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Advancing the Study of Violence Against Women

Evolving Research Agendas Into Science

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Decades of research produced by multiple disciplines has documented withering rates of violence against women in the United States and around the globe. To further an understanding of gendered violence, a field of research has developed, but recent critiques have highlighted weaknesses that inhibit a full scientific exploration of these crimes and their impacts. This review extends beyond prior reviews to explore the field's unique challenges, its community of scientists, and the state of its written knowledge. The review argues for moving beyond "research agendas" and proposes creation of a transdisciplinary science for the field of study of violence against women.

Keywords: *research agendas; science; violence against women*

Decades of research produced by multiple disciplines has now documented withering rates of violence against women (VAW) in the United States and around the globe. Data on the magnitude and deleterious effects of VAW give cause for rigorous research on epidemiology, etiology, context and ecology, impact, intervention, and prevention. Nonetheless, two national critiques of the state of research in the field highlight weaknesses that inhibit a full scientific exploration of these crimes and their impacts. In 1994, through the Violence Against Women Act (VAWA), Congress directed the National Research Council to develop a research agenda aimed at broadening the understanding of the scope and dynamics of domestic violence and rape. After an in-depth review of the literature, the council concluded that

significant gaps exist in understanding the extent and causes of VAW and the impact and effectiveness of preventive and treatment interventions. In order to begin filling those gaps, the panel recommends a research agenda to facilitate development in four

Author's Note: The author is indebted and grateful in equal measure for the substantive contributions to the development of this article by of a number of key people, including University of Kentucky faculty Helene Jackson and Donald Case and Center for Research on Violence Against Women research assistants Krista King, Adam Pritchard, and Lana Stephens. Significant appreciation is also extended to Claire Renzetti as the insightful editor who wished to provoke more dialogue on the state of the field and to Rebecca Campbell, David Ford, Sandy Martin, and Kathleen Basile, whose thoughtful commentaries on this article are making that conversation possible.

major areas: preventing violence against women, improving research methods, building knowledge about violence against women, and developing the research infrastructure. (Crowell & Burgess, 1996, p. 2)

In 2000, the National Research Council was congressionally directed to build on the first panel's recommendations by developing a "detailed research agenda." The council's Committee on Law and Justice noted progress made but emphasized that comparatively low levels of research funding and other barriers left much work to be done (Kruttschnitt, McLaughlin, & Petrie, 2002).

In addition to these national reviews, in 2002, Ford, Bachman, Friend, and Meloy authored a report on the criminal justice impacts of VAWA, documenting an increase in research and improved connection among research, policy, and practice in the 5 years since passage of the federal act but, like the National Research Council reports before it, highlighting methodological and funding limitations.

The state of research on VAW, what this review terms VAW research, has been addressed in several special issues of peer-reviewed journals. A call to advance transnational and cross-cultural research shone light on the inadequacy of prevalence surveys and intervention studies with this perspective (Gondolf, 2004). A 2004 special issue reviewed definitional problems, collaborative research, and the state of health, mental health, and criminal justice literature (Jordan, 2004). Methodological research issues have also been highlighted in special issues addressing collaborative research models (Riger, 1999) and models ensuring the centrality of survivors' voices (Williams, Banyard, & Aoudeh, 2005), data systems for monitoring and responding to VAW (Saltzman, 2000), and metaresearch (Rosenbaum & Langhinrichsen-Rohling, 2006). Finally, several special issues have focused on research challenges in narrower areas, including the intersection of child maltreatment, youth violence, and domestic violence (Edleson, Daro, & Pinderhughes, 2004), stalking (Frieze, Davis, & Maiuro, 2000), risk (Heyman & Slep, 2001), and physical health (Jordan, 2007).

Challenges Inherent in Researching VAW: What the Issue Brings to Us

VAW research is enormously challenging. The magnitude and impacts noted above tax research capabilities, but it is more complex yet. The quality of the experience of victimization is different for women, first because no one set of behaviors comprises the experience, because victims experience different levels of severity and chronicity, and because most face multiple types of abuse (Campbell & Soeken, 1999; Coker, Smith, McKeown, & King, 2000; Riggs, Kilpatrick, & Resnick, 1992). Victims also define those experiences differently, in some cases influenced by the effects of historic exposure to abuse (Briere, 1996; Desai, Arias, Thompson, & Basile, 2000) or because they live in a culture that defines or acknowledges abuse in

a unique way (Cousineau & Rondeau, 2004; Kasturirangan, Krishnan, & Riger, 2004). There is also no single health or mental health presentation of abuse and no standard sequelae for reacting to it (Banyard, Williams, & Siegel, 2001; Briere & Jordan, 2004; Charney, 2004). It is difficult further because of the heterogeneity of stalkers, intimate partner violence offenders, and sex offenders (Davis & Chipman, 2001; Holtzworth-Munroe & Meehan, 2004; Robertiello & Terry, 2007).

Challenges Presented by Research Models and Infrastructures: What We Bring to the Issue

Silos of Research

VAW research is relatively young, a state that manifests itself in several ways, each significantly affecting the strength of the field. Research in this area has built empirical knowledge bases around distinct, singular forms of abuse patterns, such as sexual assault, domestic or intimate partner violence, stalking, femicide, and psychological maltreatment (Crowell & Burgess, 1996). These have been, for all intents and purposes, distinct fields studied by researchers who identify themselves as having expertise in that sole area. Such separation mirrored historic lines of separation between service providers, but the approach belies the interrelatedness of abuse forms as research makes clear that forms of abuse often occur concurrently (Campbell & Soeken, 1999; Dutton, Goodman, & Bennett, 1990; Follingstad, Rutledge, Berg, Hause, & Polek, 1990) or are experienced consecutively between child and adult years (Tjaden & Thoennes, 2000).

There has also been a clear separation of VAW research from the study of crime in general. As noted by the National Research Council's 2002 report, there is arguably some logic for building distinct bases of research, as "this intellectual separation of research on VAW also stems from the premise that distinctive features of the social and political context of such violence, particularly the context of intimate relationships, set it apart from other forms of violence" (Kruttschnitt et al., 2002, p. 2). While acknowledging the reasoning, the council urged increased integration of VAW research and the larger literature on crime and violence. The council's admonition focused largely on criminology and sociology but could be applied to other areas of behavior and biomedical science.

Lack of a Discipline

To comprehensively understand violence, research is needed across the behavioral, social, biomedical, and legal sciences and other disciplines. The breadth of this interdisciplinary research, although critical, also brings challenges to the field, as each discipline operates with unique theoretical models and research methodologies.

