Informing collaborative interventions: Intimate partner violence risk assessment for front line police officers

Jill Theresa Messing* and Jacquelyn Campbell**

Abstract   Police officers have a unique opportunity to administer risk assessment at the scene of intimate partner violence (IPV) incidents. This article examines the predictive validity of two IPV risk assessments developed for administration by front line police officers and intended to inform collaborative interventions between the criminal justice and social service systems. The Lethality Screen and the Danger Assessment for Law Enforcement (DA-LE) are short forms of the Danger Assessment and, although similar, function differently and have different uses. The higher specificity of the DA-LE makes it appropriate for informing interventions focused on offender accountability. The high sensitivity of the Lethality Screen casts a wide net to educate and offer advocacy services to victim-survivors of IPV. Using technology to integrate IPV risk assessment within an evidence based practice framework may inform targeted collaborative interventions that reduce future IPV and femicide.

It is estimated that, globally, 30% of women and girls (over 14 years old) experience lifetime intimate partner violence (IPV; Devries *et al.* 2013). In the USA, 35% of adult women report IPV (also called domestic violence) in their lifetimes, and 25% of women report severe IPV in their lifetimes (Black *et al.* 2011). IPV is the systematic exercise of power and control in an intimate relationship that often includes crimes such as physical violence, sexual violence, threats of physical or sexual violence, and stalking (Johnson, 2008; Stark, 2007). IPV results in injury to the victim-survivor,[1] as well as long-term health and mental health consequences (Campbell, 2002; Devries *et al.*, 2013; Ruiz-Perez, Plazaola-Castaño, and del Río-Lozano, 2007; Tadegge, 2008). For women who are severely abused by an intimate partner, these difficulties are exacerbated (Campbell *et al.* 2003).

Overall, the homicide rate in the USA declined 49% from 1992 to 2011 (Smith and Cooper, 2013).

*School of Social Work, Arizona State University, 411 N. Central Ave, Phoenix, AZ, Suite 800, 85004, E-mail: Jill.Messing@asu.edu

**School of Nursing, The Johns Hopkins University

[1] *Victim* is generally used by the criminal justice system and advocates often use the term *survivor*. Consistent with our values of self-determination and empowerment, the term *victim-survivor* is used throughout this article to indicate that it is the choice of each individual to self-assign the label that best fits their stage in the healing process (see Messing, Ward-Lasher, Thaller and Bagwell, 2015).

While rates of intimate partner homicide of women (or *femicide*) declined in the USA between 1980 and 1995, this trend reversed and, as of 2008, there has been a 5% increase in the proportion of women killed by an intimate since 1980 (Cooper and Smith, 2011). Whereas 5% of male homicide victims are killed by an intimate partner, 45% of femicide victims are killed by an intimate partner (Catalano *et al.* 2009). IPV is the single largest risk factor for intimate partner femicide, preceding 65–80% of cases (Campbell *et al.* 2003; Moracco, Runyon, and Butts, 1998).

In 2013, the Violence Against Women Act (VAWA), national US legislation that largely governs the response to IPV, added language suggesting that lethality assessment and collaborative interventions are imperative for effective IPV intervention (VAWA, 2013). Various estimates indicate that a small proportion (20–25%) of perpetrators account for the majority of severe and repeat IPV (Bennett and Williams, 2001; Maxwell, Garner and Fagan, 2001). Thus, the use of lethality assessment to identify and intervene with these perpetrators could have a significant impact on rates of IPV and femicide. Further, collaboration between criminal justice and social service agencies is important given the ongoing nature of IPV and emotional and material attachments between the victim-survivor and offender. In this article, we discuss the use and predictive validity of two versions of the Danger Assessment (DA) for use by front line police officers to inform collaborative interventions between the criminal justice and social service systems. We focus on the DA because it is the only IPV risk assessment that is both intended to predict lethality and gathers data from only the victim-survivor of IPV.

