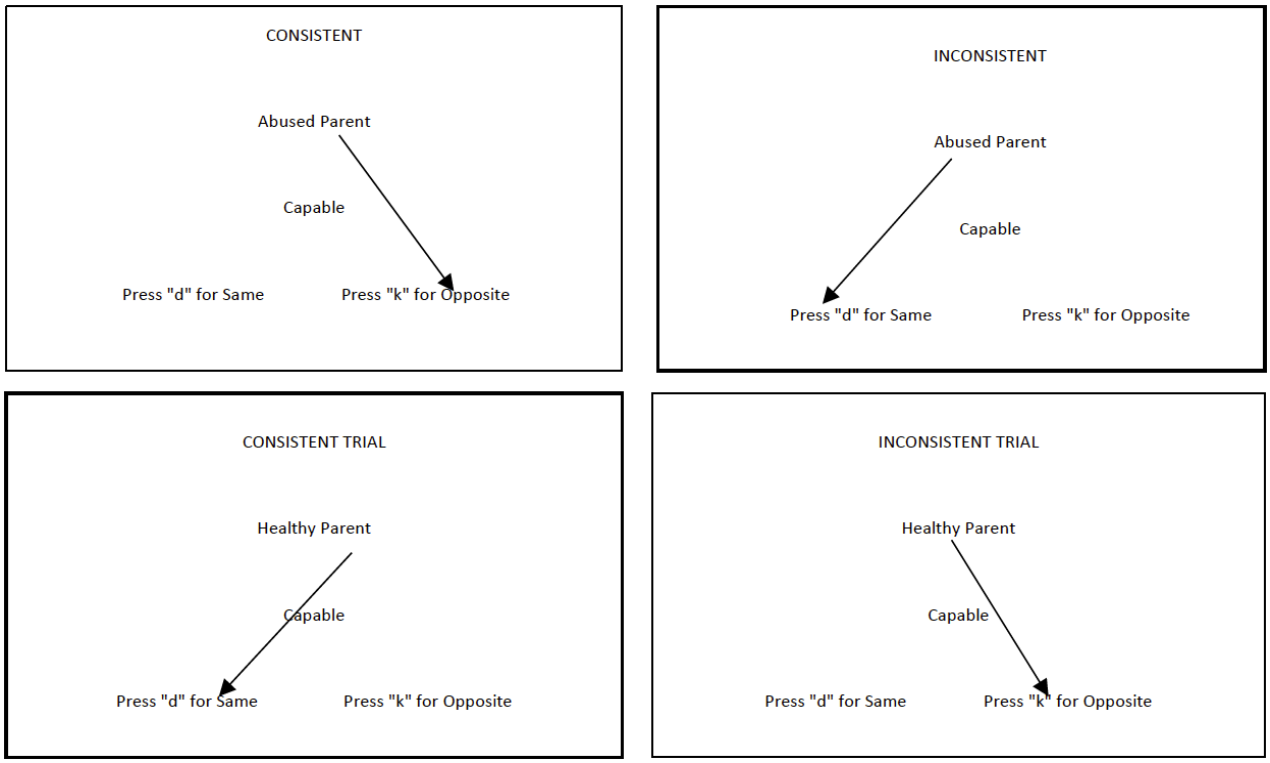

Figure 1: Schematic Representation of the IRAP-IPV Trial-types.

Note: The arrows and the terms, consistent and inconsistent do not appear on the assessment screen. They are included here to show response flow. A consistent response would be one in line with prevailing biases and an inconsistent response would be a response that does not meet with the prevailing bias. For example, selecting the response option, 'same' when presented with the sample stimulus, 'Abused Parent' and the target stimulus, 'weak' is consistent with prevailing biases that persons targeted in abusive relationships are weak. IPV: Intimate partner violence.

problematic bias evidenced on the implicit measure as compared to the explicit measures. We created a topic-specific version of the IRAP, the IRAP-Intimate Partner Violence (IRAP-IPV). We paired the IRAP-IPV with an empirically validated explicit measure of IPV-related bias and an analog explicit measure derived from the IRAP-IPV. We evaluated the validity of the IRAP-IPV as a measure of IVP-related bias. We analyzed patterns of responding across explicit and implicit measures. Comparisons across measures enhance our understanding of how IPV-related bias functions within the context of the child welfare system. To accommodate pandemic-related restrictions, we offered participants the option of completing the IRAP-IPV in-person or virtually. Our analyses of results across conditions of administration give very preliminary support for virtual administration of the IRAP.

MATERIALS AND METHODS

This study was conducted in accordance with approval was granted by the Institutional Review Board of the Chicago School of Professional Psychology.

Participants

We calculated sample size a priori using G*Power software (Faul *et al*., 2007). Based on an effect size of .45, a significance criterion of α = .05, and a statistical power of 80%, we required a minimum of 12 participants. Participants eligible for inclusion were professionals working in child welfare who were fluent in English at a professional level and capable of responding to visual stimuli using a computer keyboard.

We recruited participants via email and snowball sampling. As exposure to IPV-related content can be triggering (Gainsburg & Earl, 2018), we included an IPV-specific trigger warning at the top of the recruitment letter and the consent form. Each participant completing all study tasks received one entry into a drawing for a $50 Amazon gift card. We expected participants to experience no direct benefit from their participation.