This variability limits the generalizability of findings across studies and makes some areas of literature inaccessible to all researchers. Both national reviews noted difficulties stemming from the lack of an identified field of research, with studies on rape, physical assault, and stalking being conducted out of criminal justice, medicine, nursing, public health, psychology, psychiatry, sociology, social work, law, and other disciplines (Crowell & Burgess, 1996; Kruttschnitt et al., 2002).

The Community of Scientists

The lack of one specified discipline taxes the cohesiveness, maturation, and even identification of the community of scientists who study VAW. There is not even a straightforward way to identify VAW researchers,¹ as they are not distinguishable by degree, faculty rank, credential, or academic department. VAW researchers are often isolated in academic departments where they share a discipline (e.g., nursing), but not a field of study with their colleagues. Historically, there have also not been readily accessible opportunities to network with other VAW researchers through scientific meetings or associations as those are generally organized around discipline (e.g., the American Sociological Association or the American College of Obstetricians and Gynecologists).

Being multidisciplinary also means that no standardized academic preparation exists for VAW researchers, not by course curriculum or research practicum. Academic curricula within other disciplines, although varying by university to some degree, are relatively standardized and often guided by accreditation standards. The American Psychological Association, for example, accredits doctoral programs, internship programs, and postdoctoral residency programs and evaluates curricula of psychology departments on whether students can acquire competence in specified areas (American Psychological Association, 2008). In the area of VAW, however, limited curricular content exists. As pointed out by the Institute of Medicine, at least with respect to health and mental health professions, “curricula on family violence for health professionals do exist, but the content is incomplete, instruction time is generally minimal, the content and teaching methods vary, and the issue is not well integrated throughout their educational experiences” (Cohn, Salmon, & Stobo, 2004, p. 6). Furthermore, where good curricula do exist, they are largely targeted at health care providers rather than providing a bedrock of competency for undergraduate and graduate students whose careers will be research focused.²

A by-product of a relatively youthful field also has implications for the availability of mentors for junior faculty for whom violence is a research interest. The lack of mentors is problematic if that also translates to a lack of guidance associated with moving up the faculty ranks. Related to this, although the lack of adequate research funding will be more thoroughly discussed below, this is also a critical issue for junior faculty who need to secure federal grants in pursuit of promotion and tenure.

Arguably, insufficient federal research funding not only hampers current scientific study but also slows the ability of the field to attract a new generation of scholars.

A final caution regarding the identification of the community of scientists in the VAW area is thinking in too narrow of terms. There are countless researchers who may not self-identify as VAW researchers but whose work is vastly relevant and should be reflected in the field's literature if a full understanding of the phenomenon is to be captured. For example, scientists who explore gender differences in the pathophysiology of traumatic brain injury, fibromyalgia and chronic pain, personality theory, crime deterrence, child development, and countless other areas may not be perceived as "VAW researchers," but their work can substantively inform theory and research in the VAW area.

Methodological Weaknesses

Methodological weaknesses in the study of VAW have been well chronicled in earlier reviews and focus on such problems as small sample sizes, the lack of control groups, and poor instrumentation (Crowell & Burgess, 1996; Kruttschnitt et al., 2002). The lack of consistent definitions to operationalize "VAW" is also a major obstacle to generalizability and is associated with variances in study prevalence findings (Kilpatrick, 2004; Saltzman, 2004). Inconsistencies in definitions also blur an understanding of the nature of abuse when studies use such terms as *abuse* or *violence* without conceptual clarity regarding whether that experience is composed of physical assault alone or some combination of physical, sexual, and stalking victimization. How and whether to measure psychological maltreatment is a critical question still in search of an empirical answer (Follingstad, 2007). And context also affects measurement as violence may be operationalized differently in clinical, legal, and general population settings (Kruttschnitt et al., 2002). Integration and strengthening of data sets; the segregation of acute and chronic responses to lifetime exposure; a focus on understudied populations of women; the use of methods to ensure inclusion of women who do not speak English, have telephones, or reside at a permanent address; the use of more theory-based research; the identification of pathways for individualized responses to victimization; and the use of contextualized analyses of the lives of women who do not use mainstream services have all been highlighted as methodological areas needing improvement (Campbell, Martin, Moracco, Manganello, & Macy, 2006; Crowell & Burgess, 1996; Ford et al., 2002; Kruttschnitt et al., 2002; Logan, Walker, Jordan, & Leukefeld, 2005; Richie, 1996).

Methodological complexities are also evidenced in problems with recruitment and retention of study participants. As noted by Dutton et al. (2003),

Current or recent victims of intimate partner violence are typically dealing with safety issues, coping with traumatic reactions to violence and abuse, and are making decisions and difficult transitions in their lives. . . . These factors add to the challenges of recruiting and retaining samples from economically oppressed or unstable populations. (p. 15)

Although not explicitly stated, many of these factors also apply in victimization cases outside the context of intimate partner assault.

A final methodological challenge has been raised by some VAW researchers regarding constraints placed on investigators by institutional review boards at universities through which VAW research protocols must flow, opining that board reviewers may be reluctant to confront abuse and restrictive regarding investigators' ability to include questions regarding victimization in survey designs or interviews (Becker-Blease & Freyd, 2006). Related to this, depending on the legal jurisdiction and unless a certification of confidentiality from the National Institutes of Health (NIH) has been secured, disclosures regarding child abuse or domestic violence resulting from survey questions and interviews may invoke mandatory reporting laws (Liss, 1994; Sachs, Koziol-McLain, Glass, Webster, & Campbell, 2002; Urquiza, 1991).

Federal Funding for Research

Research may be driven by a thirst for knowledge and a sea of unanswered questions, but at a practical level it is supported by federal research dollars. Both earlier national reviews cited a lack of funding as a barrier to advancing empirical study (Crowell & Burgess, 1996; Kruttschnitt et al., 2002). Scarce federal research funding limits the number of empirical studies funded in any given year and lowers the level of funding on individual grants. Smaller grant awards have implications for the feasibility of certain methodologies, as longitudinal and multiyear grants are more costly to implement. Furthermore, as noted by Ford and colleagues (2002), "Limited funding also results in research with less effort devoted to concurrent process evaluation and qualitative observations, limited types of outcome measures, low interview response rates, and truncated follow-up time" (p. 75).