The DA

The DA (www.dangerassessment.org; Campbell *et al.* 2003) was originally created for collaborative use by an IPV victim-survivor and a practitioner, with the intent of empowering women toward decisions of self-care, or protective actions. It is usually administered by an advocate, healthcare professional, or criminal justice practitioner who will assist the victim-survivor in recalling incidents of past abuse, with the help of a 12-month calendar, and completing 20 yes/no questions about risk factors present within the past year. The calendar is used to aid the victim-survivor in recalling severity and frequency of violent incidents and to avoid minimization of abuse. A weighted scoring system identifies women at the following levels of danger: variable danger (<8), increased danger (8–13), severe danger (14–17), and extreme danger (≥18). The DA is intended as a collaborative effort between the victim-survivor and survey administrator, who ideally works within an evidence-based practice framework to assist the victim-survivor in developing a safety plan taking into account her level of danger.

In its original form, the DA was comprised of 15 dichotomous questions created based on a review of the literature and interviews with domestic violence survivors and advocates (Campbell, 1986). In 2003, based on evidence from a study funded by the National Institute of Justice (in collaboration with the National Institute on Drug Abuse, the National Institute of Mental Health, and the Centers for Disease Control and Prevention), five additional items were added (Campbell *et al.* 2003). This case control study included interviews with 220 proxies (e.g., a mother, sister, best friend) of women killed by their intimate partner, 143 women who experienced attempted intimate partner femicide, and a comparison group of 356 abused controls across 11 cities in the USA. Each hypothesized risk factor was examined for its ability to predict femicide and attempted femicide (compared against the abused control group). This study demonstrated that the DA could accurately predict intimate partner femicide and attempted femicide (Campbell, Webster and Glass, 2009). The DA has also been shown to be predictive of intimate partner re-assault and severe re-assault in six additional research studies, five of them by independent research teams (Campbell *et al.* 2005; Goodman, Dutton

and Bennett, 2000; Heckert and Gondolf, 2004; Hilton, Harris, Rice, Houghton, Eke, 2008; Hilton *et al.* 2004; Weisz, Tolman and Saunders, 2000). Finally, the DA is better at prediction than victim-survivors' perception of risk—this is especially true of intimate partner homicide and near lethality but also of reassault and severe reassault (Campbell *et al.* 2003; Campbell *et al.* 2005).

Criminal justice-social service collaborations

Collaborations between the criminal justice and social service systems appear to enhance system outcomes, particularly in the criminal justice arena. Collaborative interventions have led to an increase in arrests and convictions of IPV offenders (Bledsoe, Sar, and Barbee, 2006; Salazar *et al.* 2007; Visher, Harrell, Newmark, and Yahner, 2008). For victim-survivors, collaborative interventions appear to result in increased cooperation, trust, and satisfaction with the criminal justice system, as well as an increased likelihood of future police utilization in IPV situations (Casey *et al.* 2007; Davis *et al.* 2003; Hovell, Seid, and Liles, 2006; Stover, 2012; Stover, Berkman, Desai, and Marans, 2010).

Risk-informed collaborative interventions

An IPV intervention is risk-informed when actors in any part of the system are using risk assessment to make decisions with regard to appropriate interventions for an IPV victim-survivor or offender. For IPV victim-survivors, this could include education, risk-informed safety planning, or access to additional resources. It is particularly important that risk-informed intervention for IPV victim-survivors is empowering and does not inhibit their self-determination. For an IPV perpetrator, risk assessment is most commonly used to inform pre-trial release conditions, and can also be used to inform offender treatment, prosecution and sentencing decisions. Risk informed collaboration

occurs when actors in the criminal justice and social service systems are sharing information about risk, using a common language to identify risk, and working together towards a shared goal of reducing violence against women by holding offenders accountable and connecting victims with community resources (Salazar *et al.* 2007; Shorey, Tirone, and Stuart, 2014). The Lethality Assessment Program (LAP) and Domestic Violence High Risk Teams (DVHRT) are two examples of risk-informed collaborative interventions; these interventions each use a version of the DA created for first responders to identify high-risk victim-survivors.