Attrition

Of the 37 potential participants who responded to recruitment efforts, 35 met criteria for participation and

34 consented to participate. Five of the 34 consenting participants failed to complete initial study tasks. Of the 29 participants attempting the IRAP-IPV, seven (24%) failed to achieve latency and/or accuracy criteria during IRAP-IPV practice sessions. Four virtual participants were removed from the sample subsequent to technical difficulties loading the IRAP-IPV program.

Participants included in the final analysis were 18 child welfare professionals (15 identifying as female and three identifying as male) employed in case management (*n* = 10) and clinical support roles (*n* = 8) across multiple agencies. The majority (61%) had worked with child welfare clients for greater than eight years.

Setting

To facilitate participation amidst the COVID-19 pandemic, we offered participants a choice between meeting with the lead investigator in-person at a location of their choosing or via telehealth. In-person sites included a child welfare agency office, a public library, a residential clubhouse, a coffeehouse, and a home. Virtual IRAP meetings took place via the Zoom telehealth platform using a HIPAA-compliant account.

Materials

We created the IRAP-IPV using the Go-IRAP software accessed through the Behaviour Analysis of Language and Cognition site. All study tasks were completed on laptop computers with windows-based computer operating systems. We performed statistical analyses with IBM's SPSS Statistics version 26.

Demographics Survey

Our demographics survey included questions regarding professional role and time employed in the child welfare field, highest level of formal education completed, primary field of academic study, and how many hours of IPV-related training they have completed.

Gender-Neutral Domestic Violence Myth Acceptance Scale (GN-DVMAS)

The Gender-Neutral Domestic Violence Myth Acceptance Scale (GN-DVMAS) was a modification of the Domestic Violence Myth Acceptance Scale (DVMAS) (Peters, 2008). As originally published, the wording of the DVMAS items assumes a female victim and a male perpetrator (e.g., "I hate to say it, but if a woman stays with the man who abused her, she basically deserves what she gets"). Gendered language may fail to account for diversity among IPV victim-survivors (Donnelly *et al*., 2016). We edited all gendered nouns and pronouns in the original DVMAS items to express gender neutrality.

Participants indicated their level of agreement with each of 18 statements relating to common myths about IPV along a Likert scales ranging from strongly agree to strongly disagree. We recalibrated the DVMAS's 7-point Likert scale to a 5-point scale to better align the GN-DVMAS with the Analog measure.

Implicit Relational Assessment Procedure- Intimate Partner Violence (IRAP-IPV)

The IRAP-IPV is a topic-specific version of theIRAP created by the lead researcher to measure implicit biases related to IPV. Sample stimuli were "*Abused Parent"* and "*Healthy Parent*". We selected target stimuli from the IPV literature and in consultation with a panel of IPV and dependency experts (see Table **1**). We used the response options *Same* and *Opposite*.

Analog Explicit Questionnaire

We created the Analog explicit questionnaireusing the same stimuli presented by the IRAP-IPV. In line with previous studies (e.g., Bast *et al*., 2016; Bast *et al*., 2020; Ferroni-Bast *et al*., 2019; Staniec, 2019), we incorporated this measure to aid in the interpretation of comparisons between explicit and implicit measures. Each of the 24 items on the Analog included a sample stimulus (i.e., Abused Parent or Healthy Parent) and one of the 12 target stimuli. Participants responded to items by selecting a value along a 5-point Likert scale to indicate how the statement "fit" with their own beliefs. As such, the Analog measure allowed participants to respond along a continuum to the same stimuli used in the IRAP-IPV.

Inter-Observer Agreement and Treatment Integrity

We calculated inter-observer agreement (IOA) across 30% of randomly selected GN-DVMAS measures at 100%. Agreement across 30% of the Analog measures was 92%. Instances of disagreement resulted from errors in data entry. These errors were corrected. The IRAP program scored the IRAP-IPV. Treatment integrity was 100% across all virtual and in-person sessions.

Table 1: Target Stimuli by Trial Type

Trial-type	Consistent	Inconsistent
Healthy Parent	Capable	Passive
	Resourceful	Weak
	Strong	Submissive
	Leader	Neglectful
	Rational	Blameworthy
	Protective	Irresponsible
Abused Parent	Passive	Capable
	Weak	Resourceful
	Submissive	Strong
	Neglectful	Leader
	Blameworthy	Rational
	Irresponsible	Protective

PROCEDURE

We conducted this study in accordance with the ethical standards of the Chicago School of Professional Psychology and within the parameters of the approval granted by the Institutional Review Board.

Dependent Variables

Our primary dependent variable was bias related to IPV. We operationally defined *bias* as behavior systematically influenced by social and contextual cues (De Houwer, 2019). Referencing the REC model (Barnes-Holmes *et al*., 2010), we sub-defined *explicit* bias as extended and elaborated relational responding (EERR) and *implicit* bias as brief and immediate relational responding (BIRR).

Initial Measures

Participants completed the demographics survey, GN-DVMAS, and Analog via email. When all three pre-measures were received and we verified they had been completed to criterion, we scheduled the IRAP-IPV testing session.

