Technical Brief for the

STRONG INTEREST INVENTORY® ASSESSMENT

Using the *Strong* with LGBT Populations

Updated Version

Nancy A. Schaubhut
Richard C. Thompson

CPP, Inc. | 800-624-1765 | www.cpp.com

INTRODUCTION

The *Strong Interest Inventory® (Strong)* assessment is one of the most widely used career planning tools, helping high school and college students, as well as people in transition, make fulfilling career choices. Because the instrument is so widely used, the publisher, CPP, Inc., continues to examine the assessment for use in specific populations. This technical brief summarizes the measurement properties of the *Strong* assessment when used with samples of lesbian, gay, bisexual, and transgender (LGBT) individuals. Specifically, reliability coefficients and correlations among *Strong* scales are reported for several samples. Readers are encouraged to use this document in conjunction with the *Strong Interest Inventory® Manual* (Donnay, Morris, Schaubhut, & Thompson, 2005).

The *Strong Interest Inventory* assessment helps individuals match their interests with different occupational, educational, and leisure pursuits. It compares clients' level of interest on a wide range of familiar items with the interests of people who are successfully employed in different occupations. The information provided by the *Strong* can be used to help clients make sound educational and career decisions.

The five main types of data provided by the *Strong* assessment are

- General Occupational Theme (GOT) scores
- Basic Interest Scale (BIS) scores
- Occupational Scale (OS) scores
- Personal Style Scale (PSS) scores
- Administrative indexes

Knowing clients' gender is required for scoring certain scales on the *Strong,* namely the GOTs and OSs, as research shows that men and women have different interests. And because the *Strong* reports occupational interests based on separate scale computations by gender, occasionally a question is raised about the impact of sexual orientation or gender identification on the results of the assessment. Research data on the *Strong,* albeit earlier versions of the assessment (1994, 2004), show that it is not biased in regard to either. Specific suggestions for using the *Strong* instrument with LGBT clients are available.

Jeffrey Prince and Michael Potoczniak (2012) have several suggestions that career counselors working with LGBT clients may find useful:

- Discuss the client's feelings about assessments in general and allay any concerns.
- Discuss specific assessments that may be beneficial to the client (e.g., the *Strong* assessment).
- Determine the goals of counseling (e.g., selecting an academic major).
- Be ready to collaborate with the client more than usual to provide a *Strong* interpretation that is ethical, useful to the client, and accurate.
- Deliver information in a manner that takes into account the client's identity and values.
- Provide assessment results in a way that helps the client feel empowered to seek out resources and opportunities in the community in which the individual is a member.

Strong Certification Program instructor C. Hollatz-Wisely suggests that administrators tell all their clients (not only LGBT clients) to indicate *identified* gender. Clients who identify as transgender will select their identified gender or identified gender expression. Clients who identify as gender-neutral or genderqueer will need to choose a gender as a starting place, and for them *Strong* reports for either gender may be used (personal communication, November 19, 2014).

For the current version of the *Strong,* opposite-gender scores on the Occupational Scales are not provided in the initial *Strong* Profile or *Strong* Interpretive Report as was done on some earlier versions. However, the career counselor does have the option to generate an opposite-gender report for use with a client at no additional cost. Vicki Campbell (1987) provided a few guidelines for this approach:

- Consider patterns of interests when evaluating the significance of high scores on opposite-gender scales.
- Consider traditional roles of men and women to understand differences between scores on male and female scales in the same occupation.
- Consider the mean of the reference group when evaluating the meaningfulness of high scores for scales with traditional cultural differences—for example, gender differences on General Occupational Themes such as Realistic (where men tend to score higher) and Artistic (where women tend to score higher).

Based on anecdotal evidence from *Strong* administrators, such as career counselors, it is known that typically the opposite-gender reports option is used when respondents are members of the LGBT community and may identify more with interests of the opposite gender. Additionally, research on sexual orientation and occupational interests has shown that gay men's interests were more similar to those of women than to those of straight men (Lippa, 2002; 2008). For example, Holland (1985) found that gay men's interests were more Artistic and Social than those of straight men. Also Ellis, Ratnasingam, and Wheeler (2012) found that homosexual men had interests similar to those

of heterosexual women (e.g., occupations including actor/actress, beautician, nurse, and dress designer), whereas homosexual women shared more interests with heterosexual men (e.g., occupations including auto mechanic, high school coach, and wildlife photographer).

SAMPLE DESCRIPTIONS

Three samples were utilized in this technical brief: a CPP sample in which opposite-gender reports were generated, a stratified sample that was collected via a third-party market research vendor, and a convenience sample collected with the help of OUT for Work, a nonprofit organization that aids LGBT students with career planning and employment opportunities.

CPP Sample

A sample consisting of 127 individuals in which opposite-gender reports were employed was collected from CPP's commercial website. It should be noted that an examination of *Strong* data from April 2012 to October 2013 revealed that out of the 340,000 *Strong Interest Inventory* assessments administered during that period, only 127 opposite-gender reports were generated. It is possible that so few opposite-gender reports were generated because career counselors were not aware of the option, or because such a course was considered unnecessary to use the *Strong* successfully with clients.

Stratified Sample

This sample was collected through a market research company with specific targets set so that the sample would include different groups of people, including students and employed adults, as well as gays, lesbians, and transgender individuals. This sample consisted of 406 individuals.

Convenience Sample

The organization OUT for Work assisted in the collection of this sample by inviting LGBT participants to complete the *Strong* assessment as part of a 2014 research project. This sample consists of 189 individuals who completed the *Strong* as well as three additional demographic items. These items and response options were specifically chosen by OUT for Work to meet the needs of the targeted population, and are presented in Figure 1 (number and percentage of individuals in the sample follow each item response).

Complete demographic descriptions of each of these three samples are presented in Table 1. Note that there are some items that were not asked, or asked differently, of different samples.

OUT FOR WORK'S 2014 DEMOGRAPHIC SURVEY OF THE LGBT COMMUNITY

Please select the sexual orientation that you believe best describes you. Sexual orientation here is defined as the term used to refer to your physical, emotional, or spiritual attraction toward others. Please choose only one term, even though many may apply. Ideally, you will choose the term that you think fits you the best or most of the time.

- ❑ Asexual (do not experience sexual attraction toward other people) (*n* = 2, 1.1%)
- ❑ Bisexual (experience attraction toward both genders) (*n* = 29, 15.3%)
- ❑ Demisexual (do not experience sexual attraction without a strong emotional connection) (*n* = 4, 2.1%)
- ❑ Lesbian (woman who is attracted to women) (*n* = 42, 22.2%)
- ❑ Gay (man who is attracted to men) (*n* = 69, 36.5%)
- ❑ Heterosexual (experience attraction toward the opposite gender) (*n* = 7, 3.7%)
- ❑ Pansexual (experience attraction for members of all gender identities or expressions) (*n* = 27, 14.3%)
- ❑ Questioning (currently exploring sexual orientation) (*n* = 6, 3.2%)
- ❑ Skoliosexual (experience attraction to genderqueer and transsexual people and expressions) (*n* = 1, 0.5%)
- ❑ MSM (men who engage in same-sex behavior, but do not necessarily self-identify as gay/bisexual) (*n* = 1, 0.5%)
- ❑ FSF (women who engage in same-sex behavior, but do not necessarily self-identify as gay/bisexual) (*n* = 1, 0.5%)

(cont'd)

Figure 1. OUT for Work's 2014 Demographic Survey of the LGBT Community

OUT FOR WORK'S 2014 DEMOGRAPHIC SURVEY OF THE LGBT COMMUNITY *(CONT'D)*

Please select the gender that resonates the most with you. Gender here is defined as your internal perception of gender, and how you label yourself. Please choose only one term, even though many may apply. Ideally, you will choose the term that you think fits you the best or most of the time.