The LAP was developed by the Maryland Network Against Domestic Violence (MNADV). At the scene of an IPV incident, police officers use a shortened version of the DA called the Lethality Screen to determine which victims are at high risk for homicide (Messing, Campbell, Wilson, Brown and Patchell, 2015). Those who are at high risk are provided with an opportunity to engage in a brief telephone advocacy intervention, initiated by law enforcement and conducted by a collaborating domestic violence agency. The recently completed quasi-experimental Oklahoma Lethality Assessment (OK-LA) Study found that the LAP decreased future violent victimization and increased victim-survivor protective actions (Messing, Campbell, Webster *et al.* 2015).

DVHRT, developed by the Jeanne Geiger Crisis Center (JGCC), enlists officers to identify dangerous offenders using the Danger Assessment for Law Enforcement (DA-LE). DVHRTs are comprised of professionals from advocacy organizations, law enforcement, prosecution, corrections, parole, and probation who work collaboratively to identify, review, and act on cases at high risk for homicide. Through containment and monitoring of offenders by collaborators in the law enforcement and criminal justice system, DVHRT offers victim-survivors a socially just response that fosters their trust and participation, enabling them to stay safely in their homes and communities rather than fleeing to a

shelter. Anecdotal evidence suggests that the DVHRT model reduces homicides (Snyder, 2013).

IPV risk assessments that inform collaboration: The Lethality Screen and the DA-LE

The data presented here were collected as part of the National Institute of Justice Funded (2008-WG-BX-0002) OK-LA Study that examined the effectiveness of the LAP (Messing, Campbell, Webster *et al.* 2015). OK-LA data were collected between 2009 and 2013 from female victim-survivors of violence in police-involved IPV incidents in seven police jurisdictions in Oklahoma. During the study, women were identified by the police, contacted by researchers, assessed for eligibility and interviewed at two time points approximately 7 months apart. Depending on missing data, between 549 and 570 women are included in the analyses of data presented below (for additional information about study methods and results, see Messing, Campbell and Wilson, 2015; Messing, Campbell, Webster *et al.* 2015). For these analyses, we are looking at an outcome of attempted homicide. That is, at approximately 7 months follow-up, how well do the Lethality Screen and the DA-LE predict a victim-survivor's statement that her partner had 'tried to kill' her or 'done something that may have killed [her] whether or not he intended to'?

The DA-LE and the Lethality Screen each include 11 risk factors, answered 'yes' or 'no' by victim-survivors at the scene of a police-involved IPV incident (Table 1). Eight of the questions on these lethality assessments ask about similar risk factors that are directly derived from the DA. These are separation, control of daily activities (the Lethality Screen also includes extreme jealousy within this question), threats to kill (the Lethality Screen includes threats to kill children), use of or threats with a weapon, attempted strangulation, the survivor's belief that her partner is capable of killing her, gun ownership (the Lethality Screen includes gun access), and

perpetrator suicide threats (the DA-LE also includes suicide attempts). The Lethality Screen includes three additional DA questions: partner's unemployment, stalking, and whether the victim-survivor has a child that is not also her abusive partner's child. The DA-LE includes one additional DA item, an increase in the frequency or severity of abuse, and two new risk items: a partner's previous attempts to kill the survivor and multiple strangulation. As will be described below, scoring of these risk assessments and differing risk factors lead to differences in the predictive validity of the instruments.

Predictive validity

The correct prediction of future events, or predictive validity, is the measure of the accuracy of a risk assessment instrument. The function of predictive validity is twofold. First, sensitivity, or the correct classification of cases (calculated as the number of true positives/number of true positives + number false negatives). In this context, the sensitivity of an instrument provides the proportion of those who are expected to attempt to kill their intimate partners and do so out of those who attempt to do so (whether or not they are expected to). The correct classification of non-cases is called specificity (calculated as number of true negatives/number of true negatives + number false positives). Specificity, in this case, provides the proportion of offenders who are not expected to attempt to kill their intimate partners and do not do so out of the group that does not attempt to kill their intimate partners (whether or not they are expected to do so).