IRAP-IPV Administration

Participants completed the IRAP-IPV in person or virtually. The virtual meeting option was available to any participant with a windows-based computer on which they could download the IRAP program. An in-person meeting was available to any participant who preferred to meet inperson or did not meet the technological requirements for a virtual meeting.

In-person Meeting Protocol

The experiment proceeded as follows: 1. The experimenter reviewed the IRAP-IPV script with the participant. 2. The experimenter initiated the IRAP-IPV application. 3. The participant completed the IRAP-IPV (either by failing to meet the criteria and terminating at the practice level or by continuing through test blocks). 4. The experimenter invited the participant to engage in a debriefing.

Virtual Meeting Protocol

We sent the participant an invitation to join a HIPAA-compliant Zoom meeting room. The lead researcher guided the participant through the process using the virtual administration protocol. When materials were in order, the virtual meeting session progressed in the same order as the in-person meeting.

IRAP-IPV Script

We oriented participants to the IRAP-IPV task by reading through a script based on Hussey *et al*. (2016). If the participant asked for or appeared to require additional support (e.g., stopped responding or requested clarification) at any time, we referenced the script and provided clarification in line with the script. The researcher had the discretion to encourage or praise the participant's efforts on the IRAP-IPV as appropriate.

Presentation of Stimuli

The IRAP-IPV program presented stimuli and advanced through trials automatically based on

participant responses per the study parameters. Each testing block had four trial pairings: 1. Healthy Parent, Positive, 2. Healthy Parents, Negative, 3. Abused Parent, Positive, and 4. Abused Parent, Negative. Half of the pairings were consistent with prevailing IPV biases, and half were inconsistent with prevailing IPV biases. See Figure **1**.

Within a test block, each sample stimulus was presented with each target stimulus one time in quasi-random order for a total of 24 trials per block. In test block one and all odd-numbered blocks, participants were required to respond consistent with the rule, "Healthy Parents are Good, Abused Parents are Bad." In test block two and all even numbered blocks, participants were required to respond consistent with the rule, "Healthy Parents are Bad, Abused Parents are Good."Participants responded to indicate the relation between the sample and the target, according to the rule for the testing block, by choosing one of two response options, *Same* or *Opposite.* Block presentation alternated between consistent and inconsistent block type, with a consistent block always preceding an inconsistent block.

Criteria for Testing

Participants were required to respond with at least 80% accuracy and a median response latency of < 2500ms across two practice blocks (one consistent and one inconsistent block). Participants who achieved these criteria advanced to testing (three consistent blocks and three inconsistent blocks).

Debriefing and Social Validity Survey

During the debriefing, the primary investigator summarized the study topic and goals and answered the participant's questions about the study. Participants received a list of resources for local and national services targeting IPV-related sequelae. We asked participants to complete the social validity survey and email it to the experimenter.

RESULTS AND DATA ANALYSES

Gender Neutral Domestic Violence Myth Acceptance Scale (GN-DVMAS)

We calculated a total score on the GN-DVMAS by adding the selected value for each item and dividing the total by the number of items on the measure (Hawkins, 2007). Higher scores indicated stronger endorsement of common myths associated with IPV. We calculated an aggregate mean score of 1.798 (*SD* = .261). A single-sample t-test confirmed significant effect ($t(17) = 29.27$, $p < .001$, 95% CI [1.669, 1.928]). Spearman-Brown Split-half reliability yielded a Cronbach's alpha coefficient of $\alpha = .711$.

Implicit Relational Assessment Procedure- Intimate Partner Violence (IRAP-IPV)

Data Preparation and Scoring

The IRAP program transformed raw data into a series of D-scores, one for each trial-type, according to the D-algorithm (see Barnes-Holmes *et al*., 2010, for further explanation). In line with Hussey *et al*. (2015), we inverted scores (multiplied by -1) on the two Abused Parent trial-types to facilitate interpretation. We required a minimum mean accuracy of 80% and median latency < 2500 ms across all trial-types for a participant's IRAP-IPV scores to be considered valid. Score sets not meeting these criteria were removed from the sample. Included scores were analyzed and reported in aggregate.

To evaluate the relative strength and direction of implicit bias, we extracted four mean trial-type D-scores (one for each trial-type) from each participant's IRAP-IPV data output. Applying criteria from Baker *et al*. (2016), D-scores between -.15 and .15 were considered neutral. Scores of -.16 to -.35 or .16 to .35 indicated weak bias. Moderate bias was measured when scores fall between -.36 and -.65 or .36 and .65. Scores less than -.65 or greater than .65 indicated a strong bias. We measured split-half reliability for the IRAP-IPV by comparing two overall D-scores, one for odd number trials and one for even numbered trials. Cronbach's alpha measured $\alpha = .710$.

Trial-Type Analyses

Figure **2** depicts IRAP scores across trial-types. Participants evidenced a significant, moderate pro-healthy parent bias across the Healthy Parent, Positive trial-type and the Healthy Parent, Negative trial-type. Scores across the Abused Parent, Positive and Abused Parent, Negative trial-types indicated a neutral bias toward abused parents. Participants were slightly more likely to reject abused parents as positive and to deny abused parents as negative. These effects were not statistically significant (Table **2**).

