

Personality Traits Associated with Genetic Counselor Compassion Fatigue: The Roles of Dispositional Optimism and Locus of Control

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Abstract Compassion fatigue (CMF) arises as a consequence of secondary exposure to distress and can be elevated in some health practitioners. Locus of control and dispositional optimism are aspects of personality known to influence coping style. To investigate whether these personality traits influence CMF risk, we surveyed 355 genetic counselors about their CMF, locus of control orientation, and degree of dispositional optimism. Approx-

imately half of respondents reported they experience CMF; 26.6% had considered leaving their job due to CMF symptoms. Mixed-method analyses revealed that genetic counselors having an external locus of control and low optimism were at highest risk for CMF. Those at highest risk experienced moderate-to-high burnout, low-to-moderate compassion satisfaction, and tended to rely on religion/spirituality when coping with stress. CMF risk was not influenced by years in practice, number of genetic counselor colleagues in the workplace, or completion of graduate training in this area. Recommendations for practice and education are outlined.

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Introduction

“Compassionate action involves working with ourselves as much as working with others.” ~ Pema Chodron

Compassion fatigue is a unique stress reaction that affects the professional helper’s ability to extend empathy (Figley 2002a). The term first appeared in the nursing literature to describe a state of detachment and isolation experienced by healthcare providers who interact with patients in distress (Joinson 1992). Charles Figley suggests that compassion fatigue is triggered by exposure to, and empathic engagement with, clients who experience suffering (Figley 2002b). Compassion fatigue is an extreme state of tension and preoccupation with the suffering of those being helped to the degree that it is traumatizing for the helper (Figley 2002a). While symptoms of compassion fatigue may

overlap with those of burnout, the two reactions are distinct, and burnout may be an important risk factor for compassion fatigue (Collins and Long 2003a; Udipi et al. 2008). Whereas compassion fatigue is related to a worker's interaction with a client's traumatic material, burnout is related to work environment (Collins and Long 2003a; Maslach 1982; Pryce et al. 2007). In addition to a more rapid and acute onset than burnout, compassion fatigue involves an increased sense of helplessness and isolation from supporters, as well as an inability to empathically engage after exposure(s) to client suffering (Collins and Long 2003a; Figley 1995, 2002b; Pryce et al. 2007). The helper's own efforts to empathize ultimately lead to an erosion of the helper's compassion coupled with a variety of symptoms indicative of post-traumatic stress disorder (PTSD).

The DSM-IV specifies that in addition to experiencing a stressful event first-hand, "witnessing" or "learning about" a traumatizing event experienced by a close associate comprises a diagnostic criterion of PTSD (American Psychiatric Association 1994). There is evidence that those who assist others in a professional capacity are at risk for developing PTSD reactions (Catherall 2007; Figley 1999; Gentry et al. 2002). The term "secondary traumatic stress" refers to the presence of PTSD-like symptoms in a caregiver and results from the stress associated with helping, or wanting to help, a traumatized or suffering person (Figley 1999). The phenomenon of secondary stress and its satellite stress disorders are referred to by several names including secondary traumatization, co-victimization, secondary survivor, vicarious traumatization, and compassion fatigue (Figley 1995, 1999; McCann and Pearlman 1999).

In the absence of research that specifically investigates compassion fatigue and individual differences in reactions to stress, it is valuable to extrapolate from relevant PTSD literature. It has been shown that only 8% of traumatized men and 20% of traumatized women will develop post-traumatic stress reactions after a traumatic exposure (Schnurr and Vielhauer 1999). What causes individual differences in coping strategies and propensity for despair? Reactions to stress depend not only on the characteristics of the stressful event, but also on characteristics of the individual who responds to the stressor (Hurst and Koplín-Baucum 2005). Several authors have suggested that an individual's personality characteristics determine their ability to cope with crisis, and may thus function as a risk factor for post-traumatic stress (Schnurr and Vielhauer 1999).

Personality has been defined as a constellation of attributes that describe and predict an individual's behavior across situations and over time (Schnurr and Vielhauer 1999). It is impossible to separate oneself from one's unique

worldview, which is shaped by such elements as culture, socio-economic status, social network, religious adherence, education and other facets that inform character and personal biases. The counselor therefore brings his or her own characteristics and worldview to patient interactions, including personal beliefs, ideological systems, coping mechanisms, defensive styles, and personality traits (Wilson and Lindy 1999). The personality traits of locus of control and dispositional optimism have been identified as components that shape an individual's strategies for coping with stress (Folkman 1984; Killian 2008; Scheier and Carver 1993; Stamm 2002).

Rotter (1966) has suggested that the degree to which people believe their lives are under their own control is an important variable of personality, which varies from person to person. Locus of control refers to the extent to which individuals attribute outcomes to internal or external forces (Rotter 1966). Individuals with a high internal locus of control believe events result primarily from their own behavior and resources. Those with a high external locus of control believe that forces out of their control, such as luck, fate, or powerful others, primarily determine events. Locus of control has been shown to exert an influence on vulnerability to vicarious trauma (Shakespeare-Finch 2000), and individuals with an internal control orientation have previously been found to suffer less from secondary traumatic stress (Lucero 2003; Schnurr and Vielhauer 1999). A qualitative, interview-based investigation has suggested that genetic counselors believe personality, particularly the desire to "control everything," plays a key role in increasing their chances for developing compassion fatigue (Benoit et al. 2007).

Dispositional optimism refers to generalized outcome expectancies that good things, rather than bad, will happen in the future. In contrast, dispositional pessimism refers to the tendency to expect negative outcomes in the future (Taylor 1998). General expectancies, whether for positive or negative outcomes, are important dimensions of personality that persist over time and across various contexts (Scheier and Carver 1993). Compared to dispositional pessimism, optimism has been found to be more beneficial for physical and psychological well being, as optimists routinely maintain higher levels of subjective well being during times of stress, recover more quickly after illness, and cope better when they believe their desired outcome has not been achieved (Scheier et al. 1994).