Since the earlier reviews, federal research funding has measurably increased. The 1996 review reported that the National Institute of Justice (NIJ) was awarding more than \$1 million annually to research and evaluation projects on family violence, which included child, adult, and elder abuse (Crowell & Burgess, 1996). An examination of the annual reports issued by NIJ reveals that between 1995 and 2005, more than \$50 million was awarded in VAW-related research grants (see Table 1). This funding resulted in an average of 24 grants each year with a mean level of funding of \$190,611 per award.

The VAWA aided the increase of federal research dollars to NIJ by earmarking funding for VAW. Specifically, in 1998, \$5.5 million was earmarked for research (Kruttschnitt et al., 2002). Notably, that funding has not increased in a decade and in fact decreased in the 2007 fiscal year budget (see Table 2; NIJ, 2007a). It is also important to note that these funds are not used only for investigator-generated proposals; often, the largest awards support national evaluations of programs funded under VAWA (NIJ, 2007b).

Table 1
Federal Funding From the National Institute of Justice for Violence
Against Women–Related Research and Evaluation Grants

Year	Amount (\$)	Number of Grants	Average Award (\$)
1995	2,608,828	20	130,441
1996	2,662,000	19	140,105
1997	3,600,781	25	144,031
1998	8,853,666	47	188,376
1999	4,758,680	31	153,506
2000	3,597,734	31	116,056
2001	5,285,506	14	377,536
2002	3,927,229	16	245,452
2003	6,306,414	25	252,257
2004	4,510,055	26	173,464
2005	4,972,925	14	355,209

Source: National Institute of Justice annual reports.

Note: Includes grants with violence against women in the title. Includes some broader than violence against women (e.g., rape grants on child and adult victimization), but not generic grants such as studies on DNA analysis.

Table 2
Level of Research Funding by Federal Research Agency

Federal Research Agency	Funding Level ^a						
	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007
National Institutes of Health ^b			21.0	20.0	22.0	20.0	18.0 ^c
National Institute of Justice ^d	5.3	3.9	6.3	4.5	5.0 ^e	5.0 ^f	2.5 ^g
Centers for Disease Control ^h			4.6	3.1	4.1	4.0	4.7

a. Levels in millions of dollars

b. Source: National Institutes of Health (2007).

c. Estimated budget figure.

d. Source: National Institute of Justice annual reports. Includes grants with violence against women in the title. Includes some broader than violence against women (e.g., rape grants on child and adult victimization), but not generic grants such as studies on DNA analysis.

e. Source: National Institute of Justice budget; \$4.933 actual after budget reductions.

f. Source: National Institute of Justice budget; \$5.035 actual after budget enactment.

g. Source: National Institute of Justice budget.

h. Source: Centers for Disease Control and Prevention. Includes 1st year of award amount for grants, cooperative agreements, interagency agreements, and contracts through the National Center for Injury Prevention and Control. Grants may extend more than 1 year but are counted only in the 1st year of award.

NIH also provides a significant source of federal research funding in the VAW area. As shown in Table 2, during the past 5 years an estimated \$20 million each year has supported what is denoted by NIH as VAW research (NIH, 2007). Table 2 also reflects federal research dollars from the National Center for Injury Prevention and Control in the Centers for Disease Control and Prevention (CDC), funding that averages \$4 million each year. As with NIJ, investigator-initiated grants compose only a portion of these annual amounts, as nationwide efforts, including the CDC's National Intimate Partner and Sexual Violence Survey, are included in these totals. From 2003 to 2007, the CDC awarded 61 research grants and contracts related to intimate partner violence and sexual assault, with a mean award of \$337,599.

Need for Infrastructure

VAW research needs infrastructure within academia to progress. The report from the National Research Council conceptualized infrastructure, in part, as development of academically based research centers, the purpose of which is to foster dialogue across disciplines; stimulate creative approaches and collaboration with service providers; develop training programs for young investigators, particularly minority researchers; provide a national focus for forums designed to disseminate research knowledge; and provide technical assistance for direct service providers (Crowell & Burgess, 1996). The review noted that only a very limited number of nationally recognized research centers have developed, including the National Violence Against Women Prevention Research Center (a collaboration among Wellesley College, the Medical University of South Carolina, and the University of Missouri at St. Louis that has since lost its federal funding) and the Family Research Laboratory at the University of New Hampshire that has a broader focus on family violence. Since the reviews, at least one interdisciplinary research center on VAW has been developed at the University of Kentucky (UK). Arguably, a number of VAW-related centers exist at universities across the country, but more comprehensive, interdisciplinary, translational research centers are needed.

Summary of the State of Research on VAW

The size and complexity of VAW make this an inherently difficult academic area in which to progress, and the current organization of the field is disadvantaged by conceptual silos, disconnected disciplines, methodological weaknesses, and a level of research funding insufficient to the task. Although progress has been made in the past decade, substantial improvements are needed, and innovative conceptual and practical remedies for addressing the field's weaknesses are called for.

State of the Written Knowledge on VAW

During the past three decades, the body of scientific knowledge on VAW as documented in the peer-reviewed, published literature has grown significantly, and its distribution across journals and by discipline has changed appreciably. To demonstrate historical movements in the field's literature, this review uses three analyses—including descriptive bibliometrics involving systematic compilations of literature, evaluative bibliometrics, and citation analyses to show how many times an article or other form of publication has been referenced in other publications—and directories, which are listings of scientists and scholars who are the primary authors of articles published in the journals of interest (Sengupta, 1992).

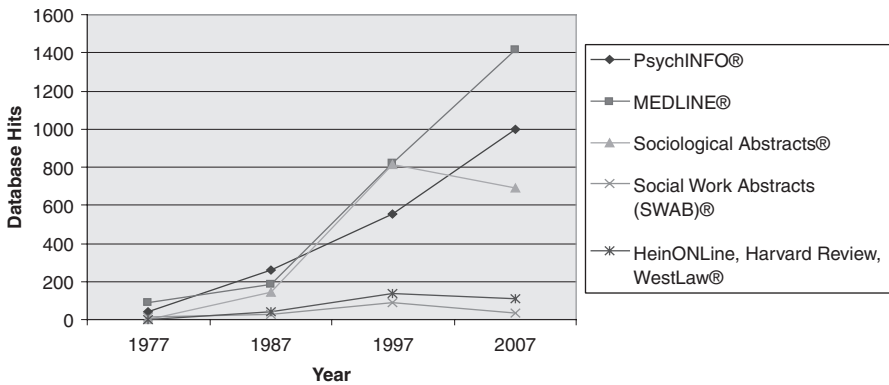
Measuring the Growth in Literature

The interdisciplinary nature of the field challenges measurement of the growth of its literature in that disciplines write and publish research in different journals and those citations are housed in distinct databases, each of which uses its own terms to index citations of literature. Even with that limitation, analysis of the citations of VAW literature across five of the major bibliographic databases in the behavioral science, biomedical, and legal disciplines yields interesting perspectives on the state of the written knowledge.

