

## Quality of Work Life Factors for Mental Health Therapists Providing Neurofeedback

*Jonathon E. Larson\**, *Bethany Apa*, *Lindsay L. Sheehan*, *Thomas P. Cothran*,  
*Kelly O'Neill*

Illinois Institute of Technology, Chicago, Illinois, USA

\*Address correspondence to: Jonathon Larson, Illinois Institute of Technology, 3424 S. State, First Floor, Room 1B9-2, Chicago, IL 60616. Email: [larsonjon@iit.edu](mailto:larsonjon@iit.edu)

Copyright: © 2014 Larson et al. This is an Open Access article distributed under the terms of the Creative Commons Attribution License (CC-BY).

### Abstract

The current study investigates factors connected to Quality of Work Life (QWL) for mental health therapists providing neurofeedback (NFB) based on previous NFB conceptual framework and QWL findings (Larson, In Press; Larson, Cothran, Drandorff, Morgan, & Ryan, 2012; Larson, Ryan, & Baerentzen, 2010). One hundred and ninety-eight NFB therapists completed online surveys gathering demographics and ratings of practice behaviors and characteristics. SPSS version 20 was utilized for descriptive statistics, frequencies, means, standard deviations, ranges, Pearson Product-Moment Correlation analyses, independent samples t-tests, and a regular simultaneous regression analysis. Results of this study found that QWL separately correlated with calmness, observant, realistic, and optimistic scores, and therapists with high levels of technique and commitment reported significantly higher QWL scores compared to therapists with moderate levels of technique and commitment. The current findings indicated that 40% of the variance in the QWL can be determined by variance in a significant multiple correlation of confidence, monthly NFB sessions, years of NFB experience, and burnout.

**Keywords:** mental health, therapists, neurofeedback, EEG biofeedback, quality of work life

### Introduction

Research has demonstrated that limited resources, increased role diffusion, increased work demands, burnout, work schedules, reduced employee support, and work stress negatively impact Quality of Work Life (QWL) (Bragard, Dupuis, Razavi, Reynaert, & Etienne, 2012; Maslach, Schaufeli, & Leiter, 2001; Sirgy, Reilly, Wu, & Efraty, 2008; Umene-Nakano et al., 2013). A systematic literature review revealed that career satisfaction, job performance, organizational commitment, quality of work life, and turnover intentions are related to life satisfaction (Erdogan, Bauer, Truxillo, & Mansfield, 2012). Research also connected low QWL with poor worker health outcomes (Page & Vella-Brodrick, 2012). The World Health Organization (2002) reported poor workplace well-being and health has been connected to

absenteeism, work performance, staff attitude and behavior, and work relationships. Two studies indicated that QWL problems existed within NFB settings, and QWL was related to therapist burnout, interpersonal skill commitment, and client adherence (Larson, Ryan, & Baerentzen, 2010; Larson, Cothran, Drandorff, Morgan, & Ryan, 2012). The current study utilized this previous research as a foundation for investigating QWL research for mental health therapists providing NFB therapy. Uncovering these factors leads to improved knowledge of therapists' QWL and potentially guidance for future therapist and client studies.

Since study participation criteria included mental health therapists that provide NFB therapy, an overview of NFB and research findings follows. Neurofeedback, electroencephalographic (EEG) biofeedback, or brain-computer interface, combines operant conditioning and advanced technology to teach individuals to influence and regulate their EEG patterns leading to improved physiological and psychological functioning. The term neurofeedback (NFB) is used for the purposes of this paper, with the understanding that EEG biofeedback and brain-computer interface are also included when the term NFB is used. Berger (1930) detected EEG activity in 76 individuals and demonstrated feasibility of capturing and utilizing EEG in his follow-up studies. Kamiya (2011) and Serman, LoPrestis, and Fairchild (2010) reviewed and summarized their crucial applied EEG research during the 1960s and 1970s; their research demonstrated the feasibility and utility of combining EEG wave patterns with operant conditioning to improve physiological regulation. Hammond (2011) provided a review of NFB research findings, and Yucha and Montgomery (2008) presented a framework and findings for evidence-based NFB. Arns, de Ridder, Strehl, Breteler, and Coenen's (2009) neurofeedback meta-analysis reported large effect sizes for impulsivity and inattention and a medium effect size for hyperactivity. A randomized controlled trial with a six-month follow-up of children with ADHD indicated significant academic improvements for the NFB intervention group compared to the pharmacological intervention group (Meisel, Servera, Garcia-Banda, Cardo, & Moreno, 2013). Niv (2013) reviewed NFB effectiveness research for various disorders and concluded NFB demonstrated superior or equivalent outcomes when compared to alternative or no treatment.