We entered the mean D-score for each trial-type into a mixed repeated measures analysis of variance (ANOVA) (See Table **2**). Trial-type effect was significant. A series of six paired samples t-tests

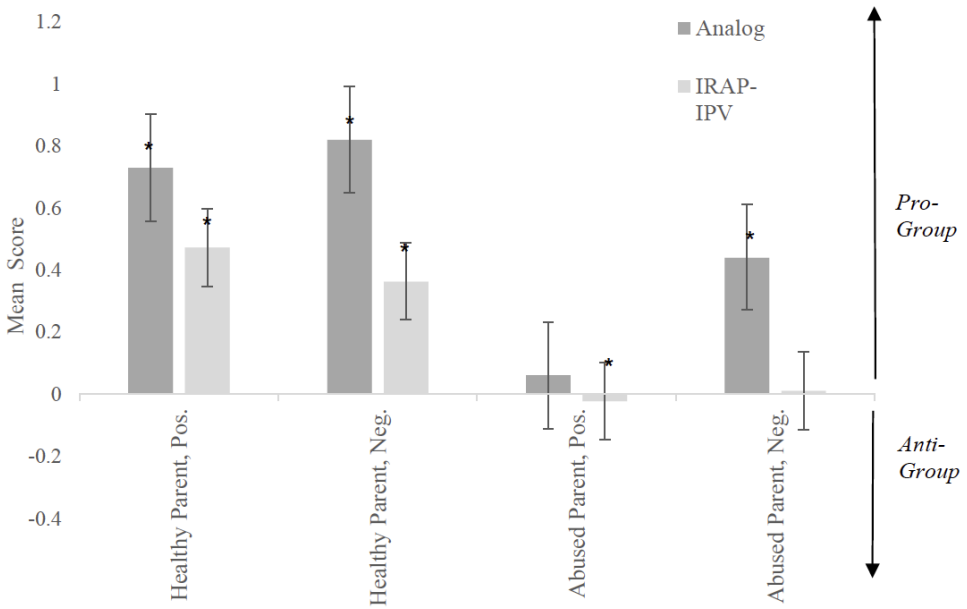

Figure 2: Comparison: Analog and IRP-IPV. *Effect significant p < .05.

Table 2: IRAP-IPV Analyses

Trial Type	Mean D-Score	Standard Deviation	Significance of Effect
Healthy Parent, Positive	.477	.359	*t*(17) = 5.648, *p* < .001, 95% *CI* [.299, .656]
Healthy Parent, Negative	.363	.52	*t*(17) = 2.963, *p* = .009, 95% *CI* [.105, .621]
Abused Parent, Positive	-.0232	.4282	Not statistically significant (*p* = .821)
Abused Parent, Negative	.0104	.5571	Not statistically significant (*p* = .938)
		Trial-type effect *F*(3, 51) = 4.812, *p* = .005, *ηp2* = .221	
Significant Between Trial-type Differences			
Healthy Parent, Positive	Abused Parent, Positive	*t*(17) = 3.062, *p* = .007, *CI* [.155641, .845359]	
Healthy Parent, Negative	Abused Parent, Positive	*t*(17) = 2.268, *p* = .037, *CI* [.023641, .656026]	
Healthy Parent, Positive	Abused Parent, Negative	*t*(17) = 2.432, *p* = .026, *CI* [.061901, .871988]	

revealed significant differences between Healthy Parent, Positive and Abused Parent, Positive trial-types, between Healthy Parent, Negative and Abused Parent, Positive trial-types, and between Healthy Parent, Positive and Abused Parent, Negative trial-types. We found no other significant differences.

Correlations between IRAP-IPV Trial-Types

We entered the D-score for each trial-type into a Pearson's two-tailed correlation matrix. We found significant negative correlations between Healthy Parent, Positive and Abused Parent, Positive trial-types (*r* = -.550, *p* = .018) and between Healthy Parent, Positive and Abused Parent, Negative trial-types (*r* = -.560, *p* = .016). Stronger endorsement of healthy parents as positive predicted stronger rejection of abused parents as positive and stronger endorsement of abused parents as negative. Statistical analyses supported the pattern of responding in Figure **2**.

Analog Explicit Measure

Data Preparation and Scoring

The 24 Analog items factored into four sub-scale scores, one to correspond with each IRAP-IPV trial-type. For example, items comprised of Abused Parent

and a positive term (e.g., Abused Parents are Protective) corresponded with the Abused Parent, Positive IRAP-IPV trial-type. We calculated sub-scale scores by totaling endorsed values for all items comprising that sub-scale and dividing by the total number of items on that sub-scale (n = 6). Items with negative terms were reverse scored such that positive scores aligned with positive biases and negative scores aligned with negative biases. To facilitate the comparison of Analog and IRAP-IPV graphical data displays, we recoded the scores along the 5-point scale from a low of 1 and a high of 5 to a low of -2 and a high of 2. Higher numbers in either direction indicated stronger bias. We analyzed and reported Analog scores in aggregate. We calculated internal consistency for the Analog by comparing scores across odd and even numbered trials. Cronbach's alpha was α = .771.

Data Analyses

Participants evidenced strong pro-healthy and moderate pro-abused parent biases (Figure **2**). Single sample t-tests showed effects to be significant for the Healthy Parent, Positive subscale and the Healthy Parent, Negative subscale. The effect for the Abused Parents, Negative subscale was also significant. Participant response across Abused Parent, Positive items was neutral, but this effect was not significant (Table **3**).