- ❑ Genderless (you do not identify with any gender) (*n* = 1, 0.5%)
- ❑ Agender (you are internally ungendered or have not felt a sense of gender identity) (*n* = 3, 1.6%)
- ❑ Bigender (you fluctuate between traditionally "female" and "male" gender-based behavior and identities) (*n* = 7, 3.7%
- ❑ Third Gender (you do not identify with traditional genders of "woman" and "man", but identify with another gender) (*n* = 1, 0.5%)
- ❑ Transsexual (your gender identity is the binary opposite of your biological sex, you may undergo medical treatments to change your biological sex or live as the opposite sex) (*n* = 1, 3.7%)
- ❑ Transgender (a blanket term used to describe all people who are not cisgender) (*n* = 1, 0.5%)
- ❑ Cisgender (your gender identity, expression, and biological sex all align (e.g., man, masculine, male) (*n* = 112, 59.3%)
- ❑ Cross Dresser/Transvestite (you dress as the binary opposite gender expression for many reasons) (*n* = 1, 0.5%)
- ❑ Trans-man (you identify as a man, but were assigned a female sex at birth) (*n* = 6, 3.2%)
- ❑ Trans-woman (you identify as a woman, but were assigned a male sex at birth); (*n* = 2, 1.1%)
- ❑ Two-Spirit (a term traditionally used by Native Americans to recognize those who possess qualities or fill roles of both genders); (*n* = 5, 2.6%)
- ❑ Gender Fluid (your gender identification and presentation shifts, whether within or outside of societal gender-based expectations); (*n* = 6, 3.2%)
- ❑ Gender Non-Conforming (you don't conform to society's expectations of gender expression based on the gender binary, expectations of masculinity and femininity) (*n* = 16, 8.5%)
- ❑ Genderqueer (your gender identity is neither man nor woman, is between or beyond both genders, or is some combination of genders) (*n* = 10, 5.3%)
- ❑ Pangender (your gender identity is comprised of all or many gender expressions) (*n* = 2, 1.1%)

Please select the sex that you identify with most. Sex here is defined as your physical anatomy and gendered hormones you were born with. Please choose only one term, even though many may apply. Ideally, you will choose the term that you think fits you the best or most of the time.

- ❑ Female (you were born with a specific set of sexual anatomy (e.g., 46, XX phenotype, ovaries, higher levels of estrogen) pursuant to this label (*n* = 96, 50.8%)
- ❑ Male (you were born with a specific set of sexual anatomy (e.g. 46, XY phenotype, testes, higher levels of testosterone) pursuant to this label (*n* = 76, 40.2%)
- ❑ FTM (you have undergone medical treatments to change your biological sex Female to Male) (*n* = 10, 5.3%)
- ❑ MTF (you have undergone medical treatments to change your biological sex Male to Female) (*n* = 6, 3.2%)
- ❑ Intersex (you have a set of sexual anatomy that doesn't fit within the labels of female or male (e.g., 47, XXY phenotype, uterus and penis) (*n* = 1, 0.5%)

Source: OUT for Work, 2014. Used with permission by OUT for Work.

Figure 1. OUT for Work's 2014 Demographic Survey of the LGBT Community

TABLE 1. DEMOGRAPHIC DESCRIPTION OF THE THREE SAMPLES

Demographic	CPP Sample (*N* = 127) *n*	%	Stratified Sample (*N* = 406) *n*	%	Convenience Sample (*N* = 189) *n*	%
Gender (Sex)						
Female	67	52.8	206	50.7	96	50.8
Male	60	47.2	200	49.3	76	40.2
Other	n/a	n/a	n/a	n/a	17	9.0
Sexual Orientation*						
Homosexual	n/a	n/a	335	82.5	n/a	n/a
Transgender	n/a	n/a	71	17.5	n/a	n/a
Employment Status						
Employed full-time	14	11.0	183	46.3	96	50.8
Employed part-time	10	7.9	15	3.7	16	8.5
Not working for income	3	2.4	6	1.5	6	3.2
Retired	0	0.0	7	1.8	2	1.1
Student	42	33.1	173	42.6	61	32.3
Self-employed	5	3.9	8	2.0	0	0.0
None of the above / no response	53	41.6	14	3.5	8	4.3
Education Level						
Some high school	5	3.9	32	7.9	0	0.0
High school diploma / GED	22	17.3	45	11.1	3	1.6
Trade / technical training	1	0.8	11	2.7	1	0.5
Some college (no degree)	34	26.8	141	34.7	51	27.0
Associate degree	3	2.4	34	8.4	12	6.3
Bachelor's degree	24	18.9	70	17.2	46	24.3
Master's degree	15	11.8	59	14.5	53	28.0
Professional degree (e.g., MD)	1	0.8	8	2.0	2	1.1
Doctorate degree (e.g., PhD)	0	0.0	2	0.5	19.0	10.1
No response	22	17.3	4	1.0	2	1.1
Average Age	29		32		35	
Dates Collected	January 2011–September 2014		January 2014–March 2014		February 2014–March 2014	

Note: n/a indicates that the item was not included in this sample.

*The item or response options for this category were different across the three samples.

RELIABILITY OF THE GOTs, BISs, AND PSSs

Reliability refers to the consistency of measurement. An assessment is said to be reliable when it produces a consistent, although not necessarily identical, result. One common measure of reliability is *internal consistency reliability,* which evaluates the consistency of responses across items intended to measure the same concept or construct. Internal consistency reliabilities (i.e., Cronbach's alpha) for the three samples are examined below.

Internal Consistency

Table 2 shows the internal consistency reliabilities of the General Occupational Themes (GOTs), Basic Interest Scales (BISs), and Personal Style Scales (PSSs) for the three samples as a whole. Separately, reliabilities are included based on available demographics and sample sizes (homosexual and transgender for the stratified sample; men and women for the CPP and convenience samples). Overall, the reliabilities are similar to those reported for the U.S. General Representative Sample (GRS) in the *Strong Interest Inventory® Manual* (Donnay et al., 2005).