In addition to NFB efficacy and effectiveness research, current literature highlights the importance exploring therapist and client relationships, establishing NFB practice guidelines, identifying properly trained therapists, highlighting NFB learning principles, and understanding potential directions for future practice and research growth (Aguilar-Prinsloo & Lyle, 2010; Hammond & Kirk, 2008; Hammond et al., 2011; Sherlin et al., 2011; Lyle, 2012). However, a comprehensive literature review found a limited number of investigations related to NFB therapist factors. Rubi (2006) investigated international therapist demographic variables, and a therapist training program highlighted age as a potential variable for specific client types (Thompson & Thompson, 2008). Additional research reported therapist perspectives and factors related to quality of work and NFB outcomes (Larson, Ryan, & Baerentzen, 2010; Larson, Cothran, Drandorff, Morgan, & Ryan, 2012; Larson, In Press).

Based on previous findings and recommendations for future research, the current study explores connections between QWL and factors of mental health therapists providing NFB. First, the variables within the study are defined, with specific measurement details of each variable, in the methods section of this paper. Second, this paper contains a review of current literature and provides the rationale for including these variables in the study. Third, the study hypotheses are listed.

## Definitions of Variables

Throughout this section of the paper, the primary variables are in bold type to provide easy reference for the reader. **QWL** is defined as interactions among work outcomes, settings, resources, and worker characteristics. **Calmness** included the ability to remain relaxed with comfortable and engaging conversations throughout NFB sessions; **confidence** described self-assurance in providing effective therapeutic treatment during NFB sessions. **Observant** included the ability to notice and synthesize client comments, behaviors, and responses to NFB sessions. **Realistic** is defined as providing clear and concise expectations of NFB outcomes and **optimism** as maintaining a positive outlook throughout the therapeutic process. **Techniques** is defined as therapist abilities utilizing both NFB technology and interpersonal skills. **Commitment** is identified as the level of importance the therapist places on learning new NFB technology and interpersonal skills. **Dropouts** is defined as the number of clients that terminate NFB therapy each month before completing the recommended number of NFB sessions; **successful outcomes** included the number of clients completing the recommended NFB training plan each month. **Monthly NFB sessions** included the total amount of NFB sessions therapists provided each month, and **years of NFB experience** included the total number of years practicing NFB. The current study utilized the Maslach and Leiter (1997) definition of **burnout** as experiencing emotional exhaustion, depersonalization, and personal accomplishments leading to negative emotions and unproductive workplace outcomes.

## Study Rationale

In order to connect current study variables to previous research findings, the variables that were used in a previous study by the current authors are placed in parentheses and bold type, followed by the term found in the literature. If the current study utilized the same term found in the research literature, then the variable name is typed in bold without brackets. **QWL** has been connected to job performance (**techniques**), turnover, interpersonal skill commitment (**commitment**), client adherence (**dropouts**), client outcomes (**successful outcomes**), work schedules (**monthly NFB sessions**), career satisfaction (**years of NFB experience**), and **burnout** (Bragard, Dupuis, Razavi, Reynaert, & Etienne, 2012; Erdogan, Bauer, Truxillo, & Mansfield, 2012; Firth-Cozens, 2001; Larson, Ryan, & Baerentzen, 2010; Larson, Cothran, Drandorff, Morgan, & Ryan, 2012; Maslach, Schaufeli, & Leiter, 2001; Page & Vella-Brodrick, 2012; Sirgy, Reilly, Wu, & Efraty, 2008; Umene-Nakano et al., 2013). The current paper investigates **calmness, confidence, observant, realistic, and optimistic** because practitioners reported the importance of these traits within NFB settings (Larson, Ryan, & Baerentzen, 2010; Larson et al. 2012). Additional research identified and categorized important therapist traits and characteristics similar to the traits of interest in this study (Imel & Wampold, 2008; Grenavage & Norcross, 1990; Wogan, & Norcross, 1985; Wampold et al., 1997). Imel and Wampold (1997) defined common factors as practitioner characteristics, role, client bond, context, and relationship qualities, which are separate from the specific therapy method being applied. Their findings and framework are used to organize the therapist traits that are investigating in this study. Since their framework includes a broad range of factors and the current paper focuses on practitioner factors, their common factors model was modified into common NFB therapist factors model, which included the five practitioner factors used in the current study: calmness, confidence, observant, realistic, and optimistic. The hypotheses and rationales, which are based on previous research and a review of the literature, are offered below.

