

# The Impact of Supervision Training on Genetic Counselor Supervisory Identity Development

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**Abstract** Supervision is critical to the training of genetic counselors. Limited research exists on the influence of supervision training and experience on the development of genetic counseling supervisors. The purpose of this study was to investigate the impact of supervision training in addition to supervisory and clinical experience on supervisory identity development, and the perceived confidence and competence supervisors have in their own supervisory skills. In addition, we explored genetic counselors' ( $N=291$ ) interest in and barriers to training as well as perspectives on requirements for supervisors. Results indicated clinical experience, supervision experience, and formal supervision training are positively associated with genetic counselors' supervisory identity development as measured by the Psychotherapy Supervisory Development Scale (PSDS) ( $p<0.05$ ). Despite a moderate correlation between supervision experience and formal training ( $\rho=0.42$ ,  $p<0.001$ ), both had independent effects on PSDS scores ( $p<0.04$ ). A majority of genetic counselors were interested in receiving supervision training but noted lack of available training as a barrier. The majority of participants indicated that supervisors should be certified as genetic counselors, but there was no consensus on training requirements. Development of additional supervision training opportunities for genetic counselors should be considered.

**Keywords** Clinical supervision · Supervision training methods · Formal supervision training · Genetic counseling student supervision

## Introduction

According to the Accreditation Council for Genetic Counseling, an entry-level genetic counselor must demonstrate specific practice-based competencies (PBC's) in order to manage successfully a genetic counseling case before, during, and after a clinic visit or session (Accreditation Council for Genetic Counseling [ACGC] 2013a). An essential method for ensuring genetic counseling students meet these PBC's is through clinical supervision by genetic counselors (Hendrickson et al. 2002; Lindh et al. 2003; McCarthy Veach and LeRoy 2009; Weil 2000). Clinical supervisors serve as mentors to students during their clinical rotations by overseeing student case preparation, evaluating student performance, and providing feedback to the students concerning their professional development (Lindh et al. 2003; McCarthy Veach and LeRoy 2009). Therefore, clinical supervisors have a unique opportunity to influence a student's method and style of counseling (Middleton et al. 2007). In addition, clinical supervision in genetic counseling is believed to ensure adequate quality in patient services provided by trainees (Hendrickson et al. 2002; Lindh et al. 2003; Middleton et al. 2007; McCarthy Veach and LeRoy 2009). Therefore, clinical supervision is not only important for students, but is important for those receiving genetic counseling services.

It has been suggested in genetic counseling, as in other fields, that being an effective genetic counselor does not necessarily make one an effective genetic counseling supervisor (McCarthy Veach and LeRoy 2009). This distinction between clinical skills and supervision skills has led other counseling fields to recognize supervision as a profession in

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its own right including its own separate body of knowledge, skills, and training (Scott et al. 2000). Recently, researchers in genetic counseling began trying to identify the supervision skill set for genetic counselors. Eubanks Higgins et al. (2013) used a consensus building research process to identify areas of competence for genetic counseling supervisors, including personal traits and characteristics, relationship building and maintenance, student evaluation, student centered supervision, guidance and monitoring of patient care, and ethical and legal aspects of supervision. They suggested that these competencies may be the basis for future training in genetic counseling supervision.

The developing recognition of the uniqueness of the supervisor role has led to required supervision training programs or standards for supervision training in other related professions such as marriage and family therapy, psychotherapy, counseling, and social work (American Association for Marriage and Family Therapy [AAMFT] 2007; American Psychological Association [APA] 2009; Council for Accreditation of Counseling and Related Educational Programs [CACREP] 2009; National Association of Social Workers [NASW] 2013). Until recently, there were no similar requirements in the field of genetic counseling. However, updates to the PBC's and newly published Standards for Accreditation that go into effect in June 2014 have addressed some aspects of supervision (ACGC 2013a, b). The new PBC's outline that a minimally competent genetic counselor should "understand the methods, roles, and responsibilities of the process of clinical supervision of trainees" (ACGC 2013a, p.6). The Standards for Accreditation require that supervisors either have 1 year of clinical experience or receive mentorship in supervision (ACGC 2013b). No additional requirements for training in supervision are outlined in the genetic counseling field by the professional, accrediting, or credentialing bodies. It is perhaps not surprising given the newness of any supervision training requirements that previous research has indicated that genetic counselors are most likely to use informal methods such as trial and error when learning how to supervise as opposed to formal didactic training (Lindh et al. 2003).

