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INTERPRETING ABUSE FROM SELF-REPRESENTATIONAL DRAWINGS:
A MIXED-METHOD STUDY

BY

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DISSERTATION

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ABSTRACT

This interdisciplinary research studied the intuitive process affecting the diagnostic interpretations of drawings. It utilized quantitative and qualitative methods to examine how subjectivity and heuristic strategies of interpreters might affect how accurately the interpreters differentiate between self-representational drawings created by persons who have experienced abuse and persons who have not been abused. This study used a non-clinical sample of 196 self-representational drawings created by college students, and 60 independent judges who were naive to the diagnostic interpretation of drawings.

The first purpose of this study was to introduce a unified, semiotic-naturalistic framework and an empirically grounded methodology for analyzing visual interpretation in general that, in particular, could be used for the diagnostic analysis of images to identify drawers who have suffered interpersonal abuse. The second purpose was to assess the diagnostic utility of a novel, self-portrait drawing protocol, titled *Inside Me–Outside Me*, which I developed for gauging drawers' self-perceptions and worldviews. The third purpose was to examine the relationships between interpreter's diagnostic performance and gender, exposure to abuse, and professional expertise. The fourth purpose was to identify heuristic strategies that are intuitively used in interpretation and how those heuristics affect interpretations and accuracy.

There were three quantitative and qualitative main findings of this study. First, the study indicated that judges who self-identified as having been abused more often saw indicators of abuse than judges who did not self-identify as having been abused. In particular, female judges who self-identified as having been abused saw indicators of abuse more frequently than female judges who did not self-identify as having been abused, and more often than both abused and non-abused male judges. The results obtained in this study expand the literature on the role of

interpreter subjectivity in the interpretation of diagnostic drawings by indicating the effect of experiencing abuse on subsequent interpretations. Second, the study identified a number of recurring visual characteristics, to which many different judges assigned the same meanings. Third, judges who reported utilizing specific heuristic strategies as the criteria for classification of drawings were more accurate than judges who did not indicate using such strategies. Furthermore, this study found a number of specific heuristic judgment strategies that were used independently by different judges. Those heuristics included: ease-of-understanding, out-of-the-norm, dominance, gestalt, elaboration, and normalcy. This finding indicates a potential for further research, linking visual interpretation with visual cognition and decision making.

The results of this study, however tentative, suggest that interpretation is not an idiosyncratic process, but may be seen as cognition-based processes working in tandem with cultural factors. Discussion includes the potential implications of this study for research and practice in visual analysis, education, psychological assessment, therapy, and advocacy against domestic violence and intimate partner abuse.

*To
Kryśia Kaźmierczak (1935–2014)
Leon Kaźmierczak
and Aliczku*

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TABLE OF CONTENTS

CHAPTER 1: INTRODUCTION	1
CHAPTER 2: LITERATURE REVIEW	18
CHAPTER 3: METHODOLOGY	45
CHAPTER 4: RESULTS	65
CHAPTER 5: DISCUSSION AND IMPLICATIONS.....	112
REFERENCES	137
APPENDIX A: PROTOCOL FOR ADMINISTRATION OF INSIDE ME– OUTSIDE ME DRAWING ACTIVITY	146
APPENDIX B: IRB APPROVAL LETTER	148
APPENDIX C: RECRUITMENT EMAIL.....	149
APPENDIX D: VOLUNTARY CONSENT FORM	150
APPENDIX E: 18 CHARACTERISTICS OF AN ABUSE SURVIVOR	151
APPENDIX F: SCORING SHEET – A SAMPLE PAGE	152
APPENDIX G: QUESTIONNAIRE.....	153
APPENDIX H: RELATIONSHIPS AMONG DISCIPLINES.....	155
APPENDIX I: SCORES FOR PROTOTYPES OF JUDGES’ PERCEPTIONS OF MANIFESTATIONS OF ABUSE.....	156
APPENDIX J: SCORES FOR PROTOTYPES OF JUDGES’ PERCEPTIONS OF MANIFESTATIONS OF NON-ABUSE.....	157
APPENDIX K: EXPLICIT SCHEMAS – A COMPLETE LIST.....	158
APPENDIX L: IMPLICIT MODELS – A COMPLETE LIST	160
APPENDIX M: INFORMATION SHEET RECEIVED BY THE JUDGES.....	161

CHAPTER 1: INTRODUCTION

This interdisciplinary research is an exploratory study of visual interpretation, as applied to the intuitive interpretation of drawings for diagnostic purposes. This study introduces a unified semiotic-naturalistic framework for visual analysis with a goal to re-conceptualize drawing-based tests for psychological assessment. The proposed theoretical framework bridges the gap between humanities and social sciences by linking semiotic theory of signification of Charles S. Peirce with the ecological psychology of Egon Brunswik and Gerd Gigerenzer's theory of heuristic judgments. To operationalize the methodological goal, this study examines interpreters' subjectivity and decision-making strategies associated with the interpreters' performance in the identification of interpersonal abuse from self-representational drawings created by a non-clinical sample of undergraduate students. The drawings illustrate a novel naturalistic drawing protocol titled, *Inside Me–Outside Me*.

What Has Motivated This Study?

Visual Interpretation and the Lingua-Centric Culture. My interest in visual interpretation has been motivated by my 25 years of professional experience as a visual artist, illustrator, and graphic designer, as well as seven years of experience in the design of curricula and facilitation of psycho-educational art workshops for battered women and adolescent victims of sexual violence. I have constructed images and designs as fine art and for commercial use and have taught undergraduate and graduate students of visual communication how to communicate visually so that the meanings inferred by viewers—including viewers coming from different cultures—match the intended meanings. The reliability of visual communication and interpretation is particularly important in commercial applications in which images and designs have to fulfill very specific communicative goals, even though the styles through which those

goals are achieved vary widely. Moreover, working with abused women and girls, I found out that the content and the style of their drawings often have been very similar to each other, which indicates that these victims of interpersonal violence have communicated their experiences using similar visual vocabularies. Moreover, these victims were often subjected to the same methods of abuse and violence by the perpetrators, regardless of their cultural heritage. Considering the apparent similarities among the drawings, methods of abuse, and the reactions to the abuse, I have been motivated to focus this study on the development of a methodology that can afford an understanding of the aspects of visual interpretation that are shared across people—a methodology that can provide a basis for studies of the differences resulting from varied interpretive contexts.

There is no doubt in my mind that there are cognition-based regularities governing the construction and interpretation of images and that visual cognition does not require linguistic mediation. That is not to say that culture is irrelevant to visual interpretation and image construction, but that culture is not everything, just as language is not everything. There are culture-based regularities as well as culture-based differences in image construction and the use and interpretation of symbols. For instance, Asian students often use space and perspective differently than students who grew up in the United States. The common knowledge that images transcend the barriers imposed by languages and that we do not need language to understand images is a given in the visual arts and visual communication communities. We lack, however, methodological tools to advance and empirically study the practical knowledge and account for our visual expertise. The challenge is to locate an interpretive lens that affords a better way of understanding both cognition-based and culture-based regularities and differences, without reliance on linguistic mediation.

This dilemma has not been helped by the dominant academic discourse on visual interpretation, which has been monopolized by “the linguistic turn” in philosophy and has sprung many theories of visual interpretation, which reduce visual analysis to linguistic analysis. Those lingua-centric theories fail to account for the affordances of visual cognition and its primacy over language. It is only in the last 20 years that visual interpretation has been freed from the lingua-centric baggage through the growing body of knowledge from neuroscience of visual perception and empirical aesthetics (Ramachandran, 1995, 2001; Zeki, 1999). Similarly, cognitive scientists and linguists, including Gilles Fauconnier and Mark Turner, have paved the way with their theory of “conceptual blending,” which accounts for pre-linguistic and subconscious processes (Turner & Fauconnier, 1995), whereas John McWhorter in his book, *The language hoax: Why the world looks the same in any language* (2014) provides evidence for the model that language rests at the top of cognitive function, rather than the cognitive function being dependent on linguistic structures. This dissertation study follows this line of thinking and investigates the utility of a framework that accounts for both cognitive and cultural factors by acknowledging the primacy of visual cognition.

In addition, being myself a visual learner, who has difficulties learning from and following language-only instructions, it is disheartening to me that research on drawing-based diagnostic tools has been abandoned by psychological research. By the same token, it is disheartening to see the colonization of educational settings by language-based assessments and methods of instruction that limit the full potential of the human multisensory cognition to lingua-centric instruction. It is yet another reason for which I turned to drawings rather than language-based stimulus material in my study. It is my hope that this study can support the collective voice

advocating for multisensory education, in which language, movement, sound, and smell are equally utilized in assessment and instruction.

New drawing protocol. This study utilizes stimulus drawings that have been created according to a drawing protocol that I have developed. The development of the *Inside Me–Outside Me* drawing protocol was shaped by my experience at the battered women’s shelters. Art workshops that invite the women to speak out about their experiences, reflect on their life situations, and guide them toward critical self-awareness have been particularly suitable for addressing the cognitive and emotional needs of this population. I designed the *Inside Me–Outside Me* drawing protocol in 2005, specifically for another research study (Dollinger, Kazmierczak, Storkerson, 2011), modeling it after the art workshops that I had facilitated for several years with groups of battered women and sexually abused adolescents. Since then, I have been using the protocol to gauge how the battered women and girls view themselves, especially whether they blame themselves for the abuse and whether they feel ashamed for what had been done to them, and how they feel when faced with the world, which they have to re-learn to navigate on their own without the insidious oversight of their abusers. The *Inside Me–Outside Me* protocol has successfully fulfilled these objectives, especially when two drawings created by the same victim at different points in time can be compared with each other. The emotional tone and cognitions depicted by the drawings created before the women participate in counseling profoundly differ from the drawings created during or after the counseling.

Statement of the Problem

Drawing-based tests in mainstream psychological research. Research regarding drawing-based assessment instruments has been abandoned by mainstream psychology since the 1980s due to the consensus that drawings fail to lead to reliable diagnoses, and drawing-based

tests have been discredited for their symbol-based and psychoanalytically inclined interpretations of mental health. Hence, there is lack of new experimental research in the literature, not only on the diagnostic utility of drawing modality, but also on the processes underlying their interpretation. It has not always been so. Interest in the psychometric properties of drawing-based assessments peaked in American psychological research between the 1940s and 1980s, until drawing tests were replaced by more reliable new instruments, which were developed under the growing institutional pressures toward the adoption of evidence-based practice (EBP). The EBP model is founded on the premise that “systematic observations that are reproducible and unbiased can increase confidence in knowledge about practice. The absence of systematic observations must lead to caution about information that is derived from clinical experience and intuition, as it may be misleading“ (Gilroy, 2006, p. 9).

With the adoption of the EBP model comes redefinition of the expectations of reliability within the biology-based medical model of mental health, which has been institutionally reinforced by the demands for proofs of accountability, efficiency, and cost effectiveness of programs in research, practice, and provisions in healthcare, mental health, social welfare, education, and other public domains. Hence, the validity of the accumulated body of clinical knowledge about drawings has been deemed unscientific, and experimental research regarding drawing-based tests has been criticized for unsystematic hypotheses and unfounded conclusions that were qualitative and hermeneutic, rather than explained through the biology-based framework (Chapman & Chapman, 1967; Groth-Marnat, 1990; Handler, 1996; Kahill, 1984; Lilienfeld, Wood & Garb, 2000; Roback, 1968; Swensen, 1957, 1968).

The design of the existing, drawing-based tests exemplifies a framework of traditional experimental psychology that constrains what subjects are allowed to draw in order to determine

specific primitives that comprise diagnostic interpretations. For instance, children were instructed to draw an isolated human figure on a blank sheet of paper so that their drawings could be used to determine whether or not the drawers were sexually abused. The constrained approach is appropriate, if determinations are based on matching characteristics of the drawings with a limited set of predetermined drawing primitives that comprise diagnostic interpretations. This path of thinking has been deemed ineffective. The 85 years of efforts to define graphics that could be reliably mapped to emotional functioning have demonstrated the limitations of the traditional paradigm, interpretive formulas, and inventories of signs. This impasse calls for a new paradigm and, resulting from it, methodology.

This study offers such a paradigm, and the methodology, by introducing a theoretical framework within which to re-conceptualize drawing-based assessments and query the process of visual interpretation as distinctly different from linguistic processing. This framework does not impose the restrictive control of the subject matter and does not utilize closed sets of predetermined primitives. To the contrary, it accounts for the openness of interpretive permutations.

Drawing-based tests in clinical practice. Contrary to the scientific evidence and the academic criticisms of their use, drawing-based tests continue to be used formally and informally by clinicians, especially by school psychologists working with children and adolescents. The controversy over the continuous use of drawings in the clinical practice exemplifies the distance between the theoretical and quantitative domain of academic research and the clinical practice, which is practical, experiential, and problem solving. This situation can be attributed to the fact that clinical experience is often “more valued by practitioners than empirical evidence” (Groth-Marnat, 1990, p. 6). Drawing-based tests continue to be taught in specialist-level psychology

programs. For instance, a study from 1997 (Culross & Nelson, 1997, p. 122), reported that drawing-based tests, among other techniques, have been taught in personality assessment courses in 70% of specialist-level school psychology programs. Practitioners who are open to drawing-based tests use them in conjunction with language-based assessment instruments and view them as helpful and important in the assessment process as long as they are used with other measures and indicators.

Surveys conducted among school psychologists show that school psychologists who favor drawing-based tests use them for a variety of purposes, including educational eligibility determination, intervention planning, and hypothesis generation, but not for the confirmation of hypotheses about students' psychological functioning (Hojnoski, Morrison, Brown, & Matthews, 2006; Knoff, 2003; Lubin, Larsen & Matarazzo, 1984; Miller & Nickerson, 2006; Watkins, Campbell, Nieberding, & Hallmark, 1995). In 1983, 83% of school psychologists reported using drawings primarily with children and adolescents for social-emotional assessment, whereas in 2002, more than half of the respondents indicated using drawing-based assessments (Hojnoski et al., 2006; Prout, 1983). Human-Figure-Drawing and Kinetic-Family-Drawing have been indicated as more popular than other drawing tests. For instance, Human-Figure-Drawing ranked third (used by 83% of the respondents) after informal classroom observations (used by 93% of the respondents), and clinical interviews, which were reported by 91% of the respondents (Flanagan & Motta, 2007).

The continuous use of drawings in clinical practice for assessment and therapy indicates that clinicians have an intuitive sense of the usefulness of drawing modality in clinical practice, and are aware of the limitations of the language-only approach to gaining information about people. Hence, driven by the need for complementing language-based assessment instruments,

clinicians take advantage of the existing non-verbal tools, for the lack of better ones, even though they are aware of their limitations. This study attempts to fulfill this need by introducing a modern-age drawing protocol that is sophisticated enough to compel adult and young drawers to engage with the medium and produce informative drawings. Moreover, this study offers a way of thinking about interpretation of drawings that seeks to overcome the limitations of the traditional conceptualizations.

Interpretation and decision making in clinical practice. By and large practitioners favor informal methods of diagnostic decision making over the mechanical methods, which include formal scoring systems and statistical procedures (Grove & Meehl, 1996; Hilton, Harris, & Rice, 2006). Clinicians perceive formal methods as cumbersome and tedious to use. The same approach extends to the preference for informal procedures of interpretation of drawing-based assessments, which include subjective, impressionistic, and experience-based methods (Backos, 2009, p. 78; Groth-Marnat, 1990). The clinical appeal of the informal approach to clinical judgments at large, and the interpretation of drawings, in particular, derives from its holistic and integrative quality, aside from its natural immediacy. In the informal approach, clinicians base diagnostic judgments entirely on their clinical expertise, intuitions, impressions, and gut-level reactions without utilizing published manuals or formal, quantitative scoring systems. Hence, in the literature on informal interpretation of drawing-based tests, this approach is referred to as “intuitive.” The term has been adopted in this study to emphasize that intuitive processes are at the center of the framework that directs this study.

The clinical appeal of the intuitive approach makes it the method for this dissertation research. This study not only builds upon the intuitive approach by investigating the process of intuitive interpretation, but also the design of this research simulates the real-world scenario by

assuming that real-life experiences can lead to the development of sufficient competencies for successful interpretation of drawings.

Purpose of this Study

The first purpose of this study has been theoretical and methodological, to propose a unified, semiotic-naturalistic framework and develop an empirically grounded methodology for visual analysis, more generally, and identification of abuse, in specific. The second purpose has been to demonstrate the diagnostic utility of a novel, self-portrait drawing protocol—developed within the naturalistic framework—to gauge drawers’ self-perceptions and worldviews. The protocol has been designed to be easy to administer, easy to implement without special tools or equipment, and to yield immediate results. Most importantly, it has been designed to stimulate self-reflection. The third purpose has been to identify judges’ experiences and decision-making strategies that were associated with the interpreters’ performance in the identification of the drawers who were abused in interpersonal relationships. Hence, I seek regularities underlying the process of visual interpretation by studying both judges and drawings. By re-visiting and re-conceptualizing the use of drawings in psychology, I hope to contribute to the revival of diagnostic drawings in psychological and educational practice and research.

Research Questions and Hypotheses

The broad question driving my research is, “How do people determine meanings?” In this study, the question has been operationalized by investigating the role that the interpreter’s subjectivity may play in the intuitive interpretation of images by asking exploratory questions and testing hypotheses regarding judges’ gender; professional expertise; exposure to psychological, physical, or sexual abuse; and their decision-making strategies. Previous research indicated that the frequency of finding indicators of a given psychological characteristic

positively corresponds to that characteristic in the interpreter. I expected that judges who self-identified as victims of domestic violence, intimate partner abuse, or sexual assault would classify more drawings as created by abused drawers than judges who did not identify themselves as having been abused. Based on the statistics and media campaigns indicating that women are victims of domestic violence and sexual assault more frequently than men, I expected that women would be more vigilant than men and would classify drawings as created by abused drawers more frequently than male judges (Ballou & Gabalac, 1985; Cohen, 2008; McLeod, 1994; Worell & Remer, 1992; Whalen, 1996).

Another aspect of this study has gauged the relationships between successful interpretation of drawings and judges' interpretive criteria and the tacit beliefs about how emotional, physical, or sexual interpersonal abuse is manifested visually. Hence, I seek to find out whether or not judges could identify criteria by which they classified the drawings, and if they could, whether or not those approaches were related to the accuracy of the judgments.

This study investigates the following quantitative and qualitative research questions and hypotheses about judges' experiences, decision-making strategies, and questions about the drawings:

RQ 1) How successful were judges in their ability to identify drawers who self-identified as having been abused and drawers who did not self-identify as having been abused?

RQ 2) What associations can be found between judges' performance and self-reported abuse status, gender, and professional expertise?

This question has been operationalized by the following hypotheses:

H 1) Judges who self-identified as having been abused are sensitized to seeing indicators of abuse in the drawings more frequently than judges who did not self-identify as having been abused.

H 2) Women see indicators of abuse more frequently than men.

RQ 3) For a given drawing, what is the consensus among judges as to whether the drawing was created either by an abused or non-abused drawer?

RQ 4) For a given drawing, how accurately was it identified as created either by an abused or non-abused drawer?

RQ 5) For a given prototypical drawing, what was the degree of consensus as to whether it was judged as drawn either by an abused or non-abused drawer?

RQ 6) What classification criteria can be identified on the basis of judges' reports, and how do they relate to judges' accuracy?

Significance of the Study

The main significance of this study is methodological. By developing a methodology for visual interpretation within a paradigm that is applicable to qualitative and quantitative methods, and can account for both cognitive and cultural influences, this study sets a stage toward the development of an empirically grounded methodology for visual research not only in psychology, but also in art therapy and other social sciences and humanities, including visual studies, cultural studies, visual communication, and education in the arts. For instance, this study is relevant to the qualitative research in visual and multimodal methods in social and health sciences, including visual psychology, an emerging field in the United Kingdom (Motzkau, 2011; Reavey, 2011; Rose, 2001). Those fields focus on the development of empirical grounds for analyzing varied types of data side-by-side, such as bodily, audio, and spatial data.

By being a first study in which interpreters' abuse has been associated with the performance in assessment of abuse from drawings, this study has broader application to a general area of research on the role of the clinicians' subjectivity in clinical decision making. For the same reason, this study is important to research on heuristic judgments by relating heuristics to visual interpretation.

This research is important to clinical and educational practice. It has significance to practitioners who are open to non-discursive modality in such disciplines as: art therapy, clinical psychology, school psychology, art education, art, and education. That includes especially professionals working with multi-language populations, because this study introduces a protocol for an activity that transcends language barriers, is a method for acquiring insights into people's self-perceptions and worldviews, and is non-intimidating and engaging. This drawing activity can be utilized (a) to personalize education, (b) to incite self-discovery, and (c) as a means to learn about people's relational selves.

This study is important to social workers and advocates working with victims and survivors of domestic violence, intimate partner violence, and sexual assault by offering a method for assessment of the victims' self-image that can guide the counseling. This study provides empirical evidence that supports advocacy against intimate partner violence, because it demonstrates that the abuse can profoundly affect the victims' self-image and worldviews.

Conceptual Framework

This study utilizes a semiotic-naturalistic framework, which bridges humanities with psychology and cognitive science by linking visual interpretation with visual cognition without the reliance on linguistic modeling. The semiotic understanding of the process of signification and interpretation derives from American semiotician, logician, and empirical realist, Charles

Sanders Peirce. According to Peirce, people make sense of their environments and create new knowledge through experience and interactions with the environment. The naturalistic extension of this approach derives from ecological psychology of Egon Brunswik, who extended Peircean epistemology and developed operational models of interpretation. According to Brunswik, all interpretations are probabilistic and tentative due to the open nature and complexity of the system in which they occur, that is, natural environment (Kirlik & Storkerson, 2010; Storkerson, 2009; 2010). Such interpretations are not the end goal; they are means to guide decisions in the social world about interventions, treatments, remedial programs, learning content, modes of teaching, and so on.

According to Gerd Gigerenzer, people make decisions spontaneously and informally, rather than deliberately or formally, by making reality-based inferences and developing ad hoc criteria for the judgments and intuitive theories that account for what they perceive. Moreover, such inferences are contextual and intuitive rather than analytical, and such intuitions are the experience-based knowledge of how things are or work. These intuitive understandings occur without a formal theory to explain why things work the way they do (Gigerenzer, 1999, 2009, 2011; Storkerson, 2001, 2003). These understandings are acquired through interactions with the environment, including its social, cultural, and personal dimensions. Thus, interpretation is not a simple computation of perceptual stimuli, but a process in which both the cognitive and the cultural factors are simultaneously at work and interact with each other.

In this study, then, interpretation is conceptualized as a process involving three interdependent actors: the interpreter, the formal aspects of the drawing, and the referents to which it relates. To make interpretive judgments, interpreters screen multiple formal cues to discern familiar patterns and regularities that suggest one interpretation more strongly than

alternative interpretations. In the realm of aesthetic theory, this model corresponds with *moderate formalism* (Dhillon, 2015; Zangwill, 2001) position recognizing that while social, cultural, and uniquely individual contexts influence judgments about art, formal features of the artifacts are the building blocks of aesthetic experiences.

Summary of Methodology

I have utilized a mixed-method approach with the developmental design, which capitalizes on the results of quantitative analyses to answer qualitative questions (Greene, Caracelli, & Graham, 1989, p. 259). Stratified, purposeful, and theory-based sampling techniques were used to recruit 60 participants from student and non-student populations with diverse professional experiences and known histories of abuse. Individuals with professional training in interpretation of drawings were excluded, because their intuitive beliefs about the relations between images and psychological functioning could be contaminated by theories they acquired during the training. Each of the non-expert judges, that is, persons who had not been trained in the diagnostic use of drawings, judged a set of 196 original self-portrait drawings that were created by undergraduate students. The judges were asked to discriminate between the drawings that had been created by abused drawers from the drawings created by non-abused drawers.

From the ecological perspective, the constraints of the laboratory, experiments, which present participants with simplified problems to test isolated variables in context-free situations, have been critiqued as reductionist and unrepresentative of human cognition, which operates in the complexity of natural environments by comparing and combining multiple cues afforded by specific situations. Hence, following the naturalistic approach, in this study, the judges were asked to classify the drawings as they would any task in everyday life: devising their own classification strategies. The sequence of drawings was randomly changed at every 15th

interpreter to counter the biasing influence of a given order. A definition of abuse was provided with a list of 18 characteristics describing psychological profile of an abuse survivor. These characteristics had been compiled from trauma literature, which indicates that similar coping responses to trauma-inducing experiences, including varied forms of abuse, can be found across individuals (Finkelhor & Browne, 1985; Herman, 1992; Rothschild, 2000).

Upon the completion of the sorting task by one judge at a time, participants were interviewed using the qualitative semi-structured questionnaire I constructed for the purpose of this study to obtain information about judges' experiences hypothesized as relevant to visual interpretation. The interview concluded with questions about criteria by which participants had classified the drawings and their impressions about the sorting process.

Stimulus drawings. The naturalistic principle has been applied not only to the method of evaluating the drawings, but also to the method of generating the stimulus material, which consisted of non-facial, self-portrait drawings, titled "Inside Me–Outside Me." The drawings were created for the purposes of another study (Dollinger et al., 2011) under controlled conditions by undergraduate college students, some of whom self-identified as having been abused. Students were asked to make rich representations of themselves in relation to the outside world by tracing the palm of their hand or their foot onto a white sheet of a legal-size paper. The area inside the tracing designated the inner self, and the area outside the tracing designated the external world or the outer self. This protocol frees the drawers to include as many or as few aspects of their inner and outer selves as they see fit. A random sample of 196 from those drawings was used in the current study.

Explanatory variables. I quantified the responses from the semi-structured questionnaire and entered them as categorical variables in the statistical analyses. The variables included

information about the participants' demographic background, professional degrees, exposure to abuse, and interpretive criteria. The abuse status of the drawers and the judges was recorded as a self-reported general measure of abuse, which was gauged by the question about whether or not participants had experienced emotional, physical, and sexual abuse. A composite measure has been applied, because the study focused on the understanding of the process of intuitive interpretation and the utility of self-representational drawings, rather than on the making of precise diagnoses about specific abuses. Thus, the *self-reported* abuse status of the drawers served as the criterion for the *judged* abuse status of the drawers.

Limitations

There are limitations to this study that warrant attention. Considering the sample design and recruitment strategies, the results from this study are not generalizable to the general population of Americans, but rather to individuals who are open to non-discursive experiences and have varied artistic interests. Second, the study relies on retrospective data, asking participants to describe their intuitive beliefs about their classification strategies. Hence, the results should be viewed with an understanding of the limitations of retrospective insights into the process that is not fully available to conscious awareness. Third, the method of modeling each predictor variable in separate regression models has limitations, though it is suitable for the sample size of this study. A more powerful approach, which is better aligned with the naturalistic framework, is to conduct multivariate analyses, in which several characteristics are modeled at the time. For instance, a hierarchical regression with a larger sample size can be used to model all predictor variables in one equation. The drawings used in this study had been created by undergraduate students, therefore regularities found among these drawings might be associated with the characteristics of the sample. To have confidence in the results of this study, a sample of

drawings created by non-students and drawers from more diverse backgrounds and ages is needed to assess the reliability of the results of this study. Finally, a generally larger sample of judges is needed to gain confidence in the conclusions drawn from this study.

Definitions of Key Outcome Variables

Aspects of judges' performance have been measured by the following variables: Sensitivity Specificity, Balanced Accuracy, and Tendency.

- **Sensitivity** = the proportion of drawings which were correctly identified as created by drawers who self-identified as having been abused.
- **Specificity** = the proportion of drawings which were correctly identified as created by drawers who did not self-identify as having been abused.
- **Raw Accuracy** = the proportion of drawings which were correctly classified in total. This measure was not reported due to the unbalanced sample. It was used to identify judges who bettered the chance level performance.
- **Balanced Accuracy** = the balanced proportion of drawings which were correctly classified; calculated as the mean of the Sensitivity score and the Specificity score.
- **Tendency** = the proportion of drawings which were classified as created by drawers who self-identified as having been abused in total.

The following outcome variables measured Accuracy and Tendency for each drawing:

- **Drawing Accuracy** = the proportion of judges who correctly classified a drawing.
- **Drawing Tendency** = the proportion of judges who classified a drawing as created by a drawer who had self-identified as having been abused.

CHAPTER 2: LITERATURE REVIEW

Drawing Tests in Psychological Assessment

Drawings have a rich tradition of use as diagnostic devices in psychological assessment and in therapy as a means to gather information about the psychological functioning of the drawer. That tradition has been polarized by differing functional and theoretical commitments and approaches to drawing tests and drawing process amongst clinicians and researchers. The modern use of drawings for diagnostic and therapeutic purposes is based on the *expressive* and *non-verbal* categorizations of drawing process, which assume that drawers reveal aspects of their personalities in response to the drawing task by encoding psychological content in the graphic medium (Groth-Marnat, 1990, p. 365). *Expressive* processes are conceived as differing from perceptual processes in that they are outgoing, whereas perceptual processes are incoming (Hammer, 1958). The distinction between verbal and *non-verbal* modes of expression is based on an assumption that some contents are better expressed with images than with language, and so, drawings can overcome limitations of the language-only approach to accessing psychological content. Drawings reduce the dependence on language acquisition, which makes drawings particularly suitable for persons with communication disabilities or for foreign language speakers. Because drawing test instructions are uncomplicated and easy to administer, to test takers they can be perceived as nonthreatening, especially to those with test anxieties. As a *non-verbal* mode of expression, drawing process is seen not only as a means for connecting with pre-verbal dimension of the self, but also as means for stimulating the externalization of the psychological content that otherwise may have remained unexpressed (Oster & Gould Crone, 2004; Waller & Dalley, 1992). In particular, human figure drawing tests have been used as a method for accessing the emotional realities of individuals, manifesting concrete markers of the inner self,

which encode most salient aspects of personality, important themes, social dynamics, and attitudes toward the self and others (Groth-Marnat, 1990; Knoff & Prout, 1993; Kris, 1952; Thomas & Gray, 1992). The assumption driving the use of human figure drawings is that drawings encode individual's conscious and unconscious self-perceptions, the role others play in one's environment, and personal assets and weaknesses (Hammer, 1958).

