



Assessing the Psychological Well-being and Coping Mechanisms of Law Enforcement Investigators vs. Digital Forensic Examiners of Child Pornography Investigations

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Abstract

Previous research indicates law enforcement investigators and digital forensic examiners working child exploitation cases are at an increased risk for experiencing psychological distress; however, the roles of digital forensic examiners and investigators often overlap substantially when working child pornography cases. Thus, the current study was the first to compare the psychological well-being, job satisfaction, coping mechanisms, and attitudes toward mental health services for individuals working as either digital forensic examiners and/or investigators of child pornography cases. Law enforcement officers were solicited from the Internet Crimes Against Children task force listserv, and based on their *current* self-reported duties, 20 were classified as digital forensic examiners-only, 71 as investigators-only, and 38 as *both* digital forensic examiners and investigators of cases involving Internet child pornography. Results showed significant differences between groups; individuals performing both duties scored significantly higher on secondary traumatic stress, higher on feelings of worthlessness, and lower on concentration compared to digital forensic examiners-only. Individuals performing both duties also reported significantly lower scores on job satisfaction compared to investigators-only. Finally, individuals working both duties were significantly more likely to know someone who sought counseling as a result of work-related stress. The study's mental health implications and future research suggestions are discussed.

Keywords Psychological well-being · Secondary traumatic stress · Internet crimes against children · Digital forensics · Child pornography

Introduction

The USA has seen an increase in the number of law enforcement officers investigating child pornography cases, as well as the number of digital forensic examiners involved in the analysis of child pornography-related digital evidence (Holt and Blevins 2011). In 2006, child pornography offenses comprised of 69% of the total number of child sex exploitation offenses referred for federal prosecution in the USA (Motivans and Kyckelhahn 2007); in addition, child pornography cases accounted for 80% of the growth in child sex exploitation referrals from 1994 to 2006 (Motivans and Kyckelhahn 2007). Since 2010, the

National Center for Missing and Exploited Children (NCMEC) has sent more than 143,000 notifications to electronic service providers regarding the appearance of child sex abuse images on public websites (NCMEC 2016). In response to the increasing number of children experiencing crimes via the Internet, a nationwide network of more than 3500 law enforcement agencies was created in 1998 known as the Internet Crimes Against Children (ICAC) task force. Since its conception, the ICAC task force investigated more than 580,000 complaints of alleged child sexual victimization, and in 2015 alone, they conducted over 54,000 investigations and 61,000 forensic exams resulting in the arrest of more than 60,000 offenders (see www.ojjdp.gov).

Criminal justice occupations are associated with high work stress leading to psychological illnesses and high turnover rates—especially for officers dealing with child sex crimes (Bourke and Craun 2014; Powell et al. 2014; Rivard et al. 2002; SHIFT n.d., 2016; Violanti and Gehrke 2004; Wolak and Mitchell 2009). In addition, child exploitation investigators may experience a number of symptoms from work-related stress

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including behavioral changes, absenteeism, secondary traumatic stress, fatigue, anxiety, and feelings of worthlessness, just to name a few (Bourke and Craun 2014; Powell et al. 2014; Burns et al. 2008; Edelmann 2010; Krause 2009; Harms 2011; Perez et al. 2010; Violanti and Gehrke 2004). However, limited research exists on the work-related stress of child pornography investigations for digital forensic examiners (see Holt and Blevins 2011).

Irvine (2010) estimates that 80–90% of criminal cases worked by digital forensic examiners involve child pornography, and digital forensic examiners must view the child sex abuse images since the content of the images may increase the severity of the offense. For instance, Indiana Code 35-42-4-4 (2016) states the offense of possession of child pornography moves from a level 6 felony (lowest level) to a level 5 felony if the child is less than 12 years of age or if the child engages in bestiality. The United States Sentencing Commission (2016) also suggests increasing the base level of child pornography offenses according to not only the number of child sex abuse images, but also the content (i.e., sadism, violence) and age of the child victim (i.e., victim, toddler). Finally, under the Crime Victims' Rights Act (CVRA n.d.; 18 U.S.C. §7771), victims have a right to be notified each and every time their image is involved in a federal investigation or prosecution through the Child Pornography Victim Assistance (CPVA; Federal Bureau of Investigation n.d.) program. Thus, digital forensic examiners have a duty to identify known victims in the images, so they can be notified and given an opportunity to exercise their legal rights under the CVRA. For instance, one victim of child pornography stated she has received at least 800 notifications in 5 years, and with the help of an attorney, she sued for restitution and was awarded \$170,000 in just 1 year (Laird 2012; Schwart 2010).

Like the USA, other countries also consider the content of the child sex abuse images during sentencing. For example, England and Wales relies on the Oliver Image Description Scale (*R v Oliver* 2002) during sentencing to determine the nature of the child sex abuse images (i.e., categorizes the images' level of victimization on a scale of 1–5; see Akdeniz 2008). A follow-up ruling in *R v. Thompson* (2004) stated indictments need to include the exact or a representative count of the number of images in each level using the Oliver Image Description Scale, as well as the child's estimated age in the images (see Akdeniz 2008). Overall, digital forensic examiners are exposed to child sex abuse images and videos, not only as part of the criminal investigation, but also because of the federal guidelines for sentencing and victim notification.

Some agencies require psychological assessments for law enforcement officers investigating child pornography cases, but there may not be requirements for the digital forensic examiners; other agencies require no psychological evaluations at all. For example, the Office of the Inspector General audit report recommended that the FBI's Innocent Images National Initiative (IINI) undercover employees receive timely mental health assessments;

the FBI agreed; however, they noted that due to resource constraints, they were not able to require that all non-IINI undercover personnel, exposed to child pornography, receive psychological assessments (Tidwell 2009). Instead, the FBI would only require psychological assessments for employees with "prolonged or intense exposure" to child pornography; although, any employee may request a psychological assessment (Tidwell 2009).