In general, the higher *both* the sensitivity and specificity of an instrument, the greater the predictive validity of that instrument (Douglas, Guy, Reeves and Weir, 2005). In practice, however, one of these measures of predictive validity may be more important than the other. The Lethality Screen is used to engage victim-survivors who screen in as high danger in a brief advocacy intervention at the scene of a police-involved IPV incident. The costs of engaging an IPV victim-survivor

Table 1: Lethality Screen and DA-LE questions*

DA-LE		Lethality Screen	
Question	% 'Yes' responses	% 'Yes' responses	Questions
Has he/she used a weapon against you or threatened you with a lethal weapon?	31.40%	38.62%	Has he/she ever used a weapon against you or threatened you with a weapon?
Has he/she threatened to kill you?	50.18%	53.37%	Has he/she threatened to kill you or your children?
Do you believe he/she is capable of killing you?	57.02%	51.37%	Do you think he/she might try to kill you?
Does he/she own a gun?	18.95%	47.54%	Does he/she have a gun or can he/she get one easily?
Has he/she ever tried to choke (strangle) you?	70.53%	75.23%	Has he/she tried to choke you?
Does he/she control all or most of your daily activities?	38.95%	76.32%	Is he/she violently or constantly jealous or does he/she control most of your daily activities?
Have you left him/her after living together in the past year?	72.46%	75.05%	Have you left him/her or separated after living together or being married?
Has he/she threatened or tried to commit suicide?	33.51%	25.14%	Has he/she threatened to kill himself/herself?
Has the physical violence increased in frequency or severity over the past year?	**56.84%**	**52.46%**	**Is he/she unemployed?**
Has he/she tried to kill you?	**24.74%**	**44.81%**	**Do you have a child that he/she knows is not his/hers?**
Has he/she choked (strangled) you multiple times?	**37.02%**	**56.83%**	**Does he/she follow you, spy on you, or leave you threatening messages?**

*Slight differences in question wording or sample size (due to missing data) account for differences in the percent responding yes to similar items on the risk assessments. Bolded items are not the same across the risk assessment tools.

in a brief advocacy intervention whether or not she is in high danger, such as advocate and police officer time and effort, are relatively low. On the contrary, failing to provide a brief advocacy intervention to a victim-survivor who is in danger may result in a much higher cost, such as future severe violence or homicide. There may be additional benefit to providing advocacy to women not in high danger as they may learn of available community resources or choose engage in additional safety strategies. As such, the Lethality Screen is intended to screen the maximum number of victim-survivors at high risk into a brief advocacy intervention, thus prioritizing sensitivity over specificity. The DA-LE screens women into a resource-intensive intervention that is intended to enhance the criminal justice response

for her partner to allow the victim-survivor to remain safely in the community. Screening a victim-survivor and her partner into this intervention is more costly, both in terms of resources and in limiting the perpetrator's liberty. Thus, a balance of sensitivity and specificity is ideal as it is important to screen in women who are at high risk and also important to screen out women who are not.

The DA-LE

The DA-LE was created for use with DVHRT as a collaboration between researchers and JGCC with funding from the Office of Violence Against Women (OVW #2014-TA-AX-K032 and #2015-SI-AX-K005). Development of the DA-LE was an iterative process with researchers providing information about the predictive validity of various risk

factors included in the OK-LA database and practitioners incorporating knowledge about feasibility and implementation. Throughout, the focus was on perpetrator behaviour and the ability of the instrument to inform risk management strategies. For example, an interaction between a survivor's partner threatening to kill her and avoiding arrest increased risk for attempted homicide, with 22.3% of women who responded 'yes' to *both* risk factors having partners who attempted to kill them on follow-up. However, including an interaction was not considered feasible from a practice standpoint—it may be confusing and lead to misinterpretation of risk and risk scores. Further, the question combination did not appear to directly inform risk management strategies. Thus, this combined risk factor was not included in the risk assessment.

To score the DA-LE, each risk factor is assigned 1 point, and the risk factors are added to create an overall score between 0 and 11. After creating the DA-LE, it was important to determine a cut-off score, or a number of risk factors that referred a case for further review by a DVHRT. To determine this cut-off, at any particular score, we examined the proportion of cases screened in, the sensitivity, specificity and percent of cases correctly classified (Table 2). Our aim was to screen in a manageable number of cases with balanced sensitivity and specificity and predictive power similar to other IPV risk assessments.