Human figure drawings. The tradition of drawing tests has been defined by drawings of a human figure (Roback, 1968; Sidun & Rosenthal, 1987; Swensen, 1957, 1968). The first figure-drawing test was the Draw-A-Man (DAM) test developed by Florence Goodenough (1926) for estimation of children's cognitive abilities. Tests that follow may differ in the number of figures and in the inclusion of other objects, but they all are human figure drawings. Among commonly used human-figure-drawing tests are four basic types: (a) drawings of a single person; (b) drawings of a group of people; (c) drawings that combine figure and inanimate objects, such as a tree and a house; and (d) drawings of a group of people engaged in an activity. For instance, Draw-A-Person (DAP) and Human-Figure-Drawings (HFD) rely on a representation of a single person on a blank sheet of paper, whereas Kinetic-Family-Drawings (KFD) depict the drawers' family members doing things (Buck, 1948; Burns & Kaufman, 1970; Groth-Marnat & Roberts, 1998; Knoff & Prout, 1985; Machover, 1949). Names of the tests indicate their subject matter. For instance, a House-Tree-Person (HTP) drawing contains a house, a tree, and a person.

The motivation behind the figure as a theme for the drawing tests derives from the observation that a human figure is what children draw before they draw animals or inanimate objects (Hammer, 1958). Human figure drawings are predicated on a central assumption that they take the form of self-portraits and compel drawers to project onto the figure their own bodily experiences (Hammer, 1958). Thus, the drawing of a human figure is the most commonly

researched subject matter in the literature and predominantly applied to children or pre-adolescents. There are different conceptualizations of how drawings manifest a drawer's emotions, thinking, and attitudes. These depend on theoretical framework and clinical training, which have methodological consequences in terms of how drawings are interpreted. A psychoanalyst may propose deep unconscious motives, whereas a cognitively oriented clinician may look for personal coping strategies or worldviews indicated by the drawings.

Quantitative methods. Quantitative scoring systems for figure drawing tests have been developed within the methodology of American experimental psychology, which historically was behaviorist, and thus, was focused on measuring observable behaviors, using standardized quantifiable measures (Bech, 1993; Chapman & Chapman, 1967; Groth-Marnat, 1990; Klopfer & Taulbee, 1976; Knoff & Prout, 1985; Lubin et al., 1984; Lubin, Larsen, Matarazzo & Seever, 1985; Prout, 1983). Standardized variations of the human figure, such as Draw-A-Person, Human-Figure-Drawing, or Kinetic-Family-Drawing, codify single or clustered features and placement of a drawn figure or figures by linking them with specific diagnostic categories or pathologies (Flanagan & Motta, 2007). Within this methodology, a one-to-one mapping between the visual forms and psychological content has been sought, and drawings have been searched for particular graphic indicators of clinical diagnoses. The standards for scoring the drawing features derive from systematic empirical studies and include scores for normative frequencies of individual graphic elements, complex elements (gestalts), and overall impressions. Typically, scoring manuals include such visual characteristics as: body parts (nose, ears, eyes, genitalia, hands, feet, etc.), clothing items (belt, skirt, nudity), a number of separators between the self and the mother, number of rooms in the house, or ornamentation (Groth-Marnat, 1990). An average manual may include from 90 to 30 diagnostic indicators. For instance, Van Hutton's scoring

system for House-Tree-Person and Draw-A-Person tests defined 90 characteristics, whereas a scoring system for screening for cognitive and emotional functioning developed by Elizabeth Koppitz (1968) for her Human-Figure-Drawing test for children and pre-adolescents codified 30 emotional indicators by associating affects with clusters of graphic features. Anger/aggressive behavior, for example, was associated with crossed eyes, teeth, long arms, big hands, and genitals, whereas anxiety was associated with shading of face, shading of body and/or limbs, shading of hands and/or neck, legs pressed together, omission of eyes, and clouds. Scores for overall impressions assess qualitative judgments, including “bizarreness,” “body disturbance,” or “quality of the drawing.” These scorings have lower interrater reliability than straightforward identifications of the presence or absence of specific elements. That may indicate that there is low agreement as to how these conceptual constructs are manifested in drawings, and/or some criteria may have not been precisely determined and, thus, the constructs can be difficult to discern. For instance, it may be debatable how to distinguish “shading” from “texture.” From the perspective of arts education, the categories designating overall impressions involve aesthetic judgments. Aesthetic judgments often differ among people depending on their aesthetic preferences, which may change with exposure to art and the understanding of art forms (Pariser et al., 2007). For instance, an average consumer of art who has low understanding of modern art movements considers traditional and realistic artworks as aesthetically satisfying, whereas cubism, neoplasticism, or dadaism as unintelligible or bizarre. What makes interrater agreements possible is that people tend to respond to certain formal qualities of artworks in similar ways, and their aesthetic judgments can be quite consistent across interpreters. This aspect of visual interpretation will come to the forefront in the section on how drawings influence interpretation.

Numerous scoring systems introduce new features and emphasize different drawing characteristics as diagnostically significant, in addition to repeating the same significations that can be found across many manuals. For instance, for the House-Tree-Person test, 475 diagnostic characteristics have been identified by combining the inventories from the manuals published until 1977 (Wenck, 1977). In sum, even though quantitative scoring systems can achieve relatively high interrater reliability, they have been criticized for unsystematic hypotheses, unfounded conclusions, and the lack of diagnostic reliability.

Qualitative methods. Two methods of qualitative evaluation of drawing tests can be distinguished: content-symbolic and global-impressionistic. In the content-symbolic approach, the focus is on sign semantics, where drawing elements are given symbolic meanings representing diagnostic categories. Typically, those meanings are imbued with psychoanalytic and psychodynamic theories of personality, because the tradition of the use of drawings in psychology and psychiatry springs from Freudian tradition. For instance, in the House-Tree-Person (HTP) test, which was developed by John Buck in 1948, windows drawn without panes “symbolize anal-eroticism and feelings of hostility” (Buck, 1948, p. 53). Hammer & Piotrowski reinterpreted windows in HTP drawings as “safety valves” releasing hostility (1997, p. 351). In similar fashion to quantitative methods, guidelines for content-symbolic interpretations have been codified through published manuals. Quantitative and qualitative evaluations are not necessarily mutually exclusive. They can be combined in a single manual. For instance, for his HTP test, Buck developed a manual that has two components: a quantitative scoring system and guidelines for qualitative evaluation of drawing features, some of which are interpreted within a psychoanalytic framework. For instance, a “tree pointing upward with spike-like branches” symbolized a “subconscious castration fear” (Buck, 1948, p. 53).

In contrast, in the global-impressionistic approach, clinicians do not use manuals and base diagnostic judgments entirely on their clinical expertise, intuitions, impressions, and gut-level feelings. Thus, the global-impressionistic method is called “intuitive” and is informal, holistic, and integrative. This type of analysis is by far preferred by clinicians who use drawings in their practice rather than cumbersome and tedious formal quantitative scoring systems or standardized content-symbolic methods (Backos, 2009, p. 78; Groth-Marnat, 1990). Qualitative approaches have been severely criticized, not only for the lack of diagnostic reliability, but also for the hermeneutic nature of interpretations, which rely on symbols that are culture dependent. Part of the problem can be attributed to the situation that although the inventories and diagnostic emphases differ among authors of varied scoring systems, drawing tests, or interpretive manuals, the essential aspects of the contents and classifications borrow knowingly or unknowingly from predecessors and continue the traditional paradigms of the discipline.

Post-drawing interviews. The protocols of drawing tests have been formalized according to prescribed procedures. The human figure drawings take, on average, up to 30 minutes, including 10 minutes for the post-test interview. During interviews, drawers are asked to make up stories about the persons shown in the drawing. Typically, a clinician prompts the drawers with questions that elicit such information as *who*, *what*, *when*, and *how* about the persons represented in the drawing. The clinician writes down the information verbatim so as to minimize distorting the content that may guide further interpretations and diagnoses. There are several approaches to post-drawing interviews depending on the preferences and theoretical orientation of the clinician. Some clinicians ask test takers to write down observations and feelings that the drawing may invoke, rather than asking for verbally delivered stories (Handler, 1996; Sarrel et al., 1981). The practice of including interviews in the protocol brings attention to

two aspects: drawings can induce learning about others, and some drawings are not self-evident. For instance, a human figure drawing may represent three types of selves: an actual self, an ideal self, and the drawer's perception of a significant other. Post-test interviews, among other things, help determine what kind of self the drawing encodes (Hammer, 1958).

Inferences for forthcoming study. Three aspects of drawings guided my study. First, the clinical appeal of the intuitive method makes it worthy of further research as the method for evaluation of drawings. Second, the lack of a satisfactory and reliable diagnostic methodology indicates a need for a methodology that leads to a better understanding of the process of interpretation. Third, the continuous use of drawings in psychological assessment and therapy, despite the criticisms, calls for a new, modern-day drawing protocol that is sophisticated enough to compel adults and children to engage with the medium and produce rich and informative drawings. In the current study, I investigate all three: an intuitive method of interpretation, a methodology for a better understanding of the process of interpretation, and a new drawing protocol.

Intuitive Judges and How Judges Co-Create Interpretation

There is a vast literature on research regarding drawing tests, including experimental and non-experimental studies. The overwhelming majority of these studies focus on what can be learned from drawings about the drawer and whether drawings are reliable diagnostic tools (for instance: Allen & Tussey, 2012; Chantler, Pelco, & Mertin, 1993; DiLeo, 1973; Handler, 1985; Joiner et al., 1996; Muri, 2007; Sidun & Rosenthal, 1987; Swensen, 1957; Thomas & Gray, 1992). To develop my overall working hypothesis for this study, I build upon the legacy of a small area of experimental research that examines the relationships between clinicians' professional training and personality and diagnostic decisions in intuitive interpretation of

drawings (Albee & Hamlin, 1949, 1950; Bruening, Wagner, & Johnson, 1997; Burley & Handler, 1997; Hammer & Piotrowski, 1997; Hiler & Nesvig, 1965; Levy, Lomax, & Minsky, 1963; Levenberg, 1975; Levy & Ulman, 1967; Schmidt & McGowan, 1959; Scribner, 1989; Scribner & Handler, 1987).

Studies examining diagnostic accuracy in relation to professional training compared performance of expert and non-expert judges. Typically, the judges were recruited from among mental health workers, non-mental health workers, or artists. Those studies indicated that professional expertise in diagnostic interpretation of drawings was not necessarily associated with higher accuracy. Non-psychologists without any experience with drawing tests were found to perform as accurately as experienced clinical psychologists who knew the theories of interpretation of drawing tests and had experience applying them (Albee & Hamlin, 1949, 1950; Handler, 1985; Schmidt & McGowan, 1959; Scribner, 1989; Scribner & Handler, 1987). Bernard Levy and Elinor Ulman (1967) replicated findings from studies conducted by George Albee and Roy Hamlin (1949, 1950) and found that judges who had experience with psychiatric patients were as accurate as raters without such experience. Wesley Hiler and David Nesvig (1965) demonstrated that six psychologists accurately identified 65% of 60 Human-Figure-Drawings, whereas non-psychologists were correct about 64% of the drawings. Half of the drawings in that study were drawn by psychiatric adolescents, and the other half were drawn by non-patients. Not all the studies yield consistent results. A study by Stephen Levenberg (1975) suggests that there may be associations between the level of professional training and diagnostic performance. Levenberg compared diagnostic accuracy of an expert in Kinetic-Family-Drawings (KFD), doctoral-level clinicians, pre-doctoral interns, and hospital secretaries. That study indicated that doctoral-level clinicians identified emotional disturbance with 11 percentage points greater

accuracy than either of the other groups and, on average, correctly identified 72% of the drawings, whereas an expert in the interpretation of KFD was not more accurate than the mean performance of judges in the three experimental groups.

Another line of research was focused on clinicians' personality factors in relation to psycho-diagnostic skills. In that approach, the intuitive or global-impressionist method was studied. Those studies represent varied theoretical frameworks to evaluate different drawing tests, and they vary in sample sizes and the methods of identification and measurement of aspects of personality. Even though personality factors that have been studied in previous research are difficult to operationalize within one framework, they do identify certain aspects of judges' personality as related to better diagnostic skills. Those studies were in agreement that intuition plays an important role in interpretation of human figure drawings, so that "well developed intuitive abilities" (Hiler & Nesvig, 1965, p. 526) have been associated with higher accuracies (Albee & Hamlin, 1949; Schmidt & McGowan, 1959). Those studies concluded in most general terms that the drawing medium can be more suitable for some personalities, but not for others. Hence, some clinicians may interpret drawings more successfully than others.

Studies that followed this line of research broadened the scope toward other personality characteristics, not only clinician's intuitive abilities. Christopher Scribner's (1989) dissertation study of ten raters interpreting Draw-A-Person drawings indicates that poor intuitive raters are characterized by concern with control over non-discursive experiences, which suggests a lack of openness to such experiences. A study by Scribner and Leonard Handler (1987), in which 66 raters evaluated three pairs of Human-Figure-Drawings devised by psychotherapy patients, has shown that raters who have affiliative interpersonal orientation and are not power-oriented are

likely to make more accurate intuitive interpreters than non-affiliative and power-oriented raters, as measured by the Minnesota Multiphasic Personality Inventory (MMPI).

There is no singular characteristic that has been linked with higher accuracy; rather, the studies point to a combination of factors as positively related to greater intuitive accuracy, relative to differing measures, populations, and drawing tests evaluated. Those characteristics include: empathy, creativity, intuition, self-reflection, introspection, self-acceptance, openness toward others, freshness and spontaneity toward others, non-judgmental approach to others, and interest in others (Burley & Handler, 1997). From among those characteristics, empathy has been emphasized as the key to better performance.

The studies of personality factors in relation to psycho-diagnostic skills also found positive association between the frequency with which indicators of certain aspects of personality are found in the drawings and the presence of those characteristics in the judges. For instance, Emanuel Hammer and Zygmund Piotrowski (1997) studied raters' hostility levels and the number of signs of hostility or aggression the raters found in House-Tree-Person (HTP) drawings. A rank-order correlation of .94 (Standard Error = .48) was reported between the degree of hostility or aggression observed in social interactions of six expert raters and the number of signs of hostility they found in the HTP drawings of a non-clinical sample of 400 school-age children, ranging from first to eighth graders. Although that study does not afford much confidence about the size of the effect, because of the large confidence interval (.96), nonetheless, it points toward a potential area for research.

The studies of the intuitive interpretation of drawings were not exclusively focused on the interpreters. Those studies developed models of the interpretive process itself. The prevailing conceptualizations of interpretation have placed empathy at the center of the interpretive process.

The construct of empathy stands for “being perceptive to a wide range of cues, having insight into one’s own motives, and the ability to accurately evaluate motives of others” (Burley & Handler, 1997, p. 370). One empathy-based model describes interpretation as the process of re-creation of meanings: “the interpreter re-creates the product for himself or herself and in this way comes to understand it” (Scribner, 1989, p. 12). Such a reconstruction of meanings can be achieved through the interpreter’s “intimate involvement” with the drawing (Handler, 1985, p. 188). Other models stress the empathetic understanding of the artist as dependent on the interpreter’s ability to imagine what it is like to be the person drawn. An Austrian psychoanalyst and art historian Ernst Kris (1900–1957) views interpretation as a process dependent on both the interpreter’s ability to co-create meanings and the interpreter’s ability to identify with the artist: “We started out as part of the world which the author created; we end as co-creators: we identify ourselves with the artist” (Kris, 1952, p. 56). Kris and others, like Todd Burley and Handler, emphasize that valid interpretation, in addition to empathetic processes, depends on the interpreter’s synthesizing skills, which they describe as the “ability to become again reconnected, with cognitively reorganized creative understanding” (Burley & Handler, 1997, p. 371).

Inferences for forthcoming study. The previous experimental studies recognized the need for understanding the process of interpretation and demonstrated that even though the drawers imbue the drawings with meanings, interpreters are not passive recipients of those meanings, but rather their co-creators. Those studies indicated that attitudes toward others, in general, and empathy, in particular, and attitudes toward non-discursive experiences were associated with diagnostic accuracy. In the current study, I examine variables corresponding to empathy and intuition. Considering that positive associations were shown between an interpreter’s hostility levels and the frequency with which the interpreters found indicators of

hostility in the drawings, I examine judges' exposure to emotional, physical, or sexual abuse in relation to accuracy and the frequency with which judges may find indicators of abuse in the stimulus drawings.

How Do Drawings Influence Interpretation?

A handful of experimental studies investigated not only interpreters' characteristics, but also the style of drawings as being potentially associated with diagnostic decisions (Albee & Hamlin, 1949, 1950; Burley & Handler, 1997; Hammer & Piotrowski, 1997; Levy et al., 1963; Levy & Ulman, 1967; Schmidt & McGowan, 1959; Scribner, 1989; Scribner & Handler, 1987; Sherman, 1958; Ulman & Levy, 1975; Whitmyre, 1953). These studies squarely relate to the qualitative foci of my research and informed my analyses of judges' heuristics. In particular, a study conducted by Bernard Levy and Elinor Ulman (1967) sums up most succinctly the trends found in other studies of associations between drawings styles and psychological functioning. In that study, 84 raters of varying experience with psychiatric patients and art were asked to identify psychiatric patients from 96 freestyle paintings. The paintings were created by adult psychiatric patients and by non-patients of varied levels of art experience and IQ levels. Most of the paintings were landscapes ranging in the style from realistic to abstract, and they were evaluated using the intuitive method. Levy and Ulman sought relationships among the diagnostic performance, the style of the drawings, and the IQ and artistic skills of the painters. They found that the style of drawings is associated with diagnostic judgments as to whether a painting is classified as created by a psychiatric patient or non-patient. Paintings created by non-patients with IQs ranging from dull average to bright average and works by artistically gifted patients and efficiently functioning patients with high IQ levels were evaluated as orderly. Those paintings had in common a realistic and compositionally integrated style. In contrast, paintings by non-

patients with lower IQ levels and works by acutely psychotic patients were evaluated as chaotic. Those paintings had in common an abstract and compositionally disintegrated style. Levy and Ulman concluded that artistic and aesthetic qualities of drawings influence diagnostic judgments in such ways that raters associated non-psychotic states with realism, compositional integration, and the perceived sense of order. In contrast, psychotic states were associated with abstraction, exaggeration of realistic forms, compositional disintegration, and the perceived sense of chaos. Levy, Lomax, and Minsky (1963) have shown that expectation of anatomical or proportional correctness underlies clinical judgments as a measure of normalcy. As a consequence, works by professional modern artists or works by non-artists that are created without regard to proportional correctness “might easily be called ‘sick’ by a clinician” (Levy et al., 1963, p. 511). A study conducted by Hiler and Nesvig (1965), in which raters were provided with a set of global-impressionistic, predictive criteria for discrimination of pathology from human figure drawings has shown that a criterion of “bizarreness” yielded the most valid intuitive judgments. This category included such descriptors as: “schizy,” “grotesque,” “inhuman,” “sinister,” “sick,” “ghoulish,” “weird,” and “gnome like,” but not “peculiar” or “distorted” (Hiler & Nesvig, 1965, p. 523). The most effective criteria of normality found by that study were “nothing pathological” and “happy, pleasant [facial] expression” (Hiler & Nesvig, 1965, p. 525). These associations of pathology with distortion of realistic forms, the sense of bizarreness, and low integration, on the one hand, and associations of normalcy with proportional correctness, high integration, and the perceived sense of order, on the other, include affective states in such ways that normal states have been associated with positive emotions, whereas pathological states have been equated with negative emotions. These patterns of associations between normal or abnormal psychological states and their stylistic manifestations in the drawings reappear in numerous studies throughout

the time span and varied contexts of the uses of drawing by many authors, not only in psychology, but also in other fields, including art therapy (Brooke, 2004; Malchiodi, 2003). This recurring of the same forms as signifiers of normality, abnormality and emotions, across judges, time periods, and domains of knowledge can be explained, in part, by neuroscience of vision, indicating that certain visual properties of images are hard wired to evoke similar aesthetic reactions across people and across cultures (Ramachandran, 1995, 2001; Zeki, 1999).

Inferences for forthcoming study. The previous experimental studies brought to attention recurring tendencies with which judges associate certain artistic and aesthetic qualities of drawings with normalcy and positive emotional states or pathology in association with negative emotional states. Those studies also indicate recurring congruence between psychological states of the drawers and certain formal aspects of the figure drawings by those drawers (Hammer, 1958; Hiler & Nesvig, 1965; Machover, 1949). Those studies indicate that certain artistic and aesthetic vocabularies have the natural or cognitive basis and, thus, can be found across populations, cultural traditions, and domains of knowledge. What those studies lack is a theory of signification that provides a framework explaining those relationships, a model that can be further empirically tested. This dissertation study is an initial effort to propose such a framework for the intuitive interpretation of drawings by evaluating whether or not the same interpretive patterns could be found across the participants of this study.

A Semiotic-Naturalistic Framework

The theoretical framework that I propose in this study of visual interpretation is based on the philosophy and logic of Charles Sanders Peirce, the ecological-naturalistic psychology founded by Egon Brunswik, and modern understandings of naturalistic thinking as distinctly

different from formal thinking, which have been developed by a number of recent psychologists (Evans, 2008; Lipschitz & Strauss, 1997; McGilchrist, 2009).

In the European philosophical tradition preceding Immanuel Kant (1724–1804), the relationships between perception and reality, and between conscious awareness and thought were most often taken to be direct, veridical, and unproblematic. Kant argued compellingly for what has become the modern view of mind as the mediator creating the structure of experience, such that we have no direct experiential access to the things around us as “things-in-themselves,” that is, things as they actually are (Deely, 2001, p. 555). Charles Peirce (1839–1914), a philosopher, logician, experimental scientist, and admirer of Kant’s work, built upon this a model of functional, empirical realism with an ontology focused on interaction and an epistemology in the form of a theory of interpretation. For Peirce, things-in-themselves are not accessible, not only because of the mediation between reality and human experience of it, but because in any given time and place, things in themselves are largely potential. Things literally “are what they do,” and they are available for observation only in so far as they interact with each other and the human actor. Thus, the qualities the things exhibit are relative to each other and structured by the possibilities and limitations of whatever situation they are in. New ensembles of objects and new situations disclose new qualities. The problem for people born into interactive environments is to interpret or make sense of the things they experience to become competent actors. Semiosis is the process of interpretation or making sense of environments and anything that people interact with. Through the multitude of experiences, people develop competencies that enable them to render experience intelligible.

Peirce uses the terms “sign” and “signification” to discuss this process. For instance, when a box with two shafts revolving around a spindle is used to tell time, the box is used as a

sign to signify time. Common language such as, “This is a clock,” conflates the physical form and the signification, as if the signification were an inherent property of the physical form. Only the box is physical. Significations exist in the mind as linkages between stimuli and what interpreters make out of them. Once created, the significations can be examined and applied to create entire categories of things: manual clocks, digital clocks, sun clocks. Significations enable people to ponder what clocks are, the measuring of and nature of time itself. This process is an archetype of the emergence of abstractions out of experience through semiotic processes.

In short, semiosis or semiotic function is at the base of everyday human competence and abstract thought. The connections that semiosis affords by linking people to reality are not veridical but functional, inferential, and structured by cognitive apparatus and pragmatics. Peirce’s model of semiotic function is cognitive. Interpretations are rooted in observations of regularities, recognizing similarities and contrasts, and patterns of interactions in one’s environment. Interpretations often begin with creative leaps or “abductions,” which are hypotheses as to what might be at work in these regularities, and testing to see if one’s abductions are correct. The interpretations are human inventions, but they are also objective as they are constrained by how well they fit what actually happens.

This current study applies Peirce’s semiotic model to the interpretation of drawings, in which interpretation or meaning results from the interactions among the formal aspects of the drawing, what the drawing refers to, and the understandings or significations that the drawing triggers in the mind of the interpreter who is attempting to make coherent sense of the drawing. Interpreting is a process of organizing and determining the relative importance of the various perceivable characteristics of the drawing. Hence, only specific key elements guide the determination of the signification or meaning of the image, rather than all perceivable

characteristics. In this model, the meaning of the drawing depends on a relationship of the following variables: the key formal aspects of the drawing, the referents to which the drawing relates, and the interpreter.

While Peirce's semiotics provides the fundamental conceptual framework for my study, Peirce did not operationalize his model in the ways needed for this study. His primary interest was in logic, and he formulated his ideas in the mid- to late nineteenth century, before psychology as we understand it, before Freud's notion of thinking that is not available to conscious awareness, and long before modern notions of naturalistic thinking, heuristics, and pattern cognition. Peirce's semiotics provides the groundwork for these later developments and makes it possible to combine semiotics, naturalistic thinking, and heuristic judgments into a coherent framework for this research.

Egon Brunswik effectively operationalized Peirce's semiotics in three major areas that are relevant to this study. First, he built a foundation for ecological psychology with a conception of a human as an organism embedded in naturalistic, dynamic environments. Second, Brunswik built a model of cognition that is adapted to interactions in naturalistic environments. It is distinctly different from formal thinking, and it is better suited to decision making needed in everyday interactions. Third, he defines research methods and criteria appropriate to psychological research within his framework (Kirlik & Storkerson, 2010; Storkerson, 2001, 2003, 2009, 2010).

Brunswik was trained in Vienna as a gestalt psychologist. His early research focused on explaining the perceptual constancy of perceived characteristics of objects, such as size and shape, as they are viewed from different distances and angles. For example, a clock face is perceived as circular whether it is viewed head-on or at an oblique angle, and it is perceived to

be the same size whether it is close to the perceiver or at a distance, even though the retinal images are profoundly altered by changes of angle and distance. What is perceived is not what actually appears on the retina, but rather it is a constructed representation of spaces, events, and objects based on sense data as indicators. Thus, the constancy of size and shape of the clock comes from observing the architecture of the room and the surrounding objects, rather than from adding discrete objects to assemble the whole.

Brunswik's experiments demonstrate that the perception of any individual object is determined based on consideration of multitude of inputs with respect to each other, as demonstrated in Figure 1. In this figure, two barns of similar retinal size are perceived as profoundly different in actual size based on numerous inputs that serve as indicators or cues, including grass and driveway, the man and ladder, fence and background foliage, and size of roofing shingles.

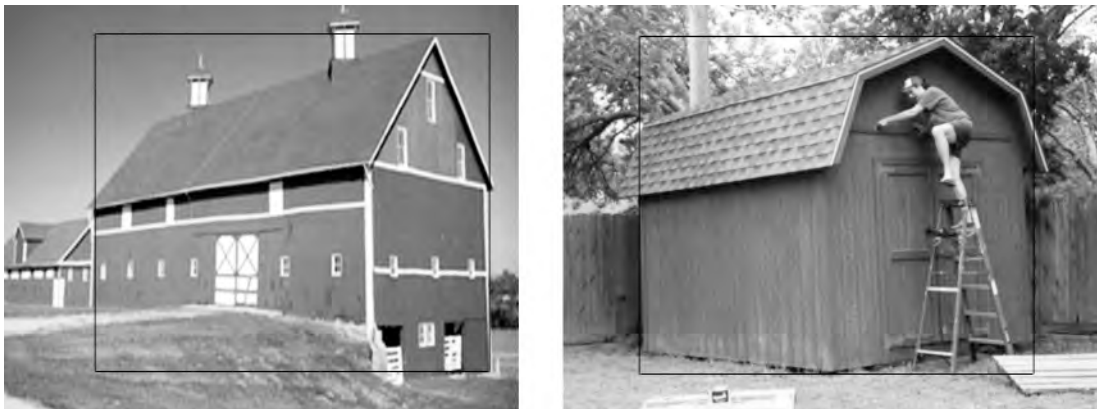


Figure 1. The use of multiple cues to determine size of objects in perception

Brunswik's "Lens Model" describes human perception and judgment as "purposive behavior," that is, goal oriented rather than caused. It uses the available data to form a coherent intelligible whole that provides a stable functional representation of the environment (Brunswik, 1951, p. 16). It describes a perception as a stable functional representation of the "distal" or

external environment. Stability refers to recognizing or perceiving that the object remains the same percept even when viewed under different conditions. Functionality refers to reliability. It indicates that perception provides usable and reliable information about what is perceived that supports competent interaction. For example, if one sees a barn in the distance and walks toward it, one will find the barn where one perceived it to be, and it will have the same characteristics that one perceived it to have. The functionality of representation depends upon comparing many inputs or cues and taking advantage of redundancies. Redundancies help resolve ambiguities and inconsistencies across indicators any one of which may be misleading, irrelevant, or reliable in a given situation (Brunswik & Tolman 1935, p. 23). Representations of the external world are mediated by past experience and add to it forming schemas that have been acquired through experience. Brunswik used W. S. Hunter’s term “vicarious mediation” (Hunter, 1932) to refer to this process, in which sensory inputs are not sensory representations in themselves, but data used to drive interpretations upon which representations are created (Figure 2).

