

Who is at Risk for Compassion Fatigue? An Investigation of Genetic Counselor Demographics, Anxiety, Compassion Satisfaction, and Burnout

Whiwon Lee · Patricia McCarthy Veach ·
Ian M. MacFarlane · Bonnie S. LeRoy

Received: 2 October 2013 / Accepted: 19 March 2014 / Published online: 1 May 2014
© National Society of Genetic Counselors, Inc. 2014

Abstract Compassion fatigue is a state of detachment and isolation experienced when healthcare providers repeatedly engage with patients in distress. Compassion fatigue can hinder empathy and cause extreme tension. Prior research suggests 73.8 % of genetic counselors are at moderate to high risk for compassion fatigue and approximately 1 in 4 have considered leaving the field as a result Injeyan et al. (Journal of Genetic Counseling, 20, 526–540, 2011). Empirical data to establish a reliable profile of genetic counselors at risk for compassion fatigue are limited. Thus the purpose of this study was to establish a profile by assessing relationships between state and trait anxiety, burnout, compassion satisfaction, selected demographics and compassion fatigue risk in practicing genetic counselors. Practicing genetic counselors ($n=402$) completed an anonymous, online survey containing demographic questions, the State-Trait Anxiety Inventory, and the Professional Quality of Life scale. Multiple regression analysis yielded four significant predictors which increase compassion fatigue risk (accounting for 48 % of the variance): higher levels of trait anxiety, burnout, and compassion satisfaction, and ethnicity other than Caucasian. Additional findings, study limitations, practice implications, and research recommendations are provided.

Keywords Compassion fatigue · Anxiety · Burnout · Satisfaction · Genetic counselor · Counselor ethnicity

Compassion fatigue is a term first used by Joinson (1992) to describe a state of detachment and isolation experienced by healthcare providers when they repeatedly engage with patients in distress. Compassion fatigue that is not recognized and managed effectively is problematic because it can cause serious psychological damage to the provider to the point of diminished patient care, reduced job satisfaction, and job turnover (Alkema et al. 2008; Sprang et al. 2007).

Figley (1995, 2002) developed a 10 component model of compassion fatigue in which he explains its etiology and manifestations. According to Figley, compassion fatigue arises from repeated empathic engagement with traumatized patients. When engaging empathically, the caregiver expends effort to understand patients' experiences. Consequently the caregiver "takes on" some of their suffering. Failure to recognize and deal with this "emotional residue" (Figley 2002, p. 1437) results in increased risk for compassion fatigue. Ironically, the very act of being empathic and compassionate can result in a care provider's reduced capacity for understanding and bearing others' distress. Professionals who experience compassion fatigue have reduced ability or interest in engaging empathically and may manifest symptoms including lack of energy and enthusiasm, exhaustion, feeling overwhelmed, irritability, sadness, and detachment (Figley 1995, 2002). Figley's model also describes compassion satisfaction, which refers to a sense of achievement. He asserts a realistic awareness of one's role and responsibilities vis-a-vis patient suffering can mitigate compassion fatigue risk.

Genetic counselor empathy, defined as the ability to understand a patient's experience and share that understanding, is considered an integral component of the counselor-client relationship (McCarthy Veach et al. 2003). Genetic counselor

W. Lee
Medical Division, Genzyme Korea Co., Ltd, Seoul, South Korea

P. M. Veach (✉)
Department of Educational Psychology, University of Minnesota,
250 Education Sciences Building, 56 E. River Road, Minneapolis,
MN 55455, USA
e-mail: veach001@umn.edu

I. M. MacFarlane
Department of Psychology, Austin College, Sherman, TX, USA

B. S. LeRoy
Department of Genetics, Cell Biology, and Development, University
of Minnesota, Minneapolis, MN, USA

empathic engagement functions to establish rapport and trust between the counselor and the patient throughout their interaction, and it allows patients an opportunity to more deeply explore their thoughts and feelings (McCarthy Veach et al. 2003). Theoretically, therefore, genetic counselors, like any other healthcare professionals who deal with distressed patients, are at risk for compassion fatigue.

Although compassion fatigue has been studied extensively in other health professions, research on genetic counselors is relatively recent. Only three published studies describe genetic counselors' experiences of compassion fatigue and associated risk factors (Benoit et al. 2007; Injeyan et al. 2011; Udipi et al. 2008). Given the paucity of empirical data to establish a reliable profile of genetic counselors at risk for compassion fatigue, the purpose of this study was to identify individual and environmental factors that predispose genetic counselors to compassion fatigue. Identification of such factors could contribute to the development of effective prevention and intervention programs.

Conceptual Distinctions

Research on compassion fatigue is complicated by its conceptual similarity to other phenomena. In particular, compassion fatigue is often confused with burnout (Figley 2002). Figley postulates compassion fatigue and burnout are related but distinct experiences, and two studies of genetic counselors support his postulation (Injeyan et al. 2011; Udipi et al. 2008). Burnout is characterized by the affected individual's emotional and/or physical exhaustion, depersonalization, and reduced feelings of personal accomplishment stemming from their inability to cope with job stress such as an overwhelming workload and lack of support (Maslach 1982; Maytum et al. 2004). Figley (1995, 2002) further asserts the development of burnout is gradual and progressive, whereas onset of compassion fatigue is often immediate and intense and can be caused by a single traumatic event. Compassion fatigue involves an erosion of a caregiver's empathy, whereas burnout does not directly affect empathy (Figley 2002). Thus, although the risk of burnout exists for any worker in any occupation, the risk of compassion fatigue is confined to those in helping professions (Benoit et al. 2007).

Although compassion satisfaction and compassion fatigue are viewed as distinct constructs (Figley 2002), their relationship is unclear. Stamm (2002) hypothesizes an individual can simultaneously experience high compassion satisfaction and high compassion fatigue, but research supporting her hypothesis is lacking. There is more empirical evidence suggesting an inverse relationship. For example, Conrad and Kellar-Guenther (2006) found higher compassion satisfaction was significantly related to lower compassion fatigue for a sample of child protection workers; and Slocum-Gori and colleagues

(Slocum-Gori et al. 2013) found an inverse relationship between compassion satisfaction and compassion fatigue in a sample of hospice workers.

Despite conceptual challenges, compassion fatigue, burnout, and compassion satisfaction have been studied extensively in health professions other than genetic counseling using various versions of the Professional Quality of Life scale (ProQOL 5; Stamm 2010). High levels of compassion satisfaction potential, high burnout risk, and high compassion fatigue risk have been found in samples that include child protection workers (Conrad and Kellar-Guenther 2006), emergency room nurses (Hooper et al. 2010), trauma treatment therapists (e.g., Craig and Sprang 2010), hospice professionals (Alkema et al. 2008; Slocum-Gori et al. 2013), and psychiatrists (Sprang et al. 2007), to name a few. While these studies have documented high levels of these constructs, they predominantly report frequencies at different levels of risk so one cannot determine the relationship between scales.