In considering whether formal training in supervision competencies may be beneficial to genetic counseling supervisors, it is important to understand the relationship between supervisor competence, training, and experience. Researchers in other fields have used the Psychotherapy Supervisory Development Scale (PSDS) as a measure to evaluate a supervisor's advancement over time. The PSDS is a validated and theory driven scale that attempts to measure supervisory identity development by assessing "the stages of growth through which supervisors pass on their way to actually becoming a supervisor" (Watkins et al. 1995, p.78). Supervisory identity development can be further described as the extent to which a supervisor is both confident and competent in his or her

current supervisory skills and professional identity, has consistent awareness of supervisory strengths and weaknesses, and provides a well-integrated and consistent supervisory style (Watkins 1993; Watkins et al. 1995). Researchers in the field of psychology using the PSDS found supervisory identity development was influenced by supervisory experience, counseling experience, as well as supervision training (Bernard and Goodyear 2004; Pelling 2008).

At this time no empirical assessment of the relationship between supervision training and supervision competence exists in genetic counseling. In a study of multicultural counseling competence in genetic counseling supervisors, Lee et al. (2009) found PSDS scores were significantly correlated with supervision experience, clinical experience, and age, but supervision training was not included in this assessment. Several researchers have postulated that, similar to other fields, formal supervision training would benefit genetic counseling supervisors. It has been suggested that formal supervision training would likely increase genetic counselors' confidence and maximize their skill development as supervisors (Eubanks Higgins et al. 2013). In addition, McIntosh et al. (2006) argued that a lack of supervision training may create insecurity and anxiety surrounding supervision of students. This discomfort, in turn, may cause the genetic counseling supervisors to resort to efforts to maintain power and authority while unknowingly overshadowing students' efforts to attain their clinical goals. Such an oversight could ultimately impact patient care.

### Purpose of the Study

At this time, there have been no studies exploring the relationship between supervision training and genetic counselors' supervisory identity development. In addition, there has been limited exploration of what supervisors perceive to be the needed experiences or trainings before genetic counselors supervise students. The aim of this study was to use the PSDS to explore the relationship between supervision training, clinical, and supervisory experience, and genetic counselors' confidence and competence in the supervisory role. In addition, we explored the perspective of genetic counselors on supervision training needs and requirements in the field.

### Methods

Institutional Review Board (IRB) approval (exempt) was received from Cincinnati Children's Hospital Medical Center and the University of Cincinnati in summer 2011.

## Participants

Participants were recruited through posts to a general listserv and a discussion forum of the National Society of Genetic Counselors (NSGC) from September 7, 2011 to October 17, 2011. All full and new members of the NSGC who were enrolled in the general listserv or who had opted in to the discussion forum posts received an email inviting them to participate in an anonymous survey. According to NSGC's Professional Status Survey (PSS) from 2010, there were an estimated 2,316 full members of the NSGC and 362 new members equaling a total of 2,678 possible participants. The invitation provided a link to the online survey. The survey was designed based on previous studies of supervision in the genetic counseling literature (Lee et al. 2009; Lindh et al. 2003) as well as the expertise of the research team which included two genetic counselors who supervise students as well as a supervision expert from the field of counseling psychology. All participants were asked questions about demographics, clinical experience, supervision training methods, and perception of supervision training needs and requirements in the field. Additionally, those who indicated that they had supervised genetic counseling students were asked about supervision experience and completed the PSDS.

## Instrumentation

The Psychotherapy Supervisory Developmental Scale (PSDS) (Watkins et al. 1995) was used in the present study to assess genetic counselors' perceptions of their development as clinical supervisors. The PSDS is a theory driven scale developed from a well-researched model called the Supervisory Complexity Model (SCM) in which both skills and supervisory identity are developed as a professional moves through four separate stages: role shock, role recovery and transition, role consolidation, and role mastery (Watkins et al. 1995). At each stage the supervisor is said to develop greater professional identity, increased acceptance of the supervisee, decreased anxiety, and increased confidence in supervisory skills (Baker et al. 2002; Lee et al. 2009; Pelling 2008; Watkins 1993; Watkins et al. 1995). The PSDS contains 18 items specifically assessing perceived competence, supervisor's level of identity and commitment to being a supervisor, supervisor's awareness of his or her impact as a supervisor, and the supervisor's perceptions of him or herself in the supervisory role using a Likert scale (1=never; 4=half the time, 7=always). The PSDS provides one total score, which reflects supervisor perceived level of development (Watkins et al. 1995). Scores can range from 18 to 126, with higher scores indicating higher levels of supervisory identity development. Validity of the PSDS was demonstrated by Watkins et al. (1995), and by Hillman et al. (1998) who found that as supervisor experience increased,

PSDS scores increased. Internal consistency reliability is high, with an alpha coefficient from two different studies of 0.90 (Watkins et al. 1995) and 0.95 (Hillman et al. 1998).