## Research Hypotheses:

1. **Calmness, observant, realistic, optimistic, dropout, and successful outcome** scores will be separately correlated with **QWL** scores.
2. Group one with high **technique** scores will report higher **quality of life** scores compared to group two with moderate **technique** scores.
3. Group one with high **commitment** scores will report higher **QWL** scores compared to group two with moderate **commitment** scores.
4. A significant and multiple correlation of **confidence, monthly NFB sessions, years of NFB experience, and burnout** explains variance in **QWL** scores.

## METHODS

### Participants and Procedure

With Illinois Institute of Technology institutional review board approval, NFB therapists were recruited through discussion boards and email distributions. The announcement directed participants to an online survey that included a consent process. In response to the announcement, 198 usable therapist surveys were collected. SPSS Version 20.0 was utilized to complete the analyses. Two research assistants entered the 198 surveys into two separate SPSS files; discrepancies were resolved by comparing the two files and the original surveys. A five-step data-set cleaning process was used to identify errors, missing data, and outliers, and to ensure that the data met assumptions for analyses (Mickey, Dunn, & Clark, 2004). The SPSS analyses include descriptive statistics, frequencies, means, standard deviations, ranges, Pearson Product-Moment Correlation analyses, independent samples t-tests, and a regular simultaneous regression analysis.

### Instrumentation

For this study, the responses to the 65-item NFB Therapist Survey, which can be found in Appendix A, were collected. This survey was developed by utilizing findings from previous NFB therapist investigations (Larson, Ryan, & Baerentzen, 2010; Larson, Cothran, Drandorff, Morgan, & Ryan, 2012; Larson, In Press). This survey included demographic variables and ratings on therapist characteristics. For the remaining analyses, the following variables from the 65-item survey were utilized. The following variables utilized one survey question: gender (item #1); age (item #2); education (item #3); mental health license (item #4); health care license (item #5); years of NFB experience (item #6); continuing education (item #7); monthly NFB sessions (item #8); monthly successful outcomes (item #9); monthly dropouts (item #10); QWL (item # 15); and burnout (item #16). The following variables utilized two or more survey questions: techniques and commitment. Techniques was measured by adding the scores of two survey questions: "How would you rate your current knowledge about neurofeedback technology?" (item #11), and "How would you rate your interpersonal skills with clients?" (item #12). Both were measured on a seven-point Likert scale with anchors of 1 = poor to 7 = excellent. These questions gathered therapists' perspectives of their own knowledge levels rather than testing their knowledge or someone else's rating of their knowledge. Commitment was measured by adding the scores of two survey questions: "How would you rate your commitment to learning about neurofeedback technology?" (item #13), and "How would you rate your commitment to improving interpersonal skills with clients?" (item #14). Both were measured on a seven-point Likert scale with anchors of 1 = poor to 7 = excellent.

Using seven-point Likert scales, ability, priority, ease, and frequency were measured for: empathic, confident, friendly, and optimistic. For example, “During a neurofeedback session, what is your satisfaction level with your ability to be confident?” (1 = very dissatisfied to 7 = very satisfied); “During a neurofeedback session, what is your priority level for being confident?” (1 = not a priority to 7 = essential priority); “During a neurofeedback session, what is your level of difficulty or ease with being confident?” (1 = very difficult to 7 = very easy); and “During a neurofeedback session, how often are you confident?” (1 = not at all to 7 = frequently). The same method of measurement was used for the remaining four factors of calmness, observant, realistic, and optimistic. The four scores from each question were added together to obtain a composite factor score. For example, the composite confident score was computed as follows: composite confident score = confident ability score + confident priority score + confident ease score + confident frequency score. The composite scores for confidence, calmness, observant, realistic, and optimistic factors were used for remaining analyses of this study.

## RESULTS

Table 1 presents demographic information for the research subjects utilized in this study. For 198 subjects, percentages were calculated for gender, education, mental health licensure, and healthcare licensure. In addition, means and standard deviations for age (in years) and monthly continuing education are provided.