Research on Genetic Counselor Compassion Fatigue

Benoit et al. (2007) conducted the first research examining genetic counselors' compassion fatigue experience, using focus groups comprised of 12 practicing genetic counselors. Their participants reported having experienced compassion fatigue and described triggers including delivering bad news and an inability to prevent patient suffering. They also speculated that certain personality characteristics, such as wanting to be in control, wanting to be acknowledged, and perfectionism, may predispose genetic counselors to compassion fatigue. The researchers concluded genetic counselors experience compassion fatigue and their experience is comparable to that of other health professionals; they hypothesized certain personality traits may be risk factors for compassion fatigue.

In a follow-up study, Udipi et al. (2008) surveyed 222 genetic counselors. They found a large percentage were at moderate-to-high risk for compassion fatigue (83 %). The researchers also identified several personal and demographic predictors of compassion fatigue. Notably, genetic counselors at high risk for compassion fatigue were more likely to experience burnout, be self-critical, face a greater variety of difficult clinical situations, and have difficulty managing such stressful events. They concluded higher risk for compassion fatigue is largely predicted by genetic counselor negative self-evaluation, demanding workload (both amount and types of demands), and difficulties coping effectively.

Injeyan et al. (2011) investigated the relationships between select personality traits (dispositional optimism and locus of control) and compassion fatigue risk in their sample of 246 genetic counselors. Dispositional optimism is defined as the general tendency to expect good things, rather than bad things, will happen. Locus of control is defined as the degree to which

individuals believe outcomes result from factors such as one's ability and effort (internal locus of control) or factors such as chance (external locus of control). The researchers found counselors with low dispositional optimism and an external locus of control were at higher risk for compassion fatigue. Similar to Udipi et al. (2008), they discovered a significant percentage of participants (73 %) were at moderate-to-high risk for compassion fatigue; moreover 26 % of their respondents reported having considered leaving the field due to the effects of compassion fatigue.

The results of these studies provide evidence that compassion fatigue is a common phenomenon in the genetic counseling field. Individuals who desire and strive for control and perfectionism may be at particular risk; ironically, due to the nature of the profession, they are constantly faced with situations in which they lack control (e.g., the news they deliver, patients' reaction to such news). Hence, it follows that genetic counselors with an external locus of control, poor coping skills, and low dispositional optimism are at a higher risk for compassion fatigue than genetic counselors who possess an internal locus of control, effective coping skills, and high dispositional optimism.

Although these intrapersonal characteristics have been identified as significant predictors of genetic counselor compassion fatigue risk, they do not account for all of the variance in risk. Another factor which may be related to compassion fatigue is anxiety, a construct that has not been studied with regards to its potential influence on genetic counselors' experience of and risk for compassion fatigue.

Anxiety as a Risk Factor for Compassion Fatigue

Anxiety is a natural human reaction to unpleasant or threatening stimuli (Spielberger et al. 1990). Anxiety includes physiological, emotional, and cognitive responses, and is further divided into two types: state anxiety and trait anxiety. State anxiety is defined as the "subjective feelings of tension, apprehension, nervousness, and worry" at a given moment in time (Spielberger et al. 1983, p. 4). Trait anxiety refers to "individual differences in anxiety-proneness" (Spielberger et al. 1983, p. 5), or in other words, the difference in the intensity and frequency of individuals' experience of anxiety. Individuals with higher trait anxiety perceive more situations as stressful and threatening, and they experience a more intense increase in their state anxiety level in such situations.

Benoit et al. (2007) found some genetic counselors use *hypervigilance*, the act of being overly cautious to maintain control of situations, to protect themselves from uncontrolled situations, and to avoid dissatisfaction about themselves as professionals. This behavior, however, creates a vicious cycle of anxiety and relief, rather than a sense of accomplishment and satisfaction. Therefore, genetic counselors with an

increased risk of compassion fatigue may be those with an increased level of anxiety. This hypothesis is further supported by findings that individuals with higher levels of trait anxiety find experiences of failure and evaluation of personal adequacy as more threatening compared to individuals with lower levels of trait anxiety (Spielberger et al. 1983). Thus, genetic counselors with higher trait anxiety levels may experience a stronger sense of dissatisfaction, incompetency, and loss of control in counseling sessions, reactions which are all associated with compassion fatigue risk.

Jungbluth et al. (2011) surveyed 225 genetic counseling students to assess their levels of anxiety and the stressors they experience during their graduate education. As a group, the genetic counseling students had high trait anxiety levels, significantly higher than normative samples of adult working women and medical students. These findings led the authors to speculate individuals with high trait anxiety are attracted to genetic counseling programs. Moreover genetic counseling programs may "select for" applicants with this personality trait, as it may be associated with other applicant qualities that predict future success in the program and the profession. The authors cautioned, however, that high levels of trait anxiety could have detrimental effects such as poorer performance, career dissatisfaction, and attrition from the field. As trait anxiety is a relatively stable intrapersonal characteristic trait, anxiety levels in currently practicing genetic counselors might be comparable to the levels found in the Jungbluth et al. study.

Eysenck (1979) asserted high anxiety always impairs an individual's quality of performance because worry and task-irrelevant cognitive activities that arise from anxiety interfere with an individual's capacity to process task-relevant information. This interference is especially true for working memory, which comprises a limited capacity. As genetic counselors must take into consideration the specific details of each patient when assessing genetic risk, those counselors with high trait anxiety, who are more likely to experience anxiety at a higher frequency and intensity, may be more prone to lower quality performance. Poorer performance might negatively affect genetic counselors' sense of control, satisfaction, and adequacy as a professional, which are identified risk factors for compassion fatigue.

Purpose of the Present Study

Given the potential deleterious effects of improperly managed compassion fatigue and anxiety on professional functioning, the purpose of this study was to identify individual and environmental factors that predispose genetic counselors to compassion fatigue risk. The study involved an assessment of the relationships between state and trait anxiety levels, burnout, compassion satisfaction, selected demographics, and compassion fatigue risk in practicing genetic counselors. It was

thought generation of a profile of at risk genetic counselors would contribute to the development of effective compassion fatigue intervention programs. Four major research questions were investigated: (1) Do currently practicing genetic counselors have high state and trait anxiety levels, comparable to previous levels found in genetic counseling students? (2) Can state and/or trait anxiety levels predict compassion fatigue risk in genetic counselors? (3) What is the relationship between anxiety, burnout, compassion satisfaction, and compassion fatigue? and (4) Do select genetic counselor demographic characteristics predict compassion fatigue?