With each 1-point score increase (6–7 or 7–8, for example), approximately 10–12% less cases are screened in for further evaluation. After examining the predictive validity of the instrument, scores between 5 and 8 were considered as potential cut-off scores. After assessing the available information, practitioners determined that a score of 7 or higher was the most appropriate to screen in cases for further review by DVHRT. At this cut-off score, 30.35% (=173/570) of cases where the DA-LE is completed are referred for further evaluation by the DVHRT. The sensitivity is 52.94%. This means that approximately half of those who attempted to kill their partner in the following 7 months (=27/51)

Table 2: DA-LE Predictive Validity

Cut-point	Proportion screened in	Sensitivity	Specificity	Correctly classified
>=0	100.00%	100.00%	0.00%	8.95%
>=1	95.97%	98.04%	4.24%	12.63%
>=2	88.60%	98.04%	12.33%	20.00%
>=3	78.07%	96.08%	23.70%	30.18%
>=4	66.32%	86.27%	35.65%	40.18%
>=5	52.81%	76.47%	49.52%	51.93%
>=6	41.75%	64.71%	60.50%	60.88%
>=7	**30.35%**	**52.94%**	**71.87%**	**70.18%**
>=8	19.82%	43.14%	82.47%	78.95%
>=9	11.23%	23.53%	89.98%	84.04%
>=10	4.91%	11.76%	95.76%	88.25%
>=11	1.75%	3.92%	98.46%	90.00%

are correctly classified and referred for further evaluation. The specificity is 71.87%; nearly three-quarters of those who do not commit attempted homicide in the following 7 months (=373/519) are not referred for further evaluation.

A *false negative* is a case that did not screen in based on the cut-off score chosen, but one in which the abusive partner committed attempted homicide in the following 7 months. At the cut-off chosen (7 or more risk factors present), 24 women were not screened in but reported attempted homicide on follow-up. This is a small (4.21%) but important portion of the overall sample as these cases indicate a missed opportunity for intervention followed by an extremely violent outcome. Of these 24 cases, a quarter of them had 6 risk factors present and another quarter had 5 risk factors present. Thus, lowering the cut-off score to 5 or 6 has the potential to refer an additional 6–12 cases to the DVHRT intervention, but at what cost? As the overall proportion of cases screened in increases, the number of false negatives decreases, increasing the sensitivity of the instrument. For example, 65 victim-survivors reported the presence of 6 risk factors, 6 of these (9.23%) also reported attempted homicide at follow-up and 59 did not. The 59 cases that are additionally screened in, but where attempted homicide is not reported on follow-up, are called *false positives*. Thus, lowering the cut-off to 6
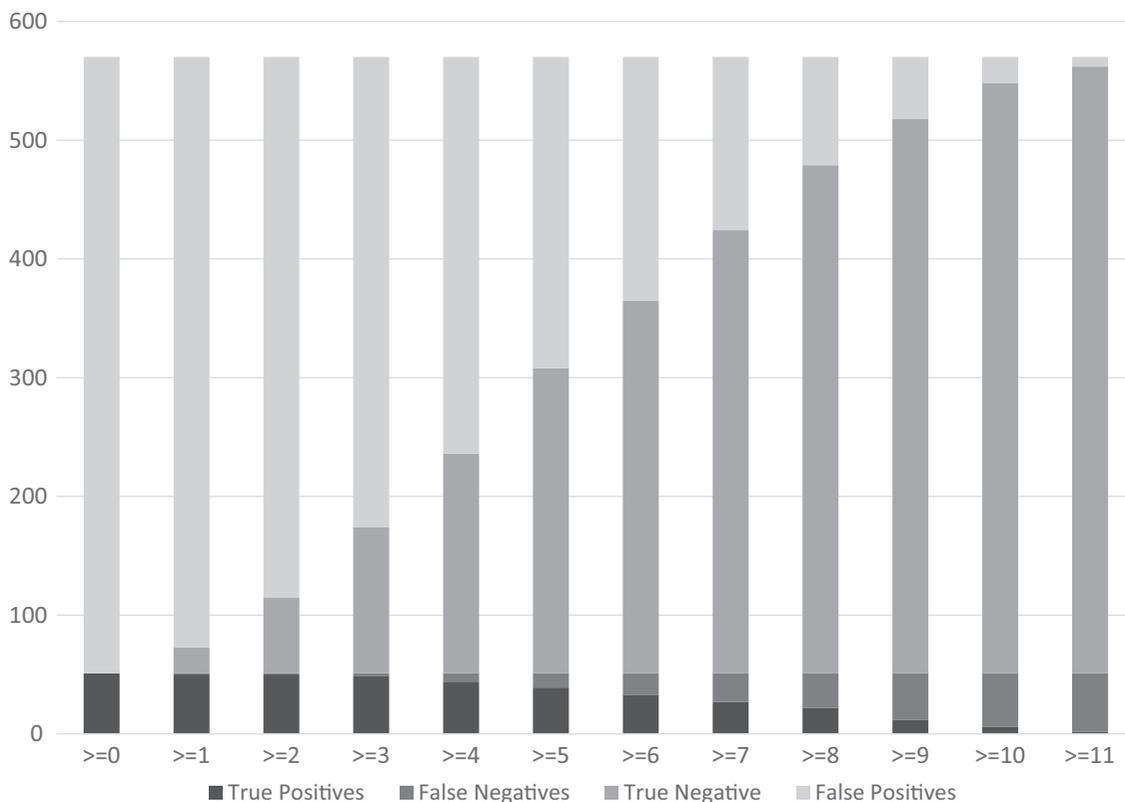
Figure 1: Sensitivity and Specificity of the DA-LE