**Table 1**  
*Demographic Information for Neurofeedback Therapists (N =198)*

Item	<i>M</i>	<i>SD</i>	%
<b>Gender</b>			
Female	--	--	48.00
Male	--	--	<u>52.00</u>
Total	--	--	100.00
<b>Education</b>			
Associates	--	--	1.00
Bachelors	--	--	7.60
Masters	--	--	39.90
Doctorate	--	--	<u>51.50</u>
Total	--	--	100.00
<b>Mental Health Licensure</b>			
License	--	--	76.30
Non-License	--	--	<u>23.70</u>
Total	--	--	100.00
<b>Healthcare Licensure</b>			
License	--	--	69.20
Non-License	--	--	<u>30.80</u>
Total	--	--	100.00
Age	55.70	11.19	--
Monthly Continuing Education	6.00	7.38	--

Table 2 provides means, standard deviations, and ranges for variables included within remaining analyses. Pearson Product-Moment Correlation analyses were calculated for QWL, burnout, calmness, observant, realistic, optimistic, dropouts, and successful outcome results. Independent samples t-test analyses were performed using QWL, techniques, and commitment results. Finally, a regular simultaneous regression analysis was performed for QWL, confidence, monthly NFB sessions, years of NFB experience, and burnout results.

**Table 2**  
*Means, Standard Deviations, and Range of Quality of Work Life, Techniques, Commitment, Confidence, Monthly Sessions, Years of NFB Experience, Burnout, Attentive, Calm, Observant, Realistic, Optimistic, Careful, Dropout, and Successful Outcome Scores (N =198)*

Measure	<i>M</i>	<i>SD</i>	Range
Quality of Work Life	9.17	1.58	1.00 - 10.00
Techniques	11.31	1.57	7.00 – 14.00
Commitment	12.04	1.81	7.00 – 14.00
Confidence	23.79	3.11	14.00 – 28.00
Monthly Sessions	62.45	69.82	0.00 – 400.00
Years of NFB Experience	9.96	7.61	1.00 - 40.00
Burnout	2.66	1.96	1.00 - 10.00
Calm	25.05	2.53	4.00 - 28.00
Observant	25.10	2.42	4.00 - 28.00
Realistic	24.54	2.65	4.00 - 28.00
Optimistic	24.00	2.94	4.00 - 28.00
Dropouts	0.69	1.00	0.00 - 5.00
Successful Outcomes	5.72	11.67	0.00 - 95.67

Table 3 provides Pearson Product-Moment Correlations for the variables of interest within this study. Results indicated significant and positive correlations between the variables of quality of work life, calmness, observant, realistic, and optimistic. Non-significant correlations were found between QWL and dropouts, and successful outcomes.

**Table 3**

*Findings from Correlations of NFB Therapists' Quality of Work Life, Calmness, Observant, Realistic, Optimistic, Drop Out, and Successful Outcome Scores (N = 198)*

Scale	QWL	Ca	Ob	R	Op	DO	SO
QWL	--	.34**	.38**	.41**	.41**	-.04	.03
Ca	--	--	.59**	.59**	.62**	.007	.09
Ob	--	--	--	.69**	.59**	-.04	.12
R	--	--	--	--	.58**	-.05	.13
Op	--	--	--	--	--	-.06	.09
DO	--	--	--	--	--	--	.15*
SO	--	--	--	--	--	--	--

*Note:* QWL = Quality of Work Life, Ca = Calmness, Ob = Observant, R = Realistic, Op = Optimistic, DO = Drop Out, and SO = Successful Outcome, \* $p < .05$ . \*\* $p < .01$ .

An independent samples t-test was conducted to compare QWL scores in the high techniques condition ( $n = 91$ ) and the moderate techniques condition ( $n = 107$ ). There was a significant difference in the scores for high techniques ( $M = 9.60$ ,  $SD = 1.67$ ) and moderate techniques ( $M = 8.80$ ,  $SD = 1.37$ ) conditions;  $t(196) = 3.65$ ,  $p = 0.000$ . These results suggested that level of NFB and interpersonal techniques affects QWL; specifically, these results indicated that when therapists report high levels of NFB and interpersonal skills, their QWL increases. Another independent samples t-test was conducted to compare QWL scores in high-commitment-to-technique-improvement condition ( $n = 89$ ) and moderate-commitment-to-technique-improvement condition ( $n = 109$ ). There was a significant difference in the scores for high commitment ( $M = 9.54$ ,  $SD = 1.63$ ) and moderate commitment ( $M = 8.87$ ,  $SD = 1.49$ ) conditions;  $t(196) = 3.01$ ,  $p = 0.003$ . These results suggested that commitment to skill improvement affects QWL; specifically, the results indicated that when therapists demonstrate high levels of commitment to improving NFB technical and interpersonal skills, their QWL increases.