For the purpose of this review, the bibliographic databases of PsycINFO, Sociological Abstracts, Social Work Abstracts, WestLaw, and MEDLINE were searched. MEDLINE (Medical Literature Analysis and Retrieval System Online) dates from 1952, is the primary component of PubMed, and contains more than 16 million references to journal articles in life sciences with a concentration on biomedicine (United Library of Medicine, 2007). PsycINFO provides abstracts and citations dating from the 1800s in the behavioral sciences and mental health and by the end of 2007 held more than 2.4 million records and 26 million references (American Psychological Association, 2007). CSA Sociological Abstracts indexes and abstracts the international literature in sociology and related disciplines dating from 1952 and held more than 822,071 records as of December 2007 (CSA Sociological Abstracts, 2007). The Social Work Abstracts database is produced by the National Association of Social Workers, Inc. and contains more than 35,000 records, spanning 1977 to the present, from social work and related journals (National Association of Social Workers, 2007). WestLaw includes more than 23,000 databases of case law, state and federal statutes, administrative codes, public records, law journals, law reviews, treatises, and legal forms. (HeinOnline and the Harvard Law Review were also accessed to cover a very small volume of older legal literature.)

To conduct a review of the literature within each of the databases, 11 keywords were selected, and the index years of 1977, 1987, 1997, and 2007 were chosen to allow an analysis spanning three decades. Citations were limited to peer-reviewed

Figure 1
Incidence of Total Keywords by Database for Index Years

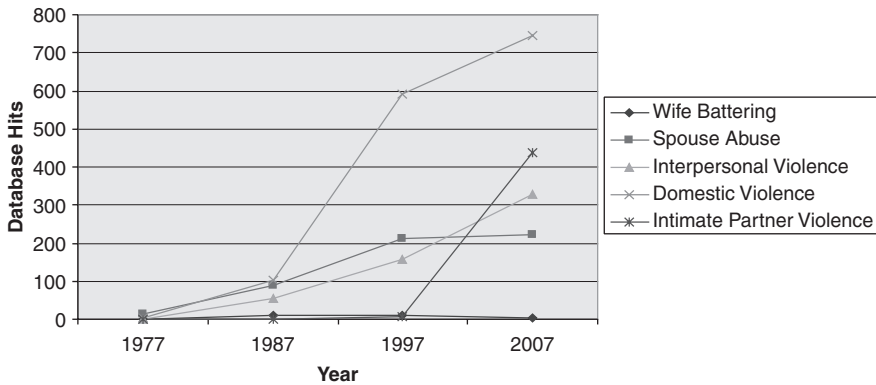


journal articles and excluded book reviews, letters to editors, notes, and other secondary publications. Using those parameters, the volume of VAW-related literature cited in each search database was found to be significantly different, influenced heavily by the size of the databases themselves and the growth each has experienced as a source of literature in the field. MEDLINE offers by far the largest volume of VAW-related literature across both index years and keywords, PsycINFO the second largest, Sociology Abstracts the third, and Social Work Abstracts a distant fourth in terms of pure citation volume as measured by the keywords used (see Figure 1).

The legal databases offer significantly less volume in comparison to all but one of the behavioral and biomedical science databases. Within the past decade, the biomedical (MEDLINE) and psychological (PsycINFO) literatures appear to have experienced the largest increase in literature volume as measured by the keywords used, whereas Sociological Abstracts has declined and the social work and law literatures have slightly decreased or remained the same.

The 11 keywords selected for this review included *wife battering*, *spouse abuse*, *interpersonal violence*, *domestic violence*, *intimate partner violence*, *rape*, *sexual assault*, *sexual violence*, *sexual harassment*, *stalking*, and *psychological abuse*. They were selected to represent (a) physical violence in relationships (partner violence), (b) sexual victimization, (c) stalking, and (d) psychological maltreatment. The keyword searches of the five bibliographic databases found several interesting trends across the 4 index years searched. First, several keywords used in the early years have been phased out as the field's perspective on VAW has evolved. In the physical violence area, for example, the words *wife battering* had minimal use, experiencing a peak in 1997 and dropping off to almost no usage by 2007 (see Figure 2). The term

Figure 2
Incidence of Keywords for Physical Abuse by Index Year

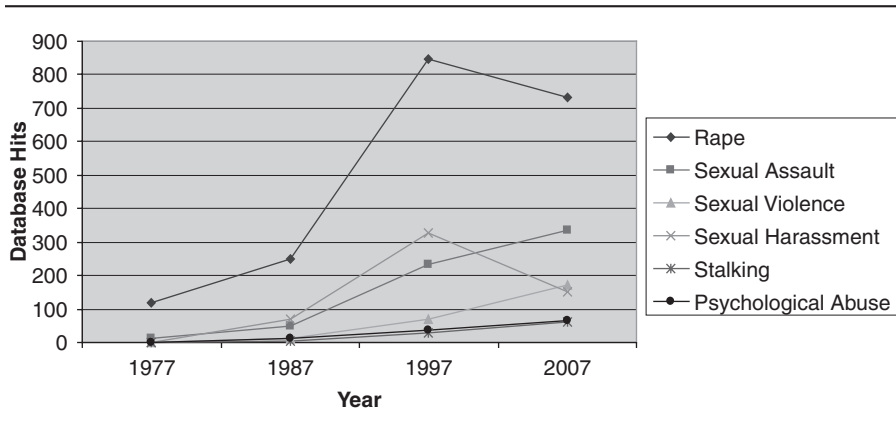


spouse abuse appeared in the middle two decades but is now used very little by the behavioral science and legal literature (e.g., the term had only 4 citations in PsycINFO in 2007). PubMed shows continued use of the term and in fact an increase from 1997 (135 citations) to 2007 (209 citations). *Interpersonal violence* and *domestic violence* are more recent terms, reflected heavily in 1997 and 2007 citations, and the term *intimate partner violence* has shown a substantial increase in usage only more recently in the 2007 search. These evolutions in citation volume reflect a change in the field's operationalization of VAW and more inclusiveness regarding the types of relationships in which violence is experienced (e.g., married and non-married, current and former, same and opposite gendered).