would result in screening in 11.40% more cases (=41.75% of the sample). This would increase the sensitivity of the instrument (=64.71%) but decrease the specificity (=60.5%) and the percent correctly classified (=60.88%). The same trade-off between sensitivity and specificity can be seen in each one-point move in cut-off score – higher scores increase specificity and the percent correctly classified while decreasing sensitivity and the proportion of cases screened in (Fig. 1).

Lethality Screen

The Lethality Screen was similarly created as a collaborative effort between researchers and practitioners led by the MNADV. The original scoring of the Lethality Screen is designed for ease of use with results of 'high danger' or 'not high danger'.

A perpetrator is automatically classified as high danger if a victim-survivor reports that he has threatened to kill her or her children, threatened her with a weapon, or if the victim-survivor thinks that the perpetrator poses as lethal threat. If the victim-survivor does not answer in the affirmative to any of these three risk factors, but answers 'yes' to four or more of the following 8 risk factors outlined above, the perpetrator is also classified as high danger.

Using this scoring rubric to predict attempted homicide, another analysis with OK-LA data found that the Lethality Screen classifies 80.3% of victim-survivors as high danger with a sensitivity of 92.86% and specificity of 21.3% (see Messing, Campbell, Wilson *et al.* 2015). As the intended use of the Lethality Screen is to offer high danger victim-survivors the opportunity to participate in a

Table 3: Lethality Screen Predictive Validity

Cut-point	Proportion screened in	Sensitivity	Specificity	Correctly classified
> =0	100.00%	100.00%	0.00%	9.84%
> =1	99.83%	100.00%	0. 20%	10.02%
> =2	95.46%	98.15%	4.85%	14.03%
> =3	90.54%	96.30%	10.10%	18.58%
> =4	80.52%	90.74%	20.61%	27.50%
> =5	70.68%	79.63%	30.30%	35.15%
> =6	58.29%	72.22%	43.23%	46.08%
> =7	45.18%	57.41%	56.16%	56.28%
> =8	31.15%	40.74%	69.90%	67.03%
> =9	17.49%	25.93%	83.43%	77.78%
> =10	6.20%	14.81%	94.75%	86.89%
> =11	1.46%	5.56%	98.99%	89.80%

brief advocacy intervention, the high sensitivity of the Lethality Screen is ideal. In the previous study, 2 women who were not screened in by the Lethality Screen reported that their partner had attempted homicide at follow-up. One of these women reported two risk factors on the instrument—that her partner had a gun or was able to get one easily and that they had recently separated. The other woman reported only one risk factor—that her partner was unemployed.