Method

Sample and Procedures

The population of interest was practicing genetic counselors. Upon receipt of approval from the University of Minnesota institutional review board, an e-mail invitation to participate in an anonymous, self-administered survey was sent to individuals subscribed to the National Society of Genetic Counselors (NSGC; $N=2,360$) and the Canadian Association of Genetic Counselors (CAGC; $N=266$) listservs. For individuals subscribed to the NSGC listserv, the invitation was first sent at the beginning of August, 2012 and again 3 weeks later. For individuals subscribed to the CAGC listserv, the invitation was sent once at the end of August. The invitation described the research as a study of the role of anxiety in genetic counselors' risk for compassion fatigue.

A total of 467 individuals responded to the study invitation. Although difficult to estimate the total number of genetic counselors who received the invitation email and chose not to participate, a conservative estimated response rate is 18.3% ($467/2,546$). Thirty-three individuals who reported not having seen patients in the last 30 days were excluded from data analyses. Another 32 individuals were excluded for completing less than 80% of the survey (Peng et al. 2006), making the final sample size 402.

Instrumentation

The survey consisted of the ProQOL 5 (Stamm 2010), the State-Trait Anxiety Inventory (STAI; Spielberger et al. 1983), and demographic questions. The order of the ProQOL 5 and STAI was randomized to counterbalance order effects. The demographic questions comprised the final section of the survey to minimize participant fatigue when responding to the first two scales.

The Professional Quality of Life Scale (ProQOL 5; Stamm 2010) The ProQOL 5 is a 30-item scale that assesses a respondent's positive and negative experiences in working with

distressed clients in the last 30 days. The ProQOL 5 has established construct validity across over 200 published papers, and demonstrated internal consistencies ranging from 0.75 to 0.88 per subscale (Stamm 2010). There are three subscales (10 items each): compassion satisfaction, burnout, and secondary traumatic stress. Rating scales anchors are: 1 = *Never*, 2 = *Rarely*, 3 = *Sometimes*, 4 = *Often*, and 5 = *Very Often*. Subscale score range is 10 to 50, with higher scores indicating higher levels of the construct being assessed.

The compassion satisfaction subscale assesses "the pleasure [one] derives from being able to do [one's] work well" (Stamm 2010, p. 12). Sample items include: "I get satisfaction from being able to help people" and "I am happy that I chose to do this work." The burnout subscale assesses "feelings of hopelessness and difficulties in dealing with work, or in doing one's job effectively" (Stamm 2010, p. 13). Sample items include: "I feel overwhelmed because my case work load seems endless" and "I feel trapped by my job as a helper." The secondary traumatic stress subscale (labeled the compassion fatigue subscale in previous versions of the ProQOL) assesses "work-related, secondary exposure to people who have experienced extremely or traumatically stressful events" (Stamm 2010, p. 13). Sample items include: "I find it difficult to separate my personal life from my life as a helper" and "I feel as though I am experiencing the trauma of someone I have helped."

With the ProQOL author's permission (Stamm, personal communication 2012), five items were modified slightly to better reflect the nature of genetic counseling clinical experiences. The term "trauma" was replaced with "stress" or "distressed" and the terms "traumatic" and "frightening" were replaced with "stressful" for four items. The phrase "techniques and protocols" was replaced with "standards of care." These modifications are consistent with those made in a prior study of genetic counselor compassion fatigue by Udipi et al. (2008).

State-Trait Anxiety Inventory (STAI; Spielberger et al. 1983) The STAI is a widely used measure consisting of two scales (20 items each): state anxiety and trait anxiety. The state anxiety scale measures anxiety in the present moment and uses the following scale anchors: 1 = *Not at all*, 2 = *Somewhat*, 3 = *Moderately so*, and 4 = *Very much so*. The trait anxiety scale measures how a respondent generally feels and uses the following scale anchors: 1 = *Never*, 2 = *Somewhat*, 3 = *Moderately so*, and 4 = *Almost always*. Sample items for the state anxiety subscale are: "I am tense" and "I feel nervous." Sample items for the trait anxiety subscale are: "I feel like a failure" and "I have disturbing thoughts." The total score on both scales can range from 20 to 80, with higher scores indicating greater anxiety. The STAI has been used extensively in research and clinical settings and has demonstrated strong psychometric properties (Spielberger et al. 1983). The

median internal reliability for normative samples (working adults, college students, high school students, and military recruits) is 0.93 for state anxiety and 0.90 for trait anxiety (Spielberger et al. 1983).

Final Survey Items Eleven items assessed respondent demographics (e.g., gender, age, relationship status, years of genetic counseling experience). Genetic counselors' familiarity with the construct of compassion fatigue was measured by one item using a 4-point rating scale (*Not at all familiar*, *Vaguely familiar*, *Familiar*, *Very familiar*). Sources of their information about compassion fatigue were also assessed via a checklist. One final, open-ended item invited respondents to provide any comments they would like to add.

Data Analysis

Quantitative Analyses Descriptive statistics (means, standard deviations, and percentages) were calculated for responses to the ProQOL 5, the STAI, and demographic items. Zero order correlations were calculated to identify relationships between major study variables. Participant scores on the ProQOL 5 subscales were classified as at high, average, or low risk using the standardized *T*-score conversion table from the ProQOL 5 manual (Stamm 2010). Multiple regression analysis was performed to identify significant predictors of compassion fatigue (as measured by the secondary traumatic stress scale). The initial predictors included state anxiety, trait-anxiety, burnout, compassion satisfaction, and those counselor demographic factors with sufficient variability.

Qualitative Analyses Responses to the open-ended item inviting additional comments were analyzed by the first author using an interpretive content analysis method (Giarelli and Tulman 2003). The content of the responses was first categorized based on conceptual similarity. Each category was then assigned a name reflecting its major theme. The second author served as data auditor. Disagreements about content classifications and/or category names were resolved by discussion to reach consensus.

Results

Respondent Characteristics

Genetic counselor demographic characteristics are summarized in Table 1. Most respondents were female (97.5 %) and self-identified as Caucasian (94.5 %), percentages that generally reflect NSGC membership (NSGC 2012). The mean age was 34.4 years ($SD=9.5$; Range = 23–66). Most respondents were in partnered relationships (81.7 %), and slightly

Table 1 Participant demographic characteristics ($N=402$)