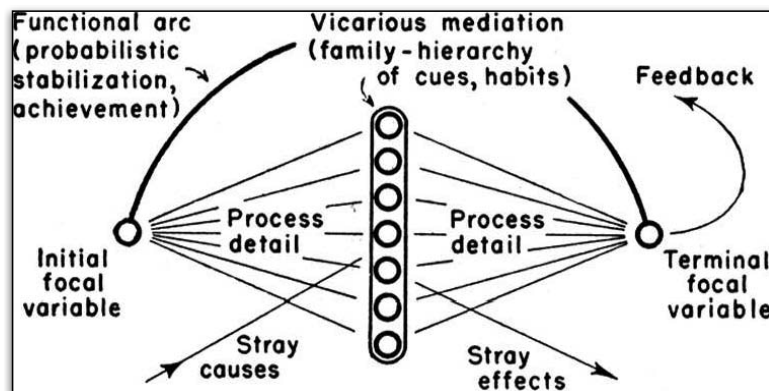


Figure 2. The Lens Model of vicarious mediation in perception (Brunswik, 1950, p. 20)

Vicarious mediation is at the heart of human cognition, which is congruent with naturalistic environments. Perception is pragmatic. It is sensitive to interactions of the organism with the environment and their consequences to the organism. It is goal oriented, that is, geared toward the organism’s judgments about how to act in environments that are imbued with

ambiguity and uncertainty, and toward using potentially all information available to reliably interpret the surroundings. The source of ambiguity is the open nature of naturalistic environments, in which many things happen at random, but also in which “events are regularly dependent on each other,” (Tolman & Brunswik, 1935, p. 43) presenting perceivable patterns or regularities. Brunswik develops a model of cognition that uses vicarious mediation to find patterns and regularities that enable organisms to make the best judgments possible. These regularities are used to identify and interpret those indicators that are critical for interpretation in a given situation and to disregard those that are not relevant. Thus, the noisy chaotic activity of naturalistic environments requires selectiveness in processing. More information is often more noise and confusion. This dynamic between openness and selectiveness adds to the problem of circularity in interpretation: that the whole is the interaction of its constituents but the constituents can only be interpreted from the whole.

Perceptual judgments often occur implicitly and are inaccessible to conscious awareness. Perceptual constancy of size and shape, for example, occurs without effort or awareness of its mediation. Brunswik’s frame gives naturalistic cognition primacy over explicit formal thinking. Naturalistic cognition precedes formal thinking. It constructs the perceived world that formal thinking analyzes (Storkerson, 2010).

Brunswik criticized approaches to research in psychology that isolate single variables (Brunswik, 1943, pp. 36–49), arguing that when it comes to psychologies of perception, judgment, and behavior, individual inputs are chaotic and equivocal. It is only through the process of vicarious mediation that humans make valid interpretations. For example, the perceptual constancy of objects is achieved in environments that are rich enough that vicarious mediation can be used to make valid interpretations (Figure 3). It is well known that perceptual

illusions operate by simplifying and removing contextual cues (Gregory, 1974). Thus, valid experiments ought to be designed to have a richness and complexity sufficient to enable vicarious mediation. This current study exemplifies this principle in that the stimulus drawings are not simplified, and every effort has been made to guide interpreters no more than necessary.

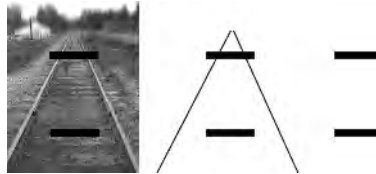


Figure 3. The Ponzo, or *railway lines* illusion. The upper horizontal line looks the longer (see Gregory, 1974, p. 137)

Heuristics and best cues. Brunswik’s naturalistic model proposes a number of human characteristics that others have built upon, for example, judgments based on tacit knowledge or *gut feelings* and *heuristic strategies* such as “*taking-the-best*” criteria or cues in interpretation (Gigerenzer, 2000, 2007). Heuristics are generally described as experience-based intuitive strategies or mental shortcuts that ease mental effort and speed up the process of making satisfactory decisions. Such heuristics are not necessarily optimal, but they are good enough to accomplish a given goal and to accomplish it efficiently. Gerd Gigerenzer has shown that people use heuristics, that they are “efficient cognitive processes, conscious or unconscious, that ignore part of the information” (Gigerenzer & Gaissmaier, 2011, p. 451). But Gigerenzer makes the stronger claim that heuristics are powerful adaptive tools that are not less effective than logic-based processes or statistical methods, but can improve accuracy in many situations (Gigerenzer & Brighton, 2009; Gigerenzer & Todd, 1999). The taking-the-best strategy is both cognitively economical and appropriate to naturalistic environments. For example, in one study, Gigerenzer tested two groups of college students, one in Berlin and one in Chicago. Both groups were given

two lists of pairs of cities in Germany and the U.S. In each pair, one city had a professional sports team, whereas the other did not. Students were asked to mark which city had the sports team. Gigerenzer discovered that the American students were more accurate at naming German cities that had sport teams than naming American cities that had sport teams. The American students were also more accurate than the German students at naming German cities with sport teams. The German students were better at naming the American cities with sport teams than the American students. How can this surprising outcome be explained? The answer is the power of the take-the-best strategy. When predicting about a foreign country about which students knew little, they intuitively decided on a “best” criterion: the city with the more familiar name is probably bigger, thus is more likely to have a major team. When students predicted cities in their own country they made use of a range of knowledge. The take-the-best criterion wins here over greater knowledge and information, because often the added information adds confusion and uncertainty. The take-the-best strategy for making inferences from cues uses the “recognition heuristic” as the first step. It is a decision-making model in which successful predictions are made based not on more information, but on familiarity with limited information that is retrieved from memory. Recognition heuristic is a method of making “inferences from patterns of missing knowledge” (Goldstein & Gigerenzer, 2002, p. 75), and it can lead to the “less-is-more” effect in which less information is more beneficial for making accurate inferences than more information. In case of the German students, the inferential rule guiding the judgments was: “If you recognize the name of one city but not that of the other, then infer that the recognized city has the larger population” (Gigerenzer, 2007, p. 8). Gigerenzer’s study showed that an instinct to follow what one knows could be beneficial in decision making.

Gigerenzer's studies of judgment in naturalistic or ecological settings from investing to management support Brunswik's understanding of the inherent complexity and equivocality of naturalistic environments that cannot be reduced by increasing information or more sophisticated analysis. The take-the-best strategy in judgment is a cognitive adaptation that relies on the best cue, that is, a *conclusive* cue upon which a satisfying decision can be made, and additional information can be ignored. This subjective strategy was shown effective in situations where information was scarce (Gigerenzer, 2007, p. 84), but it may even be the best strategy where information is rich but ambiguous, according to Gigerenzer whose claim to fame is that "good intuitions ignore information" (Gigerenzer, 2007, p. 38).

Culture and Nature in Aesthetic Judgments

The semiotic-naturalistic framework of this study would not be complete without an acknowledgement that cognition and culture operate simultaneously and interact with each other in interpretation. Experience at large and the interpretive experiences, in particular, are a hybrid of the two. Nature as cognition, culture as nurture, shared practices, and personal histories interact with each other affecting each other at all times. Considering cultural influences and personal histories complicates the dynamics of the triadic model of interpretation that has been adopted in this study from Peirce. Hence, interpretation is not a simple computation of complex stimuli, but rather a result of complex interactions among interpreters, the formal qualities of artifacts, and the referents to which the artifacts relate. These formal, perceivable qualities of images are filtered through and structured not only by perception, which is biologically determined and, thus, makes cross-cultural and intra-subjective understandings possible, but also by cultural and personal influences, which may diversify the meanings.

In the realm of philosophical aesthetics, this framework corresponds with *moderate formalism* (Dhillon, 2015; Zangwill, 2001; Zeki, 1999). A position recognizing that while social, cultural, and uniquely individual contexts influence judgments about art, formal features of the artifacts are the building blocks of aesthetic experience. The rapidly emerging field of neuroaesthetics indicates that certain visual properties of images are hard wired to evoke similar aesthetic reactions across people and across cultures; “certain lines and colors (and their spatial relations) are more salient than others in the construction and appreciation of artworks; the salience of a given feature depends upon how it correlates with neuro-physiological processes within the visual cortex” (Dhillon, 2015; Zeki, 1999). Vilayanur Ramachandran’s research in neuroscience of vision is in line with that position, as Ramachandran proposes a culture-independent, biological model of aesthetic judgments (Ramachandran, 1995, 2001).

The Semiotic-Naturalistic critique of the existing manuals and drawing tests. The semiotic-naturalistic perspective situates the source of weakness of the existing manuals for interpretation of drawing-based tests in their exhaustiveness. This method is based on the premise that drawing tests can be circumscribed by a closed system of signs. Hence, the manuals codify as many perceivable characteristics of drawings as possible, based on the purported objective of non-contextual meanings of individual graphic objects in themselves. An inventory may require clinicians to base diagnostic judgments on as many as 400 individual aspects to interpret a drawing. In quantitative inventories scores are used, whereas in qualitative inventories, diagnoses are based on psychoanalytic interpretations to the contents. For instance, “genitals,” “darkly shaded hair,” or “emphasized breasts” are given scores in quantitative systems (Van Hutton, 1994), whereas in qualitative systems, these and other contents are, more often than not, interpreted through the symbols of psychoanalysis. For instance, sexual parts “may be expressing

rebellion against society” or “body narcissism; found in infantile, egocentric subjects” (Jolles, 1989, p. 117). The sheer amount of information and the lack of hierarchies indicating the relative weight of individual characteristics make interpretation based on the manuals difficult. This approach is at odds with the selective and hierarchical nature of perception and interpretation, according to the semiotic-naturalistic framework.

To suffice the manuals, which are intended to be exhaustive, the drawing-based tests, perforce, have to rely on simplistic drawings. For instance, in a traditional Draw-A-Person (DAP) test, drawers are instructed to draw an isolated human figure on a blank sheet of paper. Kinetic Family Drawing is the most complex drawing test, in which drawers are instructed to draw a family doing something. From the semiotic-naturalistic perspective, these drawing-based tests are too simple and circumscribed to allow for vicarious mediation in either the interpretation or the making of the drawings.

Following what Egon Brunswik called “representative design” in psychological experiments, this study presents to participants problems with adequate complexity and richness that invite participants to solve them as they do in the natural, everyday ecological world: by detecting patterns or schemas, making inferences, and building models or theories to account for what they perceive. Hence, a semiotic-naturalistic approach needs the following characteristics. From a Brunswikian perspective, drawings need to be complex enough to allow for vicarious mediation in both interpretation and creation. From a Peircean perspective, the interpretations should be inferred from viewing the picture as a whole arrangement, rather than through identification of isolated elements. This framework is based on the premise that drawing tests cannot be circumscribed by a closed system of signs; therefore, they should be approached as an open interpretive field. The interpreters make sense of the drawing based on whatever

characteristics stand out to them as they interpret it. Reliance on the intuitive processing is the best way to create the conditions that favor interpretations based on taking best cues, as identified by viewers.

Inferences for forthcoming study. The problem with interpretation derives from the interdependence between biologically determined processes and culture-dependent factors. The challenge is to develop a model that can combine the two layers. The semiotic-naturalistic framework provides such a model. The question is how this model performs. Thus, this study is exploratory and basic. It does not have a determinate, operational theory of image interpretation. Rather, it seeks indications of how a theory of image interpretation can be made.

Research Questions and Hypotheses

This study investigates the following research questions and hypotheses:

Quantitative Research Questions and Hypotheses About Judges' Characteristics

RQ 1) How successful were judges in their ability to identify drawers who self-identified as having been abused and drawers who did not self-identify as having been abused?

RQ 2) What associations can be found between judges' performance and self-reported abuse status, gender, and professional expertise?

This question has been operationalized by the following hypotheses:

H 1) Judges who self-identified as having been abused are sensitized to seeing indicators of abuse in the drawings more frequently than judges who did not self-identify as having been abused.

H 2) Women see indicators of abuse more frequently than men.

Quantitative Research Questions About Drawings

RQ 3) For a given drawing, what is the consensus among judges as to whether the drawing was created either by an abused or non-abused drawer?

RQ 4) For a given drawing, how accurately was it identified as created either by an abused or non-abused drawer?

RQ 5) For a given prototypical drawing, what was the degree of consensus as to whether it was judged as drawn either by an abused or non-abused drawer?

Qualitative and Quantitative Research Question About Judges' Heuristics

RQ 6) What classification criteria can be identified on the basis of judges' reports, and how do they relate to judges' accuracy?

CHAPTER 3: METHODOLOGY

Methodology

The broad question driving this study was “How do people determine meanings?” I operationalized this question so that first, I sought to understand what aspects of judges’ demographic background and experiential knowledge base make some judges more successful than others in the intuitive identification of abuse from self-representational drawings. I investigated characteristics that manifested the personality facets that were identified by previous research as relevant in intuitive interpretation of drawing tests. Second, I sought the understanding of judges’ intuitive beliefs about how trauma of abuse is manifested in drawings, what heuristics judges used to classify the drawings, and whether those heuristic strategies were associated with the accuracy. Third, I examined the correspondence between those heuristics and the attributes of the prototypical drawings. I utilized quantitative and qualitative methods to answer my questions. Questions about attributes of drawings and the heuristics required a qualitative approach, because the attributes were derived from the interview data, and they were expected to be qualitatively different or inconsistent.

This study was preceded by a pilot study with five participants—three women and two men—who had no training in diagnostic interpretation of drawing tests. I found enough consistency among the responses to move on with the current study.

Study Design

In this mixed-method study, methods and the timing of the implementation of the methods were sequenced so that the results from the quantitative data analyses informed the qualitative analyses and, in turn, served the quantitative analyses that followed (Morse & Niehaus, 2009). The design is called developmental, because it uses the results from one method to inform the

development of the other method (Greene, Caracelli, & Graham, 1989). Although the timing sequence of the implementation of each method indicated the linearity of the design, the reasoning process was not linear and involved going back and forth between the quantitative and qualitative data and results to advance the integration of the findings from both phases and my progressive understanding of the subject.

The units of analysis in each phase of the study were not the same, although they both pertained to the same general goal of identifying predictors of the performance. In the quantitative phase, judge characteristics were units of analysis, and drawings were the units as well. In the qualitative phase, drawings were my units of analysis, and classification criteria were my units of analysis as well.

Participants and the Recruitment

Stratified, purposeful, and theory-based sampling techniques (Miles & Huberman, 1994) were used to recruit 60 participants who were non-experts in interpretation of drawings and were from varied student and non-student populations. I sought to identify naive raters' ideas about the links between graphic form and psychological functioning. Hence, individuals with professional training in interpretation of drawings were excluded, because theoretical frameworks they acquired during the training could influence their intuitive beliefs about how trauma of abuse is manifested in drawings.

The process was guided by the goal of recruiting participants representing diverse social worlds and experiences, in respect to gender, ethnicity, age, known abuse histories, education level, and professional or occupational expertise. I sought participants from varied disciplines, because no previous study had evaluated performance of individuals from disciplines other than trained interpreters of drawing tests, clinical psychologists, students of psychology, professional

artists, and secretaries at the clinics in which the studies were conducted. Even though the majority of the studies did not find significant associations between clinical training or clinical experience and higher diagnostic accuracy in comparison to artists or non-clinical personnel of the clinics, there were studies that indicated that clinical training might be associated with bettering the chance level performance. Hence, I investigated the possibility of replicating the results of previous research across the range of professions or finding new associations with disciplines that have not been studied.

Prior to the recruitment, approval from the Institutional Review Board was obtained. Recruiting materials introduced this research as a study of identification of abuse from self-representational drawings. The methods of recruitment included in-person invitations and general calls for participation with snowball sampling permitted. Targeted invitations were issued to individuals in the local community and groups with known abuse histories and professional expertise. Calls for participation were sent to local and out-of-state domestic violence shelters and sexual assault service agencies. Calls disseminated through the University of Illinois mailing lists were focused on groups that were potentially interested in the results of the study. The lists included: academic advisors, women's studies, women's resources center, students in education, School of Art and Design, and a student organization with an interest in visual arts for recreation, including the group's Facebook page. The participants were recruited in waves until at least five participants were recruited for each known category of professional expertise, and saturation was achieved in the qualitative interview data. Saturation was a stage at which the qualitative data did not provide any new information that would help to clarify the interpretive process.

The recruitment of participants at the domestic violence shelters was conducted in three stages: (a) obtaining approvals from the administrative heads of the shelters; (b) per request of the administrators, facilitation of an hour-long art workshop during which shelter residents devised self-representational drawings to the same prompt that was used to generate stimulus drawings evaluated in this study; and (c) one week after the workshop, at the shelter in Illinois, I introduced the study, using those drawings created by the residents as examples of drawings they would be asked to evaluate should they choose to participate in the study. At the shelter located in Colorado, a counselor whom I trained in the administration of the prompt for the stimulus drawings performed the recruiting procedure. My goal was to recruit at least five shelter residents and at least five women from the general population who were separated from abusive intimate partner relationships by at least five years. My guiding premise was that the recovery is a process and the impact of the abuse on the victims lessens with the passage of time and, thus, interpretations of the shelter residents who experienced violence recently might differ from the interpretations of the victims who were separated from the abuse for a considerable length of time. The study sessions took place at the respective shelters for the participants' safety. For the other participants, the sessions took place at semi-private, quiet locations that were designated by the participants, including: study rooms, conference rooms, and libraries. There was no compensation for participation in the study, except six shelter residents who were unemployed received a nominal reimbursement of \$10 each for their participation. These participants were not informed that they would receive the reimbursement until after the completion of the task.

Researcher

I was the only investigator and collected the data myself. I brought to this study specialized training and seven years of experience in the design of curricula and facilitation of

psycho-educational art workshops for women and girls who were victims of domestic violence and sexual assault. I am certified in the use of art with battered women, and I had earned certifications from the Illinois Coalitions Against Domestic Violence and Sexual Assault in crisis intervention with victims of domestic violence and sexual violence. For the last four years, I have been applying those skills to develop and conduct expressive art workshops for non-clinical populations of students at the University of Illinois through an art-based student organization that I co-founded in Fall 2009.

I identify as a Polish-American visual artist, visual communication educator, and a survivor of domestic violence. I believe that my background and experiences enabled me to maintain an empathetic and respectful attitude toward the abused and non-abused participants who generously contributed to this study. I believe that my preparedness and the disclosure of my experiences with abuse might have encouraged the participants to feel comfortable during the interviews as they disclosed confidential information about themselves.

Stimulus Drawings

Non-facial, self-portrait drawings, titled “Inside Me–Outside Me” were created under controlled conditions in an undergraduate psychology of personality course offered as a general elective at a large Midwestern university other than the University of Illinois, for the purpose of another study (Dollinger et al., 2011). Students were offered extra credit for participating in an optional, in-class drawing session.

I designed the content of the workshop specifically for that study, but the workshop structure and the style of instructions mirrored the art workshops that I had facilitated for several years with groups of battered women and sexually abused adolescents. The workshops have been designed to help the victims reflect on their life situations and lead to higher self-awareness.

During the in-class drawing session, the students were instructed to trace either the palm of their hand or their foot onto a white sheet of a legal-size paper (8.5-inch x 14-inch) and depict how they see or feel about their inner selves and how they see or feel about the world outside of them. The area inside the tracing designated the inner self, and the area outside the tracing designated the external world or the outer self. The drawers were instructed to use at least two colored pens or pencils to make a single drawing, using lines, designs, signs, symbols, and words in abstract, realistic, or other styles to express themselves during a 50-minute time slot. Protocol for administration of *Inside Me–Outside Me* drawing activity is included in Appendix A. The drawing session was followed by five minutes allotted for students to fill out a workshop evaluation form, which included demographic questions and a question about the students' experience of abuse.

In the current study, 196 of those drawings were classified and interpreted by independent judges. The drawings were created primarily by students who were single, never married (95%); who were whites (92%); and who were not psychology majors (75%). Ages ranged from 18 to 49 years (M age = 21.7 years). There were more drawings created by women (130/66%) than by men (66/34%), and 72 (37%) of those drawings were created by students who self-identified as having been abused. From among the drawings created by the abused students, 62 (86%) were created by women and 10 by men (Figure 4).

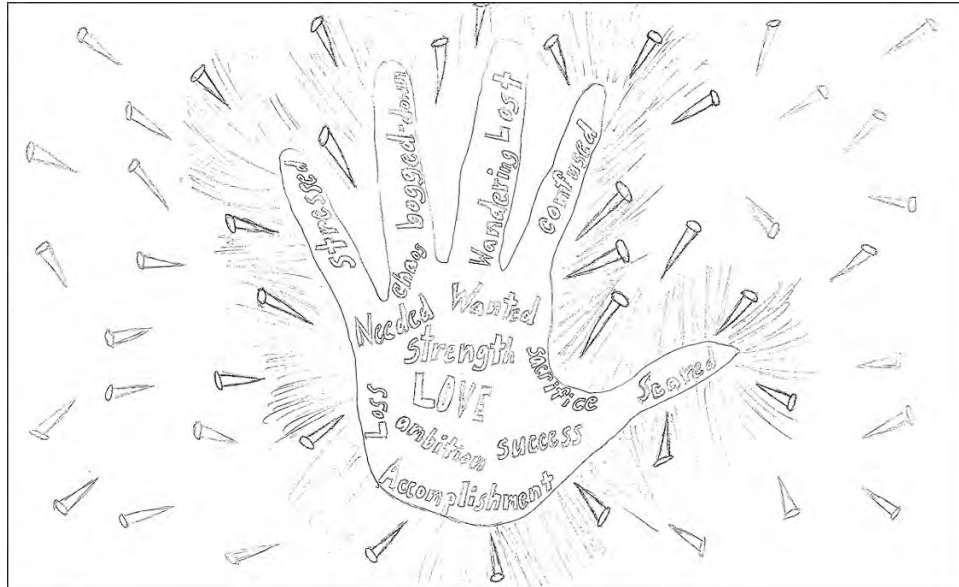


Figure 4. Sample *Inside Me–Outside Me* self-representational drawing, 83% of the participants correctly judged this prototype of the worldviews perceived as related to the trauma of abuse

Quantitative Measures

Explanatory Variables: Judges' Gender, Self-Reported Exposure to Abuse as a Victim, Profession, and Interpretive Criteria

I constructed a paper-and-pencil, semi-structured questionnaire to guide the interviews and collect information about participants' gender, self-reported exposure to abuse, professional expertise, and interpretive criteria. I anticipated that these demographic, experiential, and epistemological characteristics could play a role in the process of interpretation. The questionnaire was predominantly qualitative in order to create a conversational atmosphere during the interview to stimulate free associations, away from the structured thinking in terms of "either-or" and "yes or no." I expected that such an approach would elicit rich descriptions of the process of interpretation and the interpretations themselves. I quantified the responses and dummy coded them as categorical variables for the purpose of statistical analyses.

Explanatory variables: self-reported abuse status. Previous research indicated that the frequency of reporting indicators of a given psychological characteristic positively corresponds to the higher levels of that characteristic found in the interpreter. Thus, I expected that judges who self-identified as victims of domestic or sexual abuse would classify more drawings as created by abused drawers than judges who did not identify themselves as abused. Based on the statistics and media campaigns indicating that women are victims of intimate partner violence and sexual assault more frequently than men, I expected that women would be more vigilant to those issues than men and would classify drawings as created by abused drawers more frequently than male judges (Ballou & Gabalac, 1985; Cohen, 2008; McLeod, 1994; Worell & Remer, 1992; Whalen, 1996).

The abuse status of the drawers and the judges was recorded as a self-reported measure of abuse, which included emotional, physical, and sexual abuse. Abuse was defined as “a form of victimization, mistreatment, violation, or treatment of someone so as to cause damage or harm (knowingly or unknowingly) to gain unfair advantage.” A general measure has been applied for two reasons. First, because the study sought to understand the process of intuitive interpretation, rather than to differentiate among specific forms of abuse. Second, trauma literature indicates that similar coping responses to trauma-inducing experiences can be found across individuals (Figley, 1985; Finkelhor & Browne, 1985; Finkelhor, Gelles, Hotaling, & Straus, 1983; Herman, 1992; Rothschild, 2000). That is especially true of “complex trauma,” that is, experiences involving a chronic exposure to multiple stressors, such as the persistent stressors of interpersonal partner violence.

I relied on self-identified measure of abuse, because I expected that ability to recognize one’s victimization and assert the self by taking appropriate actions might result in the ability to

recognize it in other people's lives and, thus, in the drawings. In clinical settings, the abuse status is established and/or verified through behaviorally specific questions, asking participants to indicate whether or not they experienced specific events and indicate the frequency of the occurrences. For instance, "Modified Psychological Maltreatment Inventory (mPMI)," a widely used measure of psychological abuse for a dating population, includes such questions as: "Have your partner shoved you or threatened to harm you? Have you ever been forced to engage in sexual activities against your will?" (Kasian & Painter, 1992; Tolman, 1989).

The drawers were asked the question: "Have you experienced physical, emotional, or sexual abuse?" Positive responses were coded as "1" and negative responses were coded as "0." The *self-reported* abuse status of the drawers served as the criterion for the *judged* abuse status of the drawers and their drawings. For the judges, information about particular types of abuse was collected to establish what types of abuse the participants reported most and least frequently. Those data were included in the analyses in addition to the general measure of self-reported judge abuse status. In the post-test, semi-structured questionnaire, judges were asked the question: "Have you personally experienced any form of abuse? If yes, specify." "Yes" responses were dummy coded as "1," and "no" responses were coded as "0" and were entered into the analyses as a general variable for self-reported judge abuse status. Information about specific forms of abuse was coded according to the categories that were derived from the data. This approach was to reflect the participants' accounts of their experiences as closely to the experiences as possible, using the same coding scheme. For a given judge, a "1" was credited if a specific form of abuse was indicated, and "0" for the absence of that form of abuse.

Explanatory variables: Judges' classification criteria and heuristics. The second aspect of this study was focused on judges' approaches to decision making. I sought to find out

which, if any, of the classification criteria that were identified by the judges were associated with the accuracy of the judgments.

The Sorting Procedure

Sixty independent judges each reviewed a set of 196 original, self-portrait drawings of undergraduate students to discriminate drawings that had been created by abused students from those created by non-abused students. Drawings were randomly ordered at every 15th rater to counter the biasing influence of a given order. The sequence was changed four times. Participants were instructed to sort the drawings into two categories: drawings created by the abused and drawings created by the non-abused. Judges were informed about the title of the drawings, how the drawings were generated, who created the drawings, and how much time the students were given to create them. Judges were informed that in the sample, the proportion of drawings created by students who self-reported having been abused to the drawings created by students who did not self-identify as having been abused was adjusted, so that it did not mirror the prevalence of abuse in the population. This information was included to prevent participants' self-monitoring during the sorting task in order to keep the number of drawings judged as abused close to the prevalent proportion of abuse among Americans, which is estimated at approximately 33%. There were several participants who noted that the number of drawings, which they judged as created by abused drawers exceeded that proportion.

A definition of abuse was provided with a list of 18 characteristics describing psychological attributes that can be found among victims of abuse in respect of self-perceptions and perceptions of others. Those characteristics included: diminished sense of personal agency; perception of the world as a dangerous place; sense of entrapment; acute anxiety; acute stress; muted emotional responses; a sense of struggling with obstacles; self-doubt; dominant self-

critical voice; chronic vigilance and worries; anger; depression; hopelessness; self-blame; guilt; shame; and feeling isolated, alone, and misunderstood. The list of attributes ended with characteristics that describe the qualities linked with a process called “posttraumatic growth” and were labeled as the “recovered self” (McKenzie-Mohr & Lafrance, 2011; Tedeschi & Calhoun, 2004). These characteristics included: awareness of what was before and where one is now, and a sense of empowerment that comes from overcoming obstacles and hardships (see Appendix E).

These qualities had been compiled from trauma literature, which indicates that similar coping responses to trauma-inducing experiences, including psychological, physical, and sexual abuse can be found across individuals (Figley, 1985; Finkelhor & Browne, 1985; Finkelhor et al., 1983; Herman, 1992; Rothschild, 2000; Sharma-Patel et al., 2012; Simmons, Whalley, & Beck, 2014). A hard copy of the list was set on the table at which the sorting procedure took place, even though many judges ignored it, claiming familiarity with the characteristics of the victim and asked to proceed with the sorting task.

Judges were given technical instructions about how to perform the task, but no information was given about how trauma of abuse can be manifested in the drawings. The judges were instructed to use their own resources to classify the drawings, “You may use any means you wish and may study the drawings as long as you like.” After the completion of the sorting task, one judge at a time, participants were interviewed according to the qualitative, semi-structured questionnaire questions, which were designed to obtain information about demographic background and experiential knowledge base that might be relevant to the variables of interest. The questionnaire questions were followed with two questions about the sorting process. The judges were asked: “What experiences, thoughts, or methods helped you classify the drawings?” and “What can you say about your interpretive process?” All interviews were recorded, and the

recordings were used to validate my notes, which I took during the interviews. During the sorting procedure, I sat across the table from the participants and recorded their classifications in a scoring sheet that I constructed for the purpose of this study (Appendix F). At the completion of the study sessions, participants were provided with a debriefing, a list of warning signs of abusive relationships, and a list of free of charge counseling services if necessary (Appendix M).