The earliest publishing in the field was done on rape, as noted by the larger number of citations for that word than any other keyword in the 1977 search (see Figure 3). In addition, when looking cumulatively across three decades of literature, *rape* is by far the most commonly cited keyword, followed by *domestic violence*. *Sexual harassment* is cited less often overall, except within legal scholarship where it is one of the most heavily cited terms. The newness of studies on *stalking* and *psychological abuse* is reflected in a lower number of citations. These terms appear in approximate equal number in MEDLINE and PsycINFO, lesser so in the other two behavioral science databases, and almost not at all in the legal literature.

Although the selection and use of keywords should follow rather than direct the scholarly literature and empirical definitions used in research on VAW, it is worth noting that the field's ability to conduct quality, comprehensive literature searches in the short term and to measure its growth in the long term is hampered by a frequent change in the use of keywords by authors and citation indexes.

Figure 3
Incidence of Keywords for Sexual, Stalking,
and Psychological Abuse by Index Year



Distribution Patterns in the VAW Literature

In addition to documenting a growth in the literature by measuring citations across databases, keywords, and years, the field's written knowledge can also be evaluated by analyzing its distribution or concentration across journals. In the library sciences, the "law of concentration" describes the way in which the literature of a discipline is spread across journals (Garfield, 1977), and its use allows identification of core and peripheral journals in the field. To identify core journals in the VAW area, the 11 keywords were again used and grouped into the four major areas of partner violence (wife battering, spouse abuse, interpersonal violence, domestic violence, intimate partner violence), sexual victimization (rape, sexual assault, sexual violence, sexual harassment), psychological abuse, and stalking. Searches were then done for a 6-year period, and the journals with the top number of publications with each keyword in each year were noted (see Table 3). Journals were assigned a whole number rank based on the number of publications in a given year (1 = *most publications*; ties received same value; see Table 4). That value was then used to calculate a mean rank for top journals over the 6-year period. This method of ranking was chosen over summation to control for the occurrence of an unusually high number of publications by one journal in a single year (e.g., a special issue). In some cases the mean rank for a given journal is higher than for a journal with more publications during the study time frame, reflecting greater annual consistency in publication across the 6-year period. For two of the keyword areas, more than five journals are listed because of a clustering around the number of publications. Finally, select journals were extracted from the search when the keyword had an unrelated

Table 3
Top Journals for Publication of All Keywords for Index Years

Year	Number of Publications Each	Journal Titles
1977	3	<i>Contemporary Psychology; Crime & Delinquency; New Society; New Zealand Medical Journal; Psychological Reports</i>
	2	<i>American Journal of Orthopsychiatry; American Journal of Psychiatry; Criminal Law Quarterly; Criminology; Personality and Social Psychology Bulletin</i>
1987	5	<i>Journal of the Forensic Science Society; New Society; Sex Roles</i>
	4	<i>Journal of Criminal Law & Criminology; New England Journal of Medicine</i>
	3	<i>Aggressive Behavior; Journal of the American Medical Association; Psychology of Women Quarterly</i>
	2	<i>American Journal of Epidemiology; Bulletin of the British Psychological Society; Canadian Medical Association Journal; Employee Relations; Genitourinary Medicine; Psychological Reports</i>
1997	18	<i>Journal of Interpersonal Violence</i>
	14	<i>Academic Medicine; Sex Roles</i>
	9	<i>Journal of Family Violence</i>
	7	<i>Behavioral Medicine; Journal of the American Medical Association</i>
	6	<i>Journal of the American Academy of Child and Adolescent Psychiatry</i>
	5	<i>Aggression and Violent Behavior; Criminology; Journal of Forensic Sciences; Social Science & Medicine</i>
2007	97	<i>Violence Against Women</i>
	96	<i>Journal of Interpersonal Violence</i>
	87	<i>Journal of Family Violence</i>
	37	<i>Trauma, Violence, & Abuse</i>
	33	<i>Sex Roles</i>
	26	<i>Aggression and Violent Behavior</i>
	18	<i>Violence and Exploitation Against Women and Girls</i>
	17	<i>Annals of Emergency Medicine</i>
	9	<i>AFFILIA—Journal of Women and Social Work; Behaviour Research and Therapy; Psychology of Women Quarterly; Journal of Forensic Sciences</i>

meaning (e.g., the *Journal of Plant Sciences* publishes on rape as a stem word in the biological sciences).

Analysis of the distribution of the VAW literature during the past three decades reveals an important trend (see Table 3). In 1977 and 1987, research in the field was published in the forensic, criminal justice, medical, and psychological literatures. As the volume of literature has grown, VAW-specific journals have been introduced, and the literature has shifted to those publications. In fact by 2007, the top four journals were VAW- or victimization-specific journals. In building on Garfield's law of concentration noted above, a new bibliometric law has been proposed, which

states that during phases of robust growth of knowledge in a scientific discipline, articles of interest to that discipline appear in increasing number in journals distant from that field (Sengupta, 1992). Either the VAW literature is an exception to the law, or the field is yet to see the largest period of growth as measured by a distribution of its literature beyond victimization-specific journals.

Although the field has seen development of victimization-specific journals, each does not publish equally in all areas of the VAW field. As detailed in Table 4, in the area of physical violence, *Journal of Interpersonal Violence* and *Violence Against Women* are the highest ranked journals by citation volume in the past 5 years. Among the five top journals, only one (*Annals of Emergency Medicine*) is not a specialized VAW journal. In the area of sexual victimization, the same two journals receive top ranking, with one forensic science and two general psychological journals also making it into the top five rankings. The psychological abuse literature evidences a lower volume of articles but shows a similar pattern of being located primarily in abuse-specific journals, but in this case *Child Abuse & Neglect* is among them. Finally, the stalking literature is more heavily concentrated in forensic, criminal justice, and psychiatric journals (not unlike the way the earliest VAW-specific literature began) and in journals outside the United States.

The Community of Publishing Authors

A final measure of the state of the written knowledge on VAW relates to the disciplines of the scientists who publish in the field. To say that the field is interdisciplinary accurately conveys that multiple fields contribute to the knowledge base, but it does not mean that they do so in equal measure. To approximate the influence of different disciplines on the field's knowledge base, the top 10 most cited authors in the four keyword areas (partner violence, sexual victimization, stalking, psychological abuse) within the 5-year time frame of 2003 to 2007 were pulled from the Web of Science. By this method, 200 authors were identified, but because several authors fell into the top 10 ranks in multiple years and thus were counted more than once, 154 unduplicated scholars are included in the total. Beginning with the unit of analysis as the discipline of author publishing in the field, the number of publications and the number of times each publication was cited were analyzed.