A questionnaire was developed to collect the remaining information including demographic data, supervision training methods, as well as supervision and clinical experience. Demographic information included gender, age, race, highest educational degree earned, and certification status as a genetic counselor. Supervision training methods were based on previously reported methods of supervision training in genetic counseling (Lindh et al. 2003) and were divided into "informal training" and "formal training." Formal training was defined as an "in person" supervision course, online course, or workshop/seminar. Supervision course and online course were defined as a unit of curriculum dedicated to supervision. Workshop was defined as an educational seminar or series of meetings dedicated to supervision. Informal training was defined as learning from trial and error, student feedback, consulting with colleagues, following own supervisor's methods, and reading relevant literature. Clinical experience was assessed by determining total years of experience practicing genetic counseling in a clinical setting, and supervision experience was assessed by determining total years of experience supervising genetic counseling students in a clinical setting. For both of these, years of experience were grouped in predetermined categories within the survey.

Participants were asked if they were interested in training on supervision and what topics they were interested in. This survey item included predetermined supervision topics as well as an "other" option. Barriers to training were also assessed by asking participants to select from pre-determined barriers and/or write in other barriers. Further, participants were asked whether genetic counselor supervisors need to meet certain criteria (e.g., certification, licensure, years of experience, training, etc.) and whether they thought the topic of supervision should be included in different aspects of genetic counseling training and assessment (e.g., PBC's, certification exam). Three genetics professionals with genetic counseling student supervision experience reviewed all sections of the questionnaire for face validity, and the questionnaire was edited based upon their feedback.

## Data Analysis

Prior to analyses, the categorical variables age, genetic counseling experience, and supervisory experience were examined. Given the low numbers of individuals in the higher categories, ages 40 and above were collapsed into a single category. Likewise both supervision and clinical experience of 15 years or greater were collapsed into a single category.

To ensure that the results of this study were representative, we compared the basic demographics and characteristics of

individuals who supervise students with those who are non-supervisors using contingency tables and goodness of fit ( $\chi^2$ ) statistics. Additionally, we compared the demographic characteristics of our respondents to the data reported in the PSS (National Society of Genetic Counselors [NSGC] 2012) using contingency tables.

Our primary hypothesis was that formal training and increased experience (either as a genetic counselor or a supervisor) would be associated with increased PSDS score. The PSDS score was calculated as specified in Watkins et al. (1995). The distribution of PSDS was evaluated to ensure there were no distributional issues or data concerns. Additionally, internal consistency reliability of the PSDS was evaluated by estimating Cronbach's alpha. Based on our own experience, we hypothesized that genetic counseling experience, supervisor experience, and formal training may be related. Thus, we performed Spearman correlation analyses between formal training, genetic counseling experience, and supervisor experience all measured on an ordinal scale. Given the level of correlation between the measures, it was determined that the effective number of statistical tests for these three outcomes was two rather than three. Thus, multiple testing adjustment for association with PSDS was 0.025 (0.05/2) after applying a Bonferroni correction for the effect due to the number of independent tests. This  $p$ -value should be used for the simple regression models. For multivariable regression models,  $p$  values of 0.05 should be considered significant as it is the joint evaluation of effects.

To address the question of whether formal training was associated with PSDS score we evaluated formal training as a dichotomous variable (i.e., yes or no) or as the number of formal training types (i.e., 0, 1, 2). When using formal training as a dichotomous variable,  $t$ -tests were used to test for differences between those with and without formal training with respect to PSDS. When using formal training as an ordinal variable, simple linear regression was used with PSDS as the outcome variable and formal training as the predictor variable. As both supervision and clinical experience were collected in increments, they were treated as ordinal variables in separate analyses. Simple linear regression was used to test the association of PSDS as the outcome variable with supervision and clinical experience as separate predictor variables.

We then performed multivariable regression analysis to determine if formal training and supervisor experience were independently associated with PSDS score. Additionally, we performed stratified simple linear regression to examine the effect of supervision experience on PSDS in those with and without formal training.