In 2009, Wolak and Mitchell surveyed 40 ICAC task force agencies and 471 affiliates and found only 13% of ICAC task forces and 5% of affiliates had mandatory mental health requirements. In addition, the majority of agencies did report that mental health services were available, with only 4% reporting no psychological resources; however, 39% of participants reported their agencies needed more psychological resources (Wolak and Mitchell 2009). Organizations are recognizing the need for more mental health services and the importance of creating a healthy work environment for investigators of child exploitation cases; the Innocent Justice Foundation developed the Supporting Heroes in Mental Health Foundational Training (SHIFT) wellness program to train mental health professionals and provide resources to assist law enforcement officers exposed to child pornography (see <http://www.shiftwellness.net>).

The SHIFT wellness program provides recommendations for supervisors to create a healthy and supportive work environment to avoid burnout, compassion fatigue, and vicarious stress (SHIFT n.d., 2016). These work environment recommendations include work flexibility and proper preparation of new employees; finding qualified mental health providers is strongly encouraged, but there is no mention of whether psychological evaluation should be required, since resources may be available but underutilized by law enforcement due to stigma (SHIFT n.d., 2016).

Finally, to complicate the matter even further, the roles of digital forensic examiners and investigators often overlap substantially in units working cases involving Internet crimes against children. In other words, the individual conducting the digital forensic examination may also be the officer or investigator assigned to the child pornography case; thus, they not only view the child pornography evidence but they also interact with the victim and/or offender in each case. Currently, the work-related stress and impact on psychological well-being and coping mechanisms are unknown for law enforcement officers who serve a dual role, as both digital forensic examiner and investigator, in child pornography investigations.

Current Study

Previous research has examined the coping mechanisms and work-related stress for digital forensic examiners (Edelmann 2010; Holt and Blevins 2011; Perez et al. 2010) and law

enforcement personnel (Bourke and Craun 2014; Brady 2016; Burns et al. 2008; Harms 2011; Krause 2009; Powell et al. 2014; Tomy et al. 2015; Wolak and Mitchell 2009) working cases involving Internet crimes against children. However, few studies have examined the availability of mental health services or law enforcement's attitudes toward mandatory therapy or counseling (see Wolak and Mitchell 2009; Carleton et al. 2017). In addition, in the field of digital forensics, it is common for the roles of examiners and investigators to overlap substantially, so within these ICAC task forces or affiliates, law enforcement officers may work two roles simultaneously, as both the investigator and digital forensic examiner. Therefore, the current study was the first to compare the psychological well-being, job satisfaction, coping mechanisms (i.e., strategies for dealing with stress), and attitudes toward mental health services (e.g., mandatory therapy) for individuals working as either digital forensic examiners and/or investigators of child pornography cases. This study had three specific aims: (1) identify any differences in psychological well-being or job satisfaction, (2) identify any differences in coping mechanisms, and (3) assess attitudes toward psychological treatment, as well as availability of psychological resources, for digital forensic examiners and/or investigators working child pornography cases.

Individuals working dual roles are not only exposed to child sex abuse images, but they may also meet the victim, victim's family, and the offender. Thus, the author hypothesized that individuals working dual roles would experience more work-related stress resulting in poor psychological well-being and poor job satisfaction compared to individuals serving only one role (i.e., investigator-only or digital forensic examiner-only). Since the work environment differs (e.g., examiners are often isolated; see Morales, 2012; SHIFT n.d., 2016), the author expected to find differences in coping mechanisms for digital forensic examiners, investigators, and individuals working both duties. Finally, due to the stigma associated with mental health services in law enforcement (Corrigan 2004; Karaffa and Tochkov 2013), the author expected all three groups to be equally less likely to utilize mental health services, and their attitudes/perceptions toward mental health services would be similar.

Methods

Participants

Law enforcement officers and/or digital forensic examiners were recruited via an email sent to members of the Internet Crimes Against Children task force listserv; 168 respondents consented to the anonymous, online survey. However, 39 respondents were deleted due to incomplete data as a result of either not qualifying for the study ($n = 17$; e.g., officer worked

homicide cases, not child exploitation), dropping out ($n = 14$), or missing the validation question ($n = 8$) that assessed whether the respondents were carefully reading the survey items. The final dataset for statistical analyses included 129 respondents. As shown in Table 1, the majority of the respondents were male ($n = 104$, 81%), between 35 and 54 years of age ($M = 41.5$, $SD = 7.91$), married ($n = 99$, 76%), and White, non-Hispanic, or Latino ($n = 115$, 89%). Based on their *current* self-reported duties, 20 respondents were classified as digital forensic examiners-only (DFE-only), 71 respondents as investigators-only (Invest-only), and 38 respondents as *both* digital forensic examiners and investigators (both) of cases involving Internet child pornography. All participants were treated in accordance to the ethical standards set forth by the American Psychological Association.

Measures

Law enforcement officers working child pornography investigations completed an anonymous, online survey assessing: demographics (e.g., age, sex, current duty), job satisfaction, psychological well-being, vicarious stress, and coping mechanisms. The demographic questionnaire appeared first, but no identifying information was collected; this questionnaire also included items related to their child pornography investigations (e.g., number of cases) as well as their *current* duties as either a digital forensic examiner and/or investigator. The demographic scale also assessed the officers' attitudes toward and use of counseling resources, if available, at their current place of employment.

Coping Mechanisms Coping mechanisms in response to work-related stress were measured using a version of the Holt and Blevins (2011) scale, which assessed a variety of coping mechanisms, including distraction/suppression (e.g., "I just try to forget"), substance use (e.g., "I have a drink..."), talking with others (e.g., "I talk things over..."), withdrawal/escape (e.g., "I try to get away from everyone"), prayer/meditation (e.g., "I engage in some religious activity"), and counseling ("I seek professional help..."). We also included an additional item to assess the use of exercising as a coping mechanism: "I exercise more than usual." All items were scaled from 1 (Never) to 6 (Always). This scale is not meant to provide aggregated scores, such as an average score on "distraction," but rather it measures a variety of coping mechanisms in response to work stress.