As revealed in Table 5, psychology is by far the most commonly cited discipline in the field of VAW. Psychiatry, nursing, and medicine were the next most common, with medicine trailing only psychology when the number of times articles are cited is considered. Sociology, epidemiology, public health, and social work are the next most common disciplines.

Although psychology is the top discipline in the publishing ranks for each of the four keyword areas, the distribution of other disciplines differs by type of literature (see Table 6). For example, psychiatrists publish more heavily in the area of stalking,

Table 4
Top Journals for Violence Against Women Publications
by Keyword Category (2002 to 2007)

Category (Keywords)	Journal Title	Number of Publications	Mean Rank Publications per Year
Partner violence (keywords: wife battering, spouse abuse, interpersonal violence, domestic violence, intimate partner violence)	<i>Journal of Interpersonal Violence</i>	121	1.5
	<i>Violence Against Women</i>	70	2.8
	<i>Journal of Family Violence</i>	44	4.0
	<i>Annals of Emergency Medicine</i>	22	4.8
	<i>Trauma, Violence, & Abuse</i>	20	6.0
Sexual victimization (keywords: rape, sexual assault, sexual violence, sexual harassment)	<i>Journal of Interpersonal Violence</i>	162	1.3
	<i>Violence Against Women</i>	103	3.8
	<i>Journal of Traumatic Stress</i>	54	5.0
	<i>Psychology of Women Quarterly</i>	53	5.3
	<i>Sex Roles</i>	59	5.8
Stalking (keyword: stalking)	<i>Forensic Science International</i>	51	6.0
	<i>Journal of the American Academy of Psychiatry and the Law</i>	10	2.5
	<i>Journal of Forensic Sciences</i>	9	2.5
	<i>Criminal Justice and Behavior</i>	8	3.0
	<i>Journal of Interpersonal Violence</i>	7	3.0
	<i>European Psychiatry</i>	6	3.0
	<i>Journal of Forensic Psychiatry & Psychology</i>	5	3.2
	<i>Violence Against Women</i>	5	3.3
	<i>Australian and New Zealand Journal of Psychiatry</i>	4	3.3
	<i>Journal of Interpersonal Violence</i>	20	1.8
Psychological abuse (keyword: psychological abuse)	<i>Violence Against Women</i>	5	2.7
	<i>Journal of Family Violence</i>	9	2.8
	<i>Child Abuse & Neglect</i>	6	3.2
	<i>American Journal of Preventive Medicine</i>	3	3.7

which is also where sociologists appear most frequently. The area of intimate partner violence has the most diverse population of authors publishing and a more equal distribution across disciplines. In this area, psychology, medicine, public health, and epidemiology have almost equal numbers of disciplines and publications, with medicine once again ranking above all others in the number of citations.

Table 5
Discipline of the Top 10 Most Cited Authors in Four
Subject Areas Combined (2003 to 2007)

Discipline	Authors	Publications	Citations
Psychology	98	289	1,883
Psychiatry	19	57	345
Nursing	16	31	357
Medicine	14	45	779
Sociology	11	15	122
Epidemiology	11	39	524
Public health	9	35	131
Social work	8	27	160
Pharmacy	5	25	285
Statistics	7	13	75
Criminal justice	1	6	2
Education	1	2	1

Note: Author, publication, and citation categories are not mutually exclusive across years; that is, a single author may be counted once for each year he or she published in the 5-year period, or a multiauthored publication is counted once for each coauthor in the “publications” and “citations” categories.

Summary of State of the Written Knowledge on VAW

This analysis reveals that the biomedical and psychological bibliometric databases have experienced the greatest growth in literature volume during the past decades, whereas the sociological, social work, and legal literatures have leveled off or declined. The growth and decline of certain keywords also evidence an evolution in the field’s understanding of VAW, as terms such as *spouse abuse* and *wife battering*, for example, have been replaced by *domestic violence* and *intimate partner violence*. The distribution of VAW literature has also become more concentrated in VAW- or victimization-specific journals, each of those specializing a bit differently. Stalking is distinctive in appearing in the forensic literature and European periodicals. Although a multidisciplinary field, there are readily identifiable trends in who is publishing the highest volume across types of literature. Psychologists are the most frequent authors, whereas medicine is the most often cited. Intimate partner violence has the most diverse population of authors publishing and a more equal distribution across disciplines.

There are limitations to this bibliometric analysis. First, it is limited by selection of the five major databases and 11 keywords. The use of 1977, 1987, 1997, and 2007 offers the ability to note multiyear trends but could be influenced by high or low publishing in any single year. The analysis of most highly cited authors must be understood as an approximation of the influence of disciplines, not an exact measure. First, *discipline* is operationally defined as the highest

Table 6
Discipline of the Top 10 Most Cited Authors
by Subject Area From 2003 to 2007

Subject	Discipline	Authors	Publications	Citations
Stalking	Psychology	25	48	234
	Psychiatry	12	27	91
	Nursing	6	7	215
	Sociology	6	8	79
	Statistics	1	1	1
Intimate partner violence	Psychology	11	45	399
	Medicine	9	35	529
	Public health	7	33	99
	Epidemiology	7	31	349
	Social work	4	14	156
	Nursing	4	18	111
	Psychiatry	3	18	142
	Statistics	5	11	71
	Sexual assault	Psychology	32	154
	Pharmacy	5	25	285
	Medicine	4	9	249
	Epidemiology	3	7	173
	Psychiatry	3	11	106
	Sociology	1	3	19
	Criminal justice	1	6	2
	Social work	1	3	1
Psychological abuse	Psychology	30	42	150
	Nursing	6	6	31
	Sociology	4	4	24
	Social work	3	10	3
	Public health	2	2	32
	Psychiatry	1	1	6
	Epidemiology	1	1	2
	Medicine	1	1	1
	Education	1	2	1
		Statistics	1	1

Note: Author, publication, and citation categories are not mutually exclusive across years; that is, a single author may be counted once for each year he or she published in the 5-year period, or a multiauthored publication is counted once for each author in the "publications" and "citations" categories.

degree obtained and does not reflect multiple degrees held by the same author (e.g., a physician with a master's degree in public health is counted in the discipline of medicine). In addition, the data are influenced by the number of authors on a single publication.