The length of the sorting task ranged from 15 minutes to 420 minutes, with the mean time of 82 minutes (SD = 63.64 minutes). The majority (50/83%) of the judging and interviewing was performed in one sitting, whereas ten (17%) judges completed the task in two or three sittings. Those judges asked for breaks to combat fatigue and maintain the ability to perform attentively throughout the entire sample. This is a cautious approach, reflecting the demanding nature of the task. It has been shown that depletion of mental or bodily resources may lead to speeding up the process of decision making and jumping to conclusions (Kahneman, 2011). Figure 5 shows the sample set up of a table during the sorting procedure.



Figure 5. A table set-up during the sorting procedure: bird's eye view and sideways view

Quantitative Data Analysis

I analyzed both the judge characteristics and the drawing characteristics as factors that influence judges' successful classification of drawings created by drawers who self-reported having been abused and drawers who did not self-identify as having been abused. Four outcome variables, Sensitivity, Specificity, Balanced Accuracy, and Tendency, were calculated from the data to measure different aspects of judges' performance and to assess the utility of the *Inside Me–Outside Me* drawing protocol in assessment of abuse. In addition, I investigated whether and, if so, how many judges bettered the chance-level performance. Data were analyzed with Statistical Package for the Social Sciences (SPSS) version 21.0 on an iMac computer. The significance level for all analyses in this study was set at the alpha level of $p < .05$.

Outcome Variables: Judges' Performance

Sensitivity and specificity. Sensitivity and Specificity are common measures of evaluation of the accuracy and efficiency of diagnostic tests, which in my study measured judges' performance. Sensitivity is the proportion of *correctly classified* drawings by drawers who self-reported *having been abused*. Sensitivity is a characteristic of the judge. It is the percent of drawings created by drawers who self-reported having been abused that the judge was able to classify correctly. In this study, Specificity signifies the proportion of *correctly classified* drawings by drawers who did not self-report having been abused. Specificity is another characteristic of the judge. It is the percent of drawings by drawers who did not self-report having been abused that a judge was able to classify correctly.

Accuracy and balanced accuracy. Accuracy is a proportion of correct classifications in total. I refer to it as "Raw Accuracy." In my sample, there were 72 drawings by drawers who self-identified as survivors of abuse and 124 drawings created by drawers who did not self-report having been abused. Because the sample was unbalanced, Raw Accuracy was more strongly

weighted toward the correct *non-abused* classifications, thus, favoring Specificity over Sensitivity. Because of this situation, I did not use Raw Accuracy and used Balanced Accuracy instead, as a global measure of how well each judge performed. Raw Accuracy would have been reported if the sample of drawings were balanced. As a measure of overall success rate, Balanced Accuracy is equivalent to the “hit rate,” a term used by some authors in the test assessment literature (Cohen & Swerdlik, 2010, p. 189). Balanced Accuracy was the average of the percent of correct classifications for drawing created by students who self-reported having been abused and the percent of correct classifications for drawings created by students who did not self-report having been abused. Balanced Accuracy was calculated for each judge. Thus, for each judge, the scores for Sensitivity and Specificity were summed and divided by two.

Drawing Accuracy. It was a characteristic of a drawing. Drawing Accuracy measured the degree of accuracy with which a given drawing was classified. I obtained an accuracy score for each drawing by computing the number of judges who correctly classified the drawing as created either by an abused drawer or by the non-abused. I divided this number by 60, the total number of judges and computed the mean accuracy score for all 196 drawings, as well as the standard deviation.

Tendency. Tendency is a proportion of *abused* classifications regardless of the self-reported abuse status of the drawers who made the drawings. Tendency informs how often judges classified drawings as created by drawers who self-reported having been abused whether or not drawings were actually made by drawers who self-identified as having been abused. Tendency rates were computed for each judge and for each drawing. The former were used in the analysis of judge characteristics and were referred to as “Tendency.” The latter were used in the analysis of the prototypical drawings and were referred to as “Drawing Tendency.” Positive

classifications (judged as created by the abused) were dummy coded as “1,” and negative classifications (judged as created by the non-abused) were dummy coded as “0.”

Tendency. It was a characteristic of a judge. Tendency was calculated as the number of times a judge assigned an *abused* classification to each drawing divided by 196, the total number of drawings rated. As no judge skipped any of the drawings, the denominator of the fraction was the total number of drawings rated by the judge.

Drawing tendency. It was a characteristic of a drawing. It informs how frequently a given drawing was rated as created by an abused drawer, whether or not a drawer who self-reported having been abused in fact created the drawing. Drawing Tendency measured the degree of unanimity among the classifications for a given drawing. Drawing Tendency was calculated as the number of times a drawing received an *abused* classification divided by the total number of participants ($N = 60$).

Scoring

The following scores were computed for each judge:

- **Sensitivity** = the proportion of drawings which were correctly classified as created by drawers who self-identified as having been abused.
- **Specificity** = the proportion of drawings which were correctly classified as created by drawers who did not self-identify as having been abused.
- **Raw Accuracy** = the proportion of drawings which were correctly classified in total. This measure was not reported due to the unbalanced sample.
- **Balanced Accuracy** = the mean of the Sensitivity score and the Specificity score.
- **Tendency** = the proportion of drawings in total, which were classified as created by drawers who self-reported having been abused.

The following scores were computed for each drawing:

- **Drawing Accuracy** = the proportion of judges who correctly classified a drawing.

- **Drawing Tendency** = the proportion of judges who classified a drawing as having been created by a drawer who was abused.

Identification of Better Judges

In addition, I assessed judges' successful performance in respect to the chance-level performance. A given judge bettered the chance if her or his classifications were correct more than 50% of the time. Hence, *Better* and *Worse* judges were identified on the basis of their performance independently of the demographic or experiential characteristics. I asked the question: "Does the abuse status of drawings affect the classifications?" I tested a null hypothesis that the self-reported abuse status of drawings does not affect the classifications by performing chi-square tests of independence for each judge's two-by-two (2 x 2) contingency table of the classification and the self-reported abuse status of the drawing. The condition of the minimum expectation of 5 counts in a category for this test was met.

I was interested in identifying *Better* judges, that is, judges with chi-square statistics associated with p-values smaller than .05, because for those judges, there was statistical evidence to disprove the null hypothesis that the self-reported abuse status of drawings did not affect the classifications. In other words, for *Better* judges, there were grounds to believe that there was a relationship between the reported abuse status of the drawing and how it was rated, indicating that the classifications were not a result of guessing. Judges with the chi-square statistics associated with p-values larger than .05 are referred to as *Worse* judges. For *Worse* judges there was not enough evidence to reject the claim that there was no relationship between the classifications and the reported abuse status of drawings. In other words, for *Worse* judges, there was no evidence to disprove the claim that they performed as well as they did by virtue of random chance. *Better* judges were dummy coded as "1," whereas *Worse* judges were dummy coded as "0," and the codes for each judge were entered in a new variable.

Accuracy and the Judges' Classification Criteria

I conducted regression analyses and chi-square tests of independence to evaluate whether or not judges' classification criteria were related to the accuracy and, if so, what were the direction and the magnitude of the association for each significant criterion? Those criteria were identified from the qualitative analyses of the interview data. Some of the categorizations of the criteria were identified by the judges, and other categorizations were identified by the researcher. Judge-identified criteria included empathy and intuition/gut feeling. Researcher-identified criteria included: past experiences, specific cues/strategies, and the list of 18 characteristics of a survivor of abuse. I constructed dummy variables for each of the classification criteria. A judge who reported a given criterion or who utilized a criterion or criteria received a credit in the corresponding variable or variables. A credit was coded as "1," and no credit was coded as "0." The description of how the criteria were derived from the interview data and how they were categorized into the variables has been discussed with qualitative analyses.

Identification of the Prototypical Drawings

To determine the degree of agreement among judges as to whether a given drawing was created either by an abused or non-abused drawer, I used Drawing Tendency scores to identify drawings with the largest proportions of abused classifications, and drawings with the largest proportions of non-abused classifications assigned to each drawing by the judges. I selected 22 drawings to represent each category, which was a third of the 72 drawings created by drawers who self-reported having been abused. I supposed that fairly large sets could show regularities among the classifications. The accuracy of the classifications was not a criterion in the selection of the drawings. Drawings with the highest proportions of abused classifications constituted the *prototypes of abuse*. Drawings with the lowest Drawing Tendency rates perforce designated

drawings with the highest proportions of non-abused classifications, and constituted the *prototypes of non-abuse*. Terms “prototypes of abuse” and “prototypes of non-abuse” are used for convenience as shortcuts standing for “exemplars of judges’ perceptions of how trauma of abuse is manifested in drawings” and “exemplars of judges’ perceptions of how non-abuse is manifested in drawings,” respectively.

Qualitative Data Analysis

Identification of the Judges’ Classification Criteria and Heuristics

The second aspect of this study was focused on judges’ decision-making process and the beliefs about the psychological meanings of images. I sought to find out whether or not judges could identify criteria for classification and heuristic strategies by which they classified the drawings and, if they could, whether or not those criteria were related to the accuracy of the judgments. The relationship with the accuracy was approached quantitatively and has been discussed with other quantitative analyses. The interview responses were examined in-depth to provide answers to the following questions, “Did the judges develop any classification criteria and/or heuristic strategies?” and “How did the judges connect visual characteristics of drawings with psycho-emotional states and diagnostic judgments?” Hence, the participants were asked the questionnaire question, “Do you think that your experiences guided your interpretation of the drawings? Specify, which ones.” My goal was to avoid implying any criteria that might not be related to experiences that judges indicated in the questionnaire up to that point. After the participants responded to the questionnaire, they were asked the following questions during the interview: “What experiences, thoughts, or methods helped you classify the drawings?” and “What can you say about your interpretive process?” Combined, the questions were designed to elicit rich descriptions of the criteria, the process, and the psychological meanings.

Initial Step. I reviewed and analyzed audio recordings and my notes taken during the interviews with all the judges to make an initial list of the classification criteria, some of which were labeled by the judges, and for other criteria I applied analytic and theory-based labels. For each judge, I transcribed statements, indicating classification criteria, heuristics, and the psychological meanings of the drawings. I sought to identify judges' intuitive beliefs about how trauma of abuse and abuse-free worldviews are manifested visually. I made annotations about how confident judges appeared to be about their criteria and performance. For the judges who indicated more than one criterion, I noted the order in which the judges indicated the criteria and whether or not they emphasized some criteria more than others. This method enabled me to determine whether or not the criteria were reported as equally important to a given judge. I used that information to identify the key diagnostic criteria, key rules of their interactions, and key heuristics, rather than a complete inventory of all signifiers indicated by the judges.

Criteria. The open-coding procedure was used to disaggregate statements about criteria, heuristics, and meanings. An axial or pattern coding, with a goal to discern core and dominant themes, followed it. For the judges who provided lengthy and loquacious descriptions, I selected two or three sentences that best represented each approach. Statements with information about specific psychological, formal, semantic, or methodological indicators of diagnostic meanings were categorized as "explicit schemas." Statements about judges' reliance on varied life experiences as the classification criteria were coded as "implicit models," because they did not specify how the judges associated abuse with what they saw in the drawings. Other categories were labeled to reflect the meaning of the criterion. (*Note:* I used the term "cues" interchangeably with the term "indicators" to make references to the naturalistic model of interpretation, in which a "cue" stands for an indicator.)

Heuristics. Considering that the sample of drawings was fairly large and consisted of nearly 200 drawings, I expected that judges would devise strategies that would help them make sense of the set and manage the task in a reasonable time frame. I reexamined the reports, searching for statements that indicated what could be considered as global strategies that helped the judges make sense of collection of drawings and manage the sorting task. That procedure was followed by pattern coding to identify recurring themes among the heuristics (Miles & Huberman, 1994).

Self-reports were used as phenomenological indicators of judges' awareness of their interpretive criteria and methods, not as veridical statements about the invisible processes that underlie interpretation (Ericsson & Simon, 1984). The interviews were conducted after the sorting task, therefore the reports were retrospective, and they might as well be rationalizations filling in the lack of insights into the actual intuitive processes (Nisbett & Wilson, 1977). Regardless of the entailments of the research method, it was a step toward the better understanding of what may go on in one's mind. For the purposes of statistical analyses, I quantified the qualitative data and dummy coded them according to the categories that I derived from the data. The analyses have been discussed with other quantitative analyses.

CHAPTER 4: RESULTS

Quantitative Results

Description of the Sample

Participants: Demographic background. There were 60 participants in this study and they were referred to as “judges.” Judges’ ages ranged from 20 to 69 years, with a mean age of 34.82 years (SD = 13.01). The sample was predominantly female (47/78%). Fifty percent of the judges were Whites, and non-Whites were ethnically diverse: Black (14/23%), Hispanic (6/10%), South Asian (5/8%), East Asian (3/5%), Biracial (2/3%). The sample was well educated; 52 (87%) judges had earned or pursued college-level degrees. Thirty-one judges (52%) were not students, working in their respective professions or vocations, with an exception of six judges who were unemployed at the time of the study. Those participants were residents at domestic violence shelters, and their lives were in transition. Table 1 shows the demographic and educational background of all 60 judges.

Table 1
Demographic and Educational Background for 60 Judges

Characteristic	<i>n</i>	%
Race/ethnicity		
Caucasian/White	30	50%
African American/Black	14	23%
Latin American/Hispanic	6	10%
Indian/South Asian	5	8%
Asian/East Asian	3	5%
Biracial	2	3%
Education level: non-student		
12-grades	2	3%
GED or High School	4	7%
Vocational	2	3%
Undergraduate degree	14	23%
Graduate degree	9	15%
Education level: student		
Freshmen to Sophomore	6	10%
Senior	4	7%
Graduate	19	32%

The sample was diverse in respect to professional expertise, as measured by the number of fields in which they earned degrees or studied toward the degrees. Nearly a half of the sample (27/45%) had professional experience in more than one discipline, including 20 (33%) judges with dual degrees, and seven (12%) judges with degrees in three disciplines (Table 2). That indicated that judges acquired numerous, interrelated professional competencies and/or changed professions during their lifetimes. This situation indicated that attempting to categorize judges according to professional categories as if they were separate from each other was not as straightforward as I initially envisioned. These co-occurrences reflect that judges in this sample had wealth of experiences, both professional and non-professional.

Table 2
Professional Expertise by the Number of Domains for a Judge (N = 60)

Professional /educational expertise by the number of disciplines per a judge	<i>n</i>	%
Single discipline	33	55%
Dual discipline	20	33%
Triple discipline	7	12%

Table 3 shows the breakdown of the number of judges according to professional domains. The most frequent field in the sample was social sciences (19/32%). Expertise in education, which included teaching, administration, research, and policy, was indicated by 17 (28%) judges. Education was the only discipline in the sample that was not practiced as a stand-alone field, but rather it combined with other fields. Professional training in the arts, including visual arts and dance, was reported by 15 (25%) judges. There were 14 (23%) judges with professional training in mental health services. Twelve (20%) judges had degrees in humanities. Professional expertise in sciences and technology was indicated by 9 (15%) judges. There were 8 (13%) judges with vocational expertise or who developed skills on the job, including hairdressing, sales, clerical, and care giving. The table in Appendix H shows relationships among disciplines for 27 judges

with degrees or pursuing degrees in more than one discipline. It shows for a given judge, which disciplines are combined with each other.

Table 3
Professional Training & Experience by Disciplines

Disciplines	SocSciences	Education	Arts	MentalH.	Humanities	ScienTech.	Vocational
Number of reports	19/32%	17/28%	15/25%	14/23%	12/20%	9/15%	8/13%

Nearly all participants acquired additional training and experience in a number of non-professional areas, which were related to fitness, leisure, pleasure, and relaxation. Ninety-seven percent ($n = 58$) of the judges reported skills and experiences in such areas as: yoga, meditation, sports, gardening, woodworking, sewing, reading, watching movies, singing in a choir, dancing, playing an instrument, cooking, pet grooming, care giving, language translation, life coaching, and event organizing. Similarly, an impressive majority of the participants (52/87%) volunteered at some point in their lives.

Participants: Exposure to abuse. In regard to the exposure to abuse, the sample had a higher-than-average proportion of judges who reported having been abused. Thirty-nine (65%) participants self-identified as having been abused. This proportion exceeds the prevalence of psychological abuse and physical violence among Americans. According to *The National Partner and Sexual Violence Survey: 2010 Summary Report*, 48% of Americans were victims of psychological abuse within their lifetime; one in three (30%) women, and one in four men have been victims of physical violence within their lifetime. This disproportionately high number of judges who self-identified as having been abused can be attributed to the compounding effect of targeting participants with known abuse histories and the participants' self-selection and snowballing effect. Participants who supported this study through their participation could have been attracted to it, because of the personal history of abuse. Table 4 shows the types of abuse

that participants reported. These categories derived from the data and reflect how participants described their experiences. The participant-driven categories included: spousal and intimate partner abuse (11/20%), child and spousal emotional/verbal abuse (5/8%), emotional/verbal and physical abuse (5/8%), sexual (2/3%), sexual and emotional/verbal (2/3%), bullying (1/2%), and racial discrimination (1/2%). Thus, for a majority of judges who reported having been abused, the categories of abuse were reported as complex rather than single categories. For instance, spousal abuse was reported together with intimate partner abuse by 11 judges. This situation was similar to the situation with professional expertise, which indicated multiple domains of professional expertise for 45% of the judges.

Table 4
Self-Reported Categories of Abuse Status for all 60 Judges

Self-Reported Categories of Abuse Status	<i>n</i>	%
Unspecified	12	20%
Spousal & intimate partner	11	18.3%
Child & spousal emotional/verbal	5	8.3%
Emotional/verbal & physical	5	8.3%
Sexual	2	3%
Sexual & emotional/verbal	2	3%
Bullying	1	2%
Racial discrimination	1	2%
Total	39	65%

In sum, from among 39 participants who self-identified as having been abused, the largest number disclosed interpersonal abuse (16/41%), which was perpetrated by spouses, intimate partners, and/or parents; the second most frequently specified form of abuse was emotional/verbal abuse (14/36%) either as a single type or as co-occurring with sexual abuse. A third (12/31%) of the participants who self-identified as having been abused did not specify the abuse. Physical and sexual abuses were infrequently reported. From among participants who reported having been abused, five (13%) disclosed physical abuse as co-occurring with emotional abuse, and four (10%) disclosed sexual abuse, either alone or in conjunction with

emotional abuse. The least reported forms were bullying and racial discrimination. The higher frequency of reports of domestic violence than the frequency of reports of sexual assault corresponds to the findings of a national survey commissioned by Avon Foundation for Women (2013) on attitudes and experiences with domestic violence and sexual assault. The survey, in which 1,307 respondents ages 15 and older participated, has shown that domestic violence is more frequently spoken about among friends than sexual assault. In the survey, 33% of respondents have talked about domestic violence with their friends, and 27% have talked about sexual assault with their friends.

Table 5 shows the degrees of judges' exposure to persons who were abused. A majority of judges knew a victim or victims of domestic violence and/or sexual assault. Of all the judges, 87% ($n = 52$) reported knowing someone who was a victim of domestic violence or sexual assault, including family and non-family members. Among all participants, eleven (18%) judges reported witnessing acts of abuse, and those acts had occurred in the family. From among the eyewitnesses of abuse in the family, seven (64%) self-identified as having been abused. The proportion of judges in the sample who knew someone who was a victim of domestic violence or sexual assault was higher by 27 percentage points than a corresponding proportion of Americans who participated in the survey funded by Avon Foundation for Women (2013). The survey has shown that 60% of respondents knew a victim of domestic violence and/or sexual assault. Again here, the higher proportion in the sample than the corresponding prevalence in the population is likely the result of sampling techniques used in this study.

Participants' experiences widely varied with respect to the length of separation from the most recent abusive relationship. The shortest separations were reported by six female judges who resided at domestic violence shelters in Urbana, Illinois and Denver, Colorado. At the time

of the study, the length of their separation ranged between 3 and 14 months. Other judges indicated a minimum of five years of the separation.

Table 5
Levels of Experience with Victims of Abuse for All 60 Judges

Knows someone who was abused	<i>n</i>	%
Knows non-family member/s	27	45%
Knows family member/s	14	23.3%
Witnessed acts of abuse in the family	11	18.3%
Total	52	87%

Research Questions About the Judges

Re: Research Question 1: How successful were judges in their ability to identify drawers who self-identified as having been abused and drawers who did not self-identify as having been abused?

Judge quality was measured and evaluated by Sensitivity, Specificity, and Balanced Accuracy. I refer to these measures interchangeably as “measures of judge performance.” Table 6 shows descriptive statistics of judges’ performance in identifying drawers who self-reported having been abused and drawers who did not self-identify as having been abused. Raw Accuracy is included, not as the final result, but rather to illustrate how Raw Accuracy compares with Balanced Accuracy.

Table 6
Descriptive Statistics of Overall Judge Quality

Outcome variable	Minimum	Mean	Maximum	Standard Deviation	<i>N</i> judge
Sensitivity	.18	.51	.93	.16	60
Specificity	.11	.63	.91	.16	60
Balanced Accuracy	.43	.57	.66	.04	60
Raw Accuracy	.41	.58	.68	.06	60

Sensitivity. The mean Sensitivity among judges was .51 with a minimum of .18 and a maximum of .93 ($SD = .16$). Although, on average, judges correctly classified drawings by the drawers who self-identified as having been abused 51% of the time, the broad distribution of the classifications on this measure indicated that judges' performance highly varied, ranging between 93% and 18%. More specifically, a judge with a score of .93 correctly classified 67 of the 72 drawings by drawers who self-identified as having been abused. In the sample of 196 drawings, 72 of the drawings were by drawers who self-identified as having been abused. A judge with a Sensitivity score of .18 successfully classified 13 of the 72 drawings created by drawers who reported having been abused (Figure 6).

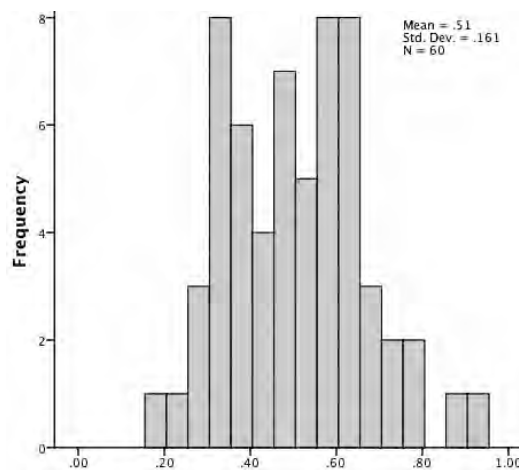


Figure 6. Distribution of Sensitivity scores for all 60 judges

Specificity. The mean Specificity for all judges was 63%, 12 percentage points higher than the mean Sensitivity score (Mean = .51), indicating that an average judge was more successful in identifying drawings by drawers who did not self-identify as having been abused than by drawers who self-identified as having been abused. The distribution of judges' scores for correct classifications of drawings by drawers who did not self-identify as having been abused was slightly broader than the distribution of Sensitivities with both the minimum and the maximum slightly lower than corresponding proportions for Sensitivity. The minimum score for judges

who correctly classified drawings that were created by drawers who self-identified as having been abused was 11%, and the maximum was 91%, with a standard deviation of .16. Again here, some judges misclassified a majority of the drawings by drawers who self-identified as having been abused, while others classified correctly nearly all of those drawings (Figure 7).

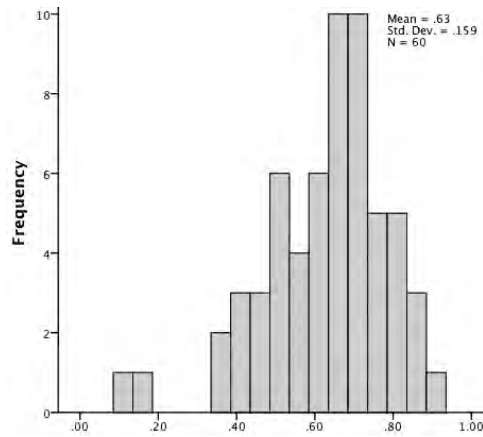


Figure 7. Distribution of Specificity scores for all 60 judges

Balanced accuracy (hit rate). The mean Balanced Accuracy rate was 57% with a minimum of 43% and a maximum of 66% ($SD = .04$), indicating that some judges did better than as if they were guessing, while some judges were less successful in correct classification of the sample, and they did not do better than chance. On average, 57% of all the drawings were correctly classified. The lowest performing judge was correct 43% of the time, whereas the most accurate judge was correct 66% of the time. Figure 8 shows the distribution of Balanced Accuracy scores for all 60 judges. The broad range of the hit rates indicates a high degree of variance in the overall accuracy of the judges.

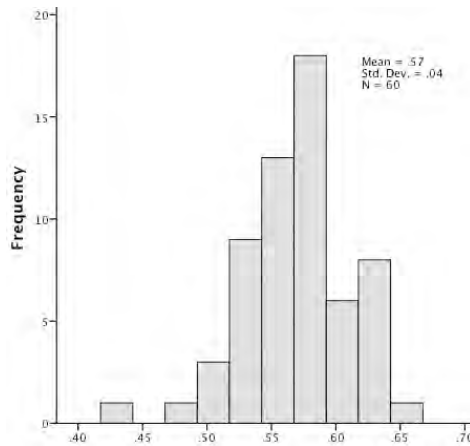


Figure 8. Distribution of Balanced Accuracy scores for all 60 judges

Better judges. The statistical analyses indicated that 33 (55%) judges bettered chance in correct classification of drawings in the sample. For those judges, Chi-square statistics were associated with p -values smaller than .05. For the others, there was not enough evidence to reject the claim that there was no relationship between the classifications and the reported abuse status of drawings. In other words, for Worse judges, there was no evidence to disprove the claim that they performed as well as they did by virtue of random chance. This result of a nearly 50-50 split of the sample was consistent with previous studies, in which about half of the raters scored better than chance, whereas the other half did not (Burley & Handler, 1997; Hammer, 1997, p. 377). Considering the theoretical framework of this study, I interpreted this result according to the research in neuroscience of visual perception, that is, as suggesting a possibility that certain systematic processes underlay diagnostic interpretations, whether or not they could be identified by this study.

Re: Research Question 2: What associations can be found between judges' performance and gender, professional expertise, and self-reported abuse status?

Statistics. To examine which of the hypothesized explanatory variables had statistically significant effects on the performance, each outcome variable was regressed on each of the

hypothesized judge characteristics. I used linear regression to identify judge characteristics that were associated with the performance that was measured by Sensitivity, Specificity, Balanced Accuracy, and Tendency. For each regression model, I examined the test statistic for the regression coefficient corresponding to the judge characteristic of interest in order to determine whether there was evidence to indicate that a model parameter was non-zero. I sought the models with statistically significant coefficients. From among the models with p-values smaller or equal to .001, I chose the best models for each outcome variable by R-squared (Buse, 1982; Lane, 2013; Pawitan, 2000; Peres-Neto, 1999; Weisberg, 2005). The best models are shown in Table 7. I shall now discuss the models for each outcome variable.

Table 7
Best Regression Models to Explain All Judges' Performance (N = 60)

Performance/ Parameter	Estimate	SE	p-value	95% CI		R-sq.	Adj.R-sq.
				Lwr B.	Uppr B.		
Sensitivity							
Intercept	.41	.03	< .001	.35	.48	.20	.18
Abused	.15	.04	< .001	.07	.23		
Specificity							
Intercept	.71	.03	< .001	.65	.78	.17	.16
Abused	-.14	.04	.001	-.22	-.06		
Balanced Accuracy							
Intercept	.56	.01	< .001	.55	.57	.13	.11
Educator	.03	.01	.005	.01	.05		
Tendency							
Intercept	.33	.03	< .001	.27	.40	.19	.18
Abused	.14	.04	.001	.06	.22		

Sensitivity and Specificity. As shown in Table 7, the best regression model for Sensitivity indicated that self-reported experience as a victim of abuse accounted for 20% of the variance in Sensitivity, $F(1, 59) = 14.118, p < .001$. Mean Sensitivity scores for judges who reported having

been abused ($\beta = .15, p < .001$) was 15 percentage points higher than mean Sensitivity scores for judges who did not report having been abused.

The best regression model for Specificity showed that having been a victim of abuse accounted for 17% of the variance in Specificity ($F(1, 59) = 11.903, p = .001$). Specificity of judges who reported having been abused was 14 percentage points lower ($\beta = -.14, p = .001$) than Specificity scores for judges who did not report having been abused.

As shown in Table 8 with descriptive statistics, judges who did not self-identify as having been abused achieved much lower scores on Sensitivity (.41) than on Specificity (.71). These scores differed by 30 percentage points. In contrast, an average judge who self-identified as having been abused achieved nearly identical scores on Sensitivity (.56) and Specificity (.58). The mean Sensitivity score for judges who reported having been abused was .56, and the corresponding score for judges who did not report having been abused was .41. The mean Specificity score for judges who did not report having been abused was a high of .71, and the corresponding score for judges who reported having been abused was .57 (Table 8).