To date, no studies have investigated dispositional optimism, locus of control, or any other aspects of genetic counselor personality that may confer vulnerability or resilience to compassion fatigue. Several previous studies have evaluated compassion fatigue in a variety of helping professions, including social work, child welfare, psychotherapy, mental health work, pastoral care, nursing and

others (Arafa et al. 2003; Collins and Long 2003a; Figley 2002a; Maytum et al. 2004; Pryce et al. 2007; Taylor et al. 2006). Recently, two studies investigated compassion fatigue in genetic counselors. In an interview-based study, Benoit and colleagues (2007) found their sample of 12 genetic counselors identified their profession as being particularly susceptible to compassion fatigue. Udipi and colleagues (2008) surveyed 222 genetic counselors and found that 83% were at moderate-to-high risk for developing compassion fatigue. Respondents at higher risk for compassion fatigue tended to report being burnt-out, used self-criticism and giving up to manage stress, experienced larger patient caseloads and clinically distressing situations, and were more likely to use religion as a coping mechanism (Udipi et al. 2008).

Purpose of the Present Study

The purpose of this study was to investigate the prevalence of compassion fatigue in practicing genetic counselors, and to determine whether dispositional optimism and locus of control are associated with compassion fatigue risk. We hypothesized that dispositional optimism and locus of control would be correlated significantly with compassion fatigue risk. Specifically, we expected high levels of dispositional optimism and an internal locus of control to correlate with low levels of compassion fatigue risk. A secondary aim was to investigate whether genetic counselors had training and/or workplace initiatives in place to address compassion fatigue.

Method

Sample and Procedures

Study participants were practicing genetic counselors with a clinical Master's degree in genetic counseling. A self-administered questionnaire was electronically distributed to genetic counselors via the National Society of Genetic Counselors [NSGC] ($n=1,154$), and the Canadian Association of Genetic Counselors [CAGC] ($n=234$) listserves. In an effort to capture the perspectives of some genetic counselors who were not members of the NSGC or CAGC, the email addresses of genetic counselors currently working in Ontario ($n=49$) were collected and anonymized; respondents were invited to participate through individual e-mail invitations. Invitations to participate in the study were sent in April 2009, and again in May 2009. The online survey was made available to potential respondents for 6 weeks.

A total of 394 individuals responded to the survey invitation. Assuming that the maximum number of NSGC

and CAGC members received the recruitment e-mail, the study response rate was 27.5%. This is a probable underestimation of response rate, given the likelihood that not all NSGC and CAGC members accessed the recruitment e-mail via listserv, and some genetic counselors may be members of both listserves. In an effort to maintain consistency among the respondents' educational backgrounds, 39 respondents without a clinical Master's degree in genetic counseling were excluded from the data analyses, leaving a sample size of 355.

Instrumentation

Three well-established tests were used to gather data: the Professional Quality of Life Test R-IV (Stamm 2005), the Revised Life Orientation Test (Scheier et al. 1994), and Rotter's Locus of Control scale (Rotter 1966). Additionally, investigator-developed multiple choice and open-ended questions were included. These questions aimed to gather demographics, to elucidate the extent to which participants had compassion fatigue addressed in their graduate training programs, the availability of, and interest in, workplace supports that address this caregiver stress, and participants' self perceptions of whether they are currently experiencing compassion fatigue. The questionnaire is included in Appendix I. The following definition of compassion fatigue was developed based on pertinent literature and was included at the beginning of the questionnaire:

Compassion fatigue is a state experienced by those helping people in distress; it is a state of tension and preoccupation with the suffering of those being helped to the degree that it is traumatizing for the helper. Caregivers may exhibit several symptoms including: hopelessness, a decrease in the experience of pleasure, stress and anxiety, and a persistent negative outlook. Experiencing compassion fatigue can also cause a decrease in productivity, the inability to focus, avoidance of a client's traumatic material, and the development of new feelings of ineptitude and self-doubt.

Professional Quality of Life Scale (ProQOL R-IV)

The Professional Quality of Life Scale [ProQOL R-IV] is a 30-item, 6-point Likert scale measuring the frequency of subjective experiences and emotions in the previous month (Stamm 2005). No changes were made to the questionnaire. Three subscales measure compassion fatigue, burnout, and compassion satisfaction.

The compassion fatigue subscale assesses work-related secondary exposure to the distress of patients with whom one is empathically engaged. Sample items include: "I am

preoccupied with more than one person I counsel,” and “I feel as though I am experiencing the trauma of someone I have counseled.” The burnout subscale measures feelings of hopelessness and difficulties in dealing with work, or in doing one’s job effectively. Sample questions include: ‘I feel trapped by my work as a genetic counselor,’ and ‘Because of my work as a genetic counselor, I feel exhausted.’ The compassion satisfaction subscale assesses the pleasure one derives from being able to do one’s work well. Sample items include: “I believe I can make a difference through my work,” and “I have thoughts that I am a ‘success’ as a genetic counselor.”

ProQOL R-IV subscale scores range from 0 to 50, with higher scores indicating greater frequency of the phenomenon being assessed. Based on data collected from 1,180 individuals, the mean score for the compassion fatigue subscale is 13 (SD=6.3), with 25% of individuals scoring below 8, and 25% of individuals scoring above 17 (Stamm 2005). With respect to burnout, the mean score is 22 (SD=6.8), with 25% of respondents scoring below 19, and 25% scoring above 28. Regarding compassion satisfaction, the mean score is 37 (SD=7.3), with 25% of individuals scoring less than 32, and 25% scoring greater than 41. For compassion fatigue, burnout, and compassion satisfaction, individuals scoring above the 75th percentile represent those at highest potential, and those scoring below the 25th percentile are at lowest potential for the phenomenon being assessed (Stamm 2005).