TYPICALITY INDEX

The typicality index is the result of a multipart computation that provides the career professional with a quick check for potentially invalid or unusual responses. It identifies response profiles that appear to be random and those that appear to be outside the normal range of responses, or both. Potential concerns, along with suggestions regarding the apparent issue, are provided on the last page of the *Strong*

TABLE 2. STRONG INTEREST INVENTORY® INTERNAL CONSISTENCY RELIABILITIES IN THREE SAMPLES

	CPP Sample (*N* =127)			Stratified Sample (*N* = 406)			Convenience Sample (*N* = 189)		
	Combined	Men	Women	Combined	Homo-sexuals	Trans-sexuals	Combined	Men	Women
		(*n* = 60)	(*n* = 67)		(*n* = 335)	(*n* = 71)		(*n* = 76)	(*n* = 96)
Scale	**Cronbach's Alpha**			**Cronbach's Alpha**			**Cronbach's Alpha**		
GOTs									
Realistic	.89	.89	.88	.93	.92	.95	.90	.92	.89
Investigative	.92	.93	.92	.94	.94	.94	.93	.93	.93
Artistic	.93	.93	.92	.95	.95	.93	.93	.93	.93
Social	.92	.91	.93	.95	.94	.96	.93	.94	.91
Enterprising	.91	.90	.91	.94	.93	.95	.92	.92	.90
Conventional	.90	.85	.92	.94	.94	.96	.91	.92	.91
BISs									
Mechanics & Construction	.87	.88	.86	.91	.90	.93	.88	.88	.88
Computer Hardware & Electronics	.91	.90	.91	.93	.93	.94	.92	.91	.93
Military	.86	.84	.87	.89	.87	.92	.86	.87	.87
Protective Services	.78	.69	.83	.86	.86	.90	.82	.78	.85
Nature & Agriculture	.88	.87	.89	.92	.91	.93	.92	.93	.92
Athletics	.87	.88	.85	.92	.91	.94	.91	.91	.91
Science	.87	.88	.88	.90	.90	.90	.88	.88	.88
Research	.86	.83	.87	.88	.88	.87	.83	.84	.83

(cont'd)

TABLE 2. STRONG INTEREST INVENTORY® INTERNAL CONSISTENCY RELIABILITIES IN THREE SAMPLES *(CONT'D)*

	CPP Sample (*N* =127)			Stratified Sample (*N* = 406)			Convenience Sample (*N* = 189)		
	Combined	Men	Women	Combined	Homo-sexuals	Trans-sexuals	Combined	Men	Women
		(*n* = 60)	(*n* = 67)		(*n* = 335)	(*n* = 71)		(*n* = 76)	(*n* = 96)
Scale	**Cronbach's Alpha**			**Cronbach's Alpha**			**Cronbach's Alpha**		
BISs *(cont'd)*									
Medical Science	.85	.82	.87	.86	.86	.88	.83	.84	.83
Mathematics	.90	.89	.91	.92	.92	.92	.91	.90	.91
Visual Arts & Design	.87	.85	.88	.89	.89	.87	.86	.86	.89
Performing Arts	.85	.81	.88	.87	.87	.85	.86	.87	.86
Writing & Mass Communication	.89	.89	.89	.89	.90	.86	.87	.86	.88
Culinary Arts	.84	.79	.87	.88	.88	.88	.85	.82	.87
Counseling & Helping	.82	.78	.86	.89	.88	.90	.81	.81	.82
Teaching & Education	.88	.89	.87	.91	.91	.93	.90	.92	.88
Human Resources & Training	.85	.82	.87	.87	.87	.88	.86	.87	.83
Social Sciences	.78	.77	.78	.85	.85	.84	.75	.80	.70
Religion & Spirituality	.90	.91	.90	.92	.91	.93	.91	.92	.90
Healthcare Services	.85	.83	.87	.88	.88	.90	.87	.84	.89
Marketing & Advertising	.82	.81	.83	.88	.88	.90	.86	.85	.85
Sales	.87	.84	.89	.92	.91	.94	.86	.85	.84
Management	.80	.73	.85	.87	.85	.92	.85	.85	.84
Entrepreneurship	.83	.82	.84	.87	.87	.86	.85	.85	.84
Politics & Public Speaking	.89	.87	.91	.91	.90	.93	.91	.91	.90
Law	.91	.91	.91	.92	.92	.93	.89	.86	.90
Office Management	.81	.71	.86	.86	.86	.86	.86	.87	.85
Taxes & Accounting	.86	.82	.89	.88	.86	.92	.86	.84	.88
Programming & Information Systems	.88	.86	.90	.90	.89	.90	.87	.87	.87
Finance & Investing	.84	.84	.85	.88	.88	.91	.86	.87	.84
PSSs									
Work Style	.79	.77	.82	.91	.91	.93	.85	.88	.83
Learning Environment	.89	.86	.91	.93	.93	.94	.88	.91	.84
Leadership	.84	.81	.86	.89	.89	.92	.85	.89	.82
Risk Taking	.78	.78	.76	.82	.81	.87	.75	.76	.77
Team Orientation	.78	.76	.80	.85	.84	.86	.77	.79	.74

Note: Samples were split into only those gender subsamples that were large enough to report reliability coefficients. Other genders (e.g., MTF, FTM, and intersex) or demographics were not included here because the sample sizes were too small.

Profile. A detailed description of the computation process and use of the typicality index is provided in the *Strong* manual. In short, however, a score of 17 or greater indicates that the combination of item responses appears consistent, while a score of less than 17 indicates that the combination of item responses appears inconsistent. Table 3 shows the average typicality index scores for these three samples, and separately by gender. The typicality index is computed based on the consistency of responses to 24 pairs of *Strong* items (Donnay et al., 2005, p. 4). All average scores were at least 21, meaning that individuals in these samples responded to the *Strong* items in a consistent manner.

VALIDITY

The validity of an assessment refers to the accuracy of the inferences that may be made based on the results of the assessment. An instrument is said to be valid when it measures what it has been designed to measure (Ghiselli, Campbell, & Zedeck, 1981; Murphy & Davidshofer, 2005). Additionally, a valid assessment maintains the same relationships with other assessments over time. Validity of personality assessments is often established through construct validity by showing that results of the assessment relate in a predictable manner to results of other similar measures they should be related to (known as *convergent validity*) and are not related to results of measures they should not be related to (known as *divergent validity*). Convergent validity can be demonstrated when results of an assessment are related to results of other similar measures, observations, or other information that assess the same or a similar concept. Similarly, divergent validity can be demonstrated when results of an assessment fail to relate to other measures, observations, or information they should not be related to.

The convergent validity of the GOTs was examined by assessing the relationships between the GOT scales (i.e., the intercorrelations between the six scales), as well as the relationships between the GOT scales and the other scales of the *Strong* assessment (i.e., the correlations between the GOTs and OSs). The following sections present these findings.