We entered mean scores for each sub-scale into a mixed repeated measures analysis of variance (ANOVA) (See Table **3**). We found a significant main effect for sub-scale on the Analog score. We conducted a series of six paired samples t-tests (one for each possible pairing) to parse differences between sub-scales. Significant differences presented between the following sub-scales: Healthy Parent, Positive and Abused Parent, Positive, Healthy Parent, Negative and Abused Parent, Positive, and Abused Parent, Positive and Abused Parent, Negative. We found no other significant differences.

Correlations between Implicit and Explicit Measures

The Abused Parent, Positive sub-scale of the Analog, and the Abused Parent, Negative trial-type of the IRAP-IPV were positively correlated (r = .472, p = .048). The negative correlation between the Healthy Parent, Positive sub-scale of the Analog and the Abused Parent, Positive trial-type on the IRAP-IPV approached significance (r = .461, p = .054). We found no significant correlations between the GN-DVMAS and IRAP-IPV trial-types. None of the Analog sub-scale/IRAP-IPV trial-type matched pairs were significantly correlated. No other comparisons were statistically significant.

Coherence between the IRAP-IPV and the Analog Measure

We found evidence of divergence and convergence across subscales/trial-types. Measures converged across Healthy Parent scales, reflecting a pro-health

Table 3: Analog Analyses

Trial Type	Mean D-Score	Standard Deviation	Significance of Effect
Healthy Parent, Positive	.732	.686	$t(17) = 4.527$, $p < .001$, 95% *CI* [.391, 1.07]
Healthy Parent, Negative	.821	.531	$t(17) = 6.569$. $p < .001$, 95% *CI* [.559, 1.09]
Abused Parent, Positive	.056	.693	Not statistically significant (p = .736)
Abused Parent, Negative	.436	.788	$t(17) = 2.348$, p = .031, 95% *CI* [.044, .828]
Main Effect for Sub-scale on Analog score			$F(3, 51) = 4.523$, p = .007, $\eta p2$ = .210
Significant Between Subscale Differences			
Healthy Parent, Positive	Abused Parent, Positive		$t(17) = 2.434$, p = .026, *CI* [.09005, 1.261]
Healthy Parent, Negative	Abused Parent, Positive		$t(17) = 3.388$, p = .003, *CI* [.28921, 1.24413]
Healthy Parent, Positive	Abused Parent, Negative		$t(17) = -2.485$, p = .024, *CI* [-.70260, -.05740]

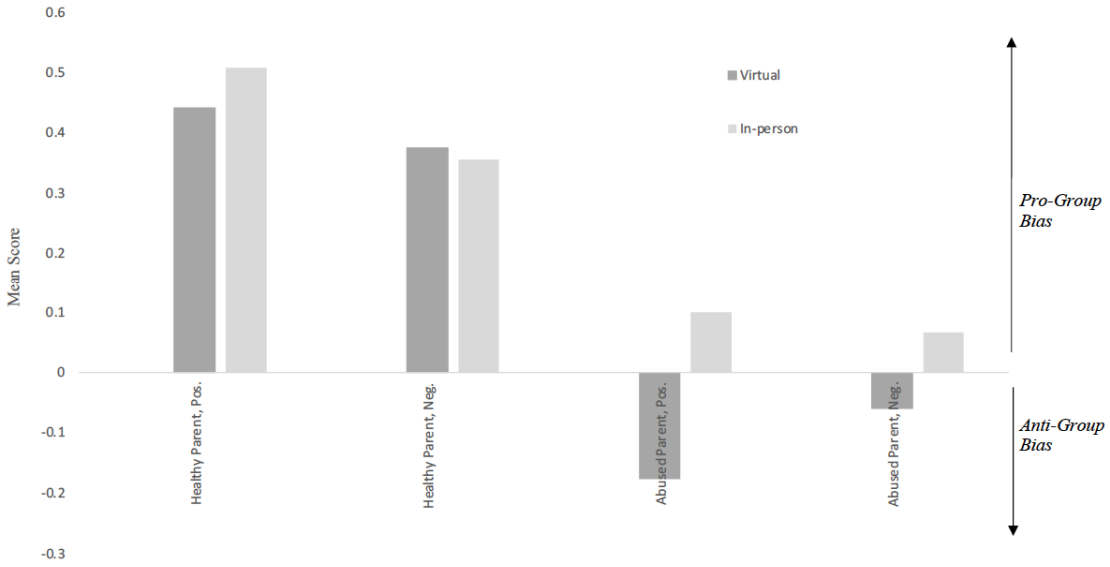

Figure 3: IRAP-IPV Scores across Conditions of Administration.

*Effect significant $p < .05$, **Effect significant $p < .01$.

parent bias. Abused Parent, Negative scales also converged, showing a pro-abused parent bias. The Abused Parent, Positive scales diverged, with the Analog indicating a neutral pro-abused parent bias and the IRAP-IPV indicating a neutral anti-abused parent bias. Across all subscale/trial-type comparisons, participants indicated stronger pro-category bias on the Analog as compared to the IRAP-IPV.