Psychological Health and Well-being Psychological health and well-being was assessed using the original K10 and K6 item pool from Kessler et al. (2002). In Kessler et al. (2002), the original scale items were used to create two screening scales for non-specific psychological distress (K6, K10); however,

Table 1 Sample demographics

Variable		Duty			Total* (<i>N</i> = 129)
		Investigator (<i>n</i> = 71)	Digital forensic examiner (<i>n</i> = 20)	Both (<i>n</i> = 38)	
Sex	Male	51 (39.5)	17 (13.2)	36 (27.9)	104 (80.6)
	Female	20 (15.5)	3 (2.3)	2 (1.6)	25 (19.4)
Age (years)	25–34	13 (10.1)	7 (5.4)	12 (9.3)	32 (24.8)
	35–44	29 (22.5)	8 (6.2)	12 (9.3)	49 (38.0)
	45–54	27 (20.9)	4 (3.1)	11 (8.5)	42 (32.6)
	55 or older	2 (1.6)	1 (0.8)	3 (2.3)	6 (4.7)
Race	White, non-H or L	65 (50.4)	15 (11.6)	35 (27.1)	115 (89.1)
	H or L	5 (3.9)	3 (2.3)	1 (0.8)	9 (7.0)
	Black	0 (0.0)	2 (1.6)	1 (0.8)	3 (2.3)
	Asian	1 (0.8)	0 (0.0)	1 (0.8)	2 (1.6)
Marital status	Single	6 (4.7)	4 (3.1)	2 (1.6)	12 (9.3)
	Married	54 (41.9)	15 (11.6)	29 (22.5)	98 (76.0)
	S, D, W	11 (8.5)	1 (0.8)	7 (5.4)	19 (14.7)
Agency	City	25 (19.4)	6 (4.7)	11 (8.5)	42 (32.6)
	County	28 (21.7)	8 (6.2)	13 (10.1)	49 (38.0)
	State	11 (8.5)	6 (4.7)	13 (10.1)	30 (23.3)
	Federal	7 (5.4)	0 (0.0)	1 (0.8)	8 (6.2)
Rank	Sworn officer	71 (55.0)	15 (11.6)	38 (29.5)	124 (96.1)
	Civilian	0 (0.0)	5 (3.9)	0 (0.0)	5 (3.9)

Values represent frequencies with percentages in parentheses

S separated, *D* divorced, *W* widowed, *H* Hispanic, *L* Latino

*Any percentage disparities due to rounding

for the current study, the author was specifically interested in assessing a wide range of psychological symptoms (e.g., depression, anxiety), not just an aggregated score on psychological well-being and health. Therefore, the original K10 and K6 item pool from Kessler et al. (2002) was used to assess the following psychological symptoms, all of which yielded acceptable Cronbach's alphas in the current study: depressed mood ($\alpha = 0.86$), anhedonia ($\alpha = 0.74$), changes in eating habits ($\alpha = 0.75$), changes in sleep ($\alpha = 0.57$), motor agitation ($\alpha = 0.86$), motor retardation ($\alpha = 0.80$), fatigue ($\alpha = 0.80$), worthless guilt ($\alpha = 0.87$), concentration ($\alpha = 0.74$), thoughts about death/suicide ($\alpha = 0.63$), anxiety ($\alpha = 0.87$), worry ($\alpha = 0.89$), motor tension ($\alpha = 0.73$), hypersensitivity ($\alpha = 0.84$), vigilance ($\alpha = 0.91$), and positive affect ($\alpha = 0.95$).

Secondary Traumatic Stress Secondary traumatic stress (STS), also referred to as compassion fatigue, is an emotional distress as a result of working with traumatized populations (Figley 1995). STS is considered equivalent to post-traumatic stress disorder (PTSD) except the stress is indirectly or vicariously experienced by the individual (Figley 1995). Since the symptoms are parallel between PTSD and STS (Bride et al. 2004;

Figley 1995), the author utilized the PTSD Checklist–Civilian Version (PCL-C) to measure the individual's symptomatic responses to vicarious stress. The PCL-C is a standardized self-report rating scale (Weathers et al. 1991), and the civilian version of this scale is appropriate because it measures symptomatic responses as a result of non-specific traumatic events, so the scale items refer to “stressful experiences” rather than specific traumatic events (e.g., military experience). The PCL-C was also chosen because it not only provides a “total score,” but it also provides symptomatic response scores for the DSM-IV criterion B (intrusive recollection), C (avoidant/numbing), and D (hyper-arousal; Weathers et al. 1991; see www.ptsd.va.gov).

The PCL-C includes 17 items assessing a variety of symptomatic responses to stress, and respondents self-reported the extent to which they were bothered by these symptoms, within the past month, on a scale from 1 (Not at all) to 5 (Extremely). To ensure the respondents were reporting symptoms as a result of vicarious work-related stress, the author added the following statement at the beginning of the scale: “As an investigator or digital forensic examiner, you work cases involving child pornography, and these cases can be stressful. Because of these cases, how often in the past month have you

experienced....” The following is a sample symptomatic response from the PCL-C: “repeated, disturbing memories, thoughts, or images?” The 17 scale items are summed to obtain a total severity score (ranging from 17 to 85), and for the general population, a score of 30 or higher is considered positive for PTSD (National Center for PTSD 2014). The current study’s Cronbach’s alpha for the PCL-C was $\alpha = 0.93$. Since PTSD symptoms mirror STS symptoms, the author will discuss the findings in its relation to compassion fatigue or secondary traumatic stress for the total severity score.