Lastly, as a secondary aim, to further understand if perceptions of barriers differed between those with and without supervisor experience, we tested whether frequency of perceived barriers differed by supervisor status using contingency tables and goodness of fit. There were five specific barriers

(training not available, training not offered when needed, scheduling, lack of time, and not interested) which were tested. To ensure that differences were not by chance, a Bonferroni correction significance threshold was applied ( $p \leq 0.01 = 0.05/5$ ).

## Results

### Demographics

There were 306 total survey respondents. Those who reported that they have provided clinical supervision, but did not complete the PSDS were excluded from analysis ( $n=14$ ). Therefore 291 individuals were included for a conservatively estimated 10.9 % response rate (291/2678). An exact response rate cannot be calculated because it is not clear how many NSGC members "opt-in" to receive emails from the NSGC discussion forum. The participants were demographically similar to those who responded to the 2012 Professional Status Survey in terms of gender, age, and race. The majority were female, less than 35 years old, and Caucasian (Table 1). The majority of respondents reported that they currently provide supervision or have in the past (74.2 %). Those respondents who have supervised students were older ( $p < 0.0001$ ), more likely to be certified as a genetic counselor ( $p < 0.0001$ ) with a greater number of years of experience as a genetic counselor in a clinical setting ( $p < 0.0001$ ). Of note, only one person with more than 15 years of clinical experience reported that they had never supervised a genetic counseling student. No statistically significant differences between supervisors and non-supervisors were obtained for gender, ethnicity, or education level.

### Supervision Training

The training in supervision reported by study participants is summarized in Table 2. The most frequent informal methods of training were consulting with colleagues, trial and error, student feedback, and either following (or not following) their past supervisors' methods. Supervisors were significantly more likely ( $p < 0.0001$ ) to have had some type of formal supervision training (62.2 %) than non-supervisors (13.4 %). Workshops or seminars were reported as the most frequent source of formal training, and respondents indicated most of their formal training occurred postgraduate school and involved continuing education units.

### Supervision Training Needs and Requirements

Most participants indicated they would be interested in training courses in supervision (85.3 %). The majority of

**Table 1** Demographics

Characteristics	Supervisors % (n)	Nonsupervisors % (n)	Total respondents % (n)
n	74.2 (216)	25.8 (75)	291
Gender	<i>n</i> =212	<i>n</i> =67	<i>n</i> =279
Male	2.4 (5)	6.0 (4)	3.2 (9)
Female	97.6 (207)	94.0 (63)	96.8 (270)
Age	<i>n</i> =212	<i>n</i> =67	<i>n</i> =279
<25 years	0	11.9 (8)	2.9 (8)
25–29 years	29.2 (62)	55.2 (37)	35.5 (99)
30–34 years	26.4 (56)	19.4 (13)	24.7 (69)
35–39 years	17.9 (38)	4.4 (3)	14.7 (41)
>40 years	26.4 (56)	9.0 (6)	22.2 (62)
Race	<i>n</i> =210	<i>n</i> =67	<i>n</i> =277
Caucasian/White Non-Hispanic	94.3 (198)	94.0 (63)	94.2 (261)
Caucasian/White Hispanic	1.4 (3)	0	1.1 (3)
African American/Black	0.5 (1)	1.5 (1)	0.7 (2)
Asian/Pacific Islander	2.9 (6)	4.5 (3)	3.2 (9)
Biracial/Multiracial	1.0 (2)	0	0.7 (2)
Total years practicing genetic counseling in a clinical setting	<i>n</i> =212	<i>n</i> =67	<i>n</i> =279
< 1 year	2.3 (5)	37.3 (25)	10.8 (30)
1–4 years	30.7 (65)	49.3 (33)	35.1 (98)
5–9 years	28.8 (61)	9.0 (6)	24.0 (67)
10–14 years	18.4 (39)	3.0 (2)	14.7 (41)
>15 years	19.8 (42)	1.5 (1)	15.4 (43)
Total years supervising students in a clinical setting <sup>a</sup>	<i>n</i> =213		<i>n</i> =213
<1 year	12.2 (26)		12.2 (26)
1–4 years	44.1 (94)		44.1 (94)
5–9 years	24.4 (52)		24.4 (52)
10–14 years	11.7 (25)		11.7 (25)
> 15 years	7.5 (16)		7.5 (16)
Highest educational degree	<i>n</i> =213	<i>n</i> =67	<i>n</i> =280
MA or MS or SCM	99.1 (211)	98.5 (66)	98.9 (277)
PhD	0.1 (2)	1.5 (1)	1.1 (3)
Certified genetic counselor (CGC)	<i>n</i> =212	<i>n</i> =67	<i>n</i> =279
Yes	92.9 (197)	55.2 (37)	83.9 (234)
No	7.1 (15)	44.8 (30)	16.1 (45)
Primary Clinical Specialty	<i>n</i> =213	<i>n</i> =66	<i>n</i> =279
Prenatal <sup>b</sup>	36.2 (77)	22.7 (15)	33.0 (92)
Cancer	22.5 (48)	31.8 (21)	24.7 (69)
Pediatrics	24.9 (53)	10.6 (7)	21.5 (60)
Cardiology	2.8 (6)	0	2.2 (6)
Neurogenetics	2.8 (6)	4.5 (3)	3.2 (9)
Adult (including complex disease)	1.4 (3)	6.1 (4)	2.5 (7)
Other <sup>c</sup>	9.4 (20)	24.2 (16)	12.9 (36)