Table 8
Descriptive Statistics of Performance by Judges who Reported Having Been Abused and Judges Who Did Not Report Having Been Abused (Sorted by the Means)

Outcome/Judge	Minimum	Mean	Maximum	Standard Deviation	N judge
Sensitivity					
Abused	.26	.56	.93	.15	39
Non-Abused	.18	.41	.65	.13	21
Specificity					
Non-Abused	.45	.71	.91	.12	21
Abused	.11	.58	.79	.16	39
Tendency					
Abused	.24	.47	.90	.15	39
Non-Abused	.14	.33	.59	.12	21

Analyzing Tendency, Sensitivity, and Specificity. To better understand how these individual measures were related to each other in association with the self-reported abuse status,

I graphed Sensitivity, Specificity, and Tendency for all judges onto one figure (Figure 9).

Inspecting the slopes, which were parallel to each other, indicated that the change in Sensitivity rates was associated with the changes in Tendency rates. This situation indicates that judges who self-identified as having been abused earned high scores in correct classification of drawings that were created by the drawers who, like the judges, also reported having been abused, not because these judges were highly accurate, but because abused judges had high predilection to seeing indicators of abuse in total. Hence, for the self-reported abused judges both Sensitivity and Tendency rates increased by 14 percentage points each, in comparison with the corresponding scores for non-abused judges. The parallel slopes show this simultaneous increase.

In contrast, Specificity scores for abused and non-abused judges were inversely proportional to Tendency (Figure 9). This situation indicated that judges who did not report having been abused earned high scores in correct identification of drawers who, like the judges, also did not report having been abused, not because these judges were highly accurate, but because the non-abused judges had high predilection to seeing indicators of non-abuse in total. Not surprisingly then, high scores in overall judge accuracy, as measured by Balanced Accuracy, were not associated with the self-reported abuse status of the judges.

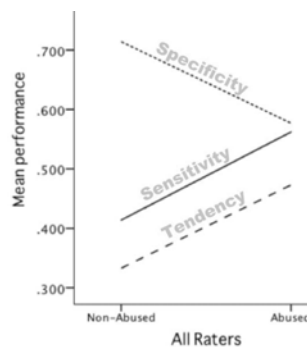


Figure 9. All judges' performance and judges' self-reported abuse status

Balanced Accuracy (hit rate). As shown by the best regression model in Table 7, Balanced Accuracy was associated with professional expertise in education, which had a small catalytic effect on the hit rate ($\beta = .03, p = .005$). This association achieved a significant model, $F(2, 59) = 8.606, p = .005$, which accounted for 13% of the variance in the hit rate. Figure 10 graphs the relationship between the hit rate and the explanatory variable. The figure shows that, on average, judges who were education professionals were more accurate by 3 percentage points than judges who were non-education professionals. Judges with professional expertise in education correctly identified 59% of the drawings, whereas non-education professionals were correct about 56% of the drawings.

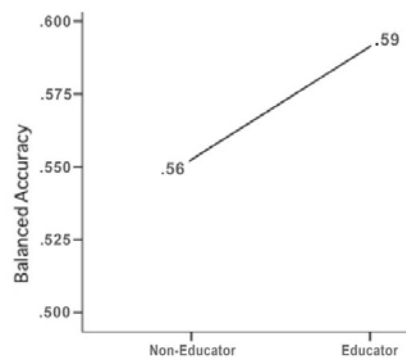


Figure 10. Balanced Accuracy explained through professional expertise in education

Whether or not to consider the difference of 3 percentage points as indicative of the meaningful increase in the overall accuracy can be debated. I interpreted this result as suggesting a possibility of an association between accuracy and judges' characteristics that relate to this variable. The question was how to interpret this variable in the context of the data, which revealed that participants had expertise in multiple professional and non-professional fields and a range of interests? Because every educator in the sample had degrees in other disciplines, accepting that expertise in education alone was associated with higher accuracy would be simplistic and inaccurate. The co-occurrence of education with other professional disciplines

prompted me to reconsider the meaning of this variable in the context of other judge characteristics

To better understand the characteristics of educators in this sample, I reviewed other characteristics of the educators. The combined responses from the questionnaire questions, “What other training/talents/skills do you have?” and “Can you draw?” provided information about the educators’ characteristics. I found that among all 17 educators in the sample, all developed additional skills in varied non-professional areas and all had volunteer experiences, which for the majority (88%) of the educators involved caring for others. In my view, this characteristic indicates empathy. The majority (76%) of the educators pursued artistic interests in non-discursive arts, which included visual arts, dance, performance, but not language arts. The majority (71%) of educators took extra art classes in high school and remain actively involved in the art by making art for pleasure, and 59% of the educators learned how to draw or design.

I hypothesized that knowing how to draw or design might lead to better interpretive skills, because such training develops an experiential understanding of the drawing process and the drawing medium. I conducted an additional test, regressing Balanced Accuracy on a categorical variable for the training in drawing or two-dimensional design. Among all the participants of the study, 43% ($n = 26$) received such training. The obtained regression model showed significant association between Balanced Accuracy and formal training in drawing or two-dimensional design, $F(2, 59) = 7.332$, $p = .009$, 95% CI [.007, .046], accounting for 11% of the variance in the hit rate. The model indicated that formal training in drawing or two-dimensional design had small catalytic effect ($\beta = .03$, $p = .009$). This profile of the educators fits the profile of a better intuitive interpreter, which was constructed on the basis of previous empirical studies. The

previous research indicated that openness to life experiences and openness to non-discursive experiences were prominent among better intuitive interpreters of drawings.

Considering both professional and non-professional characteristics of the educators, I reinterpreted the association between accuracy and expertise in education as an association between higher accuracy rates and expertise in education as long as it co-occurred with degrees in other disciplines, volunteer experiences, empathy, and artistic interests, including ability to draw or design.

This interpretation better reflects the characteristics of the sample, and is better aligned with the naturalistic critique of separating out individual aspects of human experience without considering the totality of experiences for any given individual. As evidenced by the characteristics of the sample, professional experience cannot be viewed without considering the multiple talents, skills, and interests that fall outside the individual's profession. The naturalistic approach, with its holistic perspective, could explain why the results of previous research indicated that professional training in psychology, clinical experience, or an expertise in projective drawings were not associated with higher accuracies.

In sum, the best models provided statistical evidence, with p-values equal to or smaller than .001, to answer my question #2 regarding associations between judges' performance and gender, professional expertise, and self-reported abuse status. The results indicated that gender was not associated with the performance on any outcome variable, as they were measured in this study. The results, however tentative due to the small sample size, suggested a possibility that higher accuracy rates, as measured by Balanced Accuracy, might be associated with professional expertise in education as long as it co-occurred with degrees in other disciplines and artistic

interests, including ability to draw or design. Lastly, the results indicated that self-reported abuse status was associated with Sensitivity, Specificity, and Tendency (Table 7).

Re: Hypothesis #1: Judges who self-identified as having been abused are sensitized to seeing indicators of abuse in the drawings more frequently than judges who did not self-identify as having been abused, as measured by Tendency.

Tendency. As shown by the best regression model in Table 7, judges' self-reported abuse status showed a significant association with Tendency ($\beta = .14, p = .001$) and accounted for 19% of the variance in Tendency, $F(1, 59) = 13.536, p = .001$. On average, Tendency for judges who self-identified as having been abused was 14 percentage points higher than Tendency for judges who did not self-identify as having been abused, indicating that judges who reported having been abused saw indicators of abuse in the drawings more frequently than judges who did not report having been abused, whether or not those purported indicators were correct. As graphed in figure 9, on average, of all 60 judges, participants who did not report having been abused classified 33% of the drawings as created by the abused, whereas judges who self-identified as having been abused classified 47% of the drawings in the sample as created by the abused. I interpreted the results as lending support to Hypothesis #1 that judges who self-identified as having been abused are sensitized to seeing indicators of abuse in the drawings more frequently than judges who do not self-identify as having been abused, as measured by Tendency.

Re: Hypothesis #2: Women see indicators of abuse more frequently than men.

Gender and tendency. In contrast with the hypothesis, regressing all 60 judges' Tendency on gender showed that gender did not achieve significant regression model as a predictor on Tendency. As shown in Table 9 with descriptive statistics, an average female judge classified

drawings as created by abused drawers nearly as frequently as an average male judge. The women's mean Tendency was equal to .43, and for the males it was equal to .41.

Table 9
Tendencies for Female and Male Judges

Characteristic	Min	Mean	Max	SD	N judge
Women	0.14	0.43	0.90	0.16	47
Men	0.16	0.41	0.65	0.15	13

I reviewed the highest Tendency rates in the sample, considering judges' gender and abuse. Table 10 shows the six highest Tendency scores by gender and abuse. Noticeably, all of these judges reported having been abused. There were four females in this group. The highest Tendency rate was equal to 90%, and it was achieved by a female judge who reported having been abused.

Table 10
Female and Male Judges with the Highest Tendency Scores

Judge ID (N = 60)	Gender	Having been abused	Tendency = Judged as by the abused
54	1	1	90%
58	1	1	85%
39	1	1	69%
40	0	1	65%
43	0	1	65%
16	1	1	65%

Note. Male = 0, Female = 1

Abuse, gender, and Tendency. Guided by the results associating judges' self-reported experience with interpersonal abuse as a victim, I considered women and men separately in relation to abuse. As shown in Table 11, a regression model achieved significance for the women but not for the men. Self-reported experience with abuse as a *victim* for *female judges* showed a significant association with Tendency ($\beta = .17, p < .001$) and accounted for 25% of the variance in Tendency, $F(1, 46) = 15.120, p < .001$.

Table 11
Regression Model for Tendency by Female Judges (n = 47)

Female Judges Tendency	Estimate	SE	p-value	95% CI		R-sq.	Adj.R-sq
				Lwr B.	Uppr B.		
Intercept	.32	.03	< .000	.25	.39	.25	.24
Abused	.17	.04	< .000	.08	.25		

As an additional test, I correlated Tendency with abuse for the women and men separately. Zero-order correlations were significant for the women $r(45) = .50$, $p = .01$ (Table 12), indicating that judges' experience with interpersonal abuse as victims correlated strongly with Tendency rates for the females.

Table 12
Correlations of Abuse with Tendency for Female and Male Judges

	Women		Men	
	r	n	r	n
Abuse x Tendency	.50**	47	.18	13

** Correlation is significant at $p = .01$ (2-tailed)

Thus, there were grounds for believing that self-reported abuse status could predict higher Tendency rates for female judges who self-identified as having been abused. Based on these results, I corrected my Hypothesis #2 as follows: Women who self-identify as having been abused see indicators of abuse more frequently than women who do not self-identify as having been abused and both men who report having been abused and men who do not report having been abused, as indicated by higher Tendency rates.

Research Questions About the Drawings

Re: Question 3: For a given drawing, what was the consensus among judges as to whether the drawing was created either by an abused or non-abused drawer?

To answer this question, I analyzed drawings as the units of analysis, and the sample size for these analyses was 196. This question did not pertain to the accuracy of the classifications

assigned to each drawing. Instead, it pertained to whether the classifications were positive or negative, regardless of whether or not they were accurate.

Test assumptions. I tested the assumption that the order of drawings did not impact the classifications by conducting multivariate analysis of variance (MANOVA) of the classifications for each drawing by a four-level factor, which corresponded to the four random orders in which the drawings were presented to the judges. Seventeen drawings showed some sensitivity to order effects. Because only 8.6% of the sample showed the dependence on the display order, I did not think that my final conclusions would be too sensitive to order effects.

Drawing Tendency. As shown in Table 13, descriptive statistics for this measure indicated that the consensus as to whether or not an abused drawer created a drawing did not deviate far from the complete unanimity. The maximum Drawing Tendency was a high of 95%, and the minimum was equal to 3%, with a mean of 42% ($SD = .25$). The broad distribution of the scores indicated that some drawings yielded a high consensus among judges as to whether judges perceived those drawings as indicative of abuse or non-abuse (Table 13).

Table 13
Descriptive Statistics of Drawing Accuracy and Drawing Tendency

Outcome variable	Minimum	Mean	Maximum	Standard Deviation	N drawing
Drawing Accuracy	.05	.58	.97	.25	196
Drawing Tendency	.03	.42	.95	.25	196

Re: Question 4: For a given drawing, how accurately was it identified as created either by an abused or non-abused drawer?

Table 13 shows descriptive statistics for Drawing Accuracy for all drawings. Although no drawing was correctly classified by 100% of the judges, there were drawings which did not fall far from the ideal. In the same way, there were drawings which nearly all judges classified incorrectly. Hence, the maximum Drawing Accuracy for a given drawing reached a high of 97%,

and the minimum accuracy rate for a given drawing was equal to 5%, with a mean of 58% (SD = .25). These results indicated that some drawings were much easier than others to classify correctly, and some drawings were very difficult to judge.

It has to be noted that accuracy in this study was of secondary importance because the study was focused on finding patterns among judges' perceptions of drawings, whether or not those perceptions were accurate. If the determination of accuracy were the focal point of this study, information about the actual abuse status of the drawers would have been obtained and used as the criterion. Instead, in this study the accuracy of the judgments was approximated based on self-reported abuse status of the drawers, which sufficed for the purposes of this study.

Re: Question 5: For a given prototypical drawing, what was the degree of consensus as to whether it was judged as drawn either by an abused or non-abused drawer?

To answer this question, I examined Drawing Tendency scores for every prototypical drawing in both groups of prototypes: prototypes of abuse and prototypes of non-abuse. Considering that multivariate analysis of variance (MANOVA) indicated that in the sample, there were drawings which showed sensitivity to order effects, I checked whether any of those drawings could be found among the 22 prototypes of abuse and the 22 prototypes of non-abuse. Among all the prototypical drawings, four drawings showed sensitivity to order effects: three among the prototypes of abuse and one among the prototypes of non-abuse. I did not think that these low occurrences could skew my results and proceeded to inspect the scores.

The prototypes of abuse were the drawings which achieved the highest scores in Drawing Tendency, whether or not those scores were accurate. Although the majority of the prototypes of abuse was actually created by self-reported abused drawers, nearly a third (32%/7) of those prototypes were created by drawers who self-identified as non-abused. Importantly, even though

the seven prototypes were misclassified, three of those drawings were perceived as indicative of abuse by nearly all judges: 93%, 93%, and 92%, respectively, of the judges perceived these drawings as signifiers of abuse (Appendix I). This indicated that the misclassified drawings had strongly discernible characteristics perceived by the majority of the judges as signifiers of abuse. I shall discuss those signifiers in the section pertaining to judges' interpretive criteria.

Table 14 summarizes the distribution of the rates of classifications within each group of prototypes. For the prototypes of abuse, the distribution of scores on Drawing Tendency was relatively wide and ranged between 77% and 95%. In this group, one drawing was judged with the highest consensus equal to 95%; three drawings were judged with the second to the highest consensus equal to 93%, and so on, until the four drawings which were judged with the lowest consensus, which was equal to 77%.

Table 14
Classifications Within the Prototypical Groups (Sorted from the highest to the lowest)

Prototypes of	Classifications / % of Consensus	97%	95%	93%	92%	90%	88%– 80%	78%– 77%
Abuse	Number of drawings judged as “created by the abused”	0	1	3	1	0	13	4
Non-Abuse	Number of drawings judged as “created by the non-abused”	1	4	4	9	4	0	0

In contrast, for the prototypes of non-abuse, the distribution of the scores on Drawing Tendency was narrow, relative to the other group, and ranged between 90% and 97%. As shown in Table 14, in this group, one drawing was judged with the highest consensus equal to 97%, four drawings were judged with the second to the highest consensus equal to 95%, four other drawings were judged by 93% of participants as created by non-abused drawers, and so on, until the last four prototypes, each of which was judged by 90% of participants as created by non-

abused drawers whether or not those classifications were correct. To view the detailed distributions of classifications for each of the prototypical drawings, including indications of drawings that were sensitive to order effect, see Appendices I and J.

In sum, examination of the scores on Drawing Tendency for the prototypes of abuse and the prototypes of non-abuse showed that the range of distribution of the classifications of a given drawing among the prototypes of the worldviews perceived as indicative of the trauma of abuse (77% and 95%.) was much wider than the range of distribution of the classifications among the prototypes of the worldviews perceived as indicative of non-abuse (90% and 97%).

An explanation for the differences in the variability of the classifications between the prototypical sets might be that drawings differ on the basis of discernible characteristics which make the drawings easier or more difficult to identify. Hence, one possible explanation might be that drawings created by non-abused drawers by and large exhibit more obviously discernible characteristics than drawings created by abused individuals which makes those drawings easier to classify than drawings created by the abused. Alternatively, the difference might be attributed to the unbalanced sample, in which the ratio of drawings by drawers who self-identified as having been abused to the drawings created by drawers who did not report having been abused was approximately 3 : 2. I attributed the difference in the ranges of the classifications between the two sets of prototypes to the unbalanced sample. For the larger set, which consisted of drawings created by self-reported abused drawers, there is a higher probability that more drawings can be found with obviously discernible characteristics, than the respective probability for the smaller set of drawings.

Research Question About the Judges' Criteria

Re: Qualitative Question 6: What classification criteria and heuristics can be identified on the basis of judges' reports?

I analyzed judges' reports to identify specific classification criteria and key signifiers (cues) of the meanings. This initial analytic step resulted in an unsorted list of classification criteria and the key cues. Based on the further review of these criteria, I identified two epistemologically different interpretive approaches that appeared to guide judges' classifications of the drawings: one was directed toward seeking specific cues in the drawings according to specific criteria, and the other approach pointed toward life experiences as the classification criteria, rather than the appearance of the drawings. I categorized these methods as "explicit schemas" and "implicit models," respectively. These approaches greatly differed in terms of whether or not they afforded the identification of key signifiers of meanings and specific strategic criteria that the judges devised to interpret the drawings. The reports of the *explicit schemas* afforded identification of the judges' classification criteria and heuristic strategies for interpretation, whereas reports referring to life experiences were formulated in more general terms and lacked specificity needed for such identification. Table 15 summarizes both approaches with selected examples of judges' statements illustrating each approach. The table also includes a "did not specify" category, which applied to one judge. Appendix K shows a complete list of judges' reports that were coded as the *explicit schemas*.

Criteria Derived From the Explicit Schemas

The analyses of the *explicit schemas*, as expected, revealed differences and regularities as to what aspects of drawings attracted judges' attention and what meanings judges associated with them. These relations of signification revealed judges' beliefs about how trauma of abuse is manifested psychologically and visually. Since this study sought to understand regularities that

could be found across the judges, I focus this narrative on the regularities that have been found by this study.

There were 36 (62%) judges who reported *explicit schemas*, indicating that the judges screened the drawings with these organizing patterns in mind. What stood out from the first round of analyses of the *explicit schemas* was that the criteria, based on which judges classified the drawings varied according to their specificity. As shown in Table 15, some criteria were broadly defined, and others were very specific about what kinds of cues could signify abuse. For example, a broadly defined criterion pointed to “issues of power” as an indicator of abuse, and a specific criterion pointed to “dramatic, fire or blood” as indicative of abuse. There was also a small number judges who reported criteria describing a general method for the classification. For example, one judge stated, “I wanted to be surprised.”

Table 15
Samples of the Primary Interpretive Criteria by Type

Classification criteria by type with sample cues and statements	All 60 judges	33 Better judges
Explicit Schemas	36 / 62%	29 / 88%
“issues of power”		
“what I would draw”		
“ <i>I wanted to be surprised</i> ”		
“negative words”		
“dramatic, fire or blood”		
“division into before & after”		
Implicit models	21 / 35%	4 / 12%
Abuse: 18		Abuse: 3
“my own abuse”		Other life
“my work with the abused”		experiences: 1
“probably talking to friends about their life”		
“ <i>I’m sure my friends’ different experiences influenced that</i> ”		
Other life experiences: 3		
“where I am is the basis”		
“maybe my self-reflective work was helpful”		
“past experiences influence the viewing”		
The list (18 characteristics of a survivor of abuse)	2 / 3%	0
“ <i>No experiences influenced my viewing. I approached the task with no preconceived notions except the information I was given.</i> ”		
“ <i>I followed the list. I guess I only tried to understand that point of view.</i> ”		
Did not specify	1 / 3%	0

Taxonomy of the Key Diagnostic Cues and Meanings

In the second round of analyses, I organized the key cues into three categories of indicators: psychological, semantic, and formal. For example, “pain” was among psychological cues, “sunny weather” was among semantic cues, and “aggressive strokes” was classified as a formal indicator. In the third round, I developed taxonomy of the key diagnostic cues according to these categories of indicators. Table 16 shows the taxonomy, which was based on the accounts of the 36 judges who reported *explicit schemas*. My goal for organizing the taxonomy was to assess whether the schemas interrelate and, if so, how did they interrelate and what were the overlapping categories? The taxonomy consists of 13 rows, which represent what I have called, “units of diagnostic meanings.” Each unit is comprised of the clusters of psychological, semantic, and formal indicators. In the diagnostic context of this study, the indicators serve *diagnostic* function. In non-diagnostic contexts, they might be called *conclusive* cues, that is, cues that lead to satisfying decisions that are relative to some other interpretive goals (Gigerenzer, 2007).

The taxonomy has been organized and sorted according to psychological indicators to emphasize that the judges indicated psychological meanings as the organizing principle for the classification of drawings. Those sought after psychological meanings have been visualized through semantic and formal characteristics of the drawings. Semantic indicators are the symbolic means by which diagnostic meanings are communicated, and formal indicators are the sensory means providing the foundation of signification by virtue of being the building blocks of visual perception.

Negativity and extremity as diagnostic foci. What stood out from the taxonomy is that the majority of judges were focused on screening the drawings for indicators of negativity. Among the 13 units of diagnostic meanings, nine (69%) referred to negative emotional states,

cognitions, and events. Importantly, they included meanings that could be considered existentially extreme or radical, such as death, dying, war, destruction, and so forth. This pattern is not surprising, considering the goal of this study, which was to identify abuse, rather than, for instance, to identify drawers who have been pleased with themselves as students. Among the 36 judges who reported *explicit schemas*, the most frequently reported psychological indicators of negative states and cognitions, included: pain (14/39%), isolation (10/28%), anxiety (10/28%), negative expectations (8/22%), death and dying (7/19%). There were four positive states indicated: happiness or worry-free (7/19%), recovery (5/14%), not lonely (2/6%), and optimism or empowerment (1/3%).

Table 16
Taxonomy of Diagnostic Cues as Indicated by 36 Judges Who Reported Specific Classification Criteria

<i>n</i> = 36	Psychological cues	Semantic cues (What?)	Formal cues (How?)
14/39%	Pain, hurt	Blood, bleeding, wounds, hurt, wounds to flesh, slash marks, cuts, nails, knives, thorns, tentacles, painful past, tears, rain, alcohol, drugs	Elaborate detailed rendering; representational style; abstract elements indicating negative mood; formal aspects shared with other indicators of negativity
10/28%	Entrapment, isolation, imprisonment	Walls, chains, caves, cages, “prison” word, barred windows, locks, bolts, cracks, cracked walls, obstacles, barriers, cut off hand	Thick or distinct outline; dark shading; dark areas; strokes “pushing” toward the hand; realistic style; formal elements indicating negative mood
10/28%	Confusion, uncertainty, anxiety, fear, stress, worries	Fire, flames, struggles, difficulties, turmoil, tension, puzzle pieces, words: “fear,” “anxiety”	Chaotic layout; low compositional integration: scattered, irregular, disconnected pieces; mixed up elements; unclear boundaries/no boundaries; wavy lines; swirling strokes, loops; realistic style; formal elements indicating negative mood
8/22%	Powerlessness, oppression, lack of control, negative expectations, plea for help	World as a scary & hostile place, religious symbols in a negative context, demonic symbols, arrows, spirals, black wholes, struggles, obstacles, difficulties, futureless	Chaotic layout; sharp diagonal lines; strokes “pushing” toward the hand; bold strokes, black circles, spirals; representational style; formal elements indicating negative mood
7/19%	Dramatic seeing of the world, apocalyptic worldview	Death, dying, the end of the world, fire, flames, destruction, broken things, negativity dominates, tension, risk behaviors: guns, weapons, war	Intense, bold strokes; symmetry or asymmetry, duality; nervous rendering; heavy shading, dark areas; zigzags, crosshatching, hatching; scribbles; realistic or formal elements indicating negativity and extremity

<i>n</i> = 36	Psychological cues	Semantic cues (What?)	Formal cues (How?)
7/19%	Total happiness, carefree, worry-free	Sports, sunny weather, rainbows, music, arts, crafts, leisurely activities, flowers, peace signs, love signs, family, friends, all positives	Simplistic drawings; decoration, ornamentation; non-aggressive layout; canonical view; formal aspects shared with other indicators of positive mood
5/14%	Recovered, healed, empowered, capable, not scared	Balanced dichotomy: before-after, bad-good, negative past-positive future, positives dominate	Bilateral symmetry, mellow, relaxed, calm layout; duality of positive-negative, up-down, left-right, inside-outside
5/14%	Sadness, grief, depression, general unhappiness	All negatives or negativity dominates, bad weather, thunder, rain, clouds, moon, negative expectations, negative past, regrets, religious symbols, broken things, dried out hand, cut off hand	Lack of color, representational style, canonical view, formal elements indicating negative mood
2/6%	Guilt, shame, self-blame, critical self-image	Religious symbols in a negative context, demonic symbols, shame words, self-accusatory words, self-name calling	Representational or abstract style, formal elements indicating negative mood
2/6%	Loneliness, alone, not understood	Bleak weather, rain, thunder, clouds, moon, tears, no family, no friends, broken things, dried hand or tree, cracked hand, cut off hand, negativity dominates	Thick outline of the hand or foot; representational style, formal elements indicating negative mood
2/6%	Not lonely, has social support	Human figures, stick figures, names indicating family members or friends, pets, people's names	Mellow, relaxed, calm strokes and/or layout; canonical view; relaxed rendering/lines
2/6%	Anger	Guns, weapons, war, fighting, "hate" words, arrows	Aggressive/vigorous strokes; zigzags, movement "pushing" toward objects; crosshatching, hatching; representational style; formal elements indicating negative mood
1/3%	Optimism, empowerment, moving forward, capable, not scared, realistic self-image, realistic worldview	Roads, pathways, moving forward, goals, dreams, positive future, balance of positives and negatives: positives inside the hand (love, family, pets), negatives outside the hand (government, politics, financial corruption), money signs, dollar bills	Integrated layout; mellow, relaxed, calm strokes; vigorous strokes; formal elements indicating dominant direction

Interrelatedness of the signifiers. As shown in Table 16, many categories overlap.

Within the semiotic-naturalistic framework, this situation can be explained through the interrelatedness of signification and the naturalistic contexts of visual perception. In life, scenes are assessed holistically as systems of relations with built-in redundancies as the foundation of veridical interpretations of the stimuli, which occur in ever-changing environments. That process leads to semiotic layering: there are many ways to convey a given meaning. For instance, in the taxonomy, which constitutes a semiotic system of interrelations, powerlessness, oppression, or

lack of control are associated with such semantic aspects, as demonic symbols, barriers, and spirals, and with such formal aspects as strokes that “push” against the self. The latter is designated by the outline of a hand or a foot. When demonic symbols, spirals, and “pushing” strokes appear with icons of chains, caves, locks, or bolts, the sense of powerlessness is associated with the sense of entrapment and isolation. In sum, the interrelatedness of meanings that emerged from the analysis of the judges’ reports appears to support the semiotic-naturalistic framework, which emphasizes the holistic nature of perception and interpretation.

Signifiers of what? I have to underscore that, even though participants were asked to classify the drawings to identify drawers who were abused, there were judges who pointed out that they looked for indicators of *general distress*, or in more general terms, indicators of *a problem* with the drawers’ self-perceptions or worldviews, which may or may not be related to abuse. Those judges reported that they could determine whether or not they saw indicators of *distress* or *troubling worldviews*, but they could not determine the source of the distress based on the drawings alone, that is, without accessing other types of information about the drawers. For instance, one participant stated: “Not all of them are abused, may need a little guidance.” This is an important observation that points to a limitation of this study, which has not been designed to make such differentiation. A future study might query into whether similar self-perceptions and worldviews can be found among drawers who experienced interpersonal abuse and drawers who experienced traumas not related to interpersonal abuse.

Display of semiotic relationships. In lieu of explanation, it must be noted that a table format is not the best form to show that meanings overlap, interconnect, and repeat in varied and rich semiotic interactions. An interactive, three-dimensional, color-coded, link-node diagram would be a more suitable form of display, had the dissertation format permitted it. To indicate

the interrelatedness in a table format, I clustered several indicators in each row, rather than showing them as individually paired signs or symbols. Moreover, the results ought to be interpreted with caution, because the categories discussed here are linguistic approximations of multi-sensory experiences regarding visual data. The categories derive from imposition of language-based form of presentation onto the research that investigates primarily visual and sensory experiences, and processes that are not available to conscious awareness.

Interpretation and visual characteristics. The regularities found in this study evidence that the process of interpretation, as it has been measured in this study, is not idiosyncratic. The patterns of associations between specific visual characteristics and diagnostic meanings assigned to them reoccurring across many judges have been evidenced by the top prototypical drawings. The prototypes demonstrated that judges associated negative emotions and states with disintegrated layout, aggressive strokes, elaborated details, intense colors, lack of color, and symbols that evoke negative connotations (Figure 11).