The ProQOL R-IV has well-established internal consistency and validity (Stamm 2005) with alpha reliabilities of 0.83 (compassion fatigue), 0.75 (burnout), and 0.88 (compassion satisfaction). Discriminant validity among subscales is reported for compassion fatigue and compassion satisfaction ($r=-0.15$), burnout and compassion satisfaction ($r=-0.23$), and compassion fatigue and burnout ($r=-0.59$). The ProQOL has been previously used to investigate compassion fatigue in various helper professions including child protection workers, rabbis working in pastoral care in a hospital setting, oncology social workers, and genetic counselors (Conrad and Kellar-Guenther 2006; Simon et al. 2007; Taylor et al. 2006; Udipi et al. 2008).

Revised Life Orientation Test (LOT-R)

The revised Life Orientation Test (LOT-R) is a 10-item, 5-point Likert scale that assesses the personality disposition of optimism versus pessimism (Scheier et al. 1994). Sample items include: “In uncertain times, I usually expect the best,” and “Overall, I expect more good things to happen to me than bad.” Items that are keyed in a negative direction are reverse coded before scoring; these questions include: “If something can go wrong for me, it will,” and “I rarely count on good things happening to me.” Subscale scores

range from 0 to 24, with higher scores representing a higher degree of dispositional optimism (Scheier et al. 1994). Published mean scores for the LOT-R range between 14 and 17 (Carroll and Arthur 2010; Kostka and Jachimowicz 2010; Scheier et al. 1994).

Psychometric data for the LOT-R include internal consistency reliabilities ranging from 0.78 to 0.82, and test-retest reliability from 0.75 to 0.84 over a 4-week period (Dember et al. 1989; Scheier et al. 1994). Previous studies provide evidence that the LOT-R is a psychometrically sound instrument across various samples including women at risk for postpartum depression, medical students, and men undergoing coronary bypass surgery (Carver and Gaines 1987; Scheier et al. 1989; Stewart et al. 1995).

Rotter's Locus of Control Scale (Rotter's LOC Scale)

Rotter’s Locus of Control (LOC) scale is a forced choice questionnaire designed to measure a respondent’s perceived ability to influence events in his or her own life (Rotter 1966). This self-report scale consists of 29 pairs of statements, including 6 filler pairs. One point is given for each statement selected that represents an external locus of control. Scores can range from 0 to 23, with scores above 11 indicating an external locus of control (Rotter 1966).

Rotter originally reported internal consistency reliabilities ranging from 0.65 to 0.79, and subsequent studies have confirmed its high reliability, with an alpha score of 0.80 (Dixon et al. 1976; Lange and Tigemann 1981). Rotter’s LOC scale is a widely used measure of internal-external control expectancies and has been implemented in studies of various health care professionals, including physicians and nursing students (Libert et al. 2003, 2007; Ponto 1999).

Data Analysis

The study consisted of a mixed-methods design. Descriptive statistics (means, standard deviations, and percentages) were calculated for demographics and responses to the ProQOL R-IV, LOT-R, and Rotter’s LOC scale. In order to include individuals who scored in the moderate range in our analyses, compassion fatigue score was dichotomized by creating two groups for analyses: low-to-moderate risk was defined as scores of 0–13 on the ProQOL R-IV, and moderate-to-high risk as a score greater than 13. A cut score of 13 reflects the mean compassion fatigue score used by Stamm in the ProQOL R-IV (Stamm 2005). Burnout scores were similarly dichotomized by defining the low-to-moderate risk group as scoring between 0 and the ProQOL R-IV mean score of 22, and the moderate-to-high risk group as scoring above 22. Lastly, compassion satisfaction scores were dichotomized; the low-to-moderate potential group was defined as having a compassion satisfaction

score between 0 and the ProQOL R-IV mean score of 37, and the moderate-to-high potential group was defined as having a compassion satisfaction score of 38 and higher.

Participants' written responses indicating the presence of workplace initiatives that address compassion fatigue were number coded (employee assistance program = 1, other = 2, none = 3, unsure = 4) for quantitative analysis. The results of question 18, which invited participants to comment on their experiences of compassion fatigue, will be reported separately (Appendix I).

In investigating the association between compassion fatigue and dispositional optimism, co-linearity between variables was established by means of correlational analysis between dispositional optimism and compassion fatigue risk. In order to further investigate the association between these variables, the mean LOT-R score was used to dichotomize optimism scores in the subsequent chi-square analyses.

Chi-square tests of independence were performed to examine the relationship between moderate-to-high risk of compassion fatigue with each of the following covariates of interest: years of experience; number of genetic counselors in workplace; self-identification as religious; importance of religion/spirituality in dealing with stress; workplace initiatives that address compassion fatigue; completion of graduate work on compassion fatigue; thoughts of leaving one's job due to symptoms of compassion fatigue; self-perception of experiencing compassion fatigue; burnout; compassion satisfaction; dispositional optimism; and locus of control. The joint association of these variables to compassion fatigue was investigated by means of a logistic regression analysis. Covariates of interest investigated at univariate analysis whose *p*-values were 0.20 or less were considered as potential compassion fatigue risk factors. Selected covariates were included in multivariable logistic regression analysis using a backward elimination method, and only those with *p*-values of 0.05 or less were retained in the final model.

Additional chi-square tests were conducted to evaluate the relationships of burnout and compassion satisfaction to both dispositional optimism and locus of control, as well as between dispositional optimism and locus of control. For the statistical analysis, SAS (version 9.1; SAS Institute Inc., Cary, NC) was used. An alpha level ≤ 0.05 was considered statistically significant.