<sup>a</sup> Total years supervising students in a clinical setting answered by those who supervised; <sup>b</sup> Prenatal includes: PGD/Preconception, Screening, Fetal Diagnosis; <sup>c</sup> Other: ART/IVF, Met.Disease, Hematology, “other”

participants (72.1 %) indicated the opportunity was not available for them to obtain supervision training. Other commonly reported barriers included lack of time (48.2 %) and

scheduling difficulties (38.4 %). Supervisors were more likely than non-supervisors to indicate that lack of time ( $p<0.0001$ ) and scheduling difficulties ( $p=0.0009$ ) were barriers to



**Table 2** Methods of supervision training

Method	Supervisors % ( <i>n</i> )	Nonsupervisors % ( <i>n</i> )	Total Respondents % ( <i>n</i> )
<b>Formal</b>			
Workshop/Seminar	55.6 (119)	11.9 (8)	45.2 (127)
Supervision course (in person)	20.2 (43)	4.5 (3)	16.4 (46)
Online supervision course	2.9 (6)	0	2.2 (6)
<b>Informal</b>			
Consult with colleagues	94.8 (202)	28.4 (19)	78.9 (221)
Student feedback	91.6 (195)	16.4 (11)	73.6 (206)
Trial and error	89.2 (190)	19.4 (13)	72.5 (203)
Following own supervisors methods	73.2 (156)	40.3 (27)	65.4 (183)
Reading relevant literature	54.0 (115)	23.9 (16)	46.8 (131)
Peer group supervision	27.2 (58)	6.0 (4)	22.1 (62)
None of the above	0	44.8 (30)	10.7 (30)
Other (11)	3.8 (8)	1.5 (6)	3.2 (9)

Participants could select more than one choice

supervision training. The most commonly selected topics of interest for supervision training were supervision methods and techniques (85.9 %), dealing with challenging student situations (83.7 %), and evaluation of students (80.4 %).

The opinions of participants on requirements for supervisors and ideal timing of supervision training were assessed. The majority of respondents felt that supervisors should have certification as genetic counselors before providing supervision to students (67.4 %). However, no additional supervisor requirements were selected by the majority of respondents. The next most common responses were that supervision training should be a requirement post-graduate school (38.3 %) and that supervisors should be required to have a defined number of years of genetic counseling experience (36.6 %). The least common responses were that there should be no requirement for being a supervisor (7.9 %) or that supervision should be included in the board certification exam (6.1 %).

#### Supervisors' Professional Experience

Of the 216 respondents who had supervised, a majority reported having less than 5 years of experience supervising students in a clinical setting (56.3 %) and less than 10 years of experience as a genetic counselor in a clinical setting (61.8 %). All participants reported having used at least one method of informal training. At least one form of formal training was reported by 62.1 % of participants. Of those with formal training, 27 % reported receiving two or more methods of formal training.

#### Experience, Training, and PSDS scores

Our primary hypothesis was that formal training and increased experience would be associated with increased PSDS score.

The reliability of the PSDS was high (Cronbach's alpha=0.90). Overall, the mean PSDS score in this sample population was 96.8 (Range=63–120; *SD*=10.53).

To understand the relationship between formal training and PSDS, formal training was dichotomized (Y/N) as well as treated as an ordinal variable. Using *t*-tests, higher PSDS scores were associated with ( $p=0.015$ ) having formal training ( $M=98.2$ ;  $SD=10.24$ ) versus not having any formal training ( $M=94.5$ ;  $SD=10.76$ ). When treating number of types of formal training as an ordinal variable (0, 1, 2), there was a positive linear trend between the number of types of formal training and PSDS scores ( $\beta=3.31\pm 0.99$ ,  $p=0.001$ ). Overall, these results support a strong association between formal training and PSDS score.