Job Satisfaction The job satisfaction scale included five items from the Quality of Employment Survey (Quinn and Shepard 1974), which have been previously used in other criminal justice studies (see Holt and Blevins 2011). The five items were scored according to Quinn and Staines (1979) coding scheme, which resulted in a mean score for overall job satisfaction scaled from 1 (Not Satisfied) to 5 (Very Satisfied). The Cronbach’s alpha for the job satisfaction scale was $\alpha = 0.79$ in the current study.

Procedure

The Internet-based study was hosted on Qualtrics, and the respondents were solicited using a snowball sampling methodology. Law enforcement officers and digital forensic examiners were recruited via an email sent to members of the Internet Crimes Against Children task force listserv; data collection occurred from May 2014 to November 2014. The email described the study as assessing the “job satisfaction of law enforcement and digital forensic examiners currently working cases involving child pornography.” Within this email, participants were encouraged to forward this survey to other law enforcement officers or digital forensic examiners who may qualify for the study. The researcher chose this methodology since anonymous, online surveys may increase the respondents’ self-disclosure of sensitive topics (c.f., Birnbaum 2000).

The email solicitation contained a link to the study hosted on Qualtrics, and the first page was the consent form, which stated that respondents were required to be at least 18 years of age or older, permanent residents of the USA, and law enforcement officers and/or digital forensic examiners *currently* assigned to child pornography investigations. The respondents were required to self-report their primary role in the child pornography investigations as either investigator/detective-only, digital forensic examiner-only, or both the investigator and digital forensic examiner. Participants who self-reported their duty as “other” (e.g., administrative, attorney) were disqualified from the study and sent to the “thank you” page.

Qualified participants then completed the 25-min survey, and at the end, they were sent to a separate Qualtrics page to

enter their name, which was optional, and their mailing address in order to be compensated for completing the study with a \$15.00 visa gift card. Gift cards were mailed to “Current Resident” for those participants who did not provide a first or last name. In addition, participants were encouraged to provide their home mailing address so the gift card would not be mailed to their place of employment, which would further preserve the confidentiality of their participation in the study. Finally, since the researcher created two separate Qualtrics accounts, one to collect the actual survey data and the other to collect the mailing info, it was not possible to link the respondents to their data; in addition, no identifying data was collected in the actual survey (e.g., name of agency).

Analytic Strategies

Due to the exploratory nature of this study, two-tailed statistical significance was set at the alpha level of 0.10 prior to any analyses (see Warner 2007). One multinomial variable (i.e., DUTIES) was created for this study based on the current self-reported roles or duties of the respondents (i.e., digital forensic examiner-only, investigator-only, or both). For the categorical variable, DUTIES, a multinomial logistic regression was conducted to determine which psychological well-being items predicted group differences. Next, a multinomial logistic regression identified which coping mechanisms differentiated between the three law enforcement groups. Finally, all of the variables (psychological well-being, coping mechanisms) identified as significant in the previous regressions were entered into a multinomial logistic regression to determine the overall amount of variance explained between the three groups (investigator-only, examiner-only, or both); please note, for simplicity due to the number of variables included in the analyses, the table presented only includes the results for the final model (see Table 4). Logistic regressions are appropriate for exploratory analyses, for they are more robust with fewer violations of assumptions, such as small and unequal sample sizes (Tabachnick and Fidell 2012).

Results

Descriptives

All of the 129 respondents answered questions regarding their attitudes toward counseling or seeking treatment as a result of working child pornography cases in their current position as either a digital forensic examiner, investigator, or both. Of the 129 respondents, 26 (20.2%) reported knowing someone who has sought counseling or treatment as a result of working child pornography cases. A chi-square test revealed that participants who worked both duties reported knowing more people who sought counseling compared to respondents who were only

investigators and/or digital forensic examiners, $\chi^2(2) = 5.50$, $p = 0.06$. When asked whether or not they have sought counseling or treatment as a result of their current position, only 12 (9.3%) participants reported personally seeking counseling/treatment; the chi-square analysis was not statistically significant between duties and personally seeking counseling/treatment.

Only 21 (16%) of the respondents reported that counseling and/or treatment was a mandatory requirement for their current position as a digital forensic examiner and/or investigator of child pornography cases. In a follow-up question, respondents were asked whether they would attend counseling/treatment sessions if they were offered but not required; 53 (41%) answered yes, 25 (19%) answered no, and 51 (40%) were indifferent. Next, the respondents were asked whether they thought counseling/treatment should be mandatory for individuals working Internet crimes against children; 67 (52%) answered yes, 19 (15%) answered no, and 43 (33%) were indifferent.

Next, a three-way cross-tab and chi-square statistic assessed the relationship between duties (i.e., digital forensic examiner-only, investigator-only, and both), agency type (i.e., city, county, state, and federal), and seeking counseling (yes, no). Results indicated individuals with both duties self-reported seeking counseling more often when they worked for the county, $\chi^2(2) = 5.77$, $p = 0.05$. In addition, individuals who worked for a state agency were significantly more likely to report being indifferent to whether counseling/treatment should be required, $\chi^2(2) = 9.93$, $p = 0.04$. Finally, the three-way cross-tab assessing the relationship between duties, sex (male, female), and seeking counseling was non-significant; descriptives showed 9.6% ($n = 10$) of men personally sought treatment/counseling and 8% ($n = 2$) of women personally sought treatment/counseling.