Given the similar risk factors on the Lethality Screen and the DA-LE, we scored the Lethality Screen using the DA-LE scoring rubric (1 point per risk factor, summed) to examine the predictive validity of this risk assessment at various cut-offs (Table 3). If we look at a cut-off of 3, which would be most equivalent to how the Lethality Screen is scored in practice, 90.4% of cases are screened in with a sensitivity of 96.3% and a specificity of 10.10%. There is no cut-off at which the predictive validity of the sum of risk factors on the Lethality Screen improves upon the original scoring rubric. At each cut-off, the Lethality Screen captures more people, has higher sensitivity and lower specificity than the DA-LE. For example, at the Lethality Screen score of 7, 45.18% of women are screened in, with a sensitivity of 57.41% and specificity of 56.16%.

Discussion

The DA-LE and the Lethality Screen are very similar IPV risk assessment instruments: they include 8 similar risk factors, are derived from the DA, are intended to predict lethality and be administered by font line police officers, ask questions of victim-survivors of violence, inform collaborative interventions, and were created through researcher-practitioner collaborations. At the same time, their specific functions are different. Variations in scoring and slight differences in risk factors result in differences in sensitivity and specificity of the instruments. The Lethality Screen is appropriate for use when the cost of false positives is low. That is, screening in a case that does not result in attempted homicide (or future reassault) is low cost, both in terms of resources and infringement on a perpetrator's rights. Due to the nature of the DVHRT intervention, the DA-LE screens in fewer cases and more evenly balances sensitivity and specificity, placing more importance on specificity than the Lethality Screen. This risk assessment, therefore, is appropriate for interventions where the cost of false positives is higher.

Neither risk assessment is able to correctly classify all attempted homicide cases. One explanation for this is the difficulty of predicting human behaviour and the rarity of the outcome. This study was conducted in a real world setting where victim-survivors engaged in domestic violence services, sought orders of protection, hid from their abusers, developed safety plans, and otherwise acted to protect themselves (see Messing, Campbell, Webster et al. 2015). Approximately one-third of women in this study received the LAP intervention, and all women were visited by police due to the violence in their intimate relationship. As such, false positives may reflect that women were at high risk prior to the intervention, but were able to prevent subsequent violence by engaging in services. The process of risk assessment itself may educate women about their risks and encourage protective strategies (both those measured in this study, and others not measured) that affect

subsequent violence. As such, risk assessments may be considered vehicles for prevention and not simply tools for prediction. It is additionally important to point out that the follow-up time period (approximately 7 months) is relatively short and it is likely that some abusers reassaulted or attempted to kill their partners after the study ended.

While this study was conducted in the USA, lessons learned can be applied to risk assessment and risk-informed collaboration globally. The increase in collaboration and the limited resources available for IPV intervention result in an enhanced importance placed on identifying risk for future abuse, violence, and homicide. Due to their direct contact with victim-survivors, police officers are in a position to gather information about risk factors that other actors in the criminal justice system are often unable to obtain. For example, pre-trial services, prosecutors, judges, and probation officers may never be able to reach a victim-survivor to ask questions about risk and protective factors. Even if they are able to speak to the victim-survivor, she may not be forthcoming as, theoretically, the best time to gather information is immediately after a violent incident (Curnow, 1997). Police officers should be trained in administering risk assessment in a sensitive and culturally appropriate manner. Conducting risk assessment in this way may further provide front-line officers an avenue to communicate safety concerns to victim-survivors or other actors in the criminal justice and social service systems (Kropp, 2004).

Risk assessment instruments may also function to broaden an officer's understanding of IPV. Many of the risk factors included in the Lethality Screen and the DA-LE refer to specific violent acts (e.g., strangulation, threats to kill, use of a weapon) and, as such, may not fully elucidate a pattern of coercive control within the relationship (Myhill, in press). Officers in the USA are generally trained to intervene in IPV cases as discrete crimes rather than developing an understanding IPV as a pattern of coercive and controlling behaviours that includes violence (Stark, 2012). Training officers to look

beyond a discrete incident by incorporating awareness of risk and risk factors throughout the relationship may help them to better understand IPV as a constellation of abusive behaviours. This is particularly true as some forms of violence, such as strangulation, are both risk factors for homicide (Glass *et al.* 2008) and indicators of coercive control (Thomas, Joshi, Sorenson, 2014). Training officers about risk may, in turn, assist in eradicating myth-based beliefs about IPV and IPV intervention, as well as attitudes unsupportive of victim-survivors (Ward-Lasher and Messing, under review).