To understand the relationship between years of experience and PSDS, we examined both supervisor experience and clinical experience. Years of supervision experience and clinical experience categories were treated as ordinal variables. Using regression, it was found that supervision experience had a positive linear relationship with PSDS scores [ $\beta=2.21\pm 0.57$ ,  $p=0.0001$  (per 5 years of experience)]. Similarly, clinical experience had a positive linear relationship with PSDS scores [ $\beta=1.47\pm 0.47$ ,  $p=0.0019$  (per 5 years of experience)]. Spearman correlation indicated that clinical experience and supervision experience were highly correlated ( $\rho=0.70$ ,  $p<0.0001$ ).

To determine if supervision experience and formal training were independently associated with PSDS, we examined the correlation between the two predictors, as well as performing regression analyses. Supervision experience was moderately correlated with whether an individual had formal supervision training ( $\rho=0.42$ ,  $p<0.0001$ ). Using regression analysis it was found that both supervision experience [ $\beta=1.76\pm 0.60$  (per 5 years of experience),  $p=0.0038$ ] and training [ $\beta=2.25\pm 1.06$

(per number of training types),  $p=0.036$ ] were independent predictors of PSDS scores. When stratifying by whether an individual had formal training or not, years of supervision experience was associated with PSDS scores in those with formal training [ $\beta=2.39\pm 0.72$ ,  $p=0.0012$  (per 5 years of experience)], but not in those without [ $\beta=1.18\pm 1.06$ ,  $p=0.27$  (per 5 years of experience)] (Fig. 1).

Given the correlation between supervision experience and training, we further explored the training experiences of those with the least clinical and supervision experience. We found that of the 28 respondents who had been supervising students for less than 1 year, only five (18 %) reported having formal supervision training. There were also five respondents who reported supervising students and had less than 1 year of clinical experience. Of these, only one had formal supervision training. Small sample size in these groups suggested there was not enough statistical power to analyze the association of supervision training with PSDS scores for those with less than 1 year supervision or clinical experience.

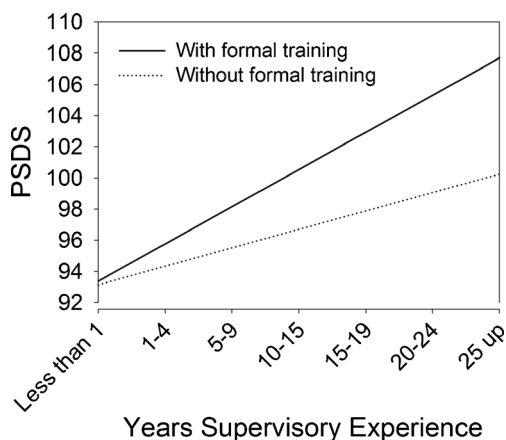
## Discussion

In the current study, we determined that clinical experience, supervision experience, and formal supervision training all were positively associated with supervisors' feelings of confidence and competence in their role as clinical supervisors. Genetic counselors who had supervised students in a clinical setting perceived themselves as moderately developed supervisors ( $M=96.8$ ;  $SD=10.53$ ). This mean score is similar to, but significantly lower than previous reports in the genetic counseling literature [ $M=101.92$ ;  $SD=10.82$  (Lee et al. 2009)] and in the mental health literature [ $M=103.95$ ,  $SD=11.24$ ;  $M=104.3$ ,  $SD=10.4$  (Hillman et al. 1998)]. This may be because the sample in this study appears to have more

individuals in lower age groups which could indicate they have less clinical experience. However, because age and experience were reported in different ways in these studies, a direct comparison is difficult. Although previous research in genetic counseling and other fields has identified the correlation between PSDS score and clinical and supervisory experience, this is the first study to identify the association of supervision training with the identity development of genetic counseling clinical supervisors.