Variable	<i>n</i>	%	<i>M</i> (<i>SD</i>)
Gender			
Female	392	97.5	
Male	8	2.0	
No response	2	0.5	
Ethnicity			
Caucasian	380	94.5	
Asian/Pacific Islander	8	2.0	
African American/Black	5	1.2	
Hispanic/Latino(a)	5	1.2	
Multi-racial	1	0.3	
Other	3	0.8	
Age (years)			34.4 (9.5)
Country of practice			
United States	350	87.1	
Canada	45	11.2	
Other	4	1.0	
No response	3	0.7	
Primary specialty area			
Prenatal	133	33.1	
Cancer	114	28.4	
Pediatrics	65	16.2	
General	27	6.7	
Adult	10	2.5	
Other	53	13.2	
Employment status			
Full-time	338	84.1	
Part-time	64	15.9	
Genetic counseling experience (years)			7.8 (7.8)
Patients seen per week			10.4 (6.7)
Number of genetic counselor co-workers			4.2 (5.1)
Relationship status			
Married	245	61.4	
In committed, long-term relationship	81	20.3	
Single	57	14.3	
Divorced	16	4.0	
Children			
Yes	153	38.1	
No	249	61.9	

more than one-third had children. The mean years of genetic counseling experience was 7.8 years ($SD=7.8$; Range = 1–37). Most were employed full-time (81.4 %), which is comparable to data obtained by the 2012 NSGC Professional Status Survey (PSS) showing 81 % of their respondents worked full-time. The mean number of patients seen per week was 10.4 ($SD=6.7$; Range = 0–50). The average number of other genetic counselors at the workplace was 4.2 ($SD=5.1$; Range = 0–30). Respondents worked in a

variety of specialties, the most prevalent being prenatal (33.1 %) and cancer (28.4 %), which is also consistent with the 2012 PSS data.

Genetic Counselors' Familiarity with Compassion Fatigue

Respondents were asked, "How would you rate your familiarity with the concept of compassion fatigue?" The mean compassion fatigue familiarity score was 2.6 ($SD=0.8$; Range = 1–4), which indicates the respondents considered themselves fairly familiar with the concept. Close to two-thirds of respondents (61.7 %; $n=248$) reported having acquired educational information about compassion fatigue. For those respondents, their source(s) of education were: during graduate training (73.8 %, $n=183$); at workshop/conferences (40.3 %, $n=100$); the workplace (10.5 %, $n=26$); personal research (10.1 %, $n=25$); and "other" (6.5 %, $n=16$).

STAI Scores

Descriptive statistics are presented in Table 2. The present sample's state and trait anxiety scores were compared to those reported for genetic counseling students (Jungbluth et al. 2011) and American working adult females (Spielberger et al. 1983) using t -tests (Bonferroni adjusted $\alpha=0.0125$). The difference between working female adults and genetic counselors in state anxiety was statistically significant ($p=0.012$) but so small ($d=0.15$) as to be of minimal practical significance (Cohen 1988). The difference in trait anxiety was also significant ($p<0.001$), but was in the range of a small effect ($d=0.31$; Cohen 1988), suggesting a meaningful but limited difference. The differences were much more pronounced when comparing genetic counselors with genetic counseling students. On both state and trait anxiety, the differences were not only statistically significant ($p<0.001$ in

both cases), but had strong effect sizes ($d=-1.00$ and -0.94 , respectively).

ProQOL 5 Scores

Descriptive statistics and risk classifications for the ProQOL 5 are presented in Table 3. As several items were changed from the original instrument, reliability analyses were conducted. The compassion satisfaction scale had $\alpha=0.90$ (original instrument $\alpha=0.88$), burnout had $\alpha=0.79$ (original instrument $\alpha=0.75$), and secondary traumatic stress had $\alpha=0.79$ (original scale had $\alpha=0.81$). Thus, the modification of items had no significant effect on the internal reliability of the instrument. Of note, 61 % ($n=245$) scored in the high risk range for compassion fatigue, while 39 % ($n=157$) scored in the average risk range. None of the respondents were at low risk for compassion fatigue. Regarding burnout, 19 % ($n=77$) of respondents were at high risk, 68 % ($n=273$) were at average risk, and 13 % ($n=52$) were at low risk. For compassion satisfaction, 45 % ($n=181$) of respondents had scores indicative of high compassion satisfaction, 51 % ($n=204$) had scores in the average range, and 4 % ($n=17$) had low compassion satisfaction scores.

Predictors of Compassion Fatigue

Prior to regression analyses, 79 missing data points were imputed using multiple imputation, a highly regarded method for managing missing data (e.g., Schlomer et al. 2010). The data points were spread across 69 participants and represented 0.2 % of the entire dataset. Imputed data were primarily for the ProQOL and STAI, though 6 participants did not include their age so these values were imputed as well. The Amelia II package (Honaker et al. 2010) in R (R R Core Team 2013) was used to carry out the procedure. Ten imputation sets were analyzed based on the recommendations

Table 2 Comparison of genetic counselors' state and trait anxiety scores to other published studies

Group	<i>N</i>	<i>M</i>	<i>SD</i>	<i>t</i>	<i>p</i>	Cohen's <i>d</i> [95 % CI]
State anxiety						
Genetic counselors	402	36.75	9.56			
Genetic counseling students ^a	213	45.0	5.0	-14.05	<0.001*	-1.00 [-1.17, -0.82]
Working adult females ^b	451	35.2	10.6	2.25	0.012*	0.15 [0.02, 0.29]
Trait anxiety						
Genetic counselors	402	37.59	8.55			
Genetic counseling students ^a	213	44.5	4.1	-13.53	<0.001*	-0.94 [-1.12, -0.77]
Working adult females ^b	451	34.8	9.2	4.59	<0.001*	0.31 [0.18, 0.45]

Scores can range from 20 to 80 on each subscale; higher scores indicate greater anxiety

^a Jungbluth et al. (2011)

^b Spielberger et al. (1983)

*significant at Bonferroni adjusted $\alpha=0.0125$

Table 3 ProQOL 5 means, standard deviations, ranges, and risk level classifications for participants

Scale	<i>M</i>	SD	Range	Risk level ^a		
				High	Average	Low
Compassion satisfaction	41.15	5.42	23–50	181 (45)	204 (51)	17 (4)
Burnout	21.11	5.33	10–40	77 (19)	273 (68)	52 (13)
Secondary traumatic stress	19.37	4.87	10–37	245 (61)	157 (39)	0 (0)

N=402

^a Presented as *n* (%); higher scores on the ProQOL 5 subscales indicate a greater risk for compassion fatigue and burnout, and greater potential for satisfaction or sense of achievement with respect to doing one's work well

of Allison (2001). The average imputation per person was 1.13, and no participant had more than three missing data points. Multiple regression analysis was run independently on all ten data sets, and the results were combined using Rubin's rule (1987).

Multiple regression analysis was chosen because it allows for determination of individual predictors' contribution to the variance observed in the dependent variable when the other predictors are held constant. An exploratory model fitting procedure was used to minimize the Akaike information criterion (AIC). The lower the AIC of a model, the better the model fits the data. The initial model contained all predictors. If removal of a predictor would decrease the AIC, the variable which would create the largest decrease was removed and the new model was calculated. This process continued until further removal of predictors would cause an increase in AIC.