Data generated from the ProQOL R-IV was compared to the results of other studies investigating compassion fatigue using the ProQOL test. These include the results of compassion fatigue assessment in the following helper professions: genetic counselors, child protection workers, rabbis working in pastoral care in a hospital setting, and therapists (Conrad and Kellar-Guenther 2006; Linley and Joseph 2007; Taylor et al. 2006; Udipi et al. 2008).

Results

Respondent Characteristics

The majority of respondents ($n=327$ or 94.5%) were female, as expected for the profession as a whole (NSGC 2009). Genetic counselor characteristics are shown in Table 1. Respondents were asked a variety of questions regarding compassion fatigue, and their responses are summarized in Table 2.

Quantitative Analyses

Table 3 contains a summary of the means, standard deviations, and ranges for the sample's score on the Pro-

Table 1 Respondent characteristics

Item	Number of respondents (<i>n</i>)	%
Country of practice	346	
United States	244	70.5
Canada	99	28.6
Other	3	0.9
Years of experience	348	
Less than 1 year	37	10.6
1–4 years	114	32.8
5–10 years	102	29.3
Greater than 10 years	95	27.3
Current practice setting (multiple could be endorsed)	346	
Prenatal	178	51.5
Pediatric	141	40.8
Cancer	118	34.1
Adult	95	27.5
Other	67	19.4
Number of other genetic counselors in workplace	345	
None	79	22.9
1–2	116	33.6
3–5	77	22.3
6–10	39	11.3
More than 10	34	9.9
Self-perception as religious/spiritual	344	
Yes	180	52.3
No	122	35.5
Unsure	42	12.2
Importance of spirituality/religiousness in coping with stress	344	
“Moderately”-to-“very important”	151	43.9
“Not very”-to-“not at all important”	185	53.8
Unsure	8	2.3

Table 2 Genetic counselor responses pertaining to compassion fatigue

Item	Number of respondents (n)	%
Self-perception of experiencing compassion fatigue	341	
Yes	184	54.0
No	63	18.4
Unsure	94	27.6
Thoughts of leaving current position due to symptoms of compassion fatigue	339	
Yes	90	26.6
No	231	68.1
Unsure	18	5.3
Plan to leave current position due to symptoms of compassion fatigue	142	
Yes	11	7.8
No	103	72.5
Unsure	28	19.7
Compassion fatigue training in graduate program	344	
Yes	73	21.2
No	228	66.3
Don't Recall	43	12.5
If compassion fatigue addressed in graduate program, Median # of hours: 2.0 Mean # of hours: 9.3 Range: 0.25-180	72	
Have support systems that address compassion fatigue available in workplace	311	
Yes	191	61.4
No	89	28.6
Unsure	31	10.0
Would utilize initiatives that address compassion fatigue in workplace	331	
Yes	141	42.7
No	22	6.6
Unsure	168	50.7
Interested in further education on compassion fatigue	339	
Yes	171	50.4
No	42	12.4
Unsure	126	37.2

QOL and LOT-R. Specifically, the mean compassion fatigue score was 11.90 (SD=6.49), with 75 (16.8%) respondents scoring in the high risk range, 163 (57.0%) scoring in the moderate risk group, and 75 (26.2%) scoring in the low risk range. Regarding burnout, the mean sample score was 26.52 (SD=16.04), with 123 (44.4%) respondents in the high risk group, 135 (48.7%) scoring in the moderate risk range, and 19 (6.9%) in the low risk group. The mean compassion

Table 3 Means, standard deviations, and ranges for the Pro-QOL and LOT-R

Subscale	X	SD	Range	Possible range
Pro-QOL				
Compassion Fatigue	11.90	6.49	0–37	0–50
Burnout	26.52	16.04	10–41	0–50
Compassion Satisfaction	38.10	6.18	18–50	0–50
LOT-R	16.38	4.06	1–24	0–24

satisfaction score for the group was 38.10 (SD=6.18). Specifically, 58 (20.4%) respondents had high compassion satisfaction, 163 (57.4%) were in the moderate range, and 63 (22.2%) had low compassion satisfaction. The mean dispositional optimism score for this study sample was 16.38 (SD=4.06). Regarding Rotter's LOC scale, 122 (55.5%) respondents scored within the internal locus of control range, and 98 (44.5%) scored within the external locus of control range.

An inverse association between dispositional optimism and compassion fatigue risk was established ($r=-0.40$, $p<0.0001$). Table 4 shows a statistically significant association between moderate-to-high risk of compassion fatigue and both internal locus of control ($p<0.005$, $\chi^2(1)=8.89$, odds ratio = 2.35), and dispositional optimism score less than 16.4 ($p<0.0001$, $\chi^2(1)=15.24$, odds ratio = 2.64). Analysis also revealed a statistically significant association between low-to-moderate compassion satisfaction and both internal locus of control ($p<0.001$, $\chi^2(1)=11.38$, odds ratio = 0.384), and dispositional optimism less than 16.4 ($p<0.0005$, $\chi^2(1)=12.49$, odds ratio = 2.37). In contrast, there were no statistically significant associations between burnout and either locus of control ($p>0.20$, odds ratio = 0.655), or dispositional optimism ($p>0.40$, odds ratio = 0.795). The relationship between dispositional optimism less than 16.4 and internal locus of control was, however, statistically significant ($p<0.0001$, $\chi^2(1)=30.84$, odds ratio = 0.205).