Finally, a three-way cross-tab and chi-square statistic assessed the relationship between duties and symptomatic responses to the DSM-IV PTSD criterion for B (intrusive recollection), C (avoidant/numbing), and D (hyper-arousal). Based on the PCL-C coding scheme, respondents were labeled as either 0 = non-symptomatic or 1 = symptomatic based on item endorsement. The chi-square analysis revealed no statistically significant differences between the three duties and symptomatic responses for criterion B, C, or D. Using the accepted cutoff score for the general population as a score of 30 or higher, respondents were then classified as being non-positive (0) or positive (1) for PTSD¹ (see National Center for PTSD 2014). According to the chi-square analysis, there was a marginal statistically significant relationship in that

individuals performing both duties (investigator and digital forensic examiner) were more likely to be positive for PTSD (which mirrors STS) compared to investigators-only or examiners-only, $\chi^2(2) = 4.47$, $p = 0.10$. Of the 38 individuals performing both duties, 16 (42%) scored at or above 30, compared to 16 (22%) for the investigators-only and 6 (30%) for the examiners-only.

Hypothesis Testing

H₁: Individuals working child pornography cases as either digital forensic examiners or investigators will score significantly higher on psychological well-being and job satisfaction compared to individuals who perform both duties (i.e., digital forensic examiner and investigator).

Means and standard deviations for the well-being and job satisfaction items are provided in Table 2. Based on the multinomial logistic regression, there were statistically significant differences in the psychological well-being of individuals working child pornography cases based on their self-reported role as either detective-only, examiner-only, or both. Digital forensic examiners reported significantly lower scores on secondary traumatic stress, Wald $\chi^2(1) = 3.25$, $p = 0.07$, and feelings of worthlessness/guilt, Wald $\chi^2(1) = 2.83$, $p = 0.08$, compared to individuals who perform both duties as digital forensic examiner and investigator. In addition, investigators reported significantly lower scores on secondary traumatic stress, Wald $\chi^2(1) = 2.86$, $p = 0.09$, and higher scores on job satisfaction, Wald $\chi^2(1) = 5.18$, $p = 0.02$, compared to individuals who performed both duties. Finally, investigators reported higher scores on feelings of worthlessness/guilt, Wald $\chi^2(1) = 3.20$, $p = 0.07$, and lower scores on concentration, Wald $\chi^2(1) = 2.78$, $p = 0.09$, compared to digital forensic examiners. Investigators also reported higher scores on job satisfaction, Wald $\chi^2(1) = 3.18$, $p = 0.07$, compared to digital forensic examiners.

H₂: Individuals working child pornography cases as either digital forensic examiners or investigators will report different coping mechanisms compared to individuals who perform both duties (i.e., digital forensic examiner and investigator).

The means and standard deviations for the coping mechanisms are provided in Table 3. The majority of digital forensic examiners self-reported using the following coping mechanisms at least sometimes or more: working harder ($n = 18$, 90%), trying to forget about it ($n = 18$, 90%), find some activity to keep my mind off things ($n = 13$, 65%), talking to spouse ($n = 11$, 55%), and religious activities ($n = 12$, 60%). The majority of investigators self-reported using the following coping mechanisms at least sometimes or more: working harder ($n = 61$, 86%), trying to forget about it ($n = 60$, 84.5%), find some activity to keep my mind off things ($n = 61$, 86%), and talking to spouse ($n = 43$, 60.5%). Finally, individuals who performed both roles as a digital forensic examiner and investigator self-

¹ As previously discussed, PTSD mirrors STS symptoms; the PCL-C has an accepted cutoff score for the general population of 30, and we used this scale as a means to describe in more detail, beyond just a total score, the respondents' symptoms.

Table 2 Mean scores on psychological well-being and job satisfaction by duty

	Duty		
	Investigator (<i>n</i> = 71)	Digital forensic examiner (<i>n</i> = 20)	Both (<i>n</i> = 38)
Psychological distress			
Depressed mood	3.59 (1.21)	4.05 (1.28)	3.45 (1.27)
Anhedonia	3.68 (1.19)	3.65 (1.23)	3.68 (1.47)
Eating changes	3.75 (1.22)	3.30 (1.42)	3.55 (1.43)
Sleep changes	2.13 (0.99)	1.95 (0.51)	2.13 (0.94)
Motor agitation	2.49 (1.23)	1.75 (0.72)	2.39 (1.10)
Motor retardation	2.56 (1.23)	2.55 (0.83)	2.55 (1.03)
Fatigue	1.00 (0.00)	1.05 (0.22)	1.05 (0.32)
Worthless guilt	1.51 (1.11)	1.25 (0.72)	1.63 (1.26)
Concentration	1.28 (1.11)	1.25 (1.12)	1.32 (1.07)
Suicidal/death thoughts	1.15 (0.50)	1.30 (1.13)	1.24 (0.79)
Anxiety	2.93 (1.37)	2.75 (1.45)	2.63 (1.36)
Worry	2.46 (1.14)	2.10 (1.33)	2.03 (1.17)
Motor tension	2.11 (1.35)	1.75 (1.07)	2.05 (1.54)
Hypersensitivity	2.28 (1.05)	2.45 (1.05)	2.13 (0.99)
Vigilance	2.65 (1.48)	2.70 (1.22)	2.87 (1.65)
Positive affect	1.31 (0.71)	1.35 (0.59)	1.47 (0.98)
Job satisfaction	2.27 (1.25)	2.40 (1.27)	2.11 (1.16)
STS	1.69 (0.79)	2.00 (1.26)	1.17 (1.01)

Values represent means with standard deviations in parentheses. Psychological distress scaled 1 (Never) to 6 (Always); job satisfaction scaled 1 (Not Satisfied) to 5 (Very Satisfied); STS scaled 1 (Not at all) to 5 (Extremely) STS secondary traumatic stress

reported using the following coping mechanism at least sometimes or more: working harder (*n* = 31, 81.6%), try to forget about it (*n* = 31, 81.6%), find some activity to keep my mind off things (*n* = 31, 81.6%), have an alcoholic drink (*n* = 21, 55.3%), talking to spouse (*n* = 20, 52.6%), and religious activities (*n* = 22, 58%).