While supervision experience and formal supervision training were not independent of each other, they were shown to have independent effects on PSDS scores. It makes sense that those individuals who have been supervising for longer periods of time are more likely to have had the opportunity to receive training in this area. Although, it is also possible that the alternative is true and those who received training were more likely to continue to act as supervisors for a longer period of time. In either case, the association of training with increased perceptions of competence was not only independent of supervisory experience; it was also associated with larger increases in PSDS score than this experience. The gain in PSDS score was larger for an individual who had one type of formal supervision training than for an individual with 5 years of supervisory experience. This may suggest that training is a more efficient way to increase supervisors' feelings of confidence and perceived competence in their role. Given that most genetic counseling supervisors in this study had less than 5 years of supervision experience and the majority of individuals in the field in general have less than 5 years clinical experience (NSGC 2012), early training could potentially allow genetic counselors to be more comfortable and confident when they first begin to supervise.

It is also critical to note, however, that formal supervision training was associated with higher PSDS scores even in those with more experience as a supervisor. Experience, then, does not eliminate the potential benefits of supervision training. This suggests that elements of formal training can benefit supervisors beyond what might be gained from the experience of working with supervisees (e.g., trial and error, learning from discussion with colleagues, thinking through issues with supervisees). In fact, in those with formal training, supervision experience showed a larger effect on PSDS scores indicating that those with training tended to report greater confidence and identity as a supervisor as they gained experience. This may be because supervisors who have had training specifically in supervision have a context for understanding their supervision experiences which allows them to gain more from these experiences. Alternatively, it could be that supervisors who have had supervision training better recognize their growth in these skills thus increasing their perceived confidence and competence while those who have had supervision experience only still feel they are "playing" at supervision as validation of the supervisor role is one factor in the PSDS score.



**Fig. 1** Association of years of supervisory experience with PSDS score stratified by formal training

The relationship identified in this study between clinical experience, supervisory experience as well as supervision training and the development of genetic counseling supervisors may lead to questions about what minimum threshold of competence is desirable before genetic counselors can act as supervisors. Other professions that train students through supervision, including counseling, psychotherapy, social work, and marriage and family therapy, have recognized the need for those who supervise students in a clinical setting to demonstrate supervision knowledge and competency prior to providing these supervision services though what these requirements are vary (AMFT 2007; APA 2009; CACREP 2009). While a training requirement in supervision has now been added to the genetic counseling PBC's, at the time of this survey, such requirements did not exist (ACGC 2013b). The current study showed that there was wide variability and little agreement among participants on what is needed for supervisors to be prepared. The only requirement that the majority of respondents believed that supervisors should have was certification as genetic counselors. This may be because certification has consistently been a requirement for supervision of "core cases" in student training and will continue to be required in new training standards (ACGC 2010; 2013b). Thus, supervisors may be familiar with this as a threshold for who is able to provide supervision. In addition, respondents may have felt that individuals should be required to demonstrate clinical competence through passing the certification exam before they can begin teaching clinical skills.

Given that this is the first study to document the importance of training in genetic counseling supervisory development, it is perhaps not surprising that while the next most common response was that supervisors should be required to have training post graduate school, this was chosen by less than 40 % of participants. In addition to the lack of previous evidence for the role of training in developing confidence as a supervisor, this could also be because many participants did not have formal training themselves. Therefore, setting this as a minimum might have been considered too high a threshold. Or perhaps, individuals felt that training is not the only way to develop competence as a supervisor. Additionally, requiring training after graduate school would also necessitate the widespread availability of supervision training. The lack of availability of such training was a concern raised by many participants.

While the requirement for supervisors to have training after graduate school was chosen by a minority of participants, it was chosen much more often than training during graduate school. This may be a reflection of the fact that after graduate school was when most current supervisors obtained whatever formal supervision training they had. It is also possible that respondents believed genetic counselors must master their clinical skills before training in supervision is necessary or relevant to them. It is relevant to note that only one individual

in this study who had more than 15 years of clinical experience had not supervised a student at some point in his or her career. If supervising students is an almost inevitable part of a genetic counselor's career, there is good reason to consider including this topic in graduate training. Indeed, the newly implemented PBC's for minimally competent genetic counselors do include familiarity with supervision as a competency (ACGC 2013a). However, with the rapid expansion in the general field of genetics and with the corresponding increased elements of the curriculum of genetic counseling programs, adding a supervision training requirement may also be a difficult undertaking. Since the revised PBC's were published after this survey, there is no way to know how the new supervision training requirements might influence genetic counselors' perception of supervision training during graduate school.