IRAP-IPV across Conditions of Administration

A total of 18 (62 %) participants opted for virtual administration. Eleven participants (38%) elected to attempt the measure in person. We conducted a series of independent samples t-tests to determine whether IRAP-IPV results differed significantly across conditions of administration. We found no statistically significant differences (See Table **4**). Upon visual inspection, we noted convergence on Healthy Parent trial types. Groups diverged across Abused Parent trial types (Figure **3**). Participants in the virtual administration condition evidenced a neutral-weak anti-abused parent bias, while participants completing the IRAP-IPV in-person evidenced a neutral-weak pro-abused parent bias.

DISCUSSION

We hypothesized that child welfare professionals would evidence problematic bias related to IPV commensurate with previous studies evaluating IPV-related bias in professional populations. We hypothesized that the implicit measure would indicate problematic bias of a significantly greater magnitude as compared to the explicit measures. Our results partially support our hypotheses.

GN-DVMAS scores were commensurate with previous studies (Driskell, 2008; Hawkins, 2007;

Table 4: IRAP-IPV Trial-type Scores across Administration Modalities

	In-person (n = 8)			Virtual (n = 10)			Difference
Trial Type	**M**	**SD**	**p**	**M**	**SD**	**p**	**Diff (p)**
Healthy Parent, Pos.	.44038	.283895	.004**	.50690	.421866	.003**	.708
Healthy Parent, Neg.	.37363	.629722	.034*	.35450	.449124	.137	.941
Abused Parent, Pos.	-.17600	.395354	.487	.09910	.432840	.248	.183
Abused Parent, Neg.	-.06038	.514738	.737	.06700	.610776	.750	.644

Wootan Merkling, 2014) using the DVMAS to evaluate IPV-related bias in similar populations. On the Analog measure, participants endorsed statements indicative of pro-healthy/anti-abused parent biases significantly more strongly than statements contrary to these biases. We also found the expected differential responding across the IRAP-IPV implicit measure and the Analog explicit measure. However, we found little evidence of anti-abused parent bias.

Patterns of Responding across Measures

We noted convergence and divergence between measures of bias. The REC model helps explain why responding across explicit and implicit measures may have differed. When an individual's immediate and extended responding cohere, implicit and explicit measures will converge (Barnes-Holmes *et al*., 2010; Staniec, 2019). Where responding does not coherence, participants may reject their immediate response in favor of the extended response. Divergence between implicit and explicit measures will result.

Abused Parent Scales

IRAP-IPV and Analog results diverged across the Abused Parent, Positive scales. Participants were more likely to endorse (rather than reject) statements relating abused parents and positive terms on the Analog measure. On the IRAP-PV, participants responded more quickly to reject (rather than endorse) Abused Parents, Positive relations. Magnitude of response was stronger on the Analog than on the IRAP-IPV. These results support our hypotheses. Divergence may be more likely when measures investigate responding in relation to sociallycharged categories of stimuli (Bast *et al*., 2020; Drake, Codd, and Terry, 2018). Referencing the REC model, participants completing the Analog may have rejected their brief, immediate relational response (indicated on the IRAP-IPV) in favor of a more equitable, pro-abused parent response.

Scores on the Abused Parent, Negative scales converged, with both measures indicating a pro-abused parent bias. The magnitude of pro-abused parent bias on the Analog was moderate, while the IRAP-IPV effect was neutral. Although measures converged, the difference in magnitude of bias across measures probably indicates incoherence between immediate and extended relational responding. Differences between implicit and explicit measures may suggest that an IRAP is capturing response bias (Bast *et al*., 2016). As such, these results lendcredence to our argument for a multi-method approach to measuring IPV-related bias.

Healthy Parent Scales

We found convergence between measures across Healthy Parent scales. Both Analog and IRAP-IPV scores reflected a pro-healthy parent bias, with stronger response magnitude measured on the Analog. When BIRRs and EERRs cohere, implicit and explicit measures will converge (Staniec, 2019). As endorsing relations between healthy parents and positively valanced terms is unlikely to engender controversy, we expected coherence between immediate and extended responding on these scales.

Analyses across implicit and explicit measures give insight into how social and contextual factors differentially influence spontaneous versus considering responding related to IPV. For instance, child welfare professionals participating in the current study showed neutral bias in relation to Abused Parents on the IRAP-IPV. The Analog measured moderate to strong pro-abused parent bias. In other words, extended responding was more equitable than immediate responding. These findings suggest problematic bias may be less evident in case plans and other tasks that require intentional, extended consideration. However, problematic bias might be evident in spontaneous responses (e.g., shifting glances, voice tone, facial expression, and other microaggressions) in relation to IPV.

Participants showed a preference Healthy Parents over Abused Parents across both explicit and implicit measures. Further, participants more strongly endorsed relations between Abused Parent andnegatively-valuated parenting terms and more strongly rejected relations between Abused Parent and positively-valuated parenting terms. It bears emphasizing that Abused Parents refers to those who have experienced IPV victimization, not those who have perpetrated abuse. Abusive behavior should belong to the abuser.