Table 4 contains the initial and final regression models. The final model accounted for 48 % of the variance (adjusted $R^2=0.48$) in compassion fatigue, indicating approximately half of the variability in compassion fatigue risk among the genetic counselors is explained by the eight variables included in the final model. Four of the eight predictors were significant: (1) burnout ($p<0.001$); (2) compassion satisfaction ($p<0.001$); (3) trait anxiety ($p<0.001$); and (4) ethnicity other than Caucasian ($p=0.009$). In contrast, there were no statistically significant associations between compassion fatigue and country of practice, years of experience, compassion fatigue familiarity, or relationship status. Based on this model, genetic counselors with high burnout, high compassion satisfaction regarding how well they do their work, high trait anxiety, and ethnic background other than Caucasian are at increased risk for compassion fatigue.

Qualitative Analysis of Respondent Comments

The final survey item invited additional comments, and 42 individuals (10.4 %) responded. Their responses were categorized into four themes: (1) personal life stressors ($n=23$), (2)

burnout factors ($n=10$), (3) being new or isolated ($n=5$), and (4) compassion fatigue factors ($n=4$). Comments pertaining to personal life stressors were further categorized into five categories (general, death, pregnancy, parenting demands, and ABGC certification exam). Table 5 contains illustrative, verbatim examples of the themes and categories.

Theme 1: Personal Life Stressors

- Category 1: **General.** Seven respondents indicated most of their stresses come from outside of work and emphasized the importance of having a stable personal life so it does not affect their professional life negatively.
- Category 2: **Parenting demands.** Six respondents indicated parenting demands to be a major life stressor. One respondent reported taking a few years off from work because the demands from work and parenting were too much with which to deal. One respondent reported having considered leaving the field until his/her children were more grown up.
- Category 3: **Pregnancy.** Four respondents reported currently being pregnant and therefore feeling more anxious than they generally feel.
- Category 4: **Death.** Three individuals reported experiencing a recent loss of a significant person in their life and speculated that loss may have influenced their responses to the time-specific state anxiety scale and ProQOL 5 scale.
- Category 5: **Boards.** Three counselors reported feeling more stressed now because they are preparing for the ABGC certification and indicated they would not feel as stressed if they were not working and studying for the boards at the same time.

Theme 2: Burnout Factors

Ten respondents described several burnout factors, including increased patient load, increased

Table 4 Regression models of compassion fatigue

Variable	AIC	R ²	<i>b</i>	SE	<i>t</i>	<i>p</i>
Original model	1037.6	0.49				
Intercept			−4.99	3.28	−1.52	0.13
State Anxiety			−0.04	0.03	−1.26	0.18
Trait Anxiety			0.14	0.03	4.28	<0.001*
Compassion satisfaction			0.16	0.04	3.60	<0.001*
Burnout			0.59	0.06	10.70	<0.001*
Female			0.41	1.30	0.32	0.38
Age			0.03	0.04	0.79	0.29
Caucasian			−2.06	0.81	−2.54	0.02*
Practicing in the US			0.82	0.55	1.49	0.13
Years of experience			−0.06	0.05	−1.28	0.18
Working full-time			−0.50	0.54	−0.92	0.26
Patients seen per week			0.03	0.03	1.02	0.24
Received training about compassion fatigue			−0.25	0.43	−0.58	0.34
Familiarity with compassion fatigue			0.44	0.27	1.63	0.11
Number of GC Co-workers			0.02	0.04	0.57	0.34
Currently in a romantic relationship			0.90	0.48	1.88	0.07
Number of children			−0.25	0.25	−1.03	0.23
Final model	1026.6	0.48				
Intercept			−4.72	2.83	−1.67	0.10
Trait anxiety			0.12	0.03	4.32	< 0.001*
Compassion satisfaction			0.17	0.04	3.92	< 0.001*
Burnout			0.59	0.05	11.30	< 0.001*
Caucasian			−2.20	0.80	−2.76	0.009*
Practicing in the US			0.87	0.53	1.63	0.11
Years of experience			−0.03	0.02	−1.45	0.14
Familiarity with compassion fatigue			0.38	0.24	1.56	0.12
Currently in a romantic relationship			0.85	0.46	1.83	0.07

R² presented is adjusted R²

administrative and logistical demands, lack of support at workplace, poor relationships with colleagues and other professionals, and extra responsibilities such as teaching.

Theme 3: **Being New or Isolated**

Five respondents described being new to genetic counseling or being isolated at the workplace as current main stressors. One individual reported having doubts as a new genetic counselor that s/he made the right choice for a first job. Another respondent indicated being the only genetic counselor is stressful because the workload and lack of support are difficult for one counselor to handle.

Theme 4: **Compassion Fatigue Factors**

Four respondents described their experience with compassion fatigue. One respondent

explained s/he switched from a clinical job to a laboratory job after feeling symptoms of compassion fatigue. One respondent indicated often not “feeling for his/her patients” as much as in the past and does not feel as connected. Another respondent emphasized the importance of self-care before feeling empathy for patients in order to protect oneself from compassion fatigue.

Discussion

In this study, 402 practicing genetic counselors completed an anonymous, online survey designed to assess relationships between their state and trait anxiety, burnout, compassion satisfaction, selected demographic characteristics, and compassion fatigue risk. Major findings, study limitations, practice

Table 5 Respondents' additional comments ($n=42$)

Theme/Category	<i>n</i>	Verbatim example
Personal life stressors	23	
General	7	"I think that it is very important to have a stable personal life to not feel overwhelmed by being a clinical genetic counselor. It is often very stressful however, I feel that if I am having personal issues, it sometimes affects my professional life negatively as well."
Parenting demands	6	"I believe there are added challenges when you have children. I worked for 4 years prior to having a child and often worked later hours without hesitation. I now find myself more often torn between my personal and professional life: what a parent needs from me versus what I need to give as a parent myself. It makes it more challenging to address all parental concerns within the normal work day."
Pregnancy	4	"I am currently 8 months pregnant, so some of my responses to the 'right now' may be affected by pregnancy hormones and emotions."
Death	3	"I have experienced the recent death of my husband. That has had a significant impact on both my personal and professional coping."
Boards	3	"I am likely more stressed now than I otherwise would be because I am studying for my ABGC board exam. I am generally fairly relaxed in my work environment, but the stress of working full time and studying can be overwhelming at times."
Burnout factors	10	"I personally have been experiencing an increase in my anxiety level recently, possibly at least partly due to the increase in workload and demand for our services, with a decrease in our amount of staff (GCs and support staff), to the point where I sought some short-term counseling myself."
Being new or isolated	5	"Definitely more overall stress as a new counselor in a setting where I am the only counselor."
Compassion fatigue factors	4	"I'm not sure that I can separate what would be compassion fatigue or just stress from work. But I do find days where I feel like I want to care more about my patients but just don't have the energy. I do my job and go through the motions but some days I just feel like I don't really 'feel' for my patients as much as I might have in the past. There are days when I really connect with a patient but those are the days when I take their concerns home with me and dwell on them so that's not great either. I have always been more of an anxious person, but I'm not sure if this type of work makes it worse or not or vice versa, or if that's just who I am."

implications, and research recommendations are discussed in the following sections.

