Critical Evaluation of the Beach Center Family Quality of Life Scale (FQOL-Scale)

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The Beach Center Family Quality of Life Scale (FQOL Scale) has been recently developed out of the Beach Center on Disability in Kansas. With a current focus on Quality of Life in health and rehabilitation sciences, this tool has the potential to be beneficial at both the clinical and research levels. This critical review evaluates the development of this scale and the statistical methods used to validate and gradually adapt the scale. The research presented suggests that the Beach Center FQOL Scale is a psychometrically sound scale that can provide an objective measure for this qualitative construct.

Introduction

In recent literature, the concept of Family Quality of Life (FQoL) has emerged as an extension of individual Quality of Life (QoL) (Wang & Brown, 2009). FQoL can be generally defined as “Families experience a high quality of life when their needs are met, they enjoy their time together and they are able to do things that are important to them” (Wang & Brown, 2009, p. 153). Within this definition it is also important to conceptualize FQoL as including both the aspects that define families universally and aspects that define families as unique (Wang & Brown, 2009). FQoL has become important in the field of Speech-Language Pathology as both public and private service delivery providers have begun to implement early intervention services using a family-centred approach (Wang & Brown, 2009). For example, the *Life Needs Model* developed at Thames Valley Children’s Centre, London, Ontario, focuses on providing multiple services by addressing the needs of the child, family and community while ultimately aiming for Community Participation and Quality of Life (King, Tucker, Baldwin, Lowry, LaPorta & Martens, 2002). Within these family-centred frameworks, it can be assumed that by effectively supporting the family we can improve the FQoL and in turn improve the QoL of the individual members, including the child with a disability (Wang & Brown, 2009). Therefore, when evaluating treatment and intervention services a measurement of FQoL can be an effective way of objectively evaluating family-centred programs and services (Hoffman, Marquis, Poston, Summers & Turnbull, 2006).

The Beach Center Family Quality of Life Scale (FQOL Scale) has been primarily developed out of the Beach Center on Disability at the University of Kansas (Zuna, James, Selig, Summers & Turnball, 2009; Hoffman et al., 2006). Researchers have developed this scale in an attempt to create a psychometrically sound measure that can be used in research and in clinical practice to evaluate programs and services (Hoffman et al., 2006). This scale includes 25 items across five subscales: Family Interaction, Parenting, Emotional Well-Being, Physical/Material Well-being and Disability Related Support (Hoffman et al., 2006 and Zuna, 2009). Each item on the scale begins with the phrase “How satisfied am I that…” and each item is rated on a five-point scale from very dissatisfied to very satisfied (Zuna et al., 2009 and J.A. Summers, personal communication, December 18, 2010). This scale is unique to the field of FQoL as it provides objective information about the families’ overall well-being (Zuna et al., 2009).

Objectives

The primary objective of this paper is to critically review the evidence presented regarding the validity and reliability of the Beach Center Family Quality of Life Scale as a measure of family and individual quality of life.

Methods

Search Strategy

The following databases were used in this literature search: CINAHL, Scopus and Google Scholar. The following search terms were used:

- (communication impairments) OR (speech/language impairments) AND (quality of life)
- (communication impairments) OR (speech/language impairments) AND (family quality of life)
- (Beach Center Family Quality of Life)

No limitations were set, however the following online journals were searched specifically:

- International Journal of Disability, development and Education
- Physical and Occupational Therapy in Paediatrics
- Journal of Early Intervention

Selection Criteria

Articles included within the selection criteria were studies that specifically investigated the reliability and/or validity of the Beach Center Family Quality of Life Scale using statistical measures or utilized this scale as an indicator of

FQoL. Articles that discussed the theoretical background for the concept of FQoL were included in the introduction.

Data Collection

This literature search resulted in 4 large-scale questionnaire design studies (Hoffman et al., 2006, Wang et al., 2006, Zuna et al., 2009 and Summers et al. 2007), 3 of which evaluated the statistical validity and/or reliability of the Beach Center Family Quality of Life Scale (Hoffman et al., 2006, Wang et al., 2006 and Zuna et al., 2009) and 1 used this scale as a measure of Family Quality of Life (Summers et al., 2007).

Results

Summary of Articles

Studies Evaluating Statistical Validity/Reliability of Beach Center FQOL Scale

Hoffman et al. (2006)

Hoffman et al. (2006) conducted two statistical analyses on the Beach Center FQOL Scale. Study 1 evaluated the conceptual and statistical fit within each subscale and Study 2 evaluated the overall structure and psychometric properties of the scale.

Study 1 recruited families from multiple demographic regions within the United States. 208 families participated in Study 1 and these families reported children's disabilities as follows: developmental delay, autism spectrum disorder, ADD/ADHD, mental retardation, emotional disorders, learning disabilities and various health and physical disabilities. Researchers used Confirmatory Factor Analysis to evaluate each subscale for the associated factor loadings and overall model fit. A full-information robust maximum likelihood within Mplus 3.13 was used due to the skewness of the items. Additionally, four criteria of item analysis were used to identify problematic items and increase subscale efficiency. These included: removal of any items that were rated as not sufficiently important, consideration of any possible ambiguity in each content item, removal of items with low loading on a factor or loading more than one factor and evaluation of internal consistency using Cronbach's alpha. Results of Study 1 indicated that Family Interaction and Emotional Well-being subscales presented as unidimensional and had adequate internal consistency. Modifications were made to the Health/Safety and General Resource subscales and the following new factors were created: Emotional Well-Being and Physical/Material Well-Being. The previous subscales were not sufficiently balanced and were felt to inconsistently measure overall FQoL. Additionally, individual items with low factor loading were removed from the scale. The Parenting, Disability-Related Support and Physical/Material Well-Being subscales did not demonstrate adequate internal consistency in satisfaction ratings, but did so in importance ratings, therefore resulting in item deletion.