Associations between compassion fatigue and a number of covariates of interest are indicated in Table 5. Moderate-to-high compassion fatigue risk was found to be significantly associated with the following variables: respondents' perception of experiencing compassion fatigue ($p<0.0001$, $\chi^2(1)=29.96$, odds ratio = 5.73); importance of religion/spirituality in dealing with stressful situations ($p<0.05$, $\chi^2(1)=5.14$, odds ratio = 0.495); thoughts of leaving job due to symptoms of compassion fatigue ($p<0.0001$, $\chi^2(1)=34.73$, odds ratio = 5.18); low-to-moderate risk of burnout ($p<0.0005$, $\chi^2(1)=14.26$, odds ratio = 0.261); low-to-moderate compassion satisfaction ($p<0.001$, $\chi^2(1)=11.91$, odds ratio = 2.388). In contrast, no significant association was identified between moderate-to-high compassion fatigue risk and the following variables: years of experience as a genetic counselor ($p>0.20$); number of

Table 4 Results of chi-square analyses of compassion fatigue (CMF) risk vs. dispositional optimism and locus of control

	Low-to-moderate CMF risk		Moderate-to-high CMF risk		P-value	Odds ratio
	n	%	n	%		
Total # of Respondents (n=286)	179		107			
Dispositional optimism					*<.0001	2.64
Less than 16.4	35.2	63	58.9			
Greater than 16.4	116	64.8	44	41.1		
Total # of Respondents (n=214)	134		80			
Locus of control					*.0029	2.35
Internal	85	63.4	34	42.5		
External	49	36.6	46	57.5		

genetic counselor colleagues in the workplace ($p=0.30$); self-perception as religious/spiritual ($p=>0.10$); completion of graduate work in compassion fatigue ($p=>0.05$).

Of 263 respondents with data on all variables of interest, a stepwise multivariate logistic regression analysis was conducted using moderate-to-high compassion fatigue risk as the criterion. As summarized in Table 6, the following factors were significantly associated with moderate-to-high risk of compassion fatigue: moderate-to-high risk for burnout ($p=0.0010$, odds ratio = 3.61); low-to-moderate potential for compassion satisfaction ($p=<0.005$, odds ratio = 2.21); dispositional

optimism score greater than 16.4 ($p=<0.01$, odds ratio = 0.470); religion being moderately-to-very important in dealing with stressful situations ($p=<0.05$, odds ratio = 2.21).

Discussion

Compassion Fatigue in Genetic Counseling

Results of this study confirm that genetic counselors are at risk for compassion fatigue. As per the ProQOL R-IV,

Table 5 Results of chi-square analyses of compassion fatigue (CMF) risk vs. covariates of interest

	Low-to-moderate CMF risk		Moderate-to-high CMF risk		P-value	Odds ratio
	n	%	n	%		
Total # of Respondents (n=207)	119		88			
Self-perception of Experiencing CMF					*<.0001	5.73
Yes	72	60.5	79	89.8		
No	47	39.5	9	10.2		
Total # of Respondents (n=271)	176		95			
Thoughts of Leaving Job due to Symptoms of CMF					*<.0001	5.18
Yes	28	15.9	47	49.5		
No	148	84.1	48	50.5		
Total # of Respondents (n=282)	176		106			
Importance of religion/spirituality in dealing with stress					*.0234	0.495
“Moderately”-to-“very important”	127	72.2	89	84.0		
“Not very”-to-“not at all important”	49	27.8	17	16.0		
Total # of Respondents (n=272)	170		102			
Burnout					*.0002	0.261
Low-Moderate Risk	50	29.4	10	9.8		
Moderate-High Risk	120	70.6	92	90.2		
Total # of Respondents (n=278)	176		102			
Compassion Satisfaction					*.0006	2.39
Low-Moderate potential	61	34.7	57	55.9		
Moderate-High potential	115	65.3	45	44.1		

Table 6 Multivariable logistic regression results for predictors of moderate-to-high compassion fatigue risk

Covariate of interest	Odds ratio	P-value	95% Confidence interval
Burnout (Moderate-to-High Risk)	3.61	0.0010	1.68–7.75
Compassion Satisfaction (Low-to-Moderate Potential)	2.21	0.0048	1.27–3.83
Dispositional Optimism (Greater than 16.4)	0.470	0.0067	0.27–0.81
Importance of Religion (Moderately-to-Very Important)	2.21	0.0227	1.12–4.35

Total number of respondents was 263

16.8% of respondents were at high risk for compassion fatigue, and an additional 57.0% were in the moderate risk range. These results corroborate findings of previous studies, which suggest that genetic counselors are at risk for compassion fatigue as a result of their work (Benoit et al. 2007; Udipi et al. 2008).

A number of previous studies have evaluated compassion fatigue risk using the ProQOL. While these studies differ from the present research with respect to particular methods, including questionnaire version, they offer a context within which to conceptualize genetic counselor compassion fatigue risk. Compared with helping professionals in other studies, genetic counselors appear to experience less compassion fatigue than both psychiatric nurses (Monroe 2008), and child protection workers (Conrad and Kellar-Guenther 2006), but more compassion fatigue than rabbis working in a pastoral care setting (Taylor et al. 2006). Genetic counselors in the present study also had a higher mean compassion fatigue score (mean = 11.9, SD=6.48) on the ProQOL than a similarly sized sample of therapists working in the United Kingdom (mean = 10.3, SD=4.80), and private practice psychologists practicing in North America (mean = 8.67, SD=5.20) (Clarke 2008; Linley and Joseph 2007).

Personality Traits Associated with Vulnerability and Resilience

This is the first study to examine genetic counselor personality traits in relation to their compassion fatigue risk. The landmark article on compassion fatigue in 1992 stated that “caregivers’ personalities lead them toward it” (Joinson 1992, p.116). Genetic counselors’ personalities likely interact with their clinical work to produce compassion fatigue. As we hypothesized, the results of the present study indicate that low dispositional optimism and external locus of control are related to higher compassion fatigue risk in genetic counselors.

In the present study, genetic counselors’ mean dispositional optimism score was 16.4, which does not differ from

published mean LOT-R scores for the general population (Carroll and Arthur 2010; Kostka and Jachimowicz 2010; Scheier et al. 1994). While correlational analysis is a powerful statistical method for analyzing the link between optimism and compassion fatigue risk, in this study we investigated this association further by means of a stepwise logistic regression analysis. While this approach may have comparatively less statistical power (M. F. Scheier, personal communication, October 6 2010), it enabled us to assess the effects of optimism in context with other personal and demographic variables. In the presence of these variables, genetic counselors that are more optimistic were less than half as likely to experience compassion fatigue than their less optimistic colleagues.