Intercorrelations Between the GOTs

Tables 4–6 shows the correlations among the GOTs in each sample. The pattern of correlations is similar to that reported for the GRS in the *Strong Interest Inventory® Manual* (Donnay, et al., 2005). Tables 7–12 show these correlations

TABLE 3. TYPICALITY INDEX MEANS AND STANDARD DEVIATIONS FOR THREE SAMPLES

	CPP Sample			Stratified Sample			Convenience Sample		
Gender	***M***	***SD***	***N***	***M***	***SD***	***N***	***M***	***SD***	***N***
Overall	21.7	2.2	127	21.6	2.0	406	21.7	1.9	189
Men	21.9	1.8	60	21.6	1.9	200	21.4	2.2	76
Women	21.5	2.5	67	21.6	2.1	206	21.9	1.8	96

Note: Other genders (e.g., MTF, FTM, intersex) were not included here because sample sizes were too small.

TABLE 4. INTERCORRELATIONS BETWEEN THE GOTs FOR THE CPP SAMPLE

Theme	Realistic	Investigative	Artistic	Social	Enterprising	Conventional
Realistic	—					
Investigative	.56	—				
Artistic	.27	.26	—			
Social	–.01	.10	.45	—		
Enterprising	.22	.04	.36	.40	—	
Conventional	.53	.35	.23	.23	.49	—

Note: N = 127.

TABLE 5. INTERCORRELATIONS BETWEEN THE GOTs FOR THE STRATIFIED SAMPLE

Theme	Realistic	Investigative	Artistic	Social	Enterprising	Conventional
Realistic	—					
Investigative	.64	—				
Artistic	.42	.46	—			
Social	.51	.52	.56	—		
Enterprising	.54	.41	.42	.65	—	
Conventional	.68	.56	.32	.56	.73	—

Note: N = 406.

TABLE 6. INTERCORRELATIONS BETWEEN THE GOTs FOR THE CONVENIENCE SAMPLE

Theme	Realistic	Investigative	Artistic	Social	Enterprising	Conventional
Realistic	—					
Investigative	.58	—				
Artistic	.23	.26	—			
Social	.09	.25	.33	—		
Enterprising	.19	.07	.32	.46	—	
Conventional	.44	.48	.09	.34	.53	—

Note: N = 189.

TABLE 7. INTERCORRELATIONS BETWEEN THE GOTs FOR THE MALE CPP SAMPLE

Theme	Realistic	Investigative	Artistic	Social	Enterprising	Conventional
Realistic	—					
Investigative	.60	—				
Artistic	.24	.22	—			
Social	–.15	–.07	.33	—		
Enterprising	.16	.03	.42	.25	—	
Conventional	.43	.25	.00	–.07	.45	—

Note: N = 60.

TABLE 8. INTERCORRELATIONS BETWEEN THE GOTs FOR THE FEMALE CPP SAMPLE

Theme	Realistic	Investigative	Artistic	Social	Enterprising	Conventional
Realistic	—					
Investigative	.56	—				
Artistic	.32	.29	—			
Social	.14	.24	.56	—		
Enterprising	.25	.05	.30	.55	—	
Conventional	.61	.43	.40	.46	.51	—

Note: N = 67.

TABLE 9. INTERCORRELATIONS BETWEEN THE GOTs FOR THE MALE STRATIFIED SAMPLE

Theme	Realistic	Investigative	Artistic	Social	Enterprising	Conventional
Realistic	—					
Investigative	.63	—				
Artistic	.46	.48	—			
Social	.60	.59	.61	—		
Enterprising	.58	.36	.42	.66	—	
Conventional	.73	.55	.35	.62	.72	—

Note: N = 200.

TABLE 10. INTERCORRELATIONS BETWEEN THE GOTs FOR THE FEMALE STRATIFIED SAMPLE

Theme	Realistic	Investigative	Artistic	Social	Enterprising	Conventional
Realistic	—					
Investigative	.65	—				
Artistic	.38	.43	—			
Social	.42	.46	.51	—		
Enterprising	.50	.44	.41	.67	—	
Conventional	.64	.55	.29	.52	.73	—

Note: N = 206.

TABLE 11. INTERCORRELATIONS BETWEEN THE GOTs FOR THE MALE CONVENIENCE SAMPLE

Theme	Realistic	Investigative	Artistic	Social	Enterprising	Conventional
Realistic	—					
Investigative	.65	—				
Artistic	.37	.46	—			
Social	.23	.37	.51	—		
Enterprising	.29	.19	.35	.54	—	
Conventional	.43	.36	.09	.41	.67	—

Note: $N = 76$.

TABLE 12. INTERCORRELATIONS BETWEEN THE GOTs FOR THE FEMALE CONVENIENCE SAMPLE

Theme	Realistic	Investigative	Artistic	Social	Enterprising	Conventional
Realistic	—					
Investigative	.52	—				
Artistic	.15	.17	—			
Social	.03	.19	.20	—		
Enterprising	.23	.02	.34	.30	—	
Conventional	.50	.60	.10	.23	.37	—

Note: $N = 96$.

for men and women, respectively. The largest correlation for the overall samples was between the Realistic and Investigative scales (r = .56–.64). The largest correlation for men in the sample was between the Realistic and Investigative scales (r = .60–.65), as it was for men in the GRS. For women, the largest correlation was also between Realistic and Investigative (r = .52–.65), as it was for women in the GRS. These intercorrelations are a common way to demonstrate validity of the *Strong* assessment—that is, showing that the GOTs relate to one another in meaningful ways.

Relationships Between the GOTs and OSs

The GOTs can provide a global view of an individual's occupational orientation. It is expected that people with common interests and preferences for similar work environments might subsequently choose similar jobs. Thus, when correlating the GOTs with the OSs, certain relationships are expected. Tables 13–30 illustrate the relationship between the GOTs and OSs for each of the six Themes in each of the three samples utilized for this technical brief. The five female (or male) OSs with the strongest and the five with the weakest relationships for women (or men) were selected, and the correlations for women (or men) are also shown. Both female and male Occupational Scales for both women and men in the samples were included in these analyses because sometimes members of the LGBT community identify with opposite-gender OSs. Results indicate that the pattern of relationships commonly found between the GOTs and OSs was found in the LGBT samples as well. For instance, women in both the GRS and all three LGBT samples that scored high on the Investigative Theme scored high on the Science Teacher OS. Additionally, men in the GRS and in the LGBT samples who scored high on the Realistic Theme scored high on the Firefighter OS. Overall, the correlations for both men and women in each sample for the male and female OSs were very similar, especially among the highest-scoring OSs.