IPV risk assessment should be used within an evidence-based practice framework wherein IPV risk assessment is the best evidence of risk of reassault or homicide and is combined with practitioner expertise and client self-determination (Messing and Thaller, 2015). For police officers, incorporation of practitioner expertise may include providing officers with an opportunity to indicate that they believe that a case is high risk when it does not screen in as such. Although risk assessment has been shown to be more accurate than clinical prediction (Ægisdóttir *et al.* 2007; Grove, Zald, Lebow, Snitz, and Nelson 2000), this incorporates an element of practitioner expertise and may increase officer buy-in. For IPV survivors, risk assessment used within an empowerment-based safety planning intervention may educate survivors about risk and risk factors (Campbell, 2001, 2004) and, if IPV survivors recognize escalation of violence or risk, may prompt protective actions (Burke *et al.* 2004; Gondolf and Fisher, 1988; Martin *et al* 2000; Pape and Arias, 2000; Short, McMahon, Chervin, Shelley, Lezin, Sloop and Dawkins, 2000). The risk-needs-responsivity (RNR) framework similarly considers IPV risk assessment a tool for intervention with an IPV offender (Andrews, Bonta, and Wormith, 2006). Within the RNR framework, *risk* is the predicted level of risk for future offending, *needs* are dynamic risk factors identified as criminogenic needs, and *responsivity* is the likelihood that an offender will respond to particular services (Andrews, Bonta, and Wormith, 2006; Andrews, Bonta, and Hoge, 1990).

IPV risk assessment alone does not prevent negative outcomes; rather, it is the interventions with victim-survivors and perpetrators that follow an assessment of high risk that have an opportunity to reduce risk, future violence and homicide. Officers have indicated that homicide prevention and reducing repeat calls for service are priorities (Messing et al. 2011). Nevertheless, there are issues with feasibility when adding additional tasks and paperwork to the fast-paced and dangerous job of police-work. Helping officers to understand how risk assessment achieves larger aims, such as homicide prevention, as well as clear communication that IPV intervention including risk assessment is a priority within the department, may assist with officer buy-in. Risk-informed collaborative responses should be an integral component of police intervention in IPV cases.

As we look towards the future of IPV risk assessment, development and integration of technology is an important step forward. Uses of technology include the reduction of human error through automatic scoring, privacy, and integrated feedback for victim-survivors responding to questions about risk, and risk communication in real-time to facilitate collaboration. Victim-survivors could complete a risk assessment privately using technology, such as an iPad, at the scene of a police-involved IPV incident and could receive electronic feedback and safety planning information (see, e.g., Glass, Eden, Bloom and Perrin, 2010). Using technology, a risk assessment conducted by law enforcement could be transmitted immediately from the scene of an IPV incident to pre-trial services to inform pre-trial decision making; information about pre-trial release conditions could be transmitted to a collaborating advocacy agency to inform safety planning with an IPV victim-survivor; risk assessment, criminal history, and offender status information could be shared with the civil court to facilitate a victim's ability to obtain a protection order and the court's ability to serve that order. Each of these collaborative steps could be tracked by the system to better understand patterns of service utilization and the impact of collaboration on victim-survivor safety and offender accountability.

Integration of IPV risk assessment across practice settings and various uses is also achievable with the use of technology. A 14-item risk assessment integrating the Lethality Screen and DA-LE questions could be administered by officers at the scene of an IPV incident. This risk assessment could be scored as the Lethality Screen to maximize sensitivity and used to refer victim-survivors to a brief advocacy intervention. Simultaneously, the risk assessment could be scored as the DA-LE to maximize specificity to refer cases to DVHRT. Victim-survivors who go on to seek services from trained advocates should further be administered the full DA, including the calendar, as a collaborative intervention that informs safety planning. The use of risk assessment within an evidence based practice framework to integrate systems may increase survivor safety and offender accountability.

Acknowledgements

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