Overall, optimists tend to have better physical health, higher levels of psychological well being, and exhibit more social support seeking behaviors than pessimists (Scheier and Carver 1992). These benefits have been shown to increase resilience to compassion fatigue (Collins and Long 2003a), and they may mitigate the effects of secondary traumatization (Lucero 2003; Harrison and Westwood 2009). Substantial research has demonstrated that optimists and pessimists behave differently when faced with a stressor. Peoples’ expectancies about whether an outcome will be positive or not provide a basis for engaging in two different types of behavior: continue to strive, or giving up (Scheier and Carver 1993). The use of behavioral disengagement as a coping mechanism, which is more common to pessimists, has been shown to be more common in genetic counselors experiencing compassion fatigue (Udipi et al. 2008). Furthermore, whereas optimists will persist in their efforts to solve a problem after a failed attempt, pessimists are more likely to use avoidance tactics and experience feelings such as shame, anger, and resentment (Scheier and Carver 1992). Indeed, it has been shown that pessimists engage in more self-blaming behavior than do optimists (Scheier and Carver 1992). This may explain why genetic counselors with high compassion fatigue risk tend to use self-blame as a coping mechanism (Udipi et al. 2008). Optimistic genetic counselors may use more effective coping strategies to manage symptoms of compassion fatigue. For example, rather than giving up, using self-criticism, or disengaging from their patients, optimistic genetic counselors may use active coping techniques such as problem solving, seeking social support, and engaging in self-reflection after difficult cases.

With respect to control orientation, genetic counselors with an external locus of control were more than two times as likely to be at moderate-to-high risk of compassion fatigue than their colleagues with an internal locus of control. An internal control orientation may confer resilience to compassion fatigue by means of a dual mechanism. Firstly, those with an internal locus of control perceive

themselves as having control over outcomes, which decreases feelings of helplessness and fosters empowerment. Secondly, internally oriented persons are more likely to use active coping mechanisms, which have been associated with better adjustment to stress (Folkman 1984). In contrast, persons who are externally oriented may be more vulnerable to compassion fatigue reactions since they tend to experience higher anticipatory anxiety in the face of a stressor (Li and Chung 2009), use less problem-focused coping techniques (Anderson 1977), and are at higher risk for depression and poor adjustment to adverse life events (Joseph et al. 1995). It may be that internally oriented genetic counselors believe not only in their own abilities to affect positive change, but also in their patients' capabilities to do so. In this view, the genetic counselor who witnesses his/her patient experiencing distress would believe that the patient ultimately has the ability to control some of the outcomes in their circumstances. A dual mechanism of self-efficacy and belief in patients' abilities to bring about positive change may protect genetic counselors from the feelings of helplessness that feed compassion fatigue.

Further, locus of control is closely related to attributional style (Joseph et al. 1995). One's attribution of causality to external phenomena reflects a belief that overall outcomes are ultimately out of one's realm of personal control, being instead determined by outside factors, which may include confidence in a higher spiritual power. In this study, the use of religion/spirituality as a coping mechanism was found to be a significant predictor of compassion fatigue risk in the logistic regression analysis. This confirms a previous finding that genetic counselors who use religion to cope with stress tend to report more compassion fatigue (Udipi et al. 2008). A number of different religious coping strategies exist, many of which have been shown to assist individuals in coping with adverse life events (Pargament et al. 1988). Some strategies, however, involve deferring problem solving to religious/spiritual authority in the face of dilemma; this coping style has been associated with lower levels of personal control and less active problem solving (Pargament et al. 1988). While outside the scope of this study, it may be prudent to investigate the specific type of religious coping employed by genetic counselors in order to better delineate the association with compassion fatigue risk.

The association between optimism and well-being has been established as independent of the impact of locus of control (Aspinwall and Taylor 1992; Scheier and Carver 1992). It has previously been found that these personality traits independently predict coping appraisal and subsequent management of stress (Peacock and Wong 1996). Interestingly, in this study it was found that locus of control and dispositional optimism were inversely associated with

one another. Genetic counselors with an internal locus of control were more likely to be optimistic. Conceptually, locus of control and optimism are distinct but partially overlapping constructs (Reker and Wong 1984). An individual's expectation of positive outcomes can be based on either confidence in one's own efficacy, or an expectation of good fortune. Both "internally based optimism" (i.e., belief in one's self-efficacy) and "externally based optimism" (i.e., belief in good luck) may contribute to the expectation of positive outcomes (Peacock and Wong 1996; Reker and Wong 1984). This study suggests that genetic counselors with an internal locus of control tend to have internally based optimism.

We found that internally based, optimistic genetic counselors are more likely to be at lower risk of compassion fatigue, possibly as a result of their high potential for compassion satisfaction. Specifically, our multivariable logistic regression model suggests that compassion satisfaction may be a protective factor against compassion fatigue. This finding reflects positive psychology literature, which has shown that when people believe that their goals are attainable, they experience positive affect (Scheier and Carver 1992; Scheier et al. 1994). Genetic counselors with an internal locus of control may derive more satisfaction from their attempts to assist patients because they interpret positive counseling outcomes to be the result of their own efforts.

Whereas locus of control was significantly correlated with compassion fatigue in the univariate analysis, in the stepwise multivariable logistic regression analysis it did not appear as a strong predictor. In the regression model, the presence of moderate-to-high burnout, low-to-moderate compassion satisfaction, importance of religion/spirituality in dealing with stress, and low optimism were more likely than locus of control to predict compassion fatigue risk. However, since locus of control independently associates with both dispositional optimism, and compassion satisfaction, it may serve as a useful predictor of compassion fatigue both on its own, and indirectly through its associations with other compassion fatigue predictors. It is prudent to validate the logistic regression model obtained in this study in future investigations.