TABLE 13. FIVE HIGHEST AND LOWEST CORRELATIONS BETWEEN REALISTIC GOT AND OS SCALES FOR WOMEN AND MEN IN THE CPP SAMPLE

Female Occupational Scale	Women *r*	Men *r*	Male Occupational Scale	Women *r*	Men *r*
Engineering Technician	.86	.85	Engineer	.77	.71
Firefighter	.79	.72	Network Administrator	.77	.70
Network Administrator	.79	.72	Software Developer	.77	.69
Computer Programmer	.76	.70	Engineering Technician	.64	.67
Software Developer	.75	.77	Computer Systems Analyst	.73	.65
Broadcast Journalist	–.35	–.34	Buyer	–.31	–.40
Speech Pathologist	–.38	–.50	Social Worker	–.36	–.41
Advertising Account Manager	–.46	–.40	Mental Health Counselor	–.48	–.41
Mental Health Counselor	–.47	–.39	Special Education Teacher	–.11	–.42
Buyer	–.53	–.54	Speech Pathologist	–.23	–.43

TABLE 14. FIVE HIGHEST AND LOWEST CORRELATIONS BETWEEN INVESTIGATIVE GOT AND OS SCALES FOR WOMEN AND MEN IN THE CPP SAMPLE

Female Occupational Scale	Women *r*	Men *r*	Male Occupational Scale	Women *r*	Men *r*
Optometrist	.86	.86	Science Teacher	.78	.87
Chiropractor	.83	.83	Medical Technologist	.81	.83
Science Teacher	.82	.88	Engineer	.83	.83
Engineer	.81	.80	Chemist	.76	.79
Medical Technologist	.79	.80	Respiratory Therapist	.75	.79
Paralegal	–.47	–.51	Interior Designer	–.42	–.45
Farmer/Rancher	–.52	–.52	Restaurant Manager	–.47	–.49
Florist	–.56	–.57	Business Education Teacher	–.32	–.52
Advertising Account Manager	–,57	–.57	Buyer	–.56	–.55
Buyer	–.70	–.74	Florist	–.65	–.60

TABLE 15. FIVE HIGHEST AND LOWEST CORRELATIONS BETWEEN ARTISTIC GOT AND OS SCALES FOR WOMEN AND MEN IN THE CPP SAMPLE

Female Occupational Scale	Women *r*	Men *r*	Male Occupational Scale	Women *r*	Men *r*
Editor	.88	.92	Editor	.86	.92
Arts/Entertainment Manager	.84	.86	Arts/Entertainment Manager	.93	.91
ESL Instructor	.84	.88	English Teacher	.76	.85
Technical Writer	.80	.89	Urban & Regional Planner	.72	.85
Graphic Designer	.75	.70	Technical Writer	.77	.85
R&D Manager	–.28	–.04	Athletic Trainer	–.32	–.73
Medical Technician	–.32	–.71	Automobile Mechanic	–.63	–.73
Farmer/Rancher	–.55	–.64	Emergency Medical Technician	–.46	–.79
Financial Analyst	–.70	–.66	Radiologic Technologist	–.34	–.80
Production Worker	–.75	–.84	Farmer/Rancher	–.83	–.89

Note: N = 127 (67 women and 60 men). Five highest correlations are shaded; five lowest correlations are not shaded.

TABLE 16. FIVE HIGHEST AND LOWEST CORRELATIONS BETWEEN SOCIAL GOT AND OS SCALES FOR WOMEN AND MEN IN THE CPP SAMPLE

Female Occupational Scale	Women *r*	Men *r*	Male Occupational Scale	Women *r*	Men *r*
Rehabilitation Counselor	.88	.81	Elementary School Teacher	.92	.94
Social Worker	.88	.89	Middle School Teacher	.90	.87
Religious Spiritual Leader	.88	.75	Rehabilitation Counselor	.91	.86
School Counselor	.88	.81	Recreation Therapist	.82	.85
Secondary School Teacher	.87	.89	Career Counselor	.79	.84
Computer & IS Manager	–.36	–.39	Electrician	–.50	–.49
R&D Manager	–.39	–.51	Engineering Technician	–.29	–.52
Landscape/Grounds Manager	–.40	–.47	Optician	–.31	–.52
Medical Illustrator	–.42	–.42	Carpenter	–.40	–.55
Artist	–.59	–.38	Geologist	–.51	–.55

TABLE 17. FIVE HIGHEST AND LOWEST CORRELATIONS BETWEEN ENTERPRISING GOT AND OS SCALES FOR WOMEN AND MEN IN THE CPP SAMPLE

Female Occupational Scale	Women *r*	Men *r*	Male Occupational Scale	Women *r*	Men *r*
Realtor	.93	.93	Wholesale Sales Representative	.91	.91
Wholesale Sales Representative	.92	.91	Securities Sales Agent	.90	.91
Technical Sales Representative	.88	.91	Sales Manager	.88	.89
Sales Manager	.88	.91	Realtor	.89	.89
Securities Sales Agent	.88	.87	Marketing Manager	.83	.87
Forester	–.49	–.46	Artist	–.62	–.46
Geologist	–.49	–.34	Physician	–.30	–.49
Physician	–.53	–.65	Geologist	–.69	–.58
Medical Illustrator	–.54	–.28	Mathematician	–.68	–.68
Artist	–.63	–.47	Biologist	–.79	–.80

TABLE 18. FIVE HIGHEST AND LOWEST CORRELATIONS BETWEEN CONVENTIONAL GOT AND OS SCALES FOR WOMEN AND MEN IN THE CPP SAMPLE

Female Occupational Scale	Women *r*	Men *r*	Male Occupational Scale	Women *r*	Men *r*
Accountant	.79	.79	Financial Manager	.74	.68
Auditor	.78	.67	Accountant	.78	.67
Financial Manager	.77	.71	Auditor	.77	.67
Administrative Assistant	.76	.53	Computer Systems Analyst	.68	.67
Credit Manager	.73	.66	Computer & IS Manager	.68	.66
Mental Health Counselor	–.34	–.59	Speech Pathologist	.06	–.41
Advertising Account Manager	–.38	–.38	Artist	–.54	–.47
Medical Illustrator	–.45	–.25	Graphic Designer	–.50	–.50
Photographer	–.47	–.46	Mental Health Counselor	–.30	–.55
Artist	–.71	–.58	Social Worker	–.23	–.60

Note: N = 127 (67 women and 60 men). Five highest correlations are shaded; five lowest correlations are not shaded.

TABLE 19. FIVE HIGHEST AND LOWEST CORRELATIONS BETWEEN REALISTIC GOT AND OS SCALES FOR WOMEN AND MEN IN THE STRATIFIED SAMPLE

Female Occupational Scale	Women *r*	Men *r*	Male Occupational Scale	Women *r*	Men *r*
Engineering Technician	.89	.90	Firefighter	.78	.81
Firefighter	.86	.89	Engineer	.79	.81
Technical Support Specialist	.81	.84	Computer & IS Manager	.76	.78
Engineer	.80	.82	Software Developer	.76	.76
Network Administrator	.79	.80	Computer Systems Analyst	.74	.76
Financial Analyst	–.27	–.25	Translator	–.28	–.35
Photographer	–.28	–.34	Graphic Designer	–.36	–.41
Artist	–.47	–.61	Musician	–.29	–.41
Advertising Account Manager	–.51	–.46	Interior Designer	–.47	–.46
Buyer	–.53	–.48	Artist	–.42	–.50

TABLE 20. FIVE HIGHEST AND LOWEST CORRELATIONS BETWEEN INVESTIGATIVE GOT AND OS SCALES FOR WOMEN AND MEN IN THE STRATIFIED SAMPLE