Compassion Fatigue in Genetic Counselors

Results from the genetic counselors' responses revealed about 61 % were at high risk for compassion fatigue, and another 39 % were at average risk. These results are consistent with prior research (Injeyan et al. 2011; Udipi et al. 2008) which found a majority of genetic counselor respondents were at moderate or high risk for compassion fatigue. Some of the genetic counselors in this investigation may have participated in the prior research; however, the sample obtained herein is larger than for either of the previous studies and contains individuals who completed their genetic counseling degree after one or both of those investigations. Thus, the prevalence of risk for compassion fatigue seems to be relatively stable over a several year period.

Approximately one-third of the respondents reported not having received any education about compassion fatigue. These findings suggest at least some genetic counselors may lack sufficient knowledge about compassion fatigue to be able to recognize its signs and take adequate measures to address their risk. As research shows one in four genetic counselors has considered leaving the field due to symptoms of compassion fatigue (Injeyan et al. 2011), the present data reaffirm the need for increased awareness and continuing education about this phenomenon in the genetic counseling profession.

Anxiety in Genetic Counselors

This is the first study to examine post-degree genetic counselors' state and trait anxiety levels and relate these levels to their compassion fatigue risk. The sample's mean levels of state and trait anxiety were significantly lower than levels reported by genetic counseling students (Jungbluth et al. 2011). Practicing genetic counselors are not under continuous formal evaluation of their academic and clinical performance as are genetic counseling students, which may partially explain their lower level of state anxiety. Moreover, practicing genetic counselors have "proven themselves" to a greater extent than students (e.g., having graduated from a genetic counseling program, obtained certification as a genetic counselor, obtained employment). Another possibility is genetic counselors with high anxiety leave the profession. Similarly, perhaps some of the students in the Jungbluth et al. (2011) study with the highest trait and/or state anxiety levels did not complete their genetic counseling degree, or may not be practicing as a genetic counselor. Additional research is needed to determine the relationship between attrition from graduate programs, career shifts, and anxiety.

As expected, the present sample of genetic counselors had significantly higher mean state and trait anxiety levels compared to working adult females, though the effects were in the minimal to small range. Given the nature of the profession, genetic counselors often face ambiguous and complex

situations that allow them little control (Runyon et al. 2010), which may increase state anxiety for some individuals but does not appear to have much of an effect overall. Jungbluth et al. (2011) speculated the genetic counseling profession may “select for” individuals with high trait anxiety as the characteristic is associated with careful attention to detail and perfectionistic efforts to “do one’s best.” The finding that genetic counselor participants in this study had higher trait anxiety than adult females supports this hypothesis, but the size of the difference may be smaller than Jungbluth et al. (2011) originally suspected.

Jungbluth et al. (2011) conducted their study in 2008. Therefore, some of the respondents in the present study (with ≤ 4 years work experience) may have been in their sample as well. The state and trait anxiety levels of respondents in the present study with ≤ 4 years work experience did not differ significantly from respondents with > 5 years of experience. These findings suggest either those individuals with high anxiety from the previous study did not participate in the present study, or their anxiety levels may have shifted over time. Perhaps genetic counselors’ anxiety levels decrease when anxiety-provoking stressors such as academic demands and clinical supervision are removed upon completion of training. Longitudinal research following students throughout their education and into their careers would increase understanding of their experience of anxiety throughout the professional lifespan.

Predictors of Compassion Fatigue

The results of the multiple regression yielded four significant predictors of risk for compassion fatigue: trait anxiety, compassion satisfaction, burnout, and ethnicity other than Caucasian. Together these factors predicted 48 % of the variance in compassion fatigue. These factors suggest the profile of a genetic counselor at highest risk for compassion fatigue is an individual who tends to have high trait anxiety, high burnout, high compassion satisfaction, and self-identifies as being of an ethnicity other than Caucasian. As these are correlational findings, causal connections cannot be made. Nevertheless the relationships among these variables largely make sense from both a theoretical and empirical perspective.

People with high trait anxiety are more likely to experience high state anxiety in situations that involve interactions with others in which their self-esteem is threatened (Spielberger et al. 1983). Given provider-patient interaction is an integral part of genetic counseling, genetic counselors are frequently exposed to situations in which they may feel limited in their ability to be helpful. For instance, inevitably, some of their interactions involve delivering bad news to patients, which in itself can create anxiety as well as compassion fatigue as the counselor engages empathically with the patient’s distress (Udipi et al. 2008). As anxiety can interfere with one’s quality

of performance, genetic counselors with a higher trait anxiety are then more likely to experience a diminished sense of control and efficacy which may make them more vulnerable to compassion fatigue.

Higher compassion satisfaction was part of the profile of genetic counselor respondents at higher risk for compassion fatigue. This finding is consistent with Stamm’s (2002) hypothesis that high compassion satisfaction and high compassion fatigue can co-exist within individuals, but it is contradictory to prior research demonstrating an inverse relationship (e.g., Conrad and Kellar-Guenther 2006; Injeyan et al. 2011, Slocum-Gori et al. 2013).

One might argue that genetic counselors with high compassion satisfaction are more motivated to do well in their work because they believe in its meaningfulness. Their motivation might backfire, however, if they face uncontrolled situations that threaten their sense of adequacy as professionals. Alternatively, perhaps the contradictory results are due to the fact that the present findings are based on compassion satisfaction in combination with variables which differ from those investigated by other researchers. Another possible explanation is that a factor(s) not investigated in the present study influenced the compassion satisfaction-compassion fatigue relationship. For instance, Kraus (2005) found self-care was significantly related to compassion satisfaction but not to compassion fatigue for mental health practitioners working with adolescent sex offenders. Perhaps the genetic counselors in the present study possessed self-care strategies to effectively build their compassion satisfaction but not to mitigate their compassion fatigue risk. More research is needed to determine the relationship among compassion satisfaction and other individual and environmental variables to compassion fatigue.

Consistent with previous research (Injeyan et al. 2011; Udipi et al. 2008), burnout was a significant predictor of compassion fatigue. Written comments from a number of participants support this finding, in particular, those describing workplace challenges associated with workload and logistical demands (classic risk factors for burnout). Arguably, these demands take away time and energy that should be invested in genetic counselors’ self-care to develop and maintain resilience regarding compassion fatigue. Figley (2002) asserts burnout depletes a caregiver’s ability to manage compassion fatigue, and vice versa. Ongoing efforts at the organizational and institutional levels need to be made to limit the workload to reasonable levels and provide a support system for genetic counselors.