Table 4 provides a regular simultaneous regression analysis for NFB therapists, with QWL scores being the dependent variable and confidence, monthly sessions, burnout, and years of NFB experience combined being independent variables. Regular simultaneous regression results, with an alpha level of .05, indicated that as confidence, monthly sessions, and years of experience increase together with burnout scores decreasing, QWL scores increase. Results indicated a multiple correlation of .63 ( $p < .001$ ), and 40% of the variance in QWL

can be determined by the variance in confidence, monthly sessions, burnout, and years of NFB combined.

**Table 4**

*Findings from Regular Simultaneous Regression Analysis Predicting Neurofeedback Therapist's Quality of Work Life Scores and Confidence, Monthly Sessions, Burnout, and Years of NFB Experience Combined (N = 198)*

Variable	Beta	t-test	p	R	R <sup>2</sup>
DV = Quality of Work Life				.63***	40%
IVs = Confidence	.43	7.59	.000		
Monthly Sessions	.24	4.20	.000		
Burnout	-.25	-4.51	.000		
Years of NFB Experience	.15	2.61	.010		

Note: \*\*\* $p < .001$

## DISCUSSION

The first hypothesis was partially supported by Pearson Product-Moment Correlation analysis findings; significant and separate correlations were found between QWL and calmness, observant, realistic, and optimistic scores. It was postulated that therapists utilize these traits to support client life goals and to facilitate their own work life goals. With an optimistic outlook, therapists set realistic work goals through calmly observing their own personal needs and work resources. Improving QWL may include therapists setting aside time to utilize these traits to develop and to evaluate personal work goals. Another method for QWL improvement may include identifying educational opportunities for advanced development of calmness, observant, realistic, and optimistic traits within NFB sessions. Overall, identifying these four NFB therapist traits added to the knowledge base of which factors influence QWL. Non-significant and separate correlations between QWL and dropouts and successful outcomes were found in this study. Potentially, these two factors do not influence NFB therapists' perspectives about QWL. It was also proposed that the current study design, measurement methods, and analyses may be limited in measuring and identifying dropout and successful outcomes. Further research may include surveying clients on therapist factors that promote QWL.

The second hypothesis was supported by an independent samples t-test. The high technique group reported significantly higher QWL scores compared to the moderate technique group. These results suggested that level of NFB and interpersonal techniques affects QWL;

specifically, the results indicated that when therapists reported high levels of NFB and interpersonal skills, their QWL increases. High levels of technique afford therapists more time to reflect on client and personal outcomes versus spending time focusing and reflecting on professional skill improvement. Potentially, therapists with more time to relish outcomes leads to improvements in their QWL. Ways to increase techniques may include therapists engaging in mentoring and training opportunities related to NFB and interpersonal skill enhancement. Future research may include investigating effective and user-friendly skill enhancement methods for NFB therapists.

The third hypothesis was supported by an independent samples t-test. The high-commitment-to-improving-technique group reported significantly higher QWL scores compared to the moderate-commitment-to-improving-technique group. These results suggested that level of commitment to improving technique affects QWL; specifically, these results indicated that when therapists reported high levels of commitment, their QWL increases. Potentially, high commitment demonstrates high engagement with work leading to increased QWL. Engaging in skill improvement may also provide new professional and personal growth opportunities that positively influence QWL. Furthermore, therapists may also utilize high commitment when pursuing their own work goals leading to high QWL.

The fourth hypothesis was supported by regular simultaneous regression analysis findings: a significant and multiple correlation of confidence, monthly NFB sessions, years of NFB experience, and burnout explains variance in QWL scores. Neurofeedback therapists deciding to improve their QWL may explore methods focusing on increasing confidence, reducing burnout, and increasing monthly NFB sessions. Therapist that experience high confidence in their own work goals may have higher work satisfaction and QWL. Furthermore, therapists that model confidence during NFB sessions appear to have clients with more improvements, which leads to higher QWL. Ways to increase confidence may include: attending NFB workshops, utilizing mentorship opportunities, completing NFB certifications, increasing NFB technology knowledge, and increasing interpersonal skills. Increasing monthly sessions provides more opportunities for skill improvements, which in turn increases client outcomes leading to higher QWL. Therapists may focus on strategies to increase available time to complete NFB sessions. One strategy may include hiring/contracting personnel to coordinate scheduling, billing, marketing, and other administrative tasks that take time away from completing NFB sessions. Therapists may engage in burnout reduction strategies to eventually improve QWL. Burnout interventions typically address personal physical and psychological wellbeing, individual values, workload versus reward, and workplace stressors. Future burnout research may include identifying and testing burnout interventions that match workplace demands and needs specific to NFB therapists.