IRAP-IPV as a Valid Measure of IPV-Related Bias

Our results offer preliminary support for the IRAP-IPV as a valid measure of IPV-related bias evidenced by child welfare professionals. We measured internal reliabilityat $\alpha = .710$. In line with previous IRAP studies, participants responded significantly faster ($t(17) = -2.524$, $p = .022$, 95% *CI* [-343.04, -30.67]) across blocks presumed to be consistent with their pre-

experimental history (i.e., Healthy Parent, Positive, Abused Parent, Negative). This suggests content validity. Discriminant validity was evident within the IRAP-IPV across Healthy Parent and Abused Parent trial-types. We found statistically significant effects for block type, for Healthy Parent trial-types, and for trial-type on effect.

We found no correlations between the GN-DVMAS and the IRAP-IPV. We did find significant correlations between the Analog and the IRAP-IPV. Endorsing Abused Parent, Positive statements on the Analog co-varied with rejecting relations between abused parents and negatively valanced terms on the IRAP-IPV. Endorsing Healthy Parent, Positive statements on the Analog co-varied with rejecting relations between abused parents and positively valanced terms on the IRAP-IPV. There were no significant correlations between matched subscales/trial-types. Significant correlations between the IRAP-IPV and the Analog (comprised of the same stimuli) suggest that the absence of correlation between the IRAP-IPV and the GN-DVMAS may result from procedural differences between measures of implicit and explicit bias.

Limitations

There are several potential limitations to the current study. First, we conducted this study two years into the continuing Coronavirus Disease-19 global pandemic. Results should be interpreted in this context. Second, our participants were a self-selected sample of professionals working in child welfare. Characteristics specific to the sample likely impacted outcomes.

Gender Distribution

Our sample included 15 participants identifying as female and three identifying as male. While this ratio is typical in social work professions (Salsberg *et al*., 2017),the gender distribution across our participant sample may have impacted results. Experts posit problematic IPV-related bias stems in part from gender biases (Eilers, 2019; Perrin, 2017; Peters, 2008), which promote females as sensitive and gentle and males as forceful and domineering (Drake, Primeaux, & Thomas, 2018). Unlike previous studies (e.g., Hawkins, 2007; Peters, 2003), we saw no differences between genders on the GN-DVMAS. Revising the DVMAS to include gender-neutral language (GN-DVMAS) may have contributed to greater gender equality in responding to the measure.

Pre-Experimental History

Responding in the context of an IRAP is likely influenced by the participant's pre-experimental history with the sample and target stimuli and with relations between the stimuli (Hussey *et al*., 2016). For example, Bast *et al*. (2016) reported significant divergence between non-therapists and participants trained as behavior therapists on an IRAP targeting feelings. Authors suggest "feelings" terms may have been more salient for trained therapists. Stimuli common in child welfare vernacular (e.g., abused, neglectful) may have been more salient for professionals in the current study.

Pre-Experimental History and Evoking Functions

Professionals working with victim-survivors of IPV are exposed to on-going trauma and details of traumatic events (Iliffe & Steed, 2020), placing them at an increased risk for heightened emotional responding to related stimuli. Researchers have observed longer IRAP response latencies in the context of stimuli that evoke strong emotions (Foster, 2012; Kishita *et al*., 2014). We observed a significantly weaker IRAP effect across Abused Parent trial-types relative to Healthy Parent trial-types. We interpreted this as evidence of neutral or weak bias in relation to the sample stimulus, Abused Parent. Longer response latencies across Abused Parent trial-types may have been a function of the evocative properties of the stimulus. As such, our interpretation of results may underestimate the strength of problematic abused parent bias for this sample.

Limitations Specific to the IRAP-IPV

IRAP-IPV Latency and Accuracy Criteria

The criterion we established for the IRAP-IPV may have negatively impacted attrition. Of those attempting the IRAP-IPV, 24% failed to meet criteria. Comparatively high rates of attrition across IRAP studies may be related to the cognitive demands of the task (Hooper *et al*., 2010). Criterion for accuracy and latency vary across IRAP studies. Higher median latency criteria may reduce cognitive demands, potentially reducing attrition. However, higher median latencies have been shown to correlate with lower reliability (Barnes-Holmes *et al*., 2010). Future studies might compare variations in latency criterion across variables such as populations, settings, topics, and stimulus presentation toward a goal of maximizing participant retention while preserving the validity of the IRAP as a measure of implicit bias.

Contextual Variables – Conditions of Administration

We administered the IRAP-IPV across multiple sites. Contextual variables unique to each administration site (e.g., public versus private) may have impacted results for individual participants. Results of Barnes-Holmes *et al*. (2010) illustrate this point. Researchers compared IRAP measures of racial biases across public and private conditions of administration. Participants testing in a private setting showed greater racial stereotyping. For the current study, contingencies selecting equitable responding may have been more salient in public settings.

Virtual IRAP-IPV Administration

Procedural variation across virtual and in-person IRAP-IPV administration conditions may have impacted findings**.** We found no statistically significant differences in aggregate scores between virtual and in-person groups. However, between group comparisons should be interpreted with caution. Our sample size is small, and we did not randomly assign participants to conditions of administration. Our results should encourage further exploration of virtual administration options. In-person IRAP-IPV administration is the standard in the literature. Empirically validated virtual administration protocols may enhance and expand the current body of IRAP research. Whereas laboratory-based studies often rely upon convenience samples (e.g., college students), researchers administering the IRAP virtually could presumably recruit larger and more diverse participant groups.