Ethnicity also was part of the profile of individuals at higher risk for compassion fatigue, in particular, for genetic counselors who self-identified as being of an ethnic background other than Caucasian. There are a number of possible explanations for this finding. Social support in the workplace comprises a major protective factor for professionals (Viswesvaran et al. 1999). Some research suggests genetic

counselors who are persons of color may feel more isolated with respect to support (Schoonveld et al. 2007). Another possible explanation involves racial microaggressions in the workplace and in the profession. Microaggressions are “subtle, stunning, often automatic, and non-verbal exchanges which are ‘put downs’” (Pierce et al. 1978, p. 66), or “subtle insults (verbal, nonverbal, and/or visual) directed toward people of color, often automatically or unconsciously” (Solorzano et al. 2000). Such incidents could be experienced with coworkers as well as with patients. Given the vast majority of the genetic counselors are Caucasian, perhaps genetic counselors of other ethnic backgrounds are unintentionally exposed to less support and more disadvantages, which would increase their risk for burnout and trigger anxiety. Further research is needed to explore these speculations.

Study Limitations

This study was cross-sectional and correlational, and thus causal connections cannot be made between the variables measured. Also, although this is the largest study yet conducted on compassion fatigue risk among genetic counselors, an estimated response rate of 18.3 % raises questions about the generalizability of the findings to the population of interest. Perhaps, for example, genetic counselors experiencing more anxiety or compassion fatigue symptoms were more likely to participate, or conversely, to avoid participating in this study. The multiple regression analysis accounted for 48 % of the variance in compassion fatigue. Although this is a large percentage for a study of this nature, another 52 % of the variance could not be explained. Finally, the findings related to ethnicity, although statistically significant, should be interpreted with caution given the small number of participants who self-identified as other than Caucasian.

Practice Implications

The results of the current study demonstrate a need for interventions to address compassion fatigue risk among genetic counselors as well as the factors shown to be related to this risk. A significant percentage of respondents were at high risk for compassion fatigue, which is concerning as compassion fatigue when unrecognized and/or unmanaged effectively, has detrimental effects on a professional’s ability to provide patient care, sense of professional efficacy, and may prompt an eventual decision to leave the field. Logical venues for education about compassion fatigue include genetic counseling programs and continuing education (e.g., workshops, conferences). Indeed, these venues were mentioned by a number of respondents as sources of their familiarity with compassion fatigue. One respondent suggested implementation of an anonymous online forum available through the NSGC or CAGC where genetic counselors, especially those lacking

workplace support from colleagues and coworkers, could seek advice on difficult clinical experiences. Additionally, peer discussion, formal peer supervision, and interventions by professionals from outside the work setting could be implemented. Their focus could be on recognition and management of compassion fatigue and related factors of anxiety, burnout, and compassion satisfaction as well as identification of strategies for coping effectively with stressful clinical situations. Finally, genetic counselors should self-screen and seek additional support should they suspect their functioning is compromised by anxiety or their condition has extended beyond compassion fatigue to a more serious state.

Research Recommendations

Further studies should examine state and trait anxiety levels in genetic counselors as this is the only study to date that has examined these variables and their association with compassion fatigue risk. Longitudinal investigations would help to establish the extent to which state and trait anxiety vary with time and experience. Interview studies would elicit rich descriptions of factors that contribute to anxiety and to compassion fatigue as well as help to identify protective factors. Studies which incorporated a direct measure of knowledge related to compassion fatigue (e.g., a short quiz about definitions and warning signs) in addition to subjective self-assessments would allow more nuanced understanding of the state of genetic counselors’ knowledge base in this area. Research aimed at identifying other factors that account for compassion fatigue risk should also be done, as the variables investigated in the present study accounted for slightly less than half of the variance in this risk. For instance, additional investigations of genetic counselor personality traits (cf. Injeyan et al. 2011) and coping strategies (cf. Udipi et al. 2008) may increase understanding of their relationship to trait anxiety and compassion fatigue.

More studies of the relationship between compassion satisfaction and compassion fatigue are warranted, as are studies of the relationship between ethnicity and compassion fatigue. A possible question for investigation is the extent to which genetic counselors who identify as other than Caucasian experience less social support at work which theoretically places them at greater risk for compassion fatigue. Future studies could investigate non-Caucasian groups and other minority populations (e.g., male counselors, LGBT counselors) in particular to see if different factors predict compassion fatigue among these groups. Information obtained from such research will be critical in the development of a more comprehensive and reliable profile of genetic counselors who are at risk for compassion fatigue. Finally, interventions targeting genetic counselors with high state and trait anxiety and burnout risk could be designed to help them recognize and manage these

phenomena. Subsequent program evaluations could be done to assess the efficacy of such interventions.

Conclusion

Compassion fatigue is a state of detachment and isolation experienced when healthcare providers repeatedly engage with patients in distress. Compassion fatigue can hinder empathy and cause extreme tension. In this study, genetic counselors were all at either moderate or high risk of compassion fatigue. The profile of a genetic counselor at highest risk for compassion fatigue includes tending to have high trait anxiety, high burnout, high compassion satisfaction, and self-identifying as an ethnicity other than Caucasian. There is a need for interventions to address compassion fatigue risk and related factors. Education about compassion fatigue triggers, symptoms and coping strategies and fostering of workplace supports (e.g., peer supervision/consultation) may help genetic counselors identify and manage their compassion fatigue.

Acknowledgments This study was completed in partial fulfillment of the requirements for the first author's Masters of Science degree from the University of Minnesota. This work was supported in part by the Jane Engelberg Memorial Fellowship (JEMF) Student Research Award, provided by the Engelberg Foundation to the National Society of Genetic Counselors, Inc. We would like to thank the NSGC Engelberg Foundation for funding this research and the genetic counselors who participated in this study.

Dr. Christina Palmer served as Action Editor on the manuscript review process and publication decision.

Conflict of Interest Whiwon Lee, Patricia McCarthy Veach, Ian M. MacFarlane, and Bonnie S. LeRoy declare they have no conflict of interest.

Informed Consent All procedures followed were in accordance with the ethical standards of the responsible committee on human experimentation (institutional and national) and with the Helsinki Declaration of 1975, as revised in 2000. Informed consent was obtained from all participants for being included in the study.

Human and Animal Rights No animal or human studies were carried out by the authors for this article

References

- Alkema, K., Linton, J. M., & Davies, R. (2008). A study of the relationship between self-care, compassion satisfaction, compassion fatigue, and burnout among hospice professionals. *Journal of Social Work in End of Life and Palliative Care*, 4, 101–119.
- Allison, P. D. (2001). Working with missing values. *Journal of Marriage and Family*, 67, 1012–1028.
- Benoit, L., McCarthy Veach, P., & LeRoy, B. S. (2007). When you care enough to do your very best: genetic counselor experiences of compassion fatigue. *Journal of Genetic Counseling*, 16, 299–312.