The current findings suggest that a therapist's perceptions of self are crucial components connected to QWL. Quality of work life appeared to be related to therapist traits of calmness, observant, realistic, and optimistic. Technical expertise and commitment for improvement appeared to impact QWL and the combination of confidence, monthly NFB sessions, years of NFB experience, and burnout correlated with QWL. Overall, these findings may be summarized as: factors of high work engagement partially explain high work satisfaction. Therapists that are highly engaged with their work may have increased excitement and pleasure that positively influences QWL.

Most research to date has investigated QWL within organizational settings with large staffing patterns and various types of leadership structures. However, one limitation of the current

study included the investigation of private, independent therapists rather than therapists from organizational settings; this may limit the ability to generalize or to directly connect the findings to previous QWL research. These findings are not offered as a comprehensive list of therapist factors related to QWL; however, this may provide a guide for future QWL research, especially investigations into QWL for private, independent therapists. Moreover, additional factors may have been missed due to the study design, sample size, and method of data collection. Additionally, there are limitations in the ability to connect therapist self-perceptions with client outcomes because only therapist self-perceptions were collected for this study and not client data. A meta-analysis demonstrated a moderate effect for cognitive-behavioral and multimodal interventions and a small effect for relaxation techniques on QWL (van der Klink, Blonk, Schene, & van Dijk, 2001). A potential next research step may test cognitive-behavioral, multimodal, relaxation techniques focused on therapist factors found within this study and the impact on QWL. Potential research questions may include: Do cognitive-behavioral, multimodal, relaxation techniques increase therapist factors and improve QWL?; Do NFB therapists with high QWL produce quicker and more sustainable NFB client outcomes?; and Do therapists with self-perceptions of high levels of calmness, confidence, optimistic, realistic, and observant traits produce quicker and more sustainable NFB client outcomes? Overall, the current study attempted to provide findings to identify therapist self-perceptions of traits and behaviors to guide future QWL research.

### References

- Aguilar-Prinsloo, S., & Lyle, R. (2010). Client perception of the neurofeedback experience: The untold perspective. *Journal of Neurotherapy*, *14*, 55–60.  
<http://dx.doi.org/10.1080/10874200903543948>
- Arns, M., de Ridder, S., Strehl, U., Breteler, M., & Coenen, A. (2009). Efficacy of neurofeedback treatment in ADHD: The effects of inattention, impulsivity, and hyperactivity: A meta-analysis. *Clinical EEG and Neuroscience*, *40*(3), 180–189.  
<http://dx.doi.org/10.1177/155005940904000311>
- Berger, H. (1930). On the electroencephalogram of man. *Journal für Psychologie und Neurologie*, *40*, 160–179.
- Bragard, I., Dupuis, G., Razavi, D., Reynaert, C., & Etienne, A. M. (2012). Quality of work life in doctors working with cancer patients. *Occupational Medicine*, *62*, 34–40.  
<http://dx.doi.org/10.1093/occmed/kqr149>
- Erdogan, B., Bauer, T. N., Truxillo, D. M., & Mansfield, L. R. (2012). Whistle while you work: A review of the life satisfaction literature. *Journal of Management*, *38*, 1038–1083.  
<http://dx.doi.org/10.1177/0149206311429379>
- Grencavage, L., & Norcross, J. (1990). Where are the commonalities among the therapeutic common factors? *Professional Psychology: Research and Practice*, *21*, 372–378.
- Hammond, D. C. (2011). What is neurofeedback: An update. *Journal of Neurotherapy*, *15*, 305–336. <http://dx.doi.org/10.1080/10874208.2011.623090>