Similar to supervision training requirements, only about one third of respondents felt that supervisors should have a minimum number of years of clinical experience before supervising. This is despite the fact that the relationship between clinical experience and increased confidence and competence as a supervisor has been previously documented in genetic counseling (Lee et al. 2009). Again, this may relate to respondents' personal experience with supervising students early in their career. Many of the individuals in this study who currently reported providing supervision may recognize that they would be excluded if additional requirements were implemented. Alternatively, this may be a reflection of the fact that genetic counseling is still a relatively young field and therefore a limited number of senior genetic counselors are available to supervise students or supervise other genetic counselors who are providing student supervision. Therefore, despite the potential value of both experience and training for supervisors, these requirements may be met with resistance among current supervisors.

Administrators of genetic counseling training programs may also be hesitant to accept the additional requirements for those providing student supervision though their opinions were not separately solicited here. The number of supervisors available to train students has been found to be one of many factors that may be limiting the growth of existing genetic counseling programs (Cooksey 2000). Therefore, limiting the number of genetic counselors who can supervise to those who meet specific standards might present additional challenges and put a strain on graduate programs. Consistent with this concern, the new standards for genetic counseling program accreditation do require that supervisors should have a minimum of 1 year clinical experience, but provide the option of having supervision mentorship instead when the required experience is not possible (ACGC 2013b). Perhaps if supervision training were more widely available, future genetic counseling graduate program standards might reasonably include a training requirement for supervisors with minimal



experience without putting further stress on graduate program resources.

Despite the lack of consensus on what experience or training genetic counselors who supervise should be required to have, the overall interest in supervision training was high in this study. This seems to indicate that supervisors recognize the value of training to them personally. However, several barriers were identified to receiving supervision training with by far the biggest barrier being a lack of available training. Therefore, the first step to increasing the supervision training of genetic counselors is to create these trainings. Creating both long and short term trainings in multiple formats both written, in person, and online may provide the best opportunities to accommodate genetic counselors and may help alleviate other reported barriers such as time and scheduling difficulties. The recently published competencies for genetic counseling supervisors provide a natural starting place for developing content for these trainings (Eubanks Higgins et al. 2013). The topic of highest interest to participants in this study was supervision methods and techniques which may correspond to “Use of Appropriate Methods and Techniques” under the competency domain of “Student Centered Supervision” (Eubanks Higgins et al. 2013). There was also a lot of interest in the topics of evaluation of students and challenging student situations which correspond to the categories of “Evaluation and Remediation” under the competency domain of “Student Evaluation” (Eubanks Higgins et al. 2013). Therefore, these domains may be a good starting place for content of newly developed supervision training.

### Study Limitations

The sample’s demographics were similar to those of other NSGC members as outlined in the PSS (NSGC 2012). However, it is unknown whether respondents differ in significant ways from those who did not respond. The moderately small sample may also have restricted the generalizability of the findings and resulted in limited power for detecting effects of supervision in the subgroup of individuals with the least amount of experience. The present findings, therefore, may need further validation in studies with larger samples. Also, none of the respondents indicated receiving *no* supervision training. Therefore, the sample of genetic counselors in this study may have been more interested in supervision training and may not be representative of the entire population.

Another limitation of this study is that the PSDS doesn’t measure ability but measures perception. Scores on the PSDS were based on how the genetic counselors viewed themselves in the role of supervisors and may not be an accurate reflection of their skill as supervisors. However, understanding how an individual perceives him or herself as a supervisor is important in understanding his or her comfort and commitment to this role.

### Research Recommendations

Identifying the content and duration of supervision training currently in genetic counseling training programs or available for continuing education would be helpful in determining a starting place for development of further training. This may include exploring whether current training options for genetic counselors were specific to genetic counseling or were aimed at a broader understanding of supervision. In addition, implementing supervision training for genetic counselors and measuring the effect of this training on supervision skills and/or supervisory identity development would be important as we move forward in this area as a profession. Lastly, research on how supervision and supervision training impacts patient outcomes will be essential to understanding the ultimate influence of such training. However, a lack of generally recognized genetic counseling outcomes may complicate this type of research.

### Practice Implications

Training was positively related to supervisory identity development among genetic counseling supervisors. This positive relationship existed in addition to and independent of experience as a supervisor or clinician. There was general interest in supervision training, but a perception that this training is unavailable seemed to undercut the execution of this interest. Development of formal supervision training opportunities based on recently published competencies is an important next step in ensuring the adequate supervision and training of future genetic counselors.

**Conflict of Interest** Carrie Atzinger, Kimberly Lewis, Lisa J. Martin, Geoffrey Yager, Catherine Ramstetter, and Katie Wusik declare that 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 (5). Informed consent was obtained from all patients for being included in the study.

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