Female Occupational Scale	Women *r*	Men *r*	Male Occupational Scale	Women *r*	Men *r*
Science Teacher	.89	.91	Science Teacher	.86	.90
Optometrist	.84	.90	Medical Technologist	.84	.87
Engineer	.84	.84	Engineer	.85	.86
Chiropractor	.84	.86	Respiratory Therapist	.82	.85
Dentist	.81	.83	Optometrist	.82	.85
Artist	–.41	–.46	Landscape/Grounds Manager	–.29	–.42
Paralegal	–.42	–.39	Restaurant Manager	–.37	–.48
Farmer/Rancher	–.48	–.58	Buyer	–.42	–.50
Advertising Account Manager	–.61	–.68	Florist	–.48	–.57
Buyer	–.68	–.73	Interior Designer	–.47	–.58

TABLE 21. FIVE HIGHEST AND LOWEST CORRELATIONS BETWEEN ARTISTIC GOT AND OS SCALES FOR WOMEN AND MEN IN THE STRATIFIED SAMPLE

Female Occupational Scale	Women *r*	Men *r*	Male Occupational Scale	Women *r*	Men *r*
Editor	.90	.94	Arts/Entertainment Manager	.92	.94
Arts/Entertainment Manager	.87	.88	Editor	.89	.90
Technical Writer	.86	.88	English Teacher	.84	.84
ESL Instructor	.85	.88	Urban & Regional Planner	.74	.78
English Teacher	.81	.84	Reporter	.78	.77
Radiologic Technologist	–.25	–.21	Vocational Agriculture Teacher	–.50	–.54
Medical Technician	–.38	–.33	Emergency Medical Technician	–.58	–.56
Farmer/Rancher	–.65	–.71	Military Enlisted	–.56	–.58
Financial Analyst	–.71	–.70	Automobile Mechanic	–.67	–.69
Production Worker	–.81	–.83	Farmer/Rancher	–.87	–.88

Note: N = **406** (206 women and 200 men). Five highest correlations are shaded; five lowest correlations are not shaded.

TABLE 22. FIVE HIGHEST AND LOWEST CORRELATIONS BETWEEN SOCIAL GOT AND OS SCALES FOR WOMEN AND MEN IN THE STRATIFIED SAMPLE

Female Occupational Scale	Women *r*	Men *r*	Male Occupational Scale	Women *r*	Men *r*
Rehabilitation Counselor	.90	.89	Middle School Teacher	.89	.91
Elementary School Teacher	.89	.86	Elementary School Teacher	.91	.91
School Counselor	.88	.86	Secondary School Teacher	.88	.90
Secondary School Teacher	.88	.87	Community Service Director	.91	.90
Religious Spiritual Leader	.87	.87	Rehabilitation Counselor	.89	.89
Farmer/Rancher	–.27	–.41	Biologist	–.38	–.32
R&D Manager	–.29	–.05	Geologist	–.41	–.54
Financial Analyst	–.32	–.33	Automobile Mechanic	–.46	–.46
Medical Illustrator	–.42	–.37	Artist	–.49	–.39
Artist	–.58	–.65	Farmer/Rancher	–.49	–.53

TABLE 23. FIVE HIGHEST AND LOWEST CORRELATIONS BETWEEN ENTERPRISING GOT AND OS SCALES FOR WOMEN AND MEN IN THE STRATIFIED SAMPLE

Female Occupational Scale	Women *r*	Men *r*	Male Occupational Scale	Women *r*	Men *r*
Wholesale Sales Representative	.92	.94	Wholesale Sales Representative	.93	.95
Realtor	.92	.95	Securities Sales Agent	.91	.94
Securities Sales Agent	.92	.92	Sales Manager	.89	..92
Sales Manager	.91	.93	Technical Sales Representative	.89	.91
Technical Sales Representative	.89	.91	Operations Manager	.90	.91
Musician	–.33	–.43	Graphic Designer	–.46	–.44
Photographer	–.34	–.33	Mathematician	–.64	–.63
Physician	–.41	–.43	Artist	–.63	–.66
Medical Illustrator	–.49	–.53	Geologist	–.60	–.67
Artist	–.73	–.73	Biologist	–.72	–.80

TABLE 24. FIVE HIGHEST AND LOWEST CORRELATIONS BETWEEN CONVENTIONAL GOT AND OS SCALES FOR WOMEN AND MEN IN THE STRATIFIED SAMPLE

Female Occupational Scale	Women *r*	Men *r*	Male Occupational Scale	Women *r*	Men *r*
Administrative Assistant	.84	.84	Accountant	.82	.87
Auditor	.83	.87	Auditor	.81	.87
Technical Support Specialist	.83	.83	Financial Manager	.82	.87
Accountant	.82	.87	Business Finance Supervisor	.81	.85
Financial Manager	.82	.85	Financial Analyst	.77	.83
Musician	–.38	–.43	Interior Designer	–.28	–.42
Medical Illustrator	–.44	–.50	Musician	–.43	–.51
Photographer	–.55	–.55	Biologist	–.48	–.58
Advertising Account Manager	–.55	–.52	Graphic Designer	–.60	–.62
Artist	–.78	–.82	Artist	–.66	–.72

Note: N = 406 (206 women and 200 men). Five highest correlations are shaded; five lowest correlations are not shaded.

TABLE 25. FIVE HIGHEST AND LOWEST CORRELATIONS BETWEEN REALISTIC GOT AND OS SCALES FOR WOMEN AND MEN IN THE CONVENIENCE SAMPLE

Female Occupational Scale	Women *r*	Men *r*	Male Occupational Scale	Women *r*	Men *r*
Engineering Technician	.85	.89	Firefighter	.71	.76
Firefighter	.83	.82	Engineering Technician	.77	.74
Electrician	.75	.76	Network Administrator	.63	.73
Landscape/Grounds Manager	.74	.77	Engineer	.68	.73
Automobile Mechanic	.73	.74	Computer & IS Manager	.61	.69
Career Counselor	–.34	–.25	Speech Pathologist	–.32	–.33
Broadcast Journalist	–.38	–.37	Buyer	–.32	–.37
Advertising Account Manager	–.41	–.35	Advertising Account Manager	–.34	–.38
Mental Health Counselor	–.54	–.38	Mental Health Counselor	–.48	–.42
Buyer	–.55	–.57	Interior Designer	–.38	–.45

TABLE 26. FIVE HIGHEST AND LOWEST CORRELATIONS BETWEEN INVESTIGATIVE GOT AND OS SCALES FOR WOMEN AND MEN IN THE CONVENIENCE SAMPLE

Female Occupational Scale	Women *r*	Men *r*	Male Occupational Scale	Women *r*	Men *r*
Science Teacher	.87	.87	Engineer	.86	.85
Optometrist	.87	.88	Medical Technologist	.87	.83
Engineer	.83	.82	Optometrist	.82	.83
Medical Technologist	.83	.79	Dentist	.78	.82
Physicist	.80	.75	R&D Manager	.81	.81
Community Service Director	–.51	–.41	Florist	–.61	–.47
Life Insurance Agent	–.54	–.49	Restaurant Manager	–.52	–.47
Florist	–.59	–.46	Life Insurance Agent	–.47	–.48
Advertising Account Manager	–.74	–.62	Interior Designer	–.51	–.50
Buyer	–.78	–.66	Advertising Account Manager	–.54	–.52