Study 2 recruited families living in the Midwest who were associated with programs serving children with disabilities from ages 0 to five years. 280 families participated in this study and levels of disabilities were described as mild, moderate, severe or unknown. The same Confirmatory Factor Analysis was completed in this study and authors completed examinations of convergent validity and test-re-test reliability, using the re-structured FQOL Scale. Results from this study indicate that all subscales had excellent fit for both importance and satisfactions ratings. The overall structure of the scale for importance and satisfaction ratings yielded excellent fit and the subscale model had excellent fit, whereas the item level model had acceptable fit. Both the Family APGAR and the Family Resource Scales were significantly correlated with FQOL Scale, indicating acceptable convergent validity. Test-retest evaluations revealed that each of the importance and satisfaction responses within the 5 subscales was significantly correlated.

Wang et al. (2006)

This study assessed whether mothers and fathers of children with disabilities view constructs of FQoL differently on both Importance and Satisfaction ratings, by using the Beach Center FQOL Scale. Participants were recruited from early childhood programs in Kansas that provide service to young children with disabilities. A total of 120 families returned the survey and were included in this study. Families included in this study reported their children as having the following disabilities: ADD/ADHD, autism spectrum disorders, developmental delays, emotional or behavioural disorders, intellectual disabilities, hearing or vision impairments, physical disabilities, speech or language impairments and health impairments. The SEM (structural equation modeling) technique was used to evaluate the quality of the model fit as well as the equivalence and structural invariance of the model. Results from this study indicate that there was no significant difference between Importance and Satisfaction ratings of mothers and fathers within each subscale and the overall scale, but both rated Importance higher than Satisfaction. Equivalency measurements also indicate that mothers and fathers from the same family view the FQoL construct similarly.

Zuna et al. (2009)

This study considered whether the Beach Center Family Quality of Life Scale could be used to evaluate FQoL of families without children with disabilities. Researchers hypothesized that by removing the Disability Related Support subscale, families without children with disabilities would perceive FQoL similarly to families with children with disabilities. This study was a substudy of the Kindergarten School Readiness Study (K-SRS), a state wide program conducted by the State Department of Education in Kansas. Kindergarten teachers randomly selected students and their families to participate in the study. A total of 696 surveys were returned and 571 surveys were completed by families without children with disabilities, and therefore used in this study. Families completed the Beach Center FQOL Scale and demographic information. A Confirmatory

Factor Analysis procedure was used to examine the scale's structure for average discrepancies between sample and model correlations, comparative fit indices and errors in fit. Researchers also employed the Mplus maximum likelihood robust estimator to correct for moderate negative skewness of the data. Results from this study indicate that the overall scale produces an excellent fit, using Cronbach's alpha and each of the four subscales fall within an acceptable fit range of .77 to .85. Fit statistics indicated an acceptable level of fit for the measurement model. All subscales were observed to be intercorrelated but were found to be significantly different and distinct. Fit statistics of the second order model indicate that the second-order FQoL model is best fitting for the non-disability sample. Researchers conclude that the Beach Center FQOL Scale is a valid measure of FQoL for families with children without disabilities.

<u>An Application of the Beach Center FQOL Scale</u>

Summers et al. (2007)

This study considered the following research questions: Do families perceive that they are receiving adequate levels of services for themselves and their children? What are families' ratings of satisfaction and importance of their family-professional partnership? What are families' ratings of satisfaction with aspects of their Family Quality of Life? Do services act as a predictor for Family Quality of Life, and do partnerships mediate that relationship? The following questionnaires were used in this study: Service Inventory, the Family-Professional Partnership Scale, the FQOL Scale and demographic questions (income, level of child's disability, sex of child with disability and age of child with disability). The Service Inventory was used to evaluate a family's perception of the services they were receiving and services they felt they needed. The Family-Professional Partnership Scale assessed a family's satisfaction with and perception of importance of the family-professional relationship. The FQOL Scale assessed a family's perception of the importance and satisfaction in different domains of family quality of life. Authors approached 80 early childhood programs which provided service to children ages 0-five years. Thirty of these programs expressed interest in the project and eight programs participated. A total of 1409 families received survey packages and 411 individual respondents returned completed surveys. Following exclusion criteria, 180 respondent families were included in this study. Researchers gathered information about the average responses on both the FQOL Scale and the Partnership scale. To indicate the relationships and mediator effects of service adequacy, FQoL and family satisfaction with partnerships, researchers developed a mediation model and used a Comparitive Fit Index of .95 to indicate excellent fit. Results of this study indicated that in general families were satisfied with the services they were receiving and the relationship between themselves and their service provider. Respondents further indicated that Physical/Material Well-Being and Disability-Related Support were the most important influences on FQoL. These authors further reported that service adequacy was a significant predictor of FQoL and the family-service provider relationship. The family-service provider relationship was also a partial mediator of the effects of service adequacy on family quality of life.

Critical Analysis of Articles

Survey research is considered a Level 4 in methodological design. However, this level of research is considered appropriate for the purpose of this research in developing a standardized scale. In survey research, Greenhalgh (2006) suggests ten questions that should be used to evaluate results of survey research. Of these ten questions, the following three topics will be addressed: methods of statistical analysis, sample size and diversity, sampling procedures and response rate and statement of conclusion. These topics were chosen as they are most relevant for the critical analysis of