Moving Research Agendas to Science

The reviews of VAW research to date have offered many excellent remedies for methodological and other shortcomings in the field. Many frame those improvements as composing a “research agenda” on VAW, a concept that arguably stops short of affecting the evolution necessary to take on the daunting challenge of understanding VAW and all its complexities. The phrase *research agenda* itself implies steps toward a single plan rather than contemplating something much more transformative. This article argues instead for the latter, for conceptualizing the study of VAW as an area of science. To propose that VAW become a science will likely raise eyebrows. The field of VAW studies with very limited laboratory work, exact measurements, and tangible phenomena. It does not even benefit from the organization of a discipline. Nevertheless, as when psychology successfully argued for its rightful place as a science years ago,

it is not the definiteness of its material which determines whether a subject is a science . . . the criterion of science is not subject matter but the methods of investigation used. If scientific method is used systematically, we may properly speak of a science, whether the object of study is minerals, bacteria, human thoughts and feelings, or social institutions. (Sargent, 1945, p. 7-8)

Use of the word *science*, then, is valid to the extent that the application is to an organized body of knowledge, a methodologically sound approach to its study, and an organized group of scientists. The application here is not an attempt to elevate the study of VAW to the same footing as the natural sciences; rather, it is an effort to extend to the field the advantages that organization as a science would bring.

The Benefits of a Science Model

Conceptualizing the study of VAW as an integrative science offers many advantages, both pragmatic and theoretical. Science is fundamentally the discovery of facts and the formulation of laws and principles derived from those discoveries (Morris, 1992). It is not just singular research studies, investigators, or agendas; science provides a means by which that research is translated into a body of knowledge. The more organized that knowledge base, the more it can be tested, retested, and built on. The first advantage of a move to this model, then, is that it moves the VAW field to improve its organization of knowledge and sets forth a structure by which testing and retesting and the generation of theory can more readily occur. Furthermore, a science model provides an intellectual framework for coming to agreement on the fundamental elements that build scientific discovery. Kuhn (1996) talked about paradigmatic sciences as those in which researchers agree on fundamental constructs, and then research questions and scientific achievements derive from and are built on that

architecture. This approach responds to the criticisms of previous reviews that cite lack of theory as a debilitating characteristic of the current field (Crowell & Burgess, 1996; Kruttschnitt et al., 2002). The study of VAW cannot become a science when overarching theoretical constructs that inform the thinking of all or even a majority of researchers in the area are lacking. If the VAW field can reach that point, disagreements will still exist, but they will be devoted to controversies about research questions and findings, not about the fundamental principles that guide the field. At that point, VAW may set itself on the course of becoming not just a descriptive science but a paradigmatic one. Absent theoretical underpinnings, or what Kuhn (1996) conceptualized as paradigms, the field will never be positioned to explore and understand VAW in the way called for by this crisis.

The lack of a solidified community of scientists is a second barrier to the field's work that can be addressed by the move to a science model. Admittedly, in most sciences the scientific community is made up of scholars who have "undergone similar educations and professional initiations; in the process they have absorbed the same technical literature and drawn many of the same lessons from it" (Kuhn, 1996, p. 177). This is counter to the VAW area, where multiple disciplines theorize, teach, and practice. A move to a science model should not be accomplished by the concentration of all scholars into one discipline, as such a move would defeat the richness that can be derived from different points of view. It is also not practical, as different disciplines play different roles, all critical to the practice side of the field (e.g., psychology, medicine, law). Nonetheless, the model offers a unique approach of unifying distinct disciplines around an organizing framework. The scientific model provides the first realistic mechanism for transdisciplinary, not just multidisciplinary, work to be done.

In addition to giving an organizing framework, the field would be advantaged by evolving to a science model in the training and preparation of graduate students, as in the natural and social sciences, the study of finished scientific accomplishments ends up in the textbooks of the next generations of scientists. The move lends itself to development of pedagogy for the transmission of information on VAW to future researchers, an ability that is currently lacking. The cohesiveness that derives from a science model may also strengthen the organization of the written literature in textbooks as well as in the bibliographic databases that now separately publish the written empirical studies of varied disciplines.

There are several models for creation of a new area of science when existing research methodologies and infrastructures are judged to be inadequate. For example, cognitive science is an interdisciplinary field that has arisen during the past decade at the intersection of psychology, linguistics, computer science, philosophy, and physiology. Prior to its existence, each discipline sought to independently understand the mind from its own perspective without having the opportunity to benefit from the methodologies and theories of others (Luger, 1994). Not only did the advent of the new field of cognitive science allow shared purpose and theory to overcome methodological differences, but also its structure facilitated interdisciplinary interaction. On a practical

level, the new science has been recognized by the National Academy of Sciences and is referenced in its National Education Standards (National Academy of Sciences, 2008).

Similarly, in the 2000s, “sustainability science” emerged with beliefs that traditional approaches to developing and testing hypotheses were inadequate and that new styles of institutional organization were needed (Clark & Dickson, 2003). Sustainability science has been recognized by the American Academy for the Advancement of Science through development of a center for science, innovation, and sustainability within the academy (National Academy for the Advancement of Science, 2008). Such a move lends not only credibility to a developing science but also access to resources that are international in scope.

Characteristics of the New Science: Transdisciplinary, Translational, and Transgenerational

Connecting the multiple disciplines that study VAW can facilitate the emergence of new theory, bridge controversies in definitions, and strengthen methodologies. In the space between existing disciplines, the most analytically sophisticated discoveries to date and, although not the recommendation of this review, possibly even the creation of new hybrid disciplines may be conceived. The synthesis of disciplines and the creation of this transdisciplinary science, however, will not occur without concerted efforts to overcome the barriers to collaboration that presently exist. As noted earlier, a primary barrier is that no present mechanism exists to even identify the members of the community of scientists who study VAW. Creation of an electronic database of VAW researchers would be a remedy. The coordination of more interdisciplinary scientific meetings, where researchers who operate with different theoretical models and constructs come together around a common problem or task, would also be of benefit.

Achieving a transdisciplinary scientific model must include the creation of research teams that see investigators move beyond the confines of the disciplines in which they are trained. Research teams of the future must include the collaboration of psychologists, sociologists, social workers, physicians and nurses, epidemiologists and public health scientists, legal scholars, and more, and they must include theoretical, applied, and clinical scientists. Realistically achieving success in building transdisciplinary research teams is also dependent on such practical steps as the continued move at the federal level to allow designation of co-principal investigators on federal research grants and the move at the institutional level to allow sharing of indirect costs across departments. In addition to the presence of multiple disciplines, research teams in this new area of science must include innovative partnerships among scientists, practitioners, and advocates, varying models of which have been espoused by a number of authors (Block, Engel, Naureckas, & Riordan, 1999; Campbell, Dienemann, Kub, Wurmser, & Loy, 1999; Galinsky, Turnbull, Meglin, & Wilner, 1993; Gilfus et al., 1999; Gondolf, Yllo, & Campbell, 1997).