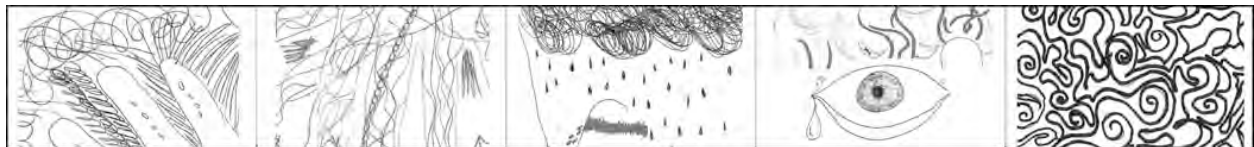


Figure 11. Samples of iconography from the top prototypes of drawings perceived as created by the abused, with Drawing Tendencies ranging between .95 and .92

In contrast, positive emotions or states, such as happiness or worry-free cognitions, judges associated with integrated layout, calm strokes, low contrast, pastel colors, and decorative arrangements, many of which made references to sports, leisurely activities, decorative elements, sunny weather, flowers and hearts, and family and friends, among other signifiers of positive mood and emotions (Figure 12).



Figure 12. Samples of iconography from the top prototypes of drawings perceived as created by the non-abused, with Drawing Tendencies ranging between .97 and .93

These results are demonstrably consistent with previous research indicating that the interpreters associated non-psychotic states with realism, compositional integration, and the perceived sense of order. In contrast, psychotic states were associated with abstraction, exaggeration of realistic forms, compositional disintegration, and the perceived sense of chaos (Albee & Hamlin, 1949, 1950; Hiler & Nesvig, 1965; Levy et al., 1963; Levy & Ulman, 1967; Schmidt & McGowan, 1959; Sherman, 1958).

Criteria Derived From the Implicit Models

I have identified regularities also among the reports of the *implicit models*. Although these reports did not provide information about what specifically the judges looked for in the drawings, they pointed to life experiences as the criteria. Of all the participants, 21 (35%) reported *implicit models* by indicating two types of life experiences. Among the 21 participants who reported their criteria *implicitly* through the references to life experiences, nearly all (18/86%) judges referred to abuse as their experiential knowledge base. That included judges' experience as victims of physical, psychological, or sexual interpersonal abuse (8/38%) and judges who pointed to knowing *about* varied types of abuses from individuals who were abused or through learning about interpersonal abuse during their professional training. As shown in Table 15, typical statements representing judges' direct and indirect experiences with abuse included: "my own abuse," "my work with the abused," and "I'm sure my friends' different experiences influenced that." One judge who did not refer to abuse, but referred to other life

experiences as the basis for interpretation, indicated the modeling effect of personal experiences, “past experiences influence the viewing.” The second judge pointed to situated knowledge as the criterion for interpretation, “where I am is the basis.” The third judge indicated a possibility that self-reflection could be a factor in interpretation, “maybe my self-reflective work was helpful.” Appendix L shows a complete list of the statements that were coded as the *implicit models*.

Criteria Derived from the List

The third category was labeled “the list” and consisted of two participants (Table 15). These judges reported using *the list* of 18 characteristics of an abuse survivor as the guide for the classification of drawings. To remind the reader, judges were given an option to use the list, which was provided by the researcher at the beginning of the sorting task. On the whole, these male judges were concerned with objectivity of the judgments. They used the criteria with which they were provided to assume objectivity during the sorting task. The first judge stated, “No experiences influenced my viewing. I approached the task with no preconceived notions except the information I was given.” The second judge was less assertive about his intentions, but indicated empathy as a factor in interpretation. Namely, that judge indicated making an effort to understand other people’s viewpoints and stated, “I followed the list” and added hesitantly, “I guess I only tried to understand that point of view.”

One can speculate at this point whether the desire to assume objectivity these male judges expressed was specific to these participants, or had it indicated broader tendencies that can be related to gender, professional training, experience or other factors? This question remains open.

In addition, one judge indicated the list in conjunction with her experiences with the abused. That participant was a sexual assault counselor, who stated, “My experience with the survivors and the description in the instructions. This description is consistent with what I see in

our survivors.” This report was coded as utilizing implicit models, because familiarity with the abused was indicated as the model for the validity of the list, and the list was subordinate to the experiences with the survivors.

Dual Criteria

Among the judges who indicated either *specific schemas* or *implicit models*, there were judges who indicated more than one criterion, and they did so in a manner that suggested that one of the criteria led the process. The lead criteria were reported first and with an added emphasis or elaboration, whereas complementary criteria were reported with delays, as if add on factors. Table 17 shows the breakdown of the paired criteria for 19 (32%) judges. Those judges supplemented the primary explicit schemas or implicit models, by making references to intuition or empathy. Eleven (18%) judges reported gut feeling/intuition in addition to the primary criterion, and eight (13%) judges reported empathy. For instance, a judge who indicated relying on negative words that were displayed in the drawings also mentioned following her intuition or felt sensations in the body as guides to the meanings.

Table 17
Dual Classification Criteria

Primary & complementary classification criteria by type & number of judges	<i>n</i>	%
Gut feeling & primary approach:	11	18%
Gut feeling & explicit schemas: 7		
Gut feeling & implicit models: 4		
Empathy & primary approach:	8	13%
Empathy & explicit schemas: 5		
Empathy & implicit models: 3		

Heuristics

What were the rules by which the judges classified the drawings? Could the judges specify them? Neither the reports of *implicit models*, nor the reports of *the list* provided information specific enough to afford identification of heuristic strategies, that is, strategies that

judges devised to manage the task of classifying the drawings.

In contrast, reports of the *explicit schemas* supplied ample information about judges' decision-making process. These reports afforded identification of specific interpretive rules according to which the judges classified the drawings. Hence, to identify judges' heuristic strategies, I focused on 36 judges who indicated relying on *explicit schemas*.

I identified six heuristic strategies based on the data derived from the questionnaires and interviews with those judges. I organized the data thematically and sorted them by counting the number of occurrences of the statements that informed about what judges were looking for in the drawings and how the judges were screening the drawings to infer their meanings. Those heuristics included: (a) ease of understanding, (b) out of the norm or red flags, (c) dominance, (d) gestalt, (e) elaboration, and (f) normalcy.

Coding objectives. Table 18 shows the breakdown of the strategies that emerged from the data. The table shows a total of 46 counts, even though there were 36 reports analyzed. That is because some of the judges indicated utilizing more than one strategy. For judges who indicated more than one heuristic, I did not attempt to determine whether or not they used the strategies simultaneously or whether or not certain strategies were primary strategies. My priority was to identify the heuristics. I used quotes from interview data to substantiate the heuristic rules.

The ease-of-understanding heuristic. From among the 36 judges, 15 (42%) reported searching for things that were “easy to understand.” Examples of indicators that judges perceived as easy to understand included: fear, pain, lack of love, uncertainty, painful memories, drugs, unhappiness, dramatic seeing of the world, and so forth. The ease-of-understanding heuristic appears to relate to the take-the-best criterion, a heuristic described by Gigerenzer (Goldstein &

Gigerenzer, 2002), as cognitively economical method for making judgments about situations about which people know little. Facing such situations, people intuitively decide on a “best” criterion that fits a given situation. It appears then, that in this study, the judges used ease-of-understanding as the *best* criterion.

The out-of-the-norm or red flags heuristic. Among the reports of implicit models, ten (28%) indicated that judges screened the drawings for red flags, that is, “anything that is out of the norm” or “anything that is out of the norm that makes me want to talk to them more.” The things that drew judges’ attention were the things that judges had not been accustomed to seeing in daily life. Hence, less-frequently-seen words, symbols, or situations would appear as out of the norm and would raise red flags. Situations that deviated from the mean, that were not repetitive, and infrequently experienced by a given judge would alert that judge. The following statement exemplifies and association between out-of-the-norm criterion and abuse, “Anything odd is abuse.” One judge who was very specific about what phenomena raised her attention as being out of the norm, stated, “Life and death, fight or die, war, all those sad words were raising my attention. I am aware that normal people can draw differently, but if I had to put them on a pile, that is what I looked for.”

This heuristic also appears to exemplify the *take-the-best* criterion: judges use as the *best* criterion the experiential knowledge of the way things are in the world. At the same time, the out-of-the-norm criterion can be associated with the *recognition* heuristic, which has been explained by Gigerenzer, as a method of making “inferences from patterns of missing knowledge” (Goldstein & Gigerenzer, 2002, p. 75). In regard to the participants of this study, it seems plausible that the inferential rule guiding the judgments might be: “If you recognize certain emotions, situations, or states that have been depicted in the drawings, but not some others, then

infer that the recognized emotions, situations, or states are normal” (Gigerenzer, 2007).

The dominance heuristic. From among the judges who reported *implicit models*, the heuristic of dominance was indicated by eight (22%) judges. The reports related to this heuristic demonstrated that the judges screened drawings to assess an overall, general mood, emotion, feeling, or cognition. This strategy involved screening all perceivable aspects of the drawings, including semantic and formal indicators simultaneously in order to determine an overall emotional meaning of a drawing. Hence, the judges screened the drawings in order to determine whether the depicted situations were positive or negative, whether they were “uppers” or “downers,” as one judge put it.

The top prototypical drawings of both perceived trauma of abuse and abuse-free worldviews made it apparent that the judges have utilized the *dominance* criterion, whether or not they have been aware of it, and whether or not they have reported it. The top prototypes were associated with the respective scores ranging between .92 and .97, which indicated that these drawings were classified with high consistency as either being created by the abused or by the non-abused. If between 92% and 97% of the judges were consistent as to whether a given drawing was created by an abused or non-abused drawer, and if none of the top prototypes of perceived abuse displayed apparent indicators of positive emotions, then it seems plausible that the dominance heuristic guided the decisions, if not alone, then in conjunction with other classification criteria.

Alternatively, the result that top prototypes display signifiers of either positive or negative emotional meanings can be attributed to the request for paired comparisons where judges had to select one from the two options. From this perspective, it was expected that judges would categorize trauma of abuse and abuse-free worldviews as mutually exclusive categories

and, thus, the prototypes inevitably had to reflect such classifications, whether or not the heuristic of dominance was involved. The question remains, would the judges have observed the same mutual exclusivity of the categories had the judges been given a task that did not require paired comparisons?

Although there is no conclusive answer as to what factors actually had an effect on the interpretations, this study demonstrated that some drawings were easier to judge than others. Drawings displaying only signifiers of negativity and drawings displaying only indicators of positive states were easier to classify than drawings displaying both positive and negative contents, which was evidenced by Drawing Tendency scores. For instance, drawings displaying only indicators of negativity had the highest Drawing Tendency scores, ranging between 90% and 95%. In contrast, drawings lacking a clearly dominant mood, in particular, drawings with a balance of positive and negative contents had Drawing Tendency rates nearing 50%. This result is consistent with the literature on psychological scale development, in which it is common to see that scales can best assess only the high end of a construct, such as depression for instance, but not low or middle (Clark & Watson, 1995).

Considering Vilayanur Ramachandran's research in neuroscience of vision, the results of this study regarding *the prototypical* and *difficult* drawings appear to be consistent with what Ramachandran describes as a psychological phenomenon of "pick shift" effect. Ramachandran has shown that forms which clearly extend in one dominant direction trigger stronger reactions than shapes that extend equally in more than one direction. By the same token, Ramachandran extends his argument toward art and states, "Art is most appealing if it produces heightened activity in a single dimension (e.g., through the peak shift principle or through grouping) rather than redundant activation of multiple modules" (Ramachandran, 1999, p. 15).

The gestalt heuristic. The gestalt heuristic makes it apparent that the entire drawing needs to be evaluated in order to infer the meanings of its elements and, in turn, the whole itself. From among the judges who reported utilizing *explicit schemas*, seven (19%) indicated the necessity of screening the entire image from which to infer the meaning of the drawings and the diagnosis that follows. For instance, one judge reported, “You have to look at the whole picture from all sides to make your choice.” The gestalt principle seems to define the intuitive approach, while other heuristics appear to implement it, even though implicitly. For instance, a judge who reported searching for a dominant mood indicated looking at the whole in order to determine the dominant mood, “If about loneliness, helplessness, fear, *but nothing to counteract*, then abused.”

The elaboration heuristic. Five (14%) judges reported classifying the drawings based on determination of the degree of elaboration of the drawings, or how much ink there was on the page. This criterion stemmed from a belief that abused or traumatized individuals create drawings that are tediously drawn or time consuming. The judges expressed the belief about the diagnostic significance of elaboration by articulating it through such statements, as: “A detailed drawing that takes a lot of time is abuse,” “Drawn by the abused have more substance, more force,” and “The abused put a lot of themselves into drawings.”

The belief that trauma is associated with elaborated drawings has support in the literature and research that associates trauma with an increased need for expression of meaning (Dollinger, 1986; Janoff-Bulman, 1985; Scheff, 2001). One recent study found that individuals reporting negative, stressful life experiences, in general, and women who self-identified as having been abused, in particular, created drawings that required more effort to complete, and those drawings were more psychologically revealing and were richer in detail than drawings created by individuals who did not report such experiences (Dollinger et al., 2011).

Table 18
Heuristic Strategies Identified by 36 Judges

Number of Judges / 36 = 100%	Labels	Heuristics, or what did the judges look for and how?
15/42%	Ease of understanding	Things that are easy to understand
10/28%	Out of the norm	Anything that is out of the norm that makes me want to talk to them more
8/22%	Dominance	What dominates, the negatives or the positives?
7/19%	Gestalt	Assess the whole picture
5/14%	Elaboration	How elaborated, developed or time consuming are drawings?
1/3%	Normalcy	What's normal?

Aesthetic sophistication, elaboration, and interpretation. The elaboration heuristic stumbled against aesthetically sophisticated drawings, which presented difficulty in interpretation. Those drawings were highly elaborated. Hence, to the judges who relied on the elaboration criterion, those drawings would indicate that abused drawers created them. If the only criterion involved in interpretation were the elaboration criterion, those drawings would not present problems with the classification to the judges who utilized that criterion. In contrast, the artistically sophisticated drawings were difficult to judge not only to the participants who indicated elaboration heuristic, but also to other judges. The majority of judges commented that drawings executed with high artistic competence and aesthetic sophistication were more difficult to judge than drawings which were executed with an average level of artistic competence.

This pattern is consistent with the results of previous studies, which indicated that aesthetic sophistication plays a mediating effect in judgments by obscuring diagnostic qualities of the drawings. Those studies concluded that artistic sophistication obscured projective personality characteristics the drawings may have displayed (Levy & Ulman, 1967; Sherman, 1958; Whitmyre, 1953).

One possible interpretation of the obscuring effect of aesthetic sophistication can be through an association between aesthetic experiences and emotions they invoke in the viewers, and their subsequent reassessment against the contents of the drawings. The traditional Western philosophical aesthetics is concerned with the creation and appreciation of beauty (Zangwill, 2001). Hence, it associates aesthetic experiences with beauty which, in turn, is associated with virtue and evokes positive connotations, or goodness, purity, dignity, respectability, and so on. If so, then it seems plausible that formal aesthetic sophistication could have triggered in the judges positive connotations and an expectation that the contents would also be positive *before* the judges could assess the contents of the drawings. Once the judges concentrated on the contents, they could have experienced a sense of confusion and cognitive dissonance, because the beauty of the formal qualities was at odds with the contents displaying semantic indicators of negativity, which was related to the fact that those drawings were created by the drawers who self-identified as having been abused. Hence, judges found those drawings difficult to interpret and classify.

Judges' behavior during the sorting task appeared to support this argument. I observed and recorded judges' behaviors during the sorting task. I noted that all participants spontaneously reacted positively to the sight of aesthetically sophisticated drawings. Some judges did so with more energy, some others did so subtly, but all reacted with admiration to the sight of those few drawings. For instance, many judges said, "Oh, this is beautiful" or "I like it very much." The subtle reactions included nodding or smiles of appreciation. Many judges smiled as they commented on the compelling quality of the artistically sophisticated drawings in the sample. Aesthetically sophisticated drawings made the judges pause and contemplate the drawings during the viewing, until they discovered the meaning, "Oh, no, she is bleeding."

To illustrate the case, Figure 13 shows one such challenging drawing, which was one of the prototypical drawings of abuse. In spite of the apparent indicators of pain and hurt, such as the bleeding marks and cuts to the flesh, this drawing did not receive top rankings among the prototypes of the worldviews representative of the trauma of abuse. The top prototype, which was of an average aesthetic quality, was classified as created by an abused drawer by 95% of judges, whereas the most artistically sophisticated prototype was judged as created by an abused drawer by 88% of participants.



Figure 13. This most artistically sophisticated prototype of the worldviews perceived as related to the trauma of abuse was correctly classified by 88% of the judges, whereas the top prototype of lesser artistic quality was correctly classified by 95% of judges

The normalcy heuristic. Lastly, one judge reported what I call the “normalcy” heuristic. That judge reported looking for indicators of “normal” states in the drawings. Even though only one judge reported screening the sample for indicators of *normal* states, other judges described what aspects of life experiences they considered *normal*. Judges who reported screening the sample for indicators of things that they perceived as *out of the norm*, also indicated what *normal* states meant to them. Hence, I acquired a pool of key indicators of normalcy.

The normal states were those which the judges were accustomed to seeing in life. Hence,

the norm was an average of multitude of experiences, experiences that did not require special attention, and typical experiences that had been seen with some regularity. An example of the norm articulated in direct correspondence with the drawings was provided by a judge who considered any drawing that might be drawn by that judge herself as an indicator of the norm, “If I could draw something or my kids could draw, I did not think anything about them.” By implication, this judge indicated that things that were out of the norm grabbed her attention. Hence, this judge’s report implied another heuristic; red flags.

Interconnectedness of the heuristics. What has become apparent is that the heuristics were not isolated, but rather they were interdependent, which in the semiotic-naturalistic framework can be interpreted as an exemplification of the holistic nature of cognitive processing. For instance, the search for red flags was intimately connected with the ease-of-understanding, because red flags were those indicators that stood out to the judges and, thus, their diagnostic meanings were easy to judge. Moreover, the heuristics presented here appear to manifest the gestalt-based, holistic approach to visual interpretation, even though only the gestalt heuristic explicitly addressed the holistic viewing, and others did so by implication.

Analogous to the differing approaches to key signifiers, not all heuristics were associated with the trauma of abuse. Judges, who screened the drawings for indicators of *emotional distress* that might or might not be related to abuse, also applied that approach to the heuristics. For example, one judge who reported looking for things that were out-of-the-norm stated, “I don’t know if they are abused, but I put drawings that are ‘not right’ on this pile.”

Emotional reactions. An aspect that stood out from the reports was that often judges relied on their emotional reactions as an underlying diagnostic criterion. The reliance on emotions was implicit in many judges’ explanations of the heuristic strategies. It was also

explicitly articulated by some of the judges, especially those who reported searching for red flags. The following statements illustrated the phenomenon, “when I don’t like something” and “what did not seem right” [then abused]. The reports in which judges articulated how they felt about the drawings could be interpreted as indicating that for those judges, immediate emotional reactions served as the criterion, even though, on the surface, it might seem that those judges used a calculated approach of comparing the criterion they had in the mind against the drawing, and on that basis issued diagnostic meanings.

Simple heuristics can guide interpretation. The heuristics identified in this study indicated that 60% of the participants devised simple and straightforward rules for decision making. Those heuristics were spontaneous methods for intuitive selection of limited information to manage a cumbersome task of interpretation of a large number of drawings, which on the whole, were complex in form and rich in content. This selective attention may have been the key to the astonishing efficiency of one judge’s performance. That judge reviewed and classified 196 drawings in 15 minutes. On average, it took that judge 4.6 seconds to evaluate a drawing. This judge evaluated drawings according to *the out-of-the-norm* criterion: “I was looking for anything that I would like to talk to that person more. Anything out of the norm: life and death, fight or die, war.” This highly efficient judge further implied the role the criterion of *normalcy* played in her approach, “If I could draw something or my kids could draw, I did not think anything about them.” This statement indicates the sense of familiarity with things in this judge’s world as the criterion in the decision making. This approach seems consistent with Gigerenzer’s research, indicating that an instinct to follow what one knows can be beneficial in visual interpretation.

Moreover, it seems plausible that the heuristics identified in this study exemplify the *take-the-best* heuristic. If so, then the six heuristic strategies that have been identified by this

study might function as the *best* criteria, which judges applied intuitively based on the tacit knowledge of the world.

Table 19 shows a taxonomy of the six heuristics, which were integrated with most frequently re-occurring key diagnostic cues, which best represent each criterion. The taxonomy demonstrates how the judges who indicated *explicit schemas* approached the drawings and what were their beliefs about how the trauma of abuse and the abuse-free worldviews are manifested in the drawings. The table has been sorted according to the frequencies with which the judges indicated each heuristic criterion, with the most frequently reported heuristic at the top of the table (Table 19).

Table 19
Judges' Heuristics Integrated with the Diagnostic Cues

Judges' heuristics and substantiating them diagnostic cues

Ease of understanding: Things that are easy to understand

- Fear, pain, unlove, uncertainty
- Painful memories, past hurt, drugs
- Unhappiness
- Dramatic seeing of the world, apocalyptic images
- Strong negative words
- Words: "dumb," "sad," or "crazy"
- Isolation, insecure, discouraged
- Chains, walls
- Shame, self-blame
- Religious symbols in negative context
- Division into "Before" and "After"

Red Flags: Anything that is out of the norm that makes me want to talk to them more

- Life & death, fight or die, war
- Deep-seated emotional struggles or difficulties
- Disturbed, distressed
- Unusual symbols, e.g.: yin-yang, weather, eye

Dominance: What dominates, the negatives or the positives?

- If everything is negative, then abused
- In abused dark side is overwhelming and the whole scene is dark in mood
- If about loneliness, helplessness, fear, but nothing to counteract, then abused
- If everything is positive, then no problem
- If about sports, fishing, etc., then no problem

Gestalt: Assess the whole picture

- Look at the whole picture from all sides to make your choice
- Interpret symbols and the idea behind the strokes, what the line stroke is getting at
- What art is about versus looking "pretty"

Elaboration: How elaborated or time consuming are drawings?

- A detailed drawing that takes a lot of time is abuse
- Drawn by the abused have more substance, more force
- The abused put a lot of themselves into drawings
- Simple drawings are by non-abused

Normalcy: What's normal?

- Normal is no problem
- If I or my kids could draw it, then OK
- What I would draw
- If it looks balanced, then no problem

Re: Quantitative Question 6: What classification criteria can be identified on the basis of judges' reports, and how do they relate to judges' accuracy?

Table 15 (page 88) shows the breakdown of the classification criteria that I have identified based on the qualitative analyses of judges' reports of their interpretive process. Considering that 95% ($n = 57$) of judges reported either *explicit schemas* (36/62%), or *implicit models* (21/35%) as the primary classification strategies which were large enough to afford statistical analyses comparisons, I evaluated whether or not there were differences in accuracies between the judges who reported *specific schemas* and judges who reported *implicit models*.

I regressed Balanced Accuracy on each of the criteria, using linear regression to assess whether or not any of the criteria was associated with higher accuracy. There was no significant relationship between Balanced Accuracy and *implicit models*, whereas the association between Balanced Accuracy and *explicit schemas* achieved significance. The regression model, summarized in Table 20, shows a significant effect of classifications based on explicit schemas on Balanced Accuracy ($\beta = .04, p < .000$), which accounted for 29% of the variance in the hit rate, $F(1, 59) = 23.274, p < .000$. On average, the results indicated that judges who reported at least one explicit schema as their primary classification method were more successful by 4 percentage points in correct classification of drawings than judges who did not indicate such schemas.

Table 20
Regression Model for Balanced Accuracy and Explicit Classification Schemas

60 Judges Bal. Accuracy	Estimate	SE	p-value	95% CI		R-sq.	Adj.R-sq
				Lwr B.	Uppr B.		
Intercept	.54	.007	< .000	.53	.56	.29	.27
Specific	.04	.009	< .000	.03	.06		

As graphed in Figure 14, on average, participants who did not indicate explicit schemas were correct about 54% of the drawings, whereas judges who reported at least one explicit schema as their classification criterion correctly classified 59% of the drawings.

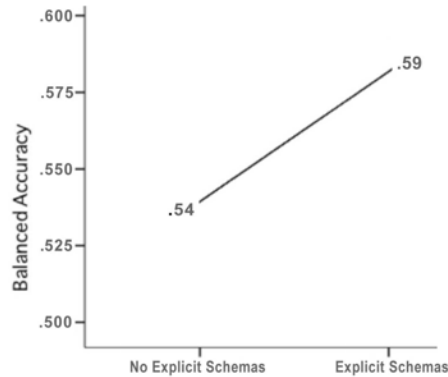


Figure 14. Balanced Accuracy explained by explicit schemas

I further investigated the association between the *explicit schemas* and accuracy, but this time, in relation to *Better* judges. I conducted a chi-square test of independence between the “Explicit Schemas” and “Better judge” variables. The minimum expectation of 5 counts in each category was met for this test. I asked a question, “Does an approach based on explicit schemas show an association with a Better judge status?” The null hypothesis was that using explicit schemas had no effect on achieving a Better judge status. The *P*-value associated with chi-square statistic was smaller than .05, and the effect size was large, *Phi* = .63. This result indicated that there was a significant relationship between self-reported explicit schemas and a status of a Better judge. Hence, this result indicates that self-reported explicit schemas might have an effect on judges’ performance, as measured by a Better judge status. That is to say, Better judges were more likely than Worse judges to identify at least one explicit criterion. As shown in a 2 by 2 contingency table of “Explicit schemas” and “Better judge” variables, the majority (88%) of Better judges indicated using explicit schemas (Table 21).

Table 21

Two by Two Contingency Table of Specific Criteria and a Better Judge Status

		Better judge		Total
		0	1	
Explicit Schemas	0	20	4	24
	1	7	29	36
Total		27	33	60

In sum, even though the increase of 4 percentage points in the accuracy rates may not seem like a lot, it suggests the possibility of an association between accuracy and decision-making style involving explicit schemas as interpretive criteria. In this study, it is the best model for Balanced Accuracy relative to the model associating accuracy with professional expertise in education. Even though this model yielded a nearly identical regression coefficient to the parameter associated with the model explaining accuracy through expertise in education (Table 7), I have more confidence in the statistic of this model. The model regressing Balanced Accuracy on the *explicit schemas* yielded larger R-squared (.29) than the R-squared associated with the other model (.13). In addition, considering that in the sample, professional expertise in education co-occurred with expertise in other fields and additional training in the arts, I concluded that considering professional training as a factor in interpretation can be problematic, and one is better off focusing on other factors like, for instance, decision-making styles.

Hence, this result suggests a possibility, however tentatively, that associating decision-making strategies which involve *explicit schemas* may lead to a better understanding of the process of interpretation. That is not to dismiss that caution has to be used, and one must be mindful of the fact that this result has the limitations of self-reported data about processes that are largely not available to direct examination or awareness.

CHAPTER 5: DISCUSSION AND IMPLICATIONS

This exploratory research studied the process of naturalistic interpretation of drawings for diagnostic purposes. More specifically, this study utilized quantitative and qualitative methods to examine the interpreter's subjectivity as potentially associated with the performance in identification of emotional, physical, or sexual interpersonal abuse from self-representational drawings created by a non-clinical sample of college students.

The first purpose of this study was theoretical and methodological, to propose a unified semiotic-naturalistic framework and develop an empirically grounded methodology for visual analysis, more generally, and identification of abuse, in particular. The second purpose was to demonstrate diagnostic utility of a novel, self-portrait drawing protocol that I had developed within the naturalistic framework to gauge drawers' self-perceptions and worldviews. The third purpose was to evaluate whether gender, self-reported abuse status, or professional expertise of the judges were associated with the judges' performance and to investigate associations between accuracy and interpretive strategies that were employed by the judges. There were three main quantitative and qualitative findings of this study.

1) The quantitative results indicated an association between the judges' exposure to interpersonal abuse as victims and the performance on Sensitivity, Specificity and Tendency, but not on accuracy.

2) The quantitative result indicated an association between higher accuracy rates and professional expertise in education for educators with professional expertise in other disciplines, additional training in other than professional areas, volunteer experiences, and/or artistic interests, which may include ability to draw or design.

3) The mixed-method result indicated an association between higher accuracy rates and six self-reported heuristic judgment strategies, which were identified by this study. These heuristic strategies included: (1) ease of understanding, (2) out of the norm or red flags, (3) dominance, (4) gestalt, (5) elaboration, and (6) normalcy.

Re: Finding #1: The self-reported experience with interpersonal abuse as victims appears to have an effect on interpreters' performance on Sensitivity, Specificity and Tendency, but not on Balanced Accuracy.

Several quantitative results contributed to this finding. One result indicated that participants who self-identified as having been abused classified drawings as created by abused drawers significantly more frequently than judges who did not report having been abused, whether or not those classifications were correct. Tendency was an outcome variable to measure the frequency of those positive classifications. On average, Tendency for judges who self-identified as having been abused was 14 percentage points higher than Tendency for judges who did not report having been abused, as indicated by a regression model, which accounted for 19% of variance in Tendency.