Compassion Fatigue and Burnout

Importantly, this study found that 44.4% of genetic counselors were at high risk for burnout, compared to 25% of genetic counselors reported previously (Udipi et al. 2008). While both studies employed the Pro-QOL to assess burnout, some modifications were made to the questionnaire in the previous study. A slightly higher estimated response rate was achieved in the present study, which suggests that a larger number of genetic counselors may be at risk for burnout. Genetic counselor risk for burnout may

be on par with that of hospital staff nurses, of whom approximately 40% are at high risk for burnout (Aiken et al. 2001). While Aiken and colleagues employed the Maslach Burnout Inventory rather than the ProQOL in their assessment of nurse burnout, their study provides a context within which to conceptualize burnout risk in genetic counselors. Burnout has been linked to physical and psychological distress, decreased patient satisfaction, and increased job exit (Boyle et al. 1991; Vahey et al. 2004). The importance of addressing burnout in genetic counselors is accentuated by the link between burnout and compassion fatigue.

In the present study, burnout was found to be the strongest predictor of compassion fatigue risk. Genetic counselors at moderate-to-high risk for burnout were more than three times as likely to experience higher compassion fatigue as their colleagues with low-to-moderate risk for burnout. This finding is consistent with compassion fatigue literature, which has indicated the coexistence of compassion fatigue and burnout in nursing and other health care professions (Collins and Long 2003b; Vahey et al. 2004). Work drain and lack of work morale have been found to be associated with burnout (Killian 2008). Other risk factors for burnout include large caseloads and increased contact with clients (Collins and Long 2003b).

Clear theoretical distinctions have been drawn between compassion fatigue and burnout (Figley 2002b). While these two stress reactions are distinct from one another, burnout may be an important risk factor for compassion fatigue (Collins and Long 2003b; Figley 1995). Further, it is thought that compassion satisfaction helps mitigate the effects of burnout. In doing so, it may decrease risk for compassion fatigue before it develops (DePanfilis 2006). As other authors have indicated, it is also likely that burnout and compassion fatigue may be synergistic (Udipi et al. 2008). Putting workplace strategies in place that target burnout will thus likely have an indirect impact on compassion fatigue risk.

Pessimism and external locus of control have been previously linked to burnout in college students and nurses, respectively (Chang et al. 2000; Schmitz et al. 2000). However, in the current study, neither locus of control nor dispositional optimism were associated with burnout. These results suggest a conceptual distinction between burnout and compassion fatigue, and lend justification to the concept that optimism and locus of control are personality traits that may specifically predict secondary traumatic stress reactions in genetic counselors.

Implications for Practice and Training

It is useful to remember that both locus of control and dispositional optimism are personality traits that remain

stable across time (Rotter 1966; Scheier and Carver 1992). Thus, interventions should aim at (1) identifying individuals with personality characteristics that make them vulnerable to compassion fatigue, (2) raising awareness about the symptoms of compassion fatigue, and (3) ensuring that supportive initiatives are in place to encourage self-care, and to mitigate the negative effects of compassion fatigue.

In the present study, respondents who indicated that they are currently experiencing compassion fatigue were significantly more likely to score in the moderate-to-high risk range on the ProQOL R-IV. While Figley cautions that it may be difficult for individuals to recognize their own compassion fatigue (Figley 2002b), genetic counselors in this study tended to be aware of their own heightened compassion fatigue risk. This has important implications for clinical practice, as self-awareness about compassion fatigue is crucial to promoting recovery. Genetic counselors are encouraged to actively self-reflect on their compassion fatigue risk, and to apply appropriate interventions should they suspect that they are experiencing this caregiver stress. Compassion fatigue is highly treatable once workers recognize it and act accordingly (Figley 2002b). Early identification of the signs and symptoms of compassion fatigue can lead to appropriate treatment and may further the prevention of chronic disorders spurred by high stress and unresolved traumatic memories (Horowitz et al. 1999). A heightened awareness can lead to faster identification of compassion fatigue symptoms, and can foster beneficial practices such as self-reflection about current cases and past traumatic experiences (Figley 2002b; Joinson 1992).

Professional interventions are needed to address compassion fatigue. A total of 28.8% of genetic counselors in this study indicated that they have no workplace supports in place to address compassion fatigue, and 42.7% indicated they would use such supports if they were made available. The majority of respondents had employee assistance programs, but some indicated they were unsure whether these programs actually address compassion fatigue. The use of workplace initiatives such as peer supervision may aid in the identification and management of triggers and signs of compassion fatigue. Further professional interventions may be introduced in the forms of workshops, seminars, and web-based case studies and/or presentations. For example, an educational seminar on compassion fatigue in pediatric intensive care units was successful in raising awareness and reducing clinical stress among health care provider participants (Meadors and Lamson 2008). Workplace seminars and professional workshops may focus on boosting self-care practices for genetic counselors, as self-care is an imperative practice shown to ameliorate the negative consequences of compassion fatigue (Gentry 2002; Monroe 2008). Additionally, interventions may be targeted in ways that address a lack of optimism and/or external locus of control. For example, helping genetic

counselors develop a realistic view of what is/is not controllable and helping them recognize and appreciate patients' resilience/hope.

The importance of addressing compassion fatigue in genetic counseling is underscored by this study's finding that approximately 1 in 4 genetic counselors have had thoughts of leaving their job because of symptoms of this traumatic stress. Of these respondents, a further 7.8% had an actual plan to leave their genetic counseling position due to compassion fatigue. These findings reflect traumatic stress literature, which highlights a positive association between compassion fatigue and reduced longevity of career (Collins and Long 2003a). Further, we found no association between compassion fatigue risk and genetic counselors' years of experience, which is consistent with compassion fatigue literature (Boscarino et al. 2004). For vulnerable genetic counselors, compassion fatigue may remain a significant risk throughout one's career. Thus, having support initiatives available to genetic counselors' throughout their careers is crucial in order to retain professionals in the field.