- Hammond, D. C., Bodenhamer-Davis, G., Gluck, G., Stokes, D., Hunt Harper, S., Trudeau, D., ... Kirk, L. (2011). Standards of practice for neurofeedback and neurotherapy: A position paper of the International Society for Neurofeedback and Research. *Journal of Neurotherapy*, 15, 54–64. <http://dx.doi.org/10.1080/10874208.2010.545760>
- Hammond, D. C., & Kirk, L. (2008). First, do no harm: Adverse effects and the need for practice standards in neurofeedback. *Journal of Neurotherapy*, 12, 79–88. <http://dx.doi.org/10.1080/10874200802219947>
- Imel, Z., & Wampold, B. (2008). The importance of treatment and the science of common factors in psychotherapy. In S. D. Brown & R. W. Lent (Eds.), *Handbook of counseling Psychology* (4th ed., pp. 249–262). Hoboken, NJ: John Wiley & Sons Inc.
- Larson, J. E. (In Press). Neurofeedback training increases practitioner profit. *NeuroConnections*.
- Larson, J. E., Cothran, T., Drandorff, L., Morgan, C., & Ryan, C. (2012). The relationship between burnout, interpersonal commitment, client adherence, and quality of work life among neurofeedback practitioners. *Journal of Neurofeedback*, 16(4), 237–245. <http://dx.doi.org/10.1080/10874208.2012.728103>
- Larson, J. E., Ryan, C. B., & Baerentzen, M. B. (2010). Practitioner perspectives of neurofeedback therapy for mental health and physiological disorders. *Journal of Neurotherapy*, 14, 280–290. <http://dx.doi.org/10.1080/10874208.2010.523334>
- Kamiya, J. (2011). The first communications about operant conditioning of the EEG. *Journal of Neurotherapy*, 15(1), 65–73. <http://dx.doi.org/10.1080/10874208.2011.545764>
- Maslach, C., & Leiter, M. P. (1997). *The truth about burnout: How organizations cause personal stress and what to do about it*. San Francisco, CA: Jossey-Bass.
- Maslach, C., Schaufeli, W. B., & Leiter, M. P. (2001). Job burnout. *Annual Review of Psychology*, 52, 398–422.
- Meisel, V., Servera, M., Garcia-Banda, G., Cardo, E., & Moreno, I. (2013). Neurofeedback and standard pharmacological intervention in ADHD: A randomized controlled trial with six-month follow up. *Biological Psychology*, 94, 12–21. <http://dx.doi.org/10.1016/j.biopsycho.2013.04.015>
- Mickey, R. M., Dunn, O. J., & Clark, V. (2004). *Applied statistics: An analysis of variance and regression* (3rd ed.). New York, NY: John Wiley and Sons, Inc.
- Niv, S. (2013). Clinical efficacy and potential mechanisms of neurofeedback. *Personality and Individual Differences*, 54, 676–686. <http://dx.doi.org/10.1016/j.paid.2012.11.037>
- Page, K. M., & Vella-Brodrick, D. A. (2012). From nonmalfeasance to beneficence: Key criteria, approaches, and ethical issues relating to positive employee health and well-being. In N. P. Reilly, M. J. Sirgy, & C. A. Gorman (Eds.), *Work and quality of life: Ethical practices in organizations* (pp. 463–489). New York, NY: Spring Science and Business Media.

- Rubi, M. C. M., (2006). Neurofeedback around the world. *Journal of Neurotherapy*, 10, 63–73. [http://dx.doi.org/10.1300/J184v10n04\\_07](http://dx.doi.org/10.1300/J184v10n04_07)
- Sherlin, L. H., Arns, M., Lubar, J., Heinrich, H., Kerson, C., Strehl, U., & Sterman, B. (2011). Neurofeedback and basic learning theory: Implications for research and practice. *Journal of Neurotherapy*, 15, 292–304. <http://dx.doi.org/10.1080/10874208.2011.623089>
- Sirgy, M., Reilly, N. P., Wu, J., & Efraty, D. (2008). A work-life identity model of well-being: Towards a research agenda linking quality-of-work-life (QWL) programs with quality of life (QOL). *Applied Research In Quality of Life*, 3(3), 181–202. <http://dx.doi.org/10.1007/s11482-008-9054-6>
- Sterman, M. B., LoPresti, R. W., & Fairchild, M. D. (2010). Electroencephalographic and behavioral studies of monomethylhydrazine toxicity on the cat. *Journal of Neurotherapy*, 14, 293–300. <http://dx.doi.org/10.1080/10874208.2010.523367>
- Thompson, M., & Thompson, L. (2008). Achieving excellence with your staff: A consultant staff training program. In Selected Abstracts of Conference Presentation at the 2007 International Society for Neurofeedback Research (ISNR) 15th Annual Conference, San Diego, California. *Journal of Neurotherapy*, 12, 75.
- Umene-Nakano, W., Kato, T. A., Kikuchi, S., Tateno, M., Fujisawa, D., Hoshuyama, T., & Nakamura, J. (2013). Nationwide survey of work environment, work-life balance and burnout among psychiatrists in Japan. *PLoS ONE*, 8(2), e55189. <http://dx.doi.org/10.1371/journal.pone.0055189>
- van der Klink, J. J. L., Blonk, R. W. B., Schene, A. H., & van Dijk, F. J. H. (2001). The benefits of interventions for work-related stress. *American Journal of Public Health*, 91, 270–276.
- Wampold, B. E., Mondin, G. W., Moody, M., Stich, F., Benson, K., & Ahn, H. (1997). A meta-analysis of outcome studies comparing bona fide psychotherapies: Empirically, "all must have prizes." *Psychological Bulletin*, 122(3), 203–215.
- Wogan, M., & Norcross, J. C. (1985). Dimensions of therapeutic skills and techniques: Empirical identification, therapist correlates, and predictive utility. *Psychotherapy: Theory, Research, Practice, Training*, 22, 63–74.
- World Health Organization (2002). Mental health and work: Impact, issues, and good practices. Geneva: World Health Organization.
- Yucha, C., & Montgomery, D. (2008). *Evidence-based practice in biofeedback and neurofeedback*. Wheat Ridge, CO: Association for Psychophysiology and Biofeedback.