TABLE 27. FIVE HIGHEST AND LOWEST CORRELATIONS BETWEEN ARTISTIC GOT AND OS SCALES FOR WOMEN AND MEN IN THE CONVENIENCE SAMPLE

Female Occupational Scale	Women *r*	Men *r*	Male Occupational Scale	Women *r*	Men *r*
Editor	.89	.88	Arts/Entertainment Manager	.91	.87
Arts/Entertainment Manager	.84	.77	Editor	.86	.86
Technical Writer	.83	.76	English Teacher	.76	.79
ESL Instructor	.82	.83	Art Teacher	.78	.74
Art Teacher	.75	.66	Technical Writer	.77	.69
Mathematics Teacher	–.38	–.15	Vocational Agriculture Teacher	–.60	–.41
Medical Technician	–.39	–.34	Electrician	–.53	–.45
Farmer/Rancher	–.71	–.57	Emergency Medical Technician	–.67	–.54
Financial Analyst	–.71	–.64	Automobile Mechanic	–.65	–.57
Production Worker	–.85	–.76	Farmer/Rancher	–.83	–.82

Note: N = 171 (96 women and 75 men). Five highest correlations are shaded; five lowest correlations are not shaded.

TABLE 28. FIVE HIGHEST AND LOWEST CORRELATIONS BETWEEN SOCIAL GOT AND OS SCALES FOR WOMEN AND MEN IN THE CONVENIENCE SAMPLE

Female Occupational Scale	Women *r*	Men *r*	Male Occupational Scale	Women *r*	Men *r*
Elementary School Teacher	.86	.88	Elementary School Teacher	.90	.90
Secondary School Teacher	.84	.80	Middle School Teacher	.90	.87
Rehabilitation Counselor	.84	.84	Recreational Therapist	.78	.84
Social Worker	.82	.79	Rehabilitation Counselor	.84	.84
Special Education Teacher	.82	.82	Secondary School Teacher	.81	.83
R&D Manager	–.27	–.34	Carpenter	–.32	–.33
Computer & IS Manager	–.28	–.30	Automobile Mechanic	–.32	–.33
Computer Systems Analyst	–.33	–.24	Geologist	–.30	–.35
Medical Illustrator	–.42	–.38	Artist	–.31	–.36
Artist	–.49	–.50	Farmer/Rancher	–.22	–.36

TABLE 29. FIVE HIGHEST AND LOWEST CORRELATIONS BETWEEN ENTERPRISING GOT AND OS SCALES FOR WOMEN AND MEN IN THE CONVENIENCE SAMPLE

Female Occupational Scale	Women *r*	Men *r*	Male Occupational Scale	Women *r*	Men *r*
Realtor	.91	.93	Wholesale Sales Representative	.90	.92
Purchasing Agent	.89	.88	Securities Sales Agent	.89	.90
Sales Manager	.87	.91	Sales Manager	.82	.90
Wholesale Sales Representative	.86	.90	Realtor	.84	.89
Securities Sales Agent	.85	.90	Operations Manager	.79	.88
Geologist	–.37	–.43	Geographer	–.49	–.55
Mathematician	–.42	–.43	Geologist	–.57	–.64
Forester	–.48	–.52	Artist	–.39	–.65
Biologist	–.52	–.55	Mathematician	–.67	–.68
Physician	–.55	–.54	Biologist	–.77	–.84

TABLE 30. FIVE HIGHEST AND LOWEST CORRELATIONS BETWEEN CONVENTIONAL GOT AND OS SCALES FOR WOMEN AND MEN IN THE CONVENIENCE SAMPLE

Female Occupational Scale	Women *r*	Men *r*	Male Occupational Scale	Women *r*	Men *r*
Technical Support Specialist	.83	.68A	ccountant	.66	.75
Accountant	.77	.80	Financial Manager	.67	.75
Auditor	.75	.75	Auditor	.74	.72
Software Developer	.75	.60	Credit Manager	.51	.71
Computer Programmer	.74	.56	Business Finance Supervisor	.61	.70
Speech Pathologist	–.39	–.30	Photographer	–.22	–.52
Photographer	–.48	–.63	Biologist	–.10	–.54
Advertising Account Manager	–.54	–.42	Mental Health Counselor	–.50	–.59
Mental Health Counselor	–.57	–.65	Graphic Designer	–.55	–.67
Artist	–.71	–.75	Artist	–.50	–.71

Note: N = 171 (96 women and 75 men). Five highest correlations are shaded; five lowest correlations are not shaded.

Relationships Between Learning Environment and Education Level

The Learning Environment scale was designed to differentiate people comfortable in formal academic settings from those who prefer learning in more practical or applied settings. Thus, one route to examining the validity of this PSS is to look at differences on the scale for people with varying amounts of formal education (Donnay et al., 2005, p. 148). Figures 2–4 show average learning environment scores for different levels of education. The figures for each sample show that as education level increases, so do learning environment scores. This finding is consistent with what was reported in the *Strong Interest Inventory® Manual* (Donnay et al., 2005).