A multinomial logistic regression determined if there were any statistically significant differences in the coping mechanism self-reported by the digital forensic examiners, investigators, and the individuals who perform both duties. Digital forensic examiners reported significantly higher scores on the coping mechanisms, working harder, Wald $X^2(1) = 2.64, p = 0.10$; shopping, Wald $X^2(1) = 4.71, p = 0.03$; and withdrawing, Wald $X^2(1) = 2.97, p = 0.09$, compared to individuals who perform both duties as digital forensic examiner and investigator. However, they scored lower on the coping mechanism, using sedatives, compared to individuals who perform both duties, Wald $X^2(1) = 3.19, p = 0.07$. There were no statistically significant differences in coping mechanisms between investigators and individuals who perform both duties as a digital forensic examiner and investigator. Finally, investigators reported lower scores on the coping mechanism, working harder, Wald $X^2(1) = 3.26, p = 0.07$; and higher on shopping,

Wald $X^2(1) = 5.10, p = 0.02$, compared to digital forensic examiners.

Final Model

For the final model, the statistically significant psychological well-being and coping mechanism variables were included simultaneously in a multinomial logistic regression to identify a final predictive model and determine the overall amount of variance explained. The following variables were included in the model: coping by working harder, coping using sedatives, coping by shopping, coping by withdrawing, secondary traumatic stress, job satisfaction, feelings of worthlessness, and ability to concentrate. As shown in Table 4, individuals who perform both duties reported significantly higher scores on secondary traumatic stress, Wald $X^2(1) = 3.79, p = 0.05$; higher scores on feelings of worthlessness, Wald $X^2(1) = 4.30, p = 0.04$; and lower scores on concentration, Wald $X^2(1) = 5.70, p = 0.02$, compared to digital forensic examiners. In addition, individuals with dual duties were less likely to “work harder,” Wald $X^2(1) = 7.15, p = 0.008$; less likely to withdraw, Wald $X^2(1) = 5.66, p = 0.02$; and more likely to

Table 3 Mean scores on coping mechanisms by duty

Coping mechanism	Duty		
	Investigator (<i>n</i> = 71)	Digital forensic examiner (<i>n</i> = 20)	Both (<i>n</i> = 38)
I just try to forget out it.	3.68 (1.19)	3.65 (1.23)	3.68 (1.47)
I find some activity to take my mind off of things, like going to a	3.75 (1.22)	3.30 (1.42)	3.55 (1.43)
I work harder than usual around the house or on the job.	3.59 (1.21)	4.05 (1.28)	3.45 (1.27)
I engage in some religious or spiritual activity.	2.65 (1.48)	2.70 (1.22)	2.87 (1.65)
I talk things over with my spouse or significant other.	2.93 (1.37)	2.75 (1.45)	2.63 (1.36)
I have a drink, such as beer, wine, or a cocktail.	2.56 (1.23)	2.55 (0.83)	2.55 (1.03)
I go shopping.	2.49 (1.23)	1.75 (0.72)	2.39 (1.10)
I exercise more than usual.	2.41 (0.15)	1.64 (0.37)	2.34 (1.12)
I just try to be alone and away from everyone.	2.28 (1.05)	2.45 (1.05)	2.13 (0.99)
I sleep more than usual.	2.13 (0.99)	1.95 (0.51)	2.13 (0.94)
I eat more than usual.	2.27 (1.25)	2.40 (1.27)	2.11 (1.16)
I participate in some organized groups or clubs to get social.	2.11 (1.35)	1.75 (1.07)	2.05 (1.54)
I talk things over with my friends and/or family.	2.46 (1.14)	2.10 (1.33)	2.03 (1.17)
I take a sedative, such as a sleeping pill.	1.51 (1.11)	1.25 (0.72)	1.63 (1.26)
I seek professional help, such as counseling.	1.31 (0.71)	1.35 (0.59)	1.47 (0.98)
I take some other form of medication, such as an anti-	1.28 (1.11)	1.25 (1.12)	1.32 (1.07)
I smoke more often.	1.15 (0.50)	1.30 (1.13)	1.24 (0.79)
I eat less than usual.	1.69 (0.79)	2.00 (1.26)	1.17 (1.01)
I take some form of drug, such as marijuana.	1.00 (0.00)	1.05 (0.22)	1.05 (0.32)

Values represent means with standard deviations in parentheses. Scale choices: 1 = Never, 2 = Rarely, 3 = Sometimes, 4 = Often, 5 = Very Often, 6 = Always

use shopping as a distraction, Wald $\chi^2(1) = 6.49$, $p = 0.01$, compared to digital forensic examiners.

Individuals who perform both duties reported significantly lower scores on job satisfaction, Wald $\chi^2(1) = 4.54$, $p = 0.03$;

and they were less likely to “withdraw,” Wald $\chi^2(1) = 3.11$ with $p = 0.08$, compared to investigators. Finally, investigators scored significantly higher on feelings of worthlessness, Wald $\chi^2(1) = 4.30$, $p = 0.04$; lower on concentration, Wald $\chi^2(1) =$

Table 4 Final multinomial logistic regression model for duties by psychological distress and coping mechanisms