The same association, however more prominent, was found in respect to gender. Female participants who self-identified as having been abused saw indicators of abuse significantly more frequently than male judges and female judges who did not report having been abused. The self-reported victimization due to interpersonal abuse among female judges accounted for 25% of variance in Tendency and was associated with the increase in Tendency equal to 17 percentage points relative to the judges who did not report having been abused. This result did not support my hypothesis that women see indicators of abuse in drawings more frequently than men. The result showed that my hypothesis about gender as a potential predictor of Tendency was

simplistic. It appears that in spite of the media campaigns and awareness that women are more frequently a target of interpersonal violence and sexual assault than men does not translate into higher vigilance to the problem and, thus, into higher tendency among women to see indicators of abuse more frequently than men. This result seems to correspond with the results of the survey funded by Avon Foundation for Women (2013), which indicated that even though 80% of respondents believed that domestic violence was a problem in our society, only a small percentage of the respondents considered domestic violence a potential threat in their circles, and “only 15% believe it is a problem among their friends” (Domestic Violence and Sexual Assault Survey of Attitudes and Experiences of Teens and Adults, 2013).

The comparative analysis of the relationships between the self-reported status of having been abused and the higher performance on such outcome variables as Tendency, Sensitivity and Specificity, but not on Balanced Accuracy, has indicated that the changes in Tendency rates were positively associated with the changes in Sensitivity rates for judges who reported having been abused, and reversely associated with the changes in Specificity rates for judges who did not report having been abused. The judges who self-identified as having been abused earned high scores in correct classification of drawings that were created by the drawers who, like the judges also reported having been abused (Sensitivity), not because these judges were highly accurate, but because the abused judges had high predilection to seeing indicators of abuse in total. Hence, for the self-reported abused judges both Sensitivity and Tendency rates increased by 14 percentage points each. In contrast, judges who did not report having been abused earned high scores in correct identification of drawers who, like the judges, also did not report having been abused (Specificity), not because these judges were highly accurate, but because the non-abused judges had high predilection to seeing indicators of non-abuse in total.

An average judge who reported having been abused was correct 56% of the time about the drawings which were created by drawers who also self-identified as having been abused, whereas judges who did not self-identify as having been abused were correct 41% of the time about drawings created by drawers who, unlike judges, reported having been abused. An average judge who did not report having been abused correctly classified 71% of the drawings created by drawers who, like the judges, also did not report having been abused, whereas an average judge who self-identified as having been abused correctly identified only 47% of the drawings created by drawers who, unlike judges, did not self-identify as having been abused.

What stood out from the comparative analysis of the results is that judges' classifications positively corresponded to judges' experiences either with abuse or non-abuse. Namely, the abused judges had predilection to overestimating indicators of abuse in the drawings, whereas the non-abused judges had predilection to overestimating indicators of non-abuse in the drawings. Although no prior study linked interpreter's exposure to interpersonal abuse with the performance in the diagnostic interpretation of drawings, this study is consistent with the prior research, which showed positive associations between higher levels of hostility and anxiety in interpreters and corresponding overestimation of indicators of those characteristics in human figure drawings (Mintz, 1955; Hammer & Piotrowski, 1997). Hence, this study contributes new information to that line of research. Considering that prior studies evaluated human figure drawings and this study evaluated a different drawing protocol, the results suggest a possibility that the same cognitive mechanism underlies visual interpretation across different types of drawings. The question remains, can the same pattern reoccur across other contexts of visual interpretation, not only in relation to the interpretation of abuse?

Based on these results, it appears that trauma of interpersonal abuse can affect some victims who self-identified as having been abused more strongly than others. For some, it can profoundly impact the worldviews and affect how those survivors of abuse interpret visual stimuli. It appears that for some judges who self-identified as having been abused the trauma of interpersonal abuse led to the sensitization toward seeing indicators of abuse in the drawings more frequently than some judges who did not report having been abused. This result is consistent with the literature on domestic violence, indicating that the trauma of chronic abuse often leads to hyper vigilance and anticipation of hurtful actions from others (Figley, 1985; Finkelhor & Browne, 1985; Finkelhor et al., 1983; Herman, 1992).

The results of this study complicate interpretations about the role of victimization due to interpersonal abuse among judges who reported having been abused in visual interpretation. The performance of the abused participants shows that they varied very much: while a number of judges who self-identified as having been abused grossly overestimated indicators of abuse in drawings, there were also abused judges who grossly underestimated such indicators. For example, one judge classified 90% of the drawings as created by abused drawers, whether or not they were in fact created by the abused. In contrast, another judge who also self-identified as having been abused classified only 24% of the drawings as created by the abused. For an average judge who reported having been abused, the Tendency rate was equal to 47%, which was higher by 10 percentage points than the base rate, which was equal to 37%. What these numbers indicate is that there was high variability among judges who self-identified as having been abused, and caution has to be applied against making broad generalizations about this population.

Re: Finding #2: Higher accuracy rates appear to be associated with professional expertise in education for educators with professional expertise in other disciplines, additional training in other than professional areas, volunteer experiences, and/or artistic interests, which may include ability to draw or design.

This study suggests the possibility of an association between higher accuracy rates and professional expertise in education for educators who have degrees in other disciplines as well, have volunteer experiences, have additional non-professional training in varied areas, and/or have artistic interests and experiences, which may include ability to draw or design. Those educators were more accurate by 3 percentage points than judges who did not have expertise in education. The regression model indicating this association explained 13% of variance in the accuracy. It has to be underscored that judges who did not have expertise in education shared many other characteristics with the educators. Those characteristics included: volunteer experiences, interest in others, and interest in and experience with non-discursive arts. This result is consistent with the previous research indicating that openness to experience, openness to non-discursive experiences, empathy, and interest in others have been found more prominent in better intuitive interpreters of drawings, than in less effective interpreters.

The characteristics of the sample, which revealed numerous overlaps among areas of professional specialization and skills acquired in addition to professional degrees, indicate that considering professional expertise outside the context of the multiple talents, skills, and interests outside the individual's profession does not reflect the ecological complexity of a person's experiential knowledge base. The implications of the result point to a fundamental problem with isolating single variables without considering the multitude of other characteristics and experiences that may contribute to one's abilities in visual interpretation. By the same token, the

characteristics of the sample lend support to the naturalistic approach, which argues against separating out individual aspects of human experience without considering the totality of experiences for any given individual.

Moreover, the naturalistic framework offers explanation for why the results of previous research did not find associations between higher accuracy and professional training and clinical experience in psychology. That research considered the profession as if it existed outside the context of other skills contributing to the development of interpretive skills.

Re: Finding #3: Six heuristic strategies have been identified by this study, and those heuristics were associated with higher accuracy rates.

The qualitative results indicated that 60% of the judges utilized one or more heuristic judgment strategies to classify the drawings. These heuristics derive from the reports of *explicit schemas* for the classification of drawings. I identified six heuristic strategies that synthesize the varied explicit schemas articulated by the judges. These strategies include: (a) gestalt, (b) ease of understanding, (c) out of the norm or red flags, (d) dominance, (e) elaboration, and (f) normalcy.

Those strategies demonstrate that judges utilized the holistic and integrative approach to the assessment of drawings, which involves paying attention to configurations and relationships among the varied aspects of the drawings, rather than making decisions based on isolated, individual symbols. For instance, one judge indicates the following criterion, “If about loneliness, helplessness, fear, but nothing to counteract, then abused.” The *gestalt* heuristic epitomizes the basic operational principle of visual analysis: through the assessment of the entire drawing, the meanings of its elements are inferred and, in turn, the meaning of the whole itself. For instance, one judge presented the following strategy, “You have to look at the whole picture from all sides to make your choice.” Even though only the gestalt heuristic explicitly addresses the directive of

assessing the relationships in the entire image, the gestalt criterion of the holistic viewing appears to underlie all other heuristics. Even though the heuristics differ in foci, they embody the holistic nature of the naturalistic interpretation. For instance, the *elaboration* heuristic is based on assessing how elaborate or time consuming drawings are, which cannot be determined without screening the entire image. The heuristics had varied foci, that is, they pointed to varied salient criteria that the judges might have utilized during the holistic viewing, which was reflected by the gestalt heuristic. For instance, to classify a drawing, the judges who reported explicit schemas for the classification appeared to be asking themselves: (a) Is the drawing easy to understand? (b) Does anything raise a red flag as standing out from the norm in the drawing? (c) What is the dominant mood of the drawing? (d) What is the degree of elaboration or complexity of the drawing? and (e) Does the drawing show a “normal” or ordinary worldview?

These heuristics appear to function as simple and straightforward rules for decision making which limit the amount of information to which the judges paid attention. They are the methods for managing a cumbersome task of interpreting a large number of drawings, which, on the whole, were complex in form and rich in content. Some judges reported one heuristic, whereas others reported more than one criterion. Those criteria appear to be related to each other. For instance, the search for *red flags* is intimately connected with the *ease of understanding*, because red flags are those aspects of drawings that can be quickly identified as indicators of a problem. As reported by the judges, once the judge sees a cue or cues that meet the criterion, the meaning of the entire drawing is determined by that criterion. In this sense, the functionality of the heuristics exemplifies a method of decision making that can be characterized as *one-reason decision making*. “One-reason” decision making, according to Gigerenzer (2007, p. 82) is a characteristic of intuitive judgments, which are often based on a single *best* criterion. Akin to red

flags, the *dominance* criterion is another example of one-reason decision making. It affords determining the meaning of a given drawing by answering one question, “What dominates, the negatives or the positives?” Problems emerge when drawings do not meet the heuristic criteria, and judges have to make decisions about the meaning based on confusing and frequently contradictory cues. Taken together, the heuristics form a hierarchical system of interdependent criteria for diagnostic interpretation of drawings. Some judges reported one heuristic, and others reported more than one criterion to classify the drawings. The question is, what might be the order in which the heuristics have been organized and are the hierarchies the same across the judges? This interpretation of the interpretive process is to some extent speculative, because this study could not determine what the relationship was between what the judges said and what actually went on in their minds.

In regard to the accuracy, this study suggests a possibility, however tentative, that judges, whose reports indicated that they had utilized heuristic judgment strategies achieved higher accuracy rates than the judges whose reports did not indicate such strategies. The heuristic strategies found in this study were categorized as “explicit schemas.” Hence, a linear regression analysis indicated an association between higher accuracy rates and the *explicit schemas*. The schemas included formal, semantic, or methodological criteria for screening the drawings. Thirty-six (60%) judges reported utilizing at least one explicit schema, and those judges were more accurate by 4 percentage points than judges who did not report explicit schemas. Explicit schemas accounted for 29% of the variance in accuracy, which was measured by Balanced Accuracy. An average judge who reported at least one explicit schema correctly classified 59% of the drawings, whereas an average judge who did not report explicit schemas for classification of drawings correctly classified 54% of the drawings in the sample. This result provides new

information on how visual interpretation may work by indicating that different methods of decision making can yield different success rates in some contexts and for some judges.

How does the self-reported abuse status of judges relate to judges' methods of classification and, in turn, to accuracy? Among 36 judges who reported explicit schemas and, thus, who as a group were more successful in correct identification of drawings, only 36% ($n = 13$) self-identified as having been abused. In contrast, among 21 judges who pointed to life experiences as the criteria for classification and, thus, who as a group were less successful in the classification of drawings, 67% ($n = 14$) self-identified as having been abused. All reports pointing to life experiences have been formed into one category, which was labeled as "implicit models." Among the judges who reported utilizing their life experiences as guides for the classification of drawings, 86% ($n = 18$) reported interpersonal abuse as the reference criterion, whether or not it was personally experienced or through the contacts with victims of abuse (Table 16).

The result suggesting a possibility that judges who self-identified as having been abused were less accurate than judges who did not report having been abused are consistent with the first finding of this study, which indicated that judges who reported having been abused had, on average, higher predilection to seeing indicators of abuse in the drawings, than judges who did not report having been abused. The high tendency to seeing indicators of abuse interferes with correct identification of drawings.

It must be noted that even though the abused judges had a high tendency to see indicators of abuse more frequently than non-abused judges, the abuse did not prevent some abused judges who reported explicit schemas from achieving high accuracy rates. Hence, it appears that judges reporting explicit schemas as the criteria were more accurate than judges who did not report

explicit criteria, whether or not the judges reported having been abused. Hence, this study indicates that decision making based on explicit schemas could be one factor that differentiates more accurate judges from less accurate judges for some abused and non-abused judges.

The question is, how to interpret the differences in accuracy rates between judges who reported explicit formal, semantic, or methodological criteria for evaluation of drawings and judges who reported life experiences as their models for interpretation? One possible explanation can be through the *availability* of information that is pertinent to achieving diagnostic judgments. Explicit formal, semantic or strategic criteria, which constituted *explicit schemas*, are the schematic models of how trauma of abuse is manifested in the drawings. Such models are translations across domains: from experiential knowledge base to visual form. Hence, these translations make information that is pertinent to diagnostic judgments about the meaning of drawings readily available. If so, it is tempting to ask whether those translations had appeared ad hoc during the sorting task, or perhaps had they been available in the judges' minds prior to the sorting task?

In contrast, reports of life experiences as the criteria upon which diagnostic decisions had been modeled did not indicate any specific translation schemas. It seems plausible to think that this approach involves connecting ad hoc what is perceived in the drawings with the recollections of life experiences. Such processing makes information that is pertinent to the diagnostic decision making less readily available during the interpretive process than the explicit schemas do. Moreover, some judges who self-identified as having been abused reported making an effort to be thorough, which adds another layer of complexity to the process of interpretation. As one judge explained, "I judged it based on all different types of abuse, and I'm sure my friends' different experiences influenced that." This report stands in demonstrable contrast to the

reports of explicit schemas that appear to involve only one best criterion, which involves lesser complexity of information. Another question might be: under what conditions are people motivated to report explicit schemas that reveal their heuristics, and under what conditions do people report life experiences as the criteria without getting into the specifics? Perhaps individuals who describe their interpretive process in general terms of life experiences utilize heuristic without being aware of them? If so, can they be studied?

Considering that explicit schemas are associated with higher accuracy rates and that the schemas constitute heuristic strategies for focusing attention on very limited information, the results of this study appear consistent with Gerd Gigerenzer's framework, in which heuristics are conceived as powerful adaptive tools that are not less effective than logic-based processes or statistical methods, but can improve accuracy in many situations (Gigerenzer & Brighton, 2009; Gigerenzer & Todd, 1999). According to Gigerenzer, the selective use of information in decision making accounts for the efficiency of the judgments in some situations. This interpretation seems to fit the result of this study. For instance, an astonishingly efficient judge who reviewed and classified 196 drawings in 15 minutes can be explained by the selectiveness of this judge's attention, which resulted in higher accuracy rates, as evidenced by this judge's status of a Better judge. This judge reported the following rule, as one best criterion: "I was looking for anything that I would like to talk to that person more. Anything out of the norm: life and death, fight or die, war. If I could draw something or my kids could draw [it], I did not think anything about them."

What stands out from the reports is that, more often than not, judges relied on emotional reactions as an underlying diagnostic criterion. This aspect was apparent among criteria that fit into the category of red flag heuristic, as well as implicit in many judges' explanations of other strategies. For instance, the meaning of red flags was assessed on the basis of how judges felt

about what they saw: “when I don’t like something” [it is a red flag] and “what did not seem right” [it is a red flag]. This outcome is consistent with previous studies, indicating that facility with interpretation of human figure drawings is in part related to affective rather than cognitive orientation (Hammer & Piotrowski, 1997; Schmidt & McGowan, 1959).

A caution has to be applied when it comes to interpretation of these findings, because one cannot make an absolute distinction between the two self-reported approaches: *explicit schemas* and *implicit models*. First, reports are accounts, that is, efforts to make sense of what judges think in retrospect about their process of interpretation. Second, both categories have an intuitive foundation, resulting from accumulated first-hand experiences and adaptive abilities. The explicit schemas are intuitive beliefs about how things are or work in the world, and they derive from experience. These intuitions occur without a formal theory to explain why things work the way they do. They may, as well, be rationalizations for gut feelings (Nisbett & Wilson, 1977). For example, a judge may propose a strict criterion, such as, “elaborated, time-consuming drawings are by the abused,” but for that judge to do so, that criterion must make sense intuitively, rather than on the basis of a formal theory that may have been learned.

Regularities in Judges’ Interpretations of Drawings

The results of this study have provided initial answers to my question about how people interpret images and whether there are regularities in judges’ interpretations of drawings. This study found what appear to be the recurring patterns across judges’ methods of interpretation and associations between physical characteristics of drawings and psychological states. The regularities suggest that visual interpretation is not idiosyncratic. For instance, all judges associated positive meanings with non-abuse or problem-free emotional states, and negative states with abuse or emotional distress. These regularities in associations are evidenced by the

top prototypical drawings, which represent judges' beliefs about how the worldviews that have been affected by the trauma of interpersonal abuse or by general emotional distress look like. Top prototypes of perceived non-abuse represent judges' beliefs about how the worldviews that have not been affected by the trauma of abuse or the worldviews of happy people look like. The prototypical drawings demonstrate that judges associated abuse and/or negative emotions and states with the following formal and semantic characteristics: disintegrated layout, aggressive strokes, rich details, laborious drawings, aggressive strokes and contents, intense colors, darkly drawn images and words, and symbols that trigger negative connotations. In contrast, the non-abuse and/or positive emotions and states, such as happiness or worry-free cognitions, judges associated with the following formal and semantic characteristics: disintegrated layout, calm strokes, low contrast, pastel colors, decorative elements, and symbols and iconic references that trigger positive associations. Those signifiers of positive associations include: sports, leisurely activities, sunny weather, flowers, hearts, and family and friends. These results are demonstrably consistent with previous research indicating associations between non-psychotic states and realism, compositional integration, and perceived sense of order, whereas psychotic states have been found in association with abstraction, exaggeration of realistic forms, compositional disintegration, and a perceived sense of chaos (Albee & Hamlin, 1949, 1950; Hiler & Nesvig, 1965; Levy et al., 1963; Levy & Ulman, 1967; Schmidt & McGowan, 1959; Sherman, 1958). The question still remains whether or not, and to what extent, they can be generalized across individuals who are not as open to art and non-discursive experience as the participants of this study, or across cultures and varied domains of knowledge?

Another interpretive pattern has been revealed by the qualitative result indicating that drawers' artistic competency can affect visual interpretation. The majority of judges commented

that drawings executed with high artistic competence and aesthetic sophistication were more difficult to judge than drawings, which were executed with an average level of artistic competence. This pattern is consistent with the results of previous studies, which indicated that aesthetic sophistication plays a mediating effect in judgments by obscuring diagnostic qualities of the drawings. Those studies concluded that artistic sophistication obscured projective personality characteristics the drawings may have displayed (Levy & Ulman, 1967; Sherman, 1958; Whitmyre, 1953).

One possible interpretation of the obscuring effect of aesthetic sophistication can be through an association between aesthetic experiences and emotions they invoke in the viewers and their subsequent reassessment against the contents of the drawings. The traditional Western philosophical aesthetics is concerned with the creation and appreciation of beauty (Zangwill, 2001). Hence, it associates aesthetic experiences with beauty, which evokes positive associations. If so, then it seems plausible that formal beauty triggered in the judges positive associations, including an expectation that the contents would also be positive. As a result, judges could have experienced a sense of confusion and cognitive dissonance because the beauty of the formal qualities, as it is conceived and experienced in Western cultures, was at odds with the contents displaying semantic indicators of negativity, which was related to the fact that those drawings were created by drawers who self-identified as having been abused. Not surprisingly, judges found those drawings difficult to interpret and classify.

The confusion can be evidenced by lower Drawing Tendency rates for drawings of high artistic quality. As shown in Figure 13, the exceptional drawing was skillfully rendered in a realistic style and a one-point perspective. Even though the drawing displays apparent indicators of pain and hurt, such as bleeding marks and cuts to the flesh, it was judged as having been

created by an abused drawer by 88% of participants, whereas a drawing of an average artistic quality and comparable contents was classified as created by the abused by 95% of judges. This attraction to aesthetic sophistication can be explained, in part, by research in the neuroscience of vision, indicating that certain visual properties of images are hard wired to evoke similar aesthetic reactions across people and across cultures (Ramachandran, 1995, 2001; Zeki, 1999), and again, by Western aesthetics of beauty, according to which people are specially equipped to respond to aesthetic qualities. The question remains whether or not similar aesthetic reactions can be found across cultures and in the non-diagnostic contexts of interpretations?

How the Purposes of the Study Have Been Fulfilled

The first purpose of this study has been theoretical and methodological to evaluate the utility of a unified, semiotic-naturalistic framework and develop an empirically grounded methodology for visual analysis, more generally, and identification of abuse, in specific. The semiotic-naturalistic epistemology predicates that interpretations are made based on the integrative and selective perception of the key cues in the naturalistic environment, rather than the evaluation of all the available cues (Brunswik, 1952, 1955; Gigerenzer, 2007; Gigerenzer & Todd, 1999; Gigerenzer & Brighton, 2009; Goldstein & Gigerenzer, 2002; Gregory, 1974; Kirlik & Storkerson, 2010; Peirce, 1932; Storkerson, 2009, 2010; Tolman & Brunswik, 1935). The result suggesting an association between heuristic strategies and higher accuracies appears to support not only the fundamental premise of the framework that visual perception is selective, but also extends toward decision making by suggesting that it may be a key to efficacy.

The second purpose of this study has been to demonstrate diagnostic utility of a novel, self-portrait drawing protocol that I have developed within the naturalistic framework to gauge drawers' self-perceptions and worldviews. Judging by the accuracy rates, this drawing protocol

appears to be slightly below average accuracy rates indicated by research evaluating the efficacy of varied human figure drawing tests. The highest score in accuracy achieved in this study was equal to 66% and the mean accuracy was equal to 57%. In comparison, Hiler and Nesvig (1965) reported accuracy rates ranging between 64% and 65%, whereas Levenberg (1975) reported accuracies ranging between 61% and 72% in determining emotional disturbance in children from Kinetic Family Drawings.

In this naturalistic drawing protocol, accuracy is less important than acquisition of information about the drawers. Considering that in clinical situations, decisions are based on more than one source of information—behavioral, diagnostic history, family history, interviews, and other tests—accuracy alone is not a good measure of the efficiency of a drawing test.

The utility of the *Inside Me–Outside Me* protocol is better assessed by its ability to gauge drawers’ self-concepts and worldviews, to provoke the drawers to self-reflection, and to stimulate conversations between the clinicians or educators and the drawers about the meaning of the drawings. In these regards, the *Inside Me–Outside Me* protocol exceeds human-figure-drawing tests. The examples provided in this study illustrate that this protocol can yield informative and comprehensive self-representations by some drawers. The protocol is open ended and asks for complex enough drawings that it can stimulate creativity and can compel adults, youth, and children to reveal more psychologically relevant information about themselves than if they were asked to draw a single human figure or a house with a tree and a person (Van Hutton, 1994). Importantly, the protocol provides drawers with an opportunity to give direct evidence of their uniqueness and presence by tracing their hand or foot which, by analogy, can signify that they assert their place in the world at large (Dollinger et al., 2011). As there are no two palms of a hand that look alike, and there are no two feet that look alike, the realization of

one's uniqueness in this regard often surprises and delights drawers in group settings, when drawings can be compared with each other. This aspect of direct indexicality is absent from the figure-drawing-based tests.

Limitations

There are limitations to this study that warrant attention. Considering the sample design and recruitment strategies, the results from this study are not generalizable to the general population of Americans, but rather to individuals who are open to non-discursive experiences, have artistic interests, and are interested in others as evidenced by volunteer experiences.

Second, the study relies on retrospective data, asking participants to describe their intuitive beliefs about their classification strategies. Hence, the results should be viewed with an understanding of the limitations of retrospective insights into the process that is not fully available to conscious awareness.

Third, the method of modeling each predictor variable in separate regression models has limitations, though it is suitable for the sample size of this study. A more powerful approach which is better aligned with the naturalistic framework, is to conduct multivariate analyses in which several characteristics are modeled at the time. For instance, a hierarchical regression with a larger sample size can be used to model all predictor variables in one equation; alternatively, a random crossed-effects logistic regression also with a larger sample size could be considered.

Fourth, the drawings used in this study had been created by undergraduate students who were predominantly White; hence, regularities found among these drawings might be associated to some extent with the characteristics of the homogenous sample. To have confidence in the results of this study, a sample of drawings created by non-students and drawers from more diverse educational and socio-cultural backgrounds, including differences in age, is needed to

assess the reliability of the results of this study.

By the same token, this study cannot answer the question whether self-perceptions and worldviews displayed by the drawers in this study are exclusive to interpersonal abuse and whether similar self-perceptions and worldviews can be found among drawers who experienced traumas not related to interpersonal abuse.

Finally, a generally larger sample of judges is needed to gain confidence in the conclusions drawn from this study, and triangulation of data is required to verify the reported status of abuse among the drawers and the interpreters.

Implications

The main significance of this study is methodological. By developing a methodology for visual interpretation within a paradigm that is applicable to qualitative and quantitative methods and can account for both cognitive and cultural influences, this study sets a stage toward the development of an empirically grounded methodology for visual research, not only in psychology, but also in other areas of social sciences, humanities, and arts, including visual studies, cultural studies, visual communication, and education in the arts. By linking visual interpretation with visual cognition and heuristic judgments, this study shows a way to take advantage of a large body of knowledge from those research areas to inform research in visual interpretation as a cognitive process that is primarily perceptual, a line of visual research that is in its infancy.

Implications for Visual Research in Visual Arts and Visual Studies

The methodology for visual analysis that has been developed in this study is not limited to psychology, therapy, or psychological assessment of worldviews affected by the trauma of abuse or general emotional distress, but it can provide a foundation for the development of

methods for visual analysis in other contexts. For research in the arts and visual communication, the integrating nature of the semiotic-naturalistic framework that bridges humanities with psychology and cognitive science mirrors the integrating nature of the creative process in the arts. These processes integrate the communicative and interpretive goals with the experiential sensuality of its material outcomes. Hence, the integrative framework affords empirical research, which can be conducted within an empirically grounded and well-rounded theoretical framework, which accounts for both cognitive-visual and humanistic-interpretive dimensions of the creative process. Moreover, the semiotic-naturalistic framework builds upon the theoretical structure that is already familiar to the visual arts community, that is, Gestalt psychology of visual grouping. The methodology makes a perfect fit with the intuitive and open-ended foundation of the creative process by relying on naturalistic and informal methods. In the area of qualitative inquiries in visual analysis, by asserting the primacy of visual cognition, this methodology breaks away from the traditional discourses which adopt linguistic theories of interpretation.

Implications for Education and Art Education

Educators, psychologists, and counselors all function within a broader institutional system of demands of public accountability. In that regard, public elementary and high school education resembles the trajectory of American psychology which was transformed into a test-based discipline under the pressures of evidence-based practice (EBP). The criteria of the EBP paradigm have been imposed on public education through the No-Child-Left-Behind legislation (2001). As it stands now, public elementary and high school education is a test-based enterprise (Ballentine, 2007) in which decisions about placements at grade level, type of school, or type of

educational track are being made based on single-test scores and standardized assessment instruments.

I do not wish to imply that the approach to education should become therapeutic, but rather that it should not lose the essence of education in which students' success is founded on mentoring and rapport between educators and students (Losey, 1995; Rich, 1991; Trent, 1990).

The institutional climate has begun to change in educational policy and practice by shifting from exclusive reliance on standardized, objective, and context independent methods of assessment to a learner-centered approach which recognizes that non-standardized, subjective accounts and contextual sources of information play an important role in arriving at a comprehensive and holistic understanding of a learner. Considering the limitations of one-sided approaches, educational policy makers are well advised to move away from the test-based assessment toward the inclusion of a variety of methods used in combination—a view that has been held by many experienced educators. “Under growing amounts of pressure to improve graduation rates and show the value of a degree, colleges are experimenting with new tactics, such as personalized learning, coaching, data analytics, and other approaches aimed at furthering students' achievements” (Chronicle of Higher Education, 2014). The drawing protocol introduced by this study can be one of such tactics for personalization of learning and academic advising. The *Inside Me–Outside Me* protocol can be used as an informal tool for learning about students' inner selves, a method that can be easy to utilize without limiting creativity, and which can be effortlessly used in any classroom with children and adults alike. The *Inside Me–Outside Me* protocol can potentially elicit meaningful conversations about the students' self-representational drawings.

Moreover, by providing a structure, by asking the drawers to use their hands or feet to represent themselves, the protocol can help inexperienced drawers overcome the initial intimidation caused by a sense of not knowing where to start. Because it does not rely on facial likeness, which is difficult to achieve by inexperienced drawers, it provides an opportunity for the development of competent self-portraits which, in turn, can generate a sense of accomplishment in the drawers.

Understanding regularities underlying the process of visual interpretation and interpretation at large is central to knowledge making and transmission, which is education in its broad sense. In teacher education, for instance, the source of teachers' biases against some students can be explained through the heuristic of *cohesion*. According to this principle, the judgments teachers make about students are situational interpretations based on the teachers' personal beliefs, goals, and assessment of a specific situation (Gigerenzer et al., 1999; Kahneman, 2011). By the same token, it is wise for educators to be aware of an association between having been abused and the frequency of seeing indicators of abuse in others, which in an educational setting may lead to false attributions to students who have not been abused.