This study affirms the importance of introducing the topic of compassion fatigue in genetic counseling graduate training programs. Greater than 60% of respondents in this study indicated that they did *not* learn about compassion fatigue in their training program, and 50.4% indicated interest in further education and training in this area. While compassion fatigue is a relatively new concept in the counseling and mental health community, it would be prudent for genetic counseling training programs to incorporate this important topic into their curricula. Self-screening for optimism and locus of control may foster self-awareness among genetic counseling students, and highlight potential vulnerability for compassion fatigue on an individual basis. However, while 21.2% of genetic counselors' in this study had completed graduate coursework in compassion fatigue, their compassion fatigue risk did not significantly differ from that of colleagues whose training programs did not address compassion fatigue. It is necessary not only to introduce this concept at the training level, but to ensure ongoing awareness, prevention, and treatment initiatives are in place for working professionals.

A further possibility is to extend our knowledge about genetic counselor compassion fatigue to the professional application process. An assessment of applicants' awareness about the emotional challenges of genetic counseling may be incorporated into candidate interviews. This is particularly important given the link between compassion fatigue and job exit (DePanfilis 2006).

Study Limitations

This study was cross-sectional and correlational; it is difficult to draw conclusions about causal relationships

between the variables studied. For example, it may be the case that having an external locus of control places one at risk of compassion fatigue. However, it is also possible that those who experience compassion fatigue begin to feel powerless to affect positive change, and that beliefs about their personal control become reinforced by experience (Folkman 1984). Rotter's Locus of Control scale assesses both personal and political dimensions of perceived control (Rotter 1966). As this study did not discern between these realms, it is prudent to focus future research specifically on genetic counselors' perceived personal control.

The results of this study were used to make comparisons about the intensity of genetic counselor burnout and compassion fatigue with those of other health practitioners. As these comparisons were done across different studies, which used other instruments or earlier versions of the ProQOL, the interpretations are tentative. Standardization of the results across studies, or a meta analysis of the available literature is beyond the scope of this research paper.

The estimated response rate for this study was 27.5%, which raises questions about how applicable the conclusions of this study are to the wider genetic counselor population. It is possible that genetic counselors who were experiencing compassion fatigue were more likely to participate because they viewed the study as being important. However, it is also possible that genetic counselors who were most affected by compassion fatigue chose not to participate, as avoidance of traumatic material is a hallmark symptom of compassion fatigue (Figley 2002a).

Genetic counselors without a clinical Masters degree in genetic counseling were excluded from this study and we did not capture their valuable perspectives. Lastly, this study attempted to assess genetic counselor job exit as a result of compassion fatigue; however, due to the method of respondent recruitment via genetic counselor professional organizations, the perspectives of genetic counselors who have actually left their jobs was not captured.

Conclusions

By nature of the profession, genetic counselors encounter patient suffering and continually extend empathy. This study found that 73% of genetic counselors were at moderate-to-high risk for compassion fatigue. However, risk of compassion fatigue is not a simple function of empathy and exposure to suffering. Personality traits, including low optimism and external locus of control, may render certain genetic counselors more vulnerable to compassion fatigue. Since these personality traits are thought to be relatively stable and enduring, efforts

should be aimed at identifying genetic counselors most vulnerable to compassion fatigue, and making available a range of interventional initiatives that raise awareness and mitigate the damaging effects of this caregiver experience.

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Appendix I: Personal and Demographic Questions

- 1.) Do you have a clinical Master's degree in Genetic Counselling?
 Yes
 No
- 2.) What is your gender?
 Male
 Female
- 3.) How many years of experience do you have as a genetic counsellor?
 Less than 1 year
 1-4 years
 5-10 years
 Greater than 10 years
- 4.) What type of clinic do you currently work in? (please check all that apply)
 Prenatal
 Pediatric
 Adult
 Cancer
 Other
- 5.) How many genetic counsellors, other than yourself, currently work in your clinic?
 None
 1-3
 3-5
 5-10
 Greater than 10
- 6.) In what country do you currently practice?
 United States
 Canada
 Other
- 7.) Do you consider yourself a spiritual or religious person?
 Yes
 No
 Unsure
- 8.) How important is spirituality or religiousness to you when dealing with stress?
 Very important
 Moderately important
 Not very important
 Not at all important
 Unsure
- 9.) In your graduate degree program in genetic counselling, did you complete any formal classes or coursework in addressing compassion fatigue in genetic counsellors?
 Yes
 No
 Don't recall

- 10.) If you answered yes to the above question, please estimate the amount of time that was spent in this area.
_____ hours
- 11.) Would you be interested in additional training or education in compassion fatigue in genetic counselling?
 Yes
 No
- 12.) Are you currently experiencing compassion fatigue?
 Yes
 No
 Unsure
- 13.) Have you ever had any thoughts about leaving your current job as a genetic counsellor because you are feeling symptoms of compassion fatigue?
 Yes
 No
 Unsure
- 14.) If you answered [yes] to Question 13, do you actually plan on leaving your current job as a genetic counsellor?
 Yes
 No
 Unsure
- 16.) What kind of support systems that formally address compassion fatigue are available to you through your workplace (i.e. employee assistance program, departmental workshops, etc.)? If none are available, please indicate 'none.'

- 17.) Would you use support resources to address compassion fatigue in the workplace if they were made available to you?
 Yes
 No
 Unsure
- 18.) Please provide any comments about your perception of compassion fatigue in the profession of genetic counselling.

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