Variable	DFE vs. both			Investigator vs. both			Investigator vs. DFE		
	<i>B</i>	SE <i>B</i>	OR (95% CI)	<i>B</i>	SE <i>B</i>	OR (95% CI)	<i>B</i>	SE <i>B</i>	OR (95% CI)
Psychological distress									
Worthless guilt	-1.88**	0.91	0.15 (0.03; 0.90)	-0.12	0.46	0.89 (0.36; 2.20)	1.76**	0.85	5.82 (1.10; 30.78)
Concentration	1.41**	0.59	4.08 (1.29; 12.91)	0.21	0.40	1.24 (0.57; 2.69)	-1.19**	0.54	0.30 (0.11; 0.87)
STS	-1.59**	0.82	0.21 (0.04; 1.01)	-0.75	0.58	0.47 (0.15; 1.46)	0.83	0.78	2.30 (0.50; 10.59)
Job satisfaction	0.06	0.30	1.06 (0.39; 1.92)	0.49**	0.23	1.63 (1.04; 2.55)	0.43	0.27	1.53 (0.90; 2.62)
Coping mechanism									
Working harder	0.81***	0.30	2.25 (1.24; 4.09)	0.16	0.18	1.17 (0.83; 1.66)	-0.65**	0.29	0.52 (0.30; 0.91)
Using sedatives	-0.29	0.44	0.75 (0.32; 1.76)	-0.03	0.21	0.97 (0.65; 1.46)	0.26	0.43	1.30 (0.56; 3.01)
Shopping	-1.12***	0.44	0.33 (0.14; .077)	-0.04	0.20	0.96 (0.65; 1.41)	1.08**	0.43	2.95 (1.28; 6.79)
Withdrawing	0.81**	0.34	2.25 (1.15; 4.38)	0.44*	0.25	1.55 (0.95; 2.54)	-0.37	0.29	0.69 (0.39; 1.21)

$R_C^2 = 0.25$; $R_N^2 = 0.29$

DFE digital forensic examiner, both individual who works both as a digital forensic examiner and investigator, STS secondary traumatic stress

* $p < 0.10$

** $p < 0.05$

*** $p < 0.01$

4.89, $p = 0.03$; were less likely “work harder,” Wald $X^2(1) = 5.22$, $p = 0.02$; and were more likely to use shopping as a distraction, Wald $X^2(1) = 6.46$, $p = 0.01$, compared to digital forensic examiners. Overall, the final model was statistically significant, $X^2(16) = 36.90$, $p < 0.001$, and predicted approximately 25 or 29% of the variance between groups ($R_C^2 = 0.25$; $R_N^2 = 0.29$).

Discussion

Several research studies suggest that law enforcement investigators are at an increased risk for experiencing emotional distress as a result of working child sex exploitation cases (Bourke and Craun 2014; Brady 2016; Powell et al. 2014; Rivard et al., 2002; SHIFT n.d., 2016; Violanti and Gehrke 2004; Wolak and Mitchell 2009); although fewer studies exist, digital forensic examiners also experience work-related stress as a result of viewing child sex abuse images (Edelmann 2010; Holt and Blevins 2011; Perez et al. 2010). However, the roles of digital forensic examiners and investigators often overlap substantially when working cases involving Internet crimes against children. Thus, the current study addressed this limitation in the literature by comparing the psychological well-being of law enforcement personnel working child pornography cases as either the investigator, digital forensic examiner, or both. In addition, the current study examined law enforcement personnel’s attitudes toward, and availability of, mental health resources.

The author’s hypotheses were supported in that several differences emerged between the three groups on psychological well-being and coping mechanisms. Consistent with previous research, law enforcement personnel reported experiencing distress as a result of working child pornography investigations. However, the current study suggests individuals performing both duties (investigator and examiner) experience more psychological distress than individuals who work solely as the digital forensic examiner; specifically, individuals working dual roles self-reported more symptoms related to secondary traumatic stress, feelings of worthlessness, and lack of concentration compared to digital forensic examiners. In addition, the psychological well-being scores were similar between individuals performing both duties and investigators-only, with the only significant difference being low job satisfaction for individuals working both duties. Finally, the study also revealed symptomatic differences between digital forensic examiners-only and investigators-only; investigators reported more feelings of worthlessness and lack of concentration compared to examiners-only.

Overall, it may not be in law enforcement’s best interest to have personnel performing dual roles, as both the investigator and examiner, when assigned to Internet crimes against children cases; individuals performing dual roles are not only faced with analyzing digital evidence, which requires viewing child sex abuse materials, but they also interact with the child victims,

family members, and/or offenders. Essentially, it may be more difficult to compartmentalize the case—that is, separate the people involved in the investigation from the child sex abuse materials. This face-to-face interaction with the people involved in the child pornography investigation may also explain why investigators-only reported more psychological distress compared to the digital forensic examiners-only. In addition, child pornography offenders often lack a criminal history of sexual offending; thus, they may appear “normally criminal” (DeLisi et al. 2016, p. 11) and “similar to the average member of the community” (Henshaw et al. 2017, p. 418). Again, the examiners are not likely to directly interact with the people involved in the case (victim, victim’s family, offender); however, the investigators often consult with the digital forensic examiner to view and discuss and child pornography evidence (see National Institute of Justice 2004; Perez et al. 2010).

Separating or rotating duties may be difficult due to lack of financial and personnel resources within a police organization. First, digital forensic training and certification are expensive and time-consuming (Cohen 2007; Harichandran et al. 2016; Holt et al. 2015; Rogers and Seigfried 2004; Vincze 2016); with the ever-changing nature of technology, many examiners specialize in an area of digital forensics because it would be too daunting to obtain the certifications and training needed to specialize in all forms of digital evidence (e.g., hard drives, mobile phones, networks, and Internet artifacts). In addition, smaller agencies may lack the manpower to separate duties between investigators and examiners working Internet crimes against children cases.

In response to these problems, some smaller agencies have created specialized multi-agency digital forensic units; these units combine local personnel and equipment resources, and they allow the agencies to process digital evidence in-house, avoiding the 8- to 12-month backlog at some regional forensic laboratories (Gurule 2016). By pooling resources, it may be possible to separate or rotate duties within these smaller agencies in order to avoid burnout and problems with work-related stress. In addition, this approach provides a coworker support system, where individuals within the specialized unit are able to talk with others who understand (Morales 2012), and this shared environment may decrease any previous feelings of isolation from being a “one-person-shop” at smaller agencies. Finally, SHIFT wellness also advocates that a healthy work environment, where individuals feel a part of the “team” and are not isolated from other colleagues, assists in the reduction of work-related stress as a result of viewing child sex abuse images.