Implications for Clinical Practice

The methodology for visual analysis that has been developed in this study and the drawing protocol can be immediately applied to clinical practice as a general-purpose method for informal assessment of worldviews and self-perceptions in general, and worldviews that might be affected by the trauma of abuse or general emotional distress, in particular. Whenever eliciting information about one's sense of self in relation to the outside world is sought after, the drawing protocol can achieve this goal in unobtrusive ways that cannot be obtained rapidly through other means. The benefit of the drawing protocol, as opposed to the use of a photo

camera, for instance, is that it is easy to administer and it provides instantaneous results. It is cheap and convenient to administer and perform, as it does not require expensive technology. A drawing can be executed in any setting without having to leave the situation to look for suitable subjects, as is often the case with photographic methods. All it takes to make a drawing is a sturdy surface, including a floor, on which a sheet of paper can be held. When more drawing supplies are available, these can benefit the drawer's art-making experience, but they are not necessary for the drawing to be informative. The drawing protocol is non-threatening, in that it does not resemble a test, which is an important feature to individuals suffering from test anxiety. Potentially, it offers drawers an opportunity to enjoy creating something of beauty while looking inward and outward and reflecting on the self.

Implications for Advocacy Against Domestic Violence

This study is important to social workers and advocates working with victims and survivors of domestic violence, intimate partner violence, and sexual assault by offering a method for informal and quick assessment of the victims' self-image that can guide the counseling. This study provides empirical evidence that supports advocacy against intimate partner violence because it demonstrates that the abuse can profoundly affect the victims' self-image and worldviews.

Future Directions for Research

The regularities found by this study, however tentative, point toward a hypothesis that interpretation is not an idiosyncratic process. This suggests a possibility that cognition-based processes may work in tandem with cultural factors in visual interpretation. Future research might examine how the framework and the methodology perform in cross-cultural contexts. Would the key signifiers change in different cultural environments? Would the interpreters pay

attention to the same signifiers in different cultures? Would the interpreters report any classification criteria and, if so, to what extent are they the same or different from the criteria indicated by the participants of this study? By the same token, the heuristics identified in the study appear to form a hierarchical system of interdependent criteria for diagnostic interpretation of drawings. Future research might query into the question: What is the order in which the heuristics have been organized, and are the hierarchies the same across the judges?

In addition, future studies might examine eye movement patterns against the interpreters' reports of classification strategies, asking the question, "Is the pattern of looking the same for varied cultures?" A step further, elements in the drawings might be manipulated to examine which cues are foundational to judgments about meaning? In cross-cultural studies, the general question to ask is, "What aspects of interpretation are cognitively determined and remain stable across cultures, and what aspects change across cultures?" Many of these questions can be answered through research in neuroscience of visual interpretation, which presents another important area for further development of this exploratory study.

In the area of counseling, a future study might query into whether similar self-perceptions and worldviews can be found among drawers who experienced interpersonal abuse and drawers who experienced traumas not related to interpersonal abuse. In advocacy against interpersonal violence, further research might test whether self-identification is merely an indicator of having been abused, or is the explicit awareness of the abuse itself a significant factor in interpretation? The question remains, "Can we see in drawings what we cannot see in our own lives?" Hence, are victims of abuse who do not self-identify as having been abused sensitized to seeing indicators of abuse-affected worldviews and self-perceptions in drawings?

Conclusion

The main significance of this study is methodological. By developing a methodology for visual interpretation within a paradigm that is applicable to qualitative and quantitative methods, and recognizes the primacy of visual cognition over language, this study sets a stage toward the development of an empirically grounded methodology for visual research across disciplines, including social sciences, humanities, arts, and education.

This study introduces a visual method for acquiring insights into people's self-perceptions and worldviews that transcends language barriers, is engaging, and by and large, non-intimidating. This drawing activity can be utilized (a) as a means to learning about people's relational selves, and (b) to personalize education by inciting self-discovery.

The regularities found by this study, however tentative, point toward a hypothesis that interpretation is not an idiosyncratic process, suggesting that cognition-based processes may work in tandem with cultural factors in visual interpretation. One goal for such a methodology is to provide a way of thinking and empirical evidence that can afford greater objectivity in the largely subjective processes of visual interpretation.

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APPENDIX A: PROTOCOL FOR ADMINISTRATION OF INSIDE ME–OUTSIDE ME DRAWING ACTIVITY

INSIDE ME–OUTSIDE ME

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Objective (*read to the participants*)

► **This activity will** give you an opportunity to examine the relationship between your inner self and the outer world. It will be an exploration of how you see yourself in respect to others, and/or to the outer world at large. You will have an opportunity to express those aspects of yourself that might be unknown to others, or unknown to you. Why? Because many of us does not practice introspection, and we may not be aware of what's going on inside of us. This activity provides you with a timeframe to focus on you and reflect about you as you see yourself in respect to the outside world.

Instructions (*read to the participants*)

- **Trace your hand or foot** on the blank sheet of paper placed in front of you. The hand or foot or both will represent you. You decide which one suits you best. Anything you draw inside that tracing, will show your inner self, or the self that you know from within. The area outside the tracing will show the external world.
 - **You may use lines, designs, words, symbols** in an abstract, realistic, or other styles to expresses yourself.
 - **Use at least two colors.** You may use more colors, if you feel inspired.
 - **You may modify** these instructions, rather than follow them to the letter.
 - **If you feel self-conscious** about not knowing how to draw, keep in mind that this activity is not focused on creating a terrific art work. The goal of this activity is to learn about yourself and to express the precious self of yours.
-

(After you've explained the project, facilitate a guided relaxation. It helps some people to focus and create richer drawings.)

GUIDED RELAXATION (*read to the participants*)

► **Make yourself comfortable.** Straighten your back, place your feet firmly on the floor. Wiggle in the chair to be comfortable. Take a couple deep breaths to focus your thoughts on you. Close your eyes, if it helps relax. It is YOUR time, it is a window of time for you to think about yourself, to explore how you feel inside yourself, how do you feel about yourself and about others.”

How do you look on **the inside**.

Are you bright or dark, soft or hard?

Are you of one color or more?

What are your boundaries?

Are your boundaries firm or soft, thick or thin?

Are you wide and open or narrow or focused?

Are you introverted and quiet, or extroverted and expressive?

Do you feel creative?

Are you dreamy, wispy, and nebulously defined? Or perhaps are you sometimes black, grey, or white?

Are you orderly, disorderly, structured, relaxed, or both? Are you endless, like a galaxy?

Ask yourself about **the outside world**. Is it bright or dark?

Is it sharp or soft?
Is it foggy or clear?
What are the symbols that describe it?
Is it dynamic or peaceful?
Is it open or closed?
Is the outside world exciting and colorful or dull, boring and colorless?
Can you explore it?
Are you safe in it? Is it friendly?

► **When you are ready** open your eyes, and create. You'll have minutes to create.
Recommended time 50 min

(Read to the participants, if the group struggles to focus or gather ideas for the drawing.)

► **WRITING TO FOCUS:** To help you focus, you can use a small piece of paper that is provided. Fold it in half vertically. On the left hand side, write the word "Inside" and on the right hand side write the word „Outside“. On the left hand side list words that describe how you feel on the inside. On the right hand side write down the words that describe the world outside of you. Let these words inspire your drawing process.

(Ask participants to write about their drawings or the process. It helps some people talk about their work and gain more insights about themselves.)

► **WRITING ABOUT THE DRAWING:** When you are finished, take 3 to 5 minutes to write down what the drawing means to you, or what have you discovered about your inner and outer worlds as you worked on the drawing.

If you copy this workshop or used it in your work with clients, please acknowledge the source/my authorship. I'll appreciate receiving your feedback about your successes with it, write me at, *my email*

APPENDIX B: IRB APPROVAL LETTER

UNIVERSITY OF ILLINOIS AT URBANA-CHAMPAIGN

Bureau of Educational Research
College of Education
38 Education Building
1310 South Sixth St.
Champaign, IL 61820



March 19, 2013

Elizbieta Kazmierczak
Education, Policy and Organizational Leadership Department
College of Education
1310 S. Sixth Street
MC-708

Dear Elizbieta,

On behalf of the College of Education Human Subject Committee, I have reviewed and approved the revisions to your research project entitled "Interpreting Abuse from Self-Representational Drawings: A Mixed-Method Study." I find that this project continues to meet the exemption criteria for federal regulation 46.101(b) 2 for research involving normal interview and observation procedures where the identifying information is protected, or participant has provided express permission to disseminate their artifacts without any other identifying information included and doing so will not reasonably place the subjects at risk.

No changes may be made to your procedures without prior Committee review and approval. Your project number is 4956 and projects are typically approved for three years with annual reports required. You are also required to promptly notify the Committee of any problems that arise during the course of the research.

Best regards,

Susan A. Fowler, Ph.D.
College of Education Human Subjects Review Committee

Cc: Dr. Pradeep Dhillon

APPENDIX C: RECRUITMENT EMAIL

CALL FOR RESEARCH PARTICIPANTS

“Interpreting Abuse from Drawings”

I am looking for participants for my research study. It involves looking at 196 self-portrait drawings to sort them into two piles: drawings by survivors of abuse and drawings by non-survivors. The sorting criteria are provided as a list (derived from the literature) of effects of abuse on self-perception and the worldviews. I record the selections. Afterwards, I ask about the strategies participants have developed to perform the task. It takes at least one hour to sort the drawings.

My interest is in learning which drawings are consistently classified as one or the other. I also peek into whether there are any hints as to what qualities support a good critical eye, e.g.: education, gender, age, work experience, knowledge of survivors, artistic sensitivity.

Any fairly quiet place of your choice with a table that can accommodate 3 legal size piles of papers next to each other will work. Places that have worked well include: conference rooms, undergrad library, or quiet spots at a quiet time in coffee shops. I will greatly appreciate help and insights, if you are not too busy to look at other people's self-portraits.

I am looking forward to your response.

Best Wishes and Happy summer!
Elka Kazmierczak
My email

APPENDIX D: VOLUNTARY CONSENT FORM

RATER'S INFORMED CONSENT



Title of the Project: **In Search of Visual Indicators of Effects of Abuse on Self-Perceptions in Inside Me–Outside Me Drawings**

Investigator: This study is conducted by Elzbieta (Elka) Kazmierczak, a visual artist and a doctoral student in Educational Policy Studies at the University of Illinois at Urbana-Champaign under the guidance of Prof. Pradeep Dhillon, PhD.

Purpose: The study is intended to identify visual and aesthetic strategies used to convey graphically self-expressive content that may be related to experience of abuse. A minimum of 30 adults with and without experience with art, psychology, or diagnostic drawings will be invited to evaluate the self-expressive drawings. This study attempts to learn about implicit visual and symbolic categories that guide evaluation of drawings, therefore participants will be asked about their experience of the selection process afterwards.

Procedures: If you agree to take part in this research, you will (1) Review 196 anonymous drawings titled “Inside Me–Outside Me” drawn by adults, and sort them into two groups: drawings that have been created by artists who experienced physical, emotional, or sexual abuse, and drawings that have been created by artists from general population. You will sort the drawings on the basis of a provided brief description of a psychological profile of an abuse survivor derived from the literature. (2) You will share reflections about your selection process afterwards, (3) Briefly describe your educational and work experience, and experience with art, psychology, diagnostic drawings, and with survivors of abuse. This one-time session will last between 70–120 minutes of your time.

Voluntariness: Your participation in this research is voluntary. You may refuse to participate, skip any drawing you don’t wish to review, or discontinue participation in the study. Your decision to participate, skip, or discontinue your involvement will have no effect on your future relations with the investigator or the University of Illinois.

Risks and Benefits: You may experience some mild, temporary discomfort relating to reflecting on drawings that may relate to stressful life events. This procedure does not otherwise involve risks beyond those encountered in everyday life. You will probably not receive any direct benefits from participating in this research, other than satisfaction from looking at expressions of innate creativity among adults who had not been trained as visual artists. Your participation may help researchers and clinicians understand visual encoding and interpretation of psychological content for diagnostic purposes. There is no compensation for participation in the study. Participants will receive a copy of the research findings upon request.

Confidentiality: Only the primary investigator will have access to consent forms that indicate your identity. There will be no personally identifying information such as names associated with the ratings. In the event of publication of this research, no personally identifying information will be disclosed.

Who to Contact with Questions: Questions about this study should be directed to the Responsible Project Investigator, Prof. Pradeep Dhillon email here; Questions about your rights as a research participant should be directed to the Campus Institutional Review Board Office-UIUC; OSURR@education.edu ; (217) 333-2670; <http://irb.illinois.edu/>; You will receive a copy of this consent form.

I certify that I am over 18, have read this form, and volunteer to participate in this research study.

Please print your name: _____

Your signature: _____ Date: _____

APPENDIX E: 18 CHARACTERISTICS OF AN ABUSE SURVIVOR

Experience of emotional, physical, or sexual abuse often has a psychologically traumatic effect on individuals' self-perceptions and self-to-the-world relationships. It may result in:

1. Diminished sense of personal power and agency
2. Perception of the world as unsafe and dangerous
3. The sense of being entrapped
4. Generalized anxiety
5. Life perceived as drama or tragedy
6. Muted emotional responses
7. The sense of struggling with obstacles and pressures from the outside
8. Feeling stressed out and exhausted
9. Lack of self-confidence, self-doubt, and confusion
10. Dominant self-critical inner voice
11. Doubting one's ability to do anything meaningful in life
12. Chronic wariness, vigilance, and worries
13. Anger, depression, hopelessness
14. Feeling guilty and ashamed
15. Feeling isolated, alone, and misunderstood

RECOVERED SELF: persons who no longer experience abuse and recovered from the psychological trauma, often develop:

16. Awareness of what was before and where one is now
17. Awareness of the journey from abuse to life with positive future
18. Sense of empowerment from the overcoming the obstacles and hardships

APPENDIX F: SCORING SHEET – A SAMPLE PAGE

● = abused RATER ID:..... Start:.....end.....
— = non-abused Date.....

		R	●●	● —	— ●	— —
DRAWID	ORD	ABU	OK abu	MISSED	FALSE Alrm	OK non-abu
2006-001-08972	1					
2006-002-85420	2					
2006-003-92176	3					
2006-004-56565	4					
2006-005-62871	5					
2007-002-03112	6					
2006-006-78962	7					
2006-007-88889	8					
2006-008-57376	9					
2006-009-62286	10					
2006-010-61855	11					
2006-011-95699	12					
2007-005-05118	13					
2006-012-06794	14					
2006-013-86410	15					
2006-014-92510	16					
2006-015-85707	17					
2006-016-91100	18					
2006-017-68857	19					
2006-018-20620	20					
2006-019-40884	21					
2006-020-14847	22					
2007-006-11281	23					
2006-021-88086	24					
2006-022-67981	25					
2006-023-40839	26					
2006-024-30847	27					
2006-025-28428	28					
2006-026-26840	29					
2006-027-06930	30					
2007-011-06124	31					
2006-028-07038	32					
2006-029-07274	33					
2006-030-07485	34					
2006-031-08100	35					
2006-032-08255	36					
2006-033-08342	37					
2006-034-08784	38					
2006-035-09283	39					
2006-036-10001	40					
2006-037-10026	41					
2007-030-06047	42					

APPENDIX G: QUESTIONNAIRE

RATER ID:

ABUSE: In this study, abuse is defined broadly as a form of victimization, as mistreatment, violation, or treatment of someone so as to cause damage or harm (knowingly or unknowingly) to gain unfair advantage; **forms of abuse:** verbal, emotional, physical, sexual, economic, and child mistreatment and neglect.

RATER'S QUESTIONNAIRE

I'd like to create a portrait of your experiences in the areas that may play a role in your interpretation of drawings. Feel free not to respond to questions that you find too personal to respond. *Write down or circle the correct responses.*

1. Your age:..... Gender:..... Ethnicity:..... Nationality:.....
Do you have children?
2. Your education: Do you have Grade / HS diploma?
3. What is/will be your undergraduate degree in?.....
4. What is/will be your graduate degree in?
5. What is/will be your doctoral degree in?
6. What other training/talents/skills do you have?.....
.....
.....
7. Your current employment status:....
- 7a. Brief history of what have you done for living
-
-
8. Do you have any volunteer experiences? (*specify*).....
9. Have you known a person/s who experienced abuse? *No yes specify*
-
10. Have you personally experienced any form of abuse? *No yes specify*
-
11. Do you think your experiences guided your interpretation of the drawings? (*specify, which ones*)
.....
.....
12. Have you participated in extracurricular arts programs in HS? (*specify*)
- 12a. Can you draw?.....
13. Have you ever had a journal or a diary? *No yes specify*
14. Have you been practicing any art/craft for pleasure? (*specify*)
-
-
15. Have you ever participated in counseling? *No yes specify no.*
- 15a. Are you currently in counseling? *No yes specify*

RATER ID:

16. Have you ever participated in art therapy? *No yes specify*

17. Have you ever used art for therapeutic purposes by yourself? *No yes specify, which art form*
.....

18. Which of the characteristics listed below apply to your self-image and perceptions of others?
.....
.....

1. Diminished sense of personal power and agency = the extent to which you believe that you can control events in your life.

2. Perception of the world as an unsafe and dangerous place

3. The sense of being entrapped in an anxiety-provoking world

4. Highly anxious self

5. Extreme reactions to unexpected events: life perceived as drama or tragedy

6. Muted emotional responses

7. The self as struggling with obstacles and pressures from the outside

8. Self as stressed out, tortured, imprisoned

9. Lack of self-confidence, self-doubt, and confusion

10. Dominant self-critical inner voice

11. Questioning one's ability to do anything meaningful in life

12. Chronic wariness, vigilance, and worries

13. Anger, depression, hopelessness

14. Feeling guilty and ashamed

15. Feeling isolated, alone, and misunderstood

16. Awareness of what was before and where one is now.

17. Awareness of the journey from hopelessness to life with hope and future

18. Sense of empowerment that comes from the overcoming obstacles and hardships

**APPENDIX I: SCORES FOR PROTOTYPES OF JUDGES' PERCEPTIONS OF
MANIFESTATIONS OF ABUSE**

DrawID	Rated Abused %	Rated Abused #	Reported Abused	Correct %	Correct #
132	95%	57	1	95%	57
28	93%	56	1	93%	56
42	93%	56	0	7%	4
124	93%	56	0	7%	4
62*	92%	55	0	8%	5
17	88%	53	1	88%	53
19	88%	53	1	88%	53
111	88%	53	1	88%	53
192	87%	52	1	87%	52
27	85%	51	1	85%	51
39	85%	51	1	85%	51
47	85%	51	0	15%	9
99	85%	51	1	85%	51
126	85%	51	0	15%	9
48*	83%	50	0	17%	10
156	83%	50	1	83%	50
88*	82%	49	1	82%	49
170	80%	48	1	80%	48
103	78%	47	1	78%	47
134	78%	47	0	22%	13
53	77%	46	1	77%	46
83	77%	46	1	77%	46

**APPENDIX J: SCORES FOR PROTOTYPES OF JUDGES' PERCEPTIONS OF
MANIFESTATIONS OF NON-ABUSE**

DrawID	Rated Non-Abused %	Rated Non-Abused #	Reported Abused	Correct %	Correct #
106	97%	58	0	97%	58
54	95%	57	1	5%	3
105	95%	57	0	95%	57
108	95%	57	0	95%	57
113	95%	57	0	95%	57
4	93%	56	0	93%	56
22	93%	56	0	93%	56
51*	93%	56	0	93%	56
182	93%	56	0	93%	56
25	92%	55	0	92%	56
37	92%	55	1	8%	5
70	92%	55	0	92%	55
72	92%	55	0	92%	55
74	92%	55	1	8%	5
82	92%	55	0	92%	55
133	92%	55	1	8%	5
185	92%	55	0	92%	55
191	92%	55	0	92%	55
20	90%	54	0	90%	54
142	90%	54	1	10%	6
171	90%	54	0	90%	54
180	90%	54	0	90%	54

APPENDIX K: EXPLICIT SCHEMAS – A COMPLETE LIST

Explicit Schemas (quoted from the interviews with 36 judges)	ID
I know line quality of the abused, e.g.: in doodles, handwriting, etc.	<u>7</u>
Are they "crazy"? By "crazy" I mean, what's wrong with them, be it disturbed, distressed."	<u>10</u>
If it looks happy, not troubled, balanced, then non-abused. Those without color are chaotic, hard to understand are abused, everything negative=abused, scary world=abused.	<u>11</u>
Issues of power. Abuse is about power.	<u>14</u>
I see those things in drawings.	<u>16</u>
What is self-evident, painful memories, past hurt, drugs=abuse.	<u>18</u>
Spirals and arrows toward hand. They indicate inner turmoil and pressure=abused. Color doesn't mean anything.	<u>19</u>
Words & patterns, like "shame" & division into before and after	<u>20</u>
What is drawn oppressive & words. I saw fear, isolation, insecure, abused, discouraged. Squiggly line is shooting=concern. When eyes=self-reflecting.	<u>21</u>
"Not right" drawings. Not all of them are abused, may need a little guidance.	<u>22</u>
Mad, sad, words related to fear, pain, unlove, uncertainty, harsh, heavy "dark" lines, even in "pretty" pictures.	<u>23</u>
Key words	<u>24</u>
Clear self-evident text. I erred to put more on the abused pile so that I could talk to them later on, rather than miss persons who needed help.	<u>25</u>
I was looking for anything that I would like to talk to that person more. Anything out of the norm: life & death, fight or die, war. If I could draw something or my kids could draw, I did not think anything about them=general.	<u>26</u>
What didn't seem right. When the foundation of family didn't seem right. When somebody is wrapped up with one person being unaware of what's going on, that is not right. Chaotic=abused, sad words: dumb, sad, crazy=abuse, simplicity=not abused.	<u>27</u>
Anything odd that feels wrong. When I don't like something=abuse, religion=abuse.	<u>28</u>
I wanted to be surprised.	<u>30</u>
I know symbols of abuse. I know symbols of happiness & love. Abuse=sadness, grief, usually demarcated by clouds, rain, confusion, weapons, alcohol, wall, fear, feeling trapped, and alone. When people are struggling, people are turning to religion more often than when they are happy.	<u>31</u>
Use of color and contrast of dark & light: in abused dark side is overwhelming, obvious are chains, walls. The abused differently express themselves.	<u>32</u>
How involved are the pictures, involved is abuse. If not feeling strong, then abused. If about loneliness, helplessness & fear, but nothing to counteract it, then abused.	<u>33</u>

Negative world: abused are confused, not understood, and gave up fighting to move forward. Non-abused are moving forward, having family as support. They know that world is not easy, but they keep struggling.	<u>36</u>
What I would draw.	<u>37</u>
I looked for drawings representing deep-seated emotional struggles or difficulties.	<u>38</u>
I looked for images that are specific, self-evident, like for instance 3 human figures: mother, father and child indicate intact family. I looked at text. I looked at expressive quality of line, direction of strokes, choice of color. I looked at the use of space, vast empty or crowded with lines filling the page; Empty space around all over=loneliness. If busy, then emotional instability. If relaxed line then not abused. If strokes move in different directions, then instability. In not abused, relaxed, not aggressive content, non-vibrant colors.	<u>40</u>
I used words, because I am a writer so I could derive more meaning from them.	<u>41</u>
You just tend to recognize more quickly those with dramatic, fire or blood, those are self-evident. Words are helpful with difficult drawings.	<u>42</u>
I relied on the way they looked to me. I looked for darkly drawn images and words, dark line quality. The line quality felt in a certain way. I looked for self-evident words & pictures.	<u>44</u>
I paid attention to negative words that stood out strongly.	<u>45</u>
By the way color was put I could tell how they felt, e.g.: black means a lot of pain. Some have happy lives, and some of them are waiting for the end of the world.	<u>48</u>
You have to look at the whole picture from all sides to make your choice. Looking at the pictures when I got farther and farther away from the picture I could tell which are abused or general. Colors tell, black is dark, negative.	<u>49</u>
You have to look for what art is about versus looking "pretty." If they have together love, joy, and life, then general. If they have everything mixed up, I put on target.	<u>50</u>
Whenever I saw circles & black holes I marked abused. Pain=abuse, all dark=a problem, balanced=no problem, religion=abuse, emotionally abused by religion, meaning, suppressed, e.g.: being a gay is not accepted by religion.	<u>51</u>
Detailed time consuming drawing=abuse. Weather is a generic metaphor. Rain, lightning, thunder=abuse. Religion on the outside in the dark drawing=oppression, suppression. Religion inside=positive. I knew how they felt when drew.	<u>52</u>
I expected that abused would put a lot of herself into the drawing. Not abused=simple drawing. When unique symbol=abused; pain, religion=abused; religion=seeking help, because they felt guilty about their abuse;	<u>53</u>
Whenever I saw a dichotomy in color, I put on the abused pile. Religious crosses=spiritual abuse of feeling damned, cursed to going to hell.	<u>54</u>
I clearly saw that they were expressing their pain, who they were angry with, or what they are unhappy about.	<u>55</u>
<i>Note. Underlining signifies Better judges.</i>	

APPENDIX L: IMPLICIT MODELS – A COMPLETE LIST

Experience-Based Criteria of 21 judges	ID
I judged it based on all different types of abuse and I'm sure my friends' different experiences influenced that.	2
Knowing persons who were abused both on a conscious and non-conscious level.	3
I'm not sure exactly how I ranked the drawings. Having childhood friend who was physically and verbally abused, and my experiences in crisis line, may have influenced my rankings.	4
Knowing other stories of abuse from life.	5
Probably talking to friends about their life.	6
My experiences working with adults and youth from abusive homes.	<u>8</u>
Perhaps knowing a person who was abused, my mom was abused.	9
I'm making assessment based on where I am and that's not objective, that's subjective.	12*
My experience with the survivors and the description in the instructions. This description is consistent with what I see in our survivors.	<u>13</u>
My own personal experiences were definitely used as one reference point, like emotion that I felt of somebody I know that was abused.	<u>15</u>
I had experience with abused women, but I wanted to separate my experience from the sorting. I had a family member who committed suicide because of abuse.	17
My work with the abused. Not sure of specific signs.	29
Makes me question what I project from my life that was abusive and what is in the drawing, e.g.: dramatic old seeing of the world.	35
Maybe my self-reflective work was helpful.	39*
My own abuse.	43
Past experiences influence the viewing, although I also know that some observations may happen on a sub-conscious level.	<u>46*</u>
Because of my abuse I could just feel the pain of some of the students more than others.	56
My experiences with abuse influenced my interpretations.	57
My abuse, some of the drawings represent my experiences.	58
Knowing sexually abused.	59
I think it opened my eyes to thoughts/images provoked by my past abuse.	60

Note. Underlining signifies Better judges. * Signifies Non-abuse-based criterion.

APPENDIX M: INFORMATION SHEET RECEIVED BY THE JUDGES

Warning Signs of an Abusive Relationship

Abuse |verb| *the improper use or treatment to bad effect or for a bad purpose; to use or treat in such a way as to cause damage or harm to gain benefit; a violation.*

If any of these warning signs describe your relationship, then you could be in an abusive relationship or the relationship is at risk of becoming abusive.

- You feel nervous around your partner.
- You are afraid to break up with your partner because he/she threatens to hurt you, self, or someone you care about.
- Your partner uses seemingly loving messages that serve to control you, e.g.: "I can't live without you."
- Your partner intimidates you with knives, guns, or other weapons.
- Your partner uses violent behavior: throws items, punches the wall, physically restrains you, shoves you, slaps you, or hits you.
- Your partner criticizes or humiliates you in front of others, e.g.: calls you fat, ugly, stupid.
- Your partner fosters the belief that you are bad or incompetent.
- Your partner pressures you into having sex or performing unwanted sexual acts.
- Your partner prevents you from seeing your family and friends or from going back to school or work.
- Your partner wrongfully accuses you of cheating and tells you that he/she is jealous because he/she loves you.
- Your partner asks you to justify everything you do, everywhere you go, every person you see.
- Your partner looks through your belongings.

- Your partner uses withdrawal of affection as punishment.
- Your partner acts like "Prince/Princess Charming" one minute and like a monster the next.
- Your partner makes all the decisions, e.g.: controls finances, tells you how to dress, or how you should behave.
- Your partner sees himself/herself as a victim whom no one understands.
- Your partner makes excuses for his/her abusive or violent behavior by blaming it on his/her childhood, alcohol or drugs, or inability to control his/her temper.
- Your partner acts like his/her abusive behavior is no big deal, tells you it's your fault, or denies it happened.
- Your partner tells you that if you changed, he/she wouldn't abuse you.

For advice or help, contact: The National Domestic Violence Hotline **1-800-799-SAFE (7233)**, or www.ncadv.org, (anywhere in the United States)

To find the Domestic Violence program in Illinois, visit the **Illinois Coalition Against Domestic Violence** Web site www.ilcadv.org.

For **Domestic, Partner Violence Services** for Champaign county residents, including students, contact 24-hour Help Line: **217-384-4390**

Counseling Center, (UI) services for students who have been abused physically, sexually, or emotionally, **217-333-3704**

For **Rape Crisis Services** for Champaign county residents, including students, contact 24-hour Hotline: **217-355-5203**

For **RACES**, community-based free, confidential services and counseling for anyone who experienced sexual abuse, contact 24-hour Rape Crisis Hotline: **217-384-4444**

Warning Signs from: The Women's Center (Carbondale, IL) Web site: www.thewomensctr.org/p/dv_warningsigns.php.