APPENDIX

Neurofeedback Therapist Survey

1. What is your gender?  
Male  
Female
  2. What is your age?
  3. What is your highest level of education?  
High School  
Associate  
Bachelor  
Master  
Doctorate
  4. Are you licensed mental health therapist in your state?  
Yes  
No
  5. Are you licensed healthcare therapist in your state?  
Yes  
No
  6. How many years of neurofeedback experience do you have?
  7. For an average month, how many hours of continuing education do you complete?
  8. For an average month, how many neurofeedback sessions do you provide?
  9. For an average month, how many clients do you have successfully completing their neurofeedback treatment?
  10. For an average month, how many clients quit neurofeedback training before completing their neurofeedback treatment?
  11. How would you rate your current knowledge about neurofeedback technology?  
Poor Fair Good Very Good Excellent  
1 2 3 4 5 6 7
  12. How would you rate your current interpersonal skills with clients?  
Poor Fair Good Very Good Excellent  
1 2 3 4 5 6 7
  13. How would you rate your current commitment to learning about neurofeedback technology?  
Poor Fair Good Very Good Excellent  
1 2 3 4 5 6 7
  14. How would you rate your current commitment to improving your interpersonal skills with clients?  
Poor Fair Good Very Good Excellent  
1 2 3 4 5 6 7
  15. My satisfaction level with my work life related to neurofeedback is?  
0% 10% 20% 30% 40% 50% 60% 70% 80% 90% 100%
  16. My burnout level related to my neurofeedback practice is?  
0% 10% 20% 30% 40% 50% 60% 70% 80% 90% 100%
  17. What is your frequency of doing neurofeedback training on yourself?  
Not at all, Once a month, Once every other week, Once a week, Two times a week, Three times a week, Four times a week, Five times a week, Six times a week, Everyday
- NOTE: Survey participants rated 12 traits for questions 18, 19, 20, & 21. Each question had 12 separate responses for a total of 48 items.

18. During a neurofeedback session, what is your satisfaction level with your ability to be...  
(a) ethical, (b) attentive, (c) empathic, (d) calm, (e) observant, (f) humorous, (g) analytical, (h) confident, (i) friendly, (j) realistic, (k) optimistic, (l) careful

Very Dissatisfied   Dissatisfied   Neutral   Satisfied   Very Satisfied  
1                    2                    3                    4                    5                    6                    7

19. During a neurofeedback session, what is your priority level for being...  
(a) ethical, (b) attentive, (c) empathic, (d) calm, (e) observant, (f) humorous, (g) analytical, (h) confident, (i) friendly, (j) realistic, (k) optimistic, (l) careful

Not a priority   Low                    Somewhat                    Neutral                    Moderate                    High  
Essential   Priority                    Priority                    Priority                    Priority                    Priority                    Priority  
1                    2                    3                    4                    5                    6                    7

20. During a neurofeedback session, what is your level of difficulty or ease with being...  
(a) ethical, (b) attentive, (c) empathic, (d) calm, (e) observant, (f) humorous, (g) analytical, (h) confident, (i) friendly, (j) realistic, (k) optimistic, (l) careful

Very                    Difficult                    Somewhat                    Neutral                    Somewhat                    Easy                    Very Easy  
Difficult                                       Difficult                                       Easy  
1                    2                    3                    4                    5                    6                    7

21. During a neurofeedback session, what is your satisfaction level with your ability to be...  
(a) ethical, (b) attentive, (c) empathic, (d) calm, (e) observant, (f) humorous, (g) analytical, (h) confident, (i) friendly, (j) realistic, (k) optimistic, (l) careful

Not at all                    Occasionally                    Frequently  
1                    2                    3                    4                    5                    6                    7