With regard to coping mechanisms, the results of the current study also found differences based on the duties performed by law enforcement personnel. Consistent with Holt and Blevins (2011), the most common coping mechanisms reported in this study were considered forms of distraction (items 1–3 in Table 3; working harder, trying to forget, and find another activity). In addition, the majority of law enforcement

personnel reported that they only rarely to sometimes “talk things over” with others, which is consistent with Holt et al. (2012) and Perez et al. (2010). According to Morales (2012), non-workplace social support (i.e., friends, family) is an important buffer to the negative effects of being exposed to child sex abuse images; specifically, non-workplace social support reduced levels of secondary traumatic stress, protectiveness, and distress, while increasing feelings of professional efficacy and pride. However, it may be that the current sample was more likely to seek support from coworkers or supervisors (Morales, 2012; Perez et al. 2010).

In general, the data suggests that law enforcement personnel from the three groups generally cope with work-related stress in healthy ways; although, the mean responses were moderate in that few law enforcement personnel endorsed “often, very often, or always.” Specifically, for some of the healthy coping mechanisms (e.g., talking it over with friends/family, seeking counseling, joining organized clubs), the mean scores across the three groups were rather low (i.e., endorsed never to rarely); whereas, the groups were more likely to endorse, to a moderate degree, using alcohol or trying to “just forget about it.” Thus, maladaptive strategies were endorsed by all three groups to some degree; although, individuals performing both duties were more likely to endorse less healthy coping mechanisms as a result of work-related stress.

That is to say, a marginal relationship suggested individuals performing both duties may be more likely to use sedatives, such as sleeping pills, as a coping mechanism. In addition, there were significant differences in that the individuals performing both duties were *less* likely to report “working harder” and “getting away/withdrawing”; instead, they were *more* likely to use shopping as a distraction. Shopping or retail therapy may restore an individual’s sense of control over one’s environment and reduce feelings of sadness (see Rick et al. 2014). On the other hand, Pratt (2004) states that retail therapy is “anti-therapy” because it is a form of distraction or avoidance and “not about the confrontation and resolution of problems” (p. 519).

Continued research is needed to better understand the ways in which law enforcement personnel, performing different duties as digital forensic examiners and/or investigators, cope with work-related stress. This is especially important since only 12 (9.3%) individuals reported seeking professional mental health services as a result of their current workload involving child pornography cases. In addition, only 16.4% ($n = 21$) of the sample reported that counseling was currently required for their position; within each duty, 3% of digital forensic examiners, 9% of investigators, and 4% of individuals working both duties stated that counseling sessions were currently mandatory. These findings suggest that despite the presence of emotional distress and poor coping mechanisms, law enforcement personnel are not likely to seek professional help from mental health services. In addition, the same

number of people who would be willing to seek treatment, or who thought mental health services should be required, also reported being “indifferent” toward treatment.

This “indifference attitude” toward seeking mental health services supports findings of a “neutral attitude” by law enforcement officers in Karaffa and Tochkov’s (2013) study. In general, research finds that law enforcement officers are resistant to seeking treatment for a number of reasons, including social stigma (Corrigan, 2004; Karaffa and Tochkov, 2013), fear of being labeled as weak or non-resilient (Blau 1994; Toch 2002), and the fear of its negative impact on their career ((De Lung, 1990; Kirschman, 2007; Shearer, 1993). In addition, Lederer (2007) states that individuals may experience symptoms of burnout without being aware of this fact. Overall, if mental health services are not mandated, then law enforcement personnel are unlikely to seek professional help for work-related stress. However, providing mandatory mental health services may resolve the problems associated with stigma, indifference, or incognizance, but this solution may not be feasible due to financial constraints. Nonetheless, future research is needed to further understand the impact of providing mental health resources to law enforcement personnel performing different duties (investigator and/or examiner) while working child pornography cases; also, future research should explore the use of more cost-effective services, such as Internet-based therapy, and its appropriateness for providing mental health services to law enforcement personnel (see Andersson and Cujpers 2009).

This study is not without limitations. Only 129 law enforcement personnel were included in the final analyses; although the survey link was emailed to all of the ICAC and affiliate commanders in the USA, requesting that it be shared with the investigators and examiners within the unit, it is unknown how many individuals received, opened, and shared the email. Similar to other studies, it is difficult to calculate the response rate (Bourke and Craun 2014; Brady 2016). Despite the study’s confidentiality, survey responses may be lower because of the sensitive nature of the study—psychological well-being and attitudes toward mental health services. However, the final sample was diverse in its representation of different agencies (federal, state, city, county) across all of the census regions and divisions of the USA (United States Census Bureau 2010). Overall, future research should continue to solicit data keeping in mind the different duties being performed by law enforcement personnel assigned to child pornography cases.

Conclusion

Findings from the current study address a critical gap in the literature by comparing the psychological well-being and coping mechanisms of law enforcement personnel working as

either investigators and/or examiners of cases involving child pornography. The author concludes that it is not in the best interest of law enforcement to have individuals performing dual roles, as both the investigator and examiner, in child pornography cases. Utilizing the recommendations from SHIFT is crucial to developing a healthy work environment; however, merely providing, and not requiring, mental health services may not be enough. If law enforcement personnel are unwilling, or unaware of the need, to seek mental health services, then it may be the agency's duty to require mandatory counseling sessions until the climate changes so that seeking mental health services is no longer stigmatized. Finally, education is key in helping law enforcement personnel, as well as their supervisors and family members, understand the psychological impact of viewing child sex abuse images (see SHIFT n.d., 2016). It is imperative that law enforcement creates an environment where individuals are able to seek professional help without the fear of being stigmatized.

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Compliance with Ethical Standards

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Conflict of Interest The author declares that she has no conflicts of interests.

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