The IRAP measures the probability of a relational response under the control of the individual's learning history and current contextual variables (Ferroni-Bast *et al*., 2019). Studies evaluating IRAP effect within laboratory settings are undoubtedly at an advantage for controlling contextual variables. However, the IRAP has also proven reliable and valid when administered in applied settings (Foster, 2012; Kelly & Barnes-Holmes, 2013), and across multiple settings (Drake, Codd, & Terry, 2018; Scanlon & Barnes-Holmes, 2013). The science will likely best be served, not by attempting to limit the influence of outside variables, but by continued efforts to identify and systematically manipulate the myriad factors impacting responding.

Future Directions- The IRAP as a Behavior-Analytic Tool

Future studies should incorporate the IRAP-IPV when evaluating biases related to IPV. Analyses across IRAP-IPV trial-types can enhance our understanding of IPV-related bias within child welfare. The IRAP is a controlled environment in which researchers experimentally manipulate exposure to social and contextual cues under conditions of automaticity. Corresponding changes in response indicate the direction and magnitude to which specific variables influence behavior (Smith *et al*., 2021). As such, differential effects across trials within the IRAP inform functional properties of the stimuli (Hussey *et al*., 2016). Results could aid in pin-pointing staff training needs. Information gleaned from IRAP results could also be applied to customize function-driven interventions (Smith *et al*., 2021) toward influencing problematic IPV-related bias. Participants in the current study, for instance, might benefit from exposure to interventions that “defuse”or separate emotionality related to IRAP-IPV stimuli. Mindfulness-based behavioral interventions (MBIs) are a consideration. Exposure to MBIs has been shown to reduce reactivity in relation to negatively valanced stimuli as evidenced by post-exposure patterns of responding on the IRAP(Hooper *et al*., 2010; Kishita *et al*., 2014).

Measuring Intervention Effects

Apply the IRAP-IPV to measure intervention effect. The IRAP is a reliable measure of treatment effect in studies addressing problematic bias (Bast *et al*., 2020; Scanlon & Barnes-Holmes, 2013). Researchers evaluating the effects of interventions on problematic IPV-related bias could administer the IRAP-IPV at baseline and post-intervention to inform response to intervention. Given that this body of work is predicated on reducing the effects of problematic bias on victim-survivors of IPV, client feedback is an essential indicator. Researchers could compare IRAP-IPV scores with measures of satisfaction completed by families involved with the child welfare system. The premise "nothing about us without us" certainly applies here.

CONCLUSION

Problematic IPV-related bias impacts child welfare work to the detriment of families served. The IPV literature shows bias to be malleable in response to training interventions. Studies relying solely on explicit measures of bias may tell an incomplete story. The current protocol paired explicit measures of IPV-related bias with the IRAP-IPV for a more comprehensive measure of IPV-related bias evidenced by child welfare professionals. Our results describe IPV-related bias in terms of behavioral response across explicit and

implicit measures and in relation to specific stimuli. Findings contribute to an enhanced functional understanding of IPV-related bias within child welfare.

Child welfare is a social justice-minded field committed to ameliorating suffering and preserving family systems (Bruster *et al*., 2019). Effective case management necessitates a diligent awareness of the safety risks associated with IPV victimization, balanced with a willingness to remain open and attuned to the constellation of variables uniquely affecting each family. It is our intent that this preliminary study would spark additional inquiry into functional analyses of IPV-related bias toward a more equitable child welfare experience for victim-survivors and the professionals who serve them.

ETHICS APPROVAL

This study was performed in line with the principles of the Declaration of Helsinki. Approval was granted by the Institutional Review Board of the Chicago School of Professional Psychology (January 25, 2022, IRB-21-12-0037). An addendum was approved on February 7, 2022. Changes included the addition of an online option to complete the research.

The author obtained informed consent from all participants. The informed consent included a statement informing the participant that deidentified data might be used for future research or distributed to another researcher without further request for consent.

The datasets generated during and/or analyzed during the current study are not publicly available. Data is of a sensitive nature. Reidentification could jeopardize the wellbeing of study participants and associated professional agencies. The terms of the IRB approval stipulate that study data will be maintained on the approving university's secure cloud storage site. Data are available from the corresponding author on reasonable request.

CONFLICT OF INTEREST

The author did not receive funding support from any organization for the submitted work. The author is employed by an agency with whom some participants have a current or past affiliation. In this role, the author has consulted with some participants on matters unrelated to the study. No participant is a client of the first author and the author does not supervise or receive supervision from any participant.

FUNDING

The authors did not receive funding from any organization to support the submitted work.

CONSENT TO PARTICIPATE/CONSENT FOR DATA SHARING

The authors obtained informed consent from all participants. The informed consent included a statement informing the participant that deidentified data might be used for future research or distributed to another researcher without further request for consent.

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ACKNOWLEDGEMENTS

The author would like to thank Dr. Robyn Catagnus, Ed.D., LBS, BCBA-D for her guidance and encouragement with this project. Much appreciation to Dr. Annette Griffith Ph.D., BCBA-D for her direction in matters related to statistical analyses. Thank you to Dr. Luis Manuel Silva, Ph.D. for sharing his expertise related to the IRAP protocol and interpretation of IRAP-IPV results.

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Received on 21-05-2024 Accepted on 15-06-2024 Published on 12-07-2024

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