- Cohen, J. (1988). *Statistical power analysis for the social sciences* (2nd ed.). Hillsdale: Lawrence Erlbaum Associates.
- Conrad, D., & Kellar-Guenther, Y. (2006). Compassion fatigue, burnout, and compassion satisfaction among Colorado child protection workers. *Child Abuse & Neglect*, 30, 1071–1080.
- Craig, C. D., & Sprang, D. (2010). Compassion satisfaction, compassion fatigue, and burnout in a national sample of trauma treatment therapists. *Anxiety, Stress, & Coping: An International Journal*, 23, 319–339.
- Eysenck, M. W. (1979). Anxiety, learning, and memory: a reconceptualization. *Journal of Research in Personality*, 13, 363–385.
- Figley, C. (1995). Compassion fatigue as secondary traumatic stress disorder: an overview. In C. Figley (Ed.), *Compassion fatigue: Coping with secondary traumatic stress disorder in those who treat the traumatized* (pp. 1–20). New York: Brunner/Mazel.
- Figley, C. (2002). Compassion fatigue: psychotherapists' chronic lack of self care. *Journal of Clinical Psychology*, 58, 1433–1441.
- Giarelli, E., & Tulman, L. (2003). Methodological issues in the use of published cartoons as data. *Qualitative Health Research*, 13, 945–956.
- Honaker, J., King, G., & Blackwell, M. (2010). Amelia II: A program for missing data (Version 1.2–13) [software]. Retrieved from <http://www.gking.harvard.edu/amelia/>.
- Hooper, C., Craig, J., Janvrin, D. R., Wetsel, M. A., & Reimels, E. (2010). Compassion satisfaction, burnout, and compassion fatigue among emergency nurses compared with nurses in other selected patient specialties. *Journal of Emergency Nursing*, 36, 420–427.
- Injeyan, M. C., Shuman, C., Shugar, A., Chitayat, D., Atenafu, E. G., & Kaiser, A. (2011). Personality traits associated with genetic counselor compassion fatigue: the role of dispositional optimism and locus of control. *Journal of Genetic Counseling*, 20, 526–540.
- Joinson, C. (1992). Coping with compassion fatigue. *Nursing*, 22, 116–122.
- Jungbluth, C., MacFarlane, I. M., McCarthy Veach, P., & LeRoy, B. S. (2011). Why is everyone so anxious?: an exploration of stress and anxiety in genetic counseling graduate students. *Journal of Genetic Counseling*, 20, 270–286.
- Kraus, V. I. (2005). Relationship between self-care and compassion satisfaction, compassion fatigue, and burnout among mental health professionals working with adolescent sex offenders. *Counseling and Clinical Psychology Journal*, 2, 81–88.
- Maslach, C. (1982). *Burnout, the cost of caring*. Englewood Cliffs: Prentice Hall.
- Maytum, J. C., Heiman, M. B., & Garwick, A. W. (2004). Compassion fatigue and burnout in nurses who work with children with chronic conditions and their families. *Journal of Pediatric Health Care*, 18, 171–179.
- McCarthy Veach, P., LeRoy, B. S., & Bartels, D. M. (2003). *Facilitating the genetic counseling process: A practice manual*. New York: Springer Verlag.
- NSGC (2012). *Professional Status Survey*. Accessed from www.nsgc.org, 10 November 2012.
- Peng, C.-Y. J., Harwell, M., Liou, S.-M., & Ehman, L. H. (2006). Advances in missing data analysis and implications for educational research. In S. Sawilowsky (Ed.), *Real data analysis* (pp. 31–78). Greenwich: Information Age.
- Pierce, C., Carew, J., Pierce-Gonzalez, D., & Wills, D. (1978). An experiment in racism: TV commercials. In C. Pierce (Ed.), *Television and education* (pp. 62–88). Beverly Hills: Sage.
- R Core Team. (2013). *R: A language and environment for statistical computing*. Vienna: R Foundation for Statistical Computing. <http://www.R-project.org/>.
- Rubin, D. B. (1987). *Multiple imputation for nonresponse in surveys*. New York: Wiley.
- Runyon, M., Zahm, K. W., McCarthy Veach, P., MacFarlane, I. M., & LeRoy, B. S. (2010). What do genetic counselors learn on the job? A

- qualitative assessment of professional development outcomes. *Journal of Genetic Counseling*, 19, 371–386.
- Schlomer, G. L., Bauman, S., & Card, N. A. (2010). Best practices for missing data management in counseling psychology. *Journal of Counseling Psychology*, 57, 1–10.
- Schoonveld, C. K., McCarthy Veach, P., & LeRoy, B. S. (2007). What is it like to be in the minority? Ethnic and gender diversity in the genetic counseling profession. *Journal of Genetic Counseling*, 16, 53–69.
- Slocum-Gori, S., Hemsworth, D., Chan, W. W., Carson, A., & Kazanjian, A. (2013). Understanding compassion satisfaction, compassion fatigue, and burnout: a survey of the hospice palliative care workforce. *Palliative Medicine*, 27, 172–178.
- Solorzano, D., Ceja, M., & Yosso, T. (2000). Critical race theory, racial microaggressions, and campus racial climate: the experiences of African American college students. *The Journal of Negro Education*, 69, 60–73.
- Spielberger, C. D., Gorsuch, M. L., Lushene, R., Vagg, P. R., & Jacobs, G. A. (1983). *Manual for the state-trait anxiety inventory for adults: Sampler set*. Redwood City: Mind Garden Consulting Psychologist Press, Inc.
- Spielberger, C. D., Diaz-Guerrero, R., & Strelau, J. (1990). *Cross-cultural anxiety: Volume 4*. New York: Hemisphere Publishing Corporation.
- Sprang, G., Clark, J. J., & Whitt-Woosley, A. (2007). Compassion fatigue, compassion satisfaction, and burnout: factors impacting a professional's quality of life. *Journal of Loss and Trauma: International Perspectives on Stress & Coping*, 12, 259–280.
- Stamm, B. H. (2002). Measuring compassion satisfaction as well as fatigue: developmental history of the compassion satisfaction and fatigue test. In C. R. Figley (Ed.), *Treating compassion fatigue* (pp. 107–119). NY: Brunner-Routledge.
- Stamm, B. H. (2010). *The concise ProQOL manual* (2nd ed.). Pocatello: ProQOL.org.
- Udipi, S., McCarthy Veach, P., Kao, J., & LeRoy, B. S. (2008). The psychic cost of empathic engagement: personal and demographic predictors of genetic counselor compassion fatigue. *Journal of Genetic Counseling*, 17, 459–471.
- Viswesvaran, C., Sanchez, J. I., & Fisher, J. (1999). The role of social support in the process of work stress: a meta-analysis. *Journal of Vocational Behavior*, 54, 314–334.