Evolution of the study of VAW into a transdisciplinary science will also necessitate improvements in the chronicling of the field's written knowledge base. In the short term, scientists of different disciplines can contribute to improvements by coauthoring papers and submitting manuscripts to journals outside of an individual discipline. A study on civil orders of protection can produce papers coauthored by psychologists, sociologists, and legal scholars, and manuscripts may be submitted to both behavioral science and law review journals. Studies on homicide and pregnancy lend themselves to authored collaborations by researchers in the health sciences, sociology, and law. Collaborations with biostatisticians may open new avenues for statistical analyses and sophisticated methodologies. In this way, disciplines are crossed and the literatures of multiple disciplines informed. The process of scientists collaborating on manuscripts destined for journals outside their own fields also exposes each in an intimate fashion to the literatures, methodologies, and theoretical models of other disciplines. Because these are additional publications rather than redirections of existing scholarly work, there would be no negative consequences for faculty members publishing outside respected journals in their own fields and thereby harming tenure and promotion. In the longer term, the VAW literature would be strengthened through integration of bibliometric databases, agreement on indexing terms, and an expanded use of review journals that require review articles to be inclusive of multiple literatures.

The science of VAW must also be translational, that is, the birth of its ideas and research hypotheses must be incubated in the practice field and its effects applied there. This new science must include a role for outreach among academic, grass-roots, government, and corporate entities if the most effective advances are to be accelerated and translated most meaningfully from science to practice and from experiment to courthouse, bedside, and crisis line.

In the well-established sciences, the passing of knowledge from one generation to the next occurs through the use of textbooks that outline the field's scientific achievements and mentoring opportunities embedded in the structure of organized academic units. As the VAW field contemplates a move to a science model, the next generation of scientists must be included. Mentoring programs that mirror the transdisciplinary nature of the field must be organized (and funded through fellowships, targeted grant awards, postdoctoral positions, and other funding mechanisms). Undergraduate and graduate students must also be exposed to curricula and other learning and research opportunities that serve as a pipeline to equip them for full participation in a transdisciplinary, collaborative workforce.

Infrastructure Needs for the Science on VAW

A science on VAW cannot advance without a robust infrastructure of support. There is a significant need to increase research funding across federal agencies as a means to increase both the number of grants awarded and the average grant award. The mean level of funding for a research grant from NIJ between 1995 and 2005 was

\$190,611, an amount inadequate to support longitudinal studies and the transdisciplinary studies with multiple investigators as recommended here. Research funding could also assist in improving the methodological weaknesses outlined in past national reviews (Crowell & Burgess, 1996; Kruttschnitt et al., 2002) by funding methodological studies focusing on research design, human participant protections, data collection, measurement, and analysis. Federal funding should also be expanded beyond current institutes such that projects addressing broader associations (e.g., cancer and victimization) and implications (child development) are included.

A second major infrastructure reform can be achieved through development of interdisciplinary, academically based research centers. As recommended previously by Crowell and Burgess (1996), these centers would foster interdisciplinary collaborations and training programs for young investigators. Although a lack of federal funding and institutional-level barriers to interdisciplinary organization have prevented widespread adoption of this model, one such center has been established at UK. The interdisciplinary Center for Research on VAW is administratively housed under the UK provost and has built an innovative model of endowing chairs and professorships of study on VAW and graduate fellowships through creation of a research endowment that reached almost \$5 million after the first 5 years of the center's operation (UK, 2008). A diversified funding model including state funding, federal research grants, and endowment funds offers stability for the program that is unique in academia. The center hosts national, interdisciplinary scientific meetings and designs training programs for advocates on how to engage and partner in research. At the institutional level, the center hosts invited lecture series, funds small competitive research grants for UK faculty, conducts interdisciplinary research, organizes mentoring programs, trains advocates and practitioners, and more. Interdisciplinary centers such as this should be replicated at other universities in models adapted to the unique skills of the VAW researchers at that institution to expand opportunities for research to be conducted and facilitated in the most innovative way.

Conclusion

Not only is the phenomenon of VAW inherently difficult to study and understand, but also the field brings to the effort conceptual silos, disconnected disciplines, methodological weaknesses, and inadequate levels of research funding. Nonetheless, an enumeration of the weaknesses that color the state of research on VAW should not preclude recognition that a tremendous amount has been accomplished in this young field. As aptly put by Richie (2004),

Twenty-five years ago, it could not be imagined that violence against women and family violence research would find a broad audience and that there would be funding streams and a commitment to influence public policy on behalf of women. Most

grassroots advocates did not expect that traditionally trained researchers would be interested in topics like the intergenerational effect of violence on children, the antecedents of abusive relationships, or the long-term consequences of domestic violence. . . . Without overstating the progress, it is fair to say that there have been considerable scientific advances and dissemination of an impressive amount of theoretical and empirical information about violence against women and family violence in a relatively short period of time. (p. IV-1-3)

Fully addressing VAW from the academy cannot be achieved with incremental steps or minor adjustments to scholarly models. As such, this review proposes creation of an area of science for this field. Transforming the study of VAW to a transdisciplinary science will take several substantive steps: constructing and testing theories that are analytically complex and derived from scholarship across disciplines, building a more cohesive community of scientists in the short term and preparing the next generation of scientists in the long term, improving the organization of written scholarship produced from empirical work, strengthening methodologies, and advancing the practical infrastructures through which this new area of science can grow. The complexity and challenge of that enterprise are matched only by the urgency with which the field must undertake it.

Notes

1. For the purpose of this article, *violence against women researchers* is used to mean university faculty who study intimate partner violence, rape or sexual assault, psychological maltreatment, stalking, and related forms of victimization of women. It includes researchers in the theoretical and applied sciences from health, behavioral and social sciences, women's studies, law, education, and many other disciplines.

2. Important curricula and training programs for health and mental health care providers have been created by numerous national associations and organizations, including the American Academy of Pediatrics, the American Association of Colleges of Nursing, the American College of Emergency Physicians, the American College of Obstetricians and Gynecologists, the American Dental Association, the American Medical Association, the American Psychological Association, the American Professional Society on the Abuse of Children, the Family Violence Prevention Fund, and others.

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