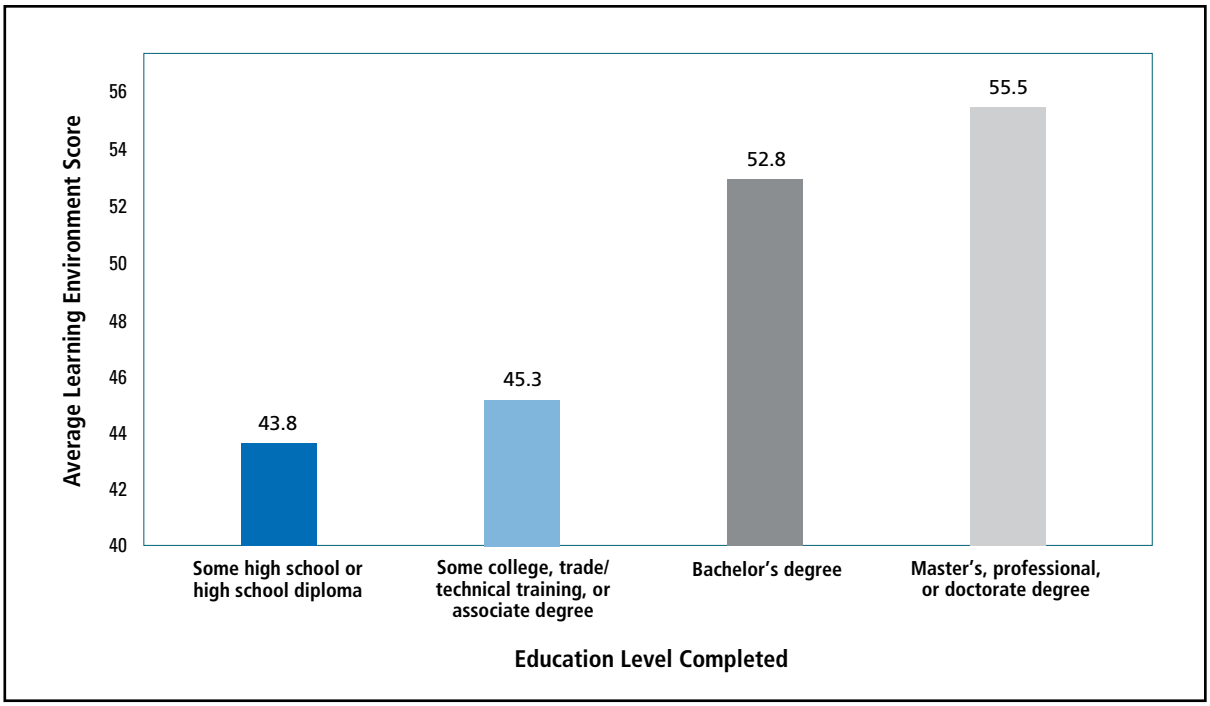

Figure 2. Learning Environment Scores by Education Level in the CPP Sample

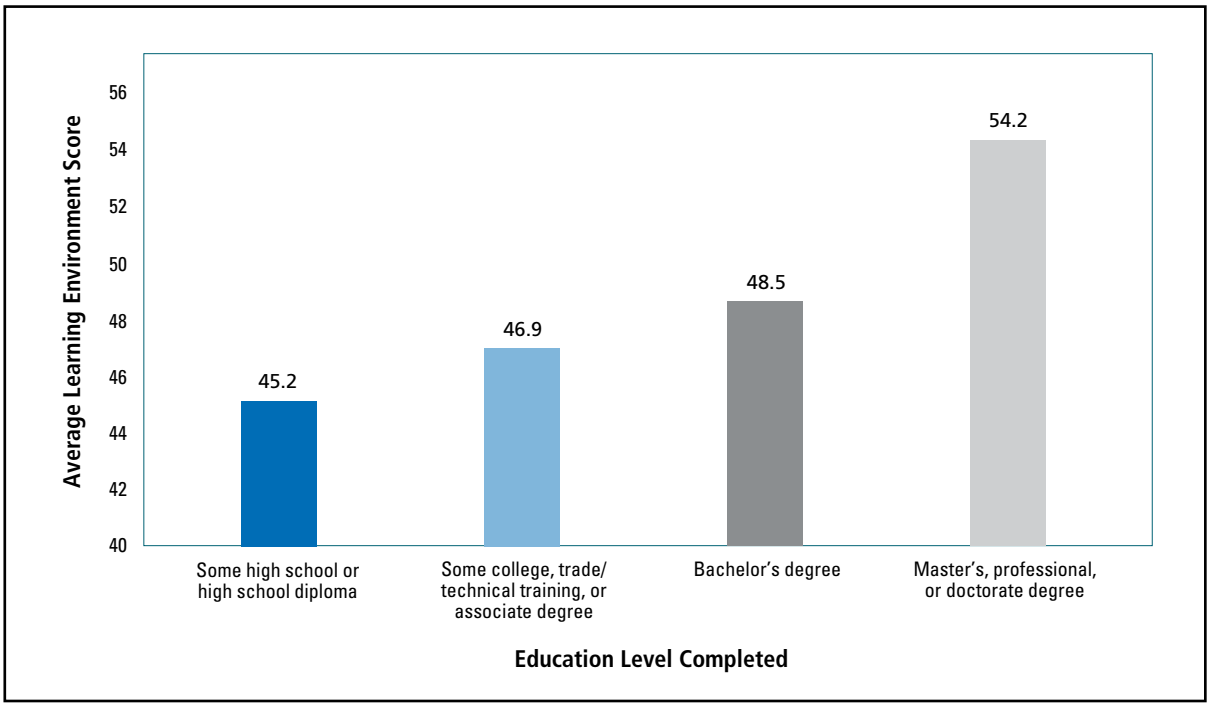

Figure 3. Learning Environment Scores by Education Level in the Stratified Sample

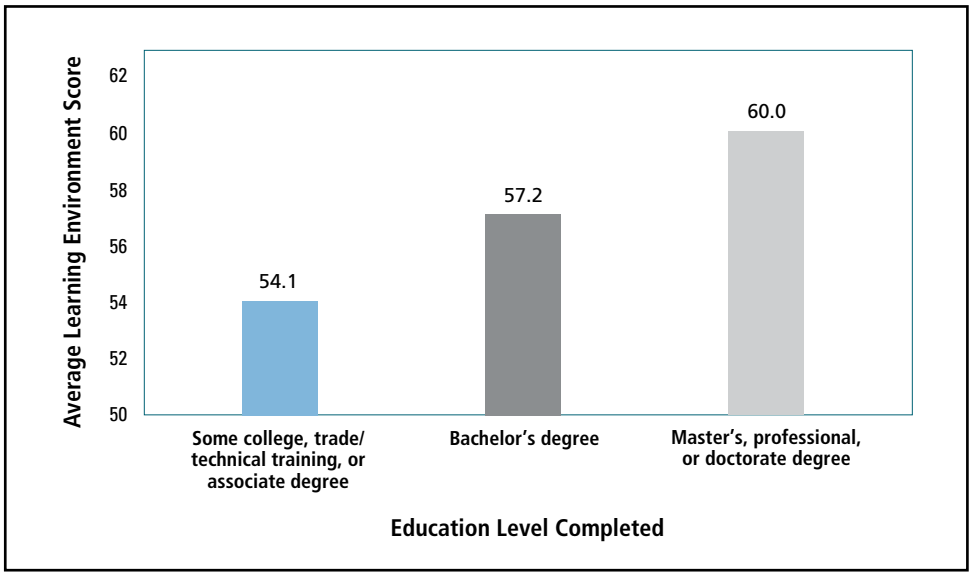

Figure 4. Learning Environment Scores by Education Level in the Convenience Sample

CONCLUSION

The analyses reported here suggest that the *Strong Interest Inventory* assessment is psychometrically sound when used with members of the LGBT community. Specifically, internal consistency reliabilities are in a similar range for the three samples as is reported in the *Strong Interest Inventory® Manual* (Donnay et al., 2005). In addition, consistency was found in the intercorrelations among the GOTs, demonstrating that the RIASEC patterns hold for all the samples included here. Similarly, consistent results were found for the GOT and OS relationships, and Learning Environment scores by education level. Going forward, however, interested researchers should examine these and other analyses with other samples of LGBT individuals to verify and further generalize the results found here.

These results should not be interpreted as suggesting that no consideration should be given when interpreting *Strong* results with LGBT community members. Indeed, guidelines from Prince and Potoczniak (2012) and Campbell (1987) are summarized here and may be useful. In addition, career counselors should be aware of and feel free to utilize the opposite-gender reports available for the *Strong* in the event they believe it will be helpful to their clients. If nothing else, it may demonstrate to LGBT clients that the results, regardless of the Occupational Scale computation used, are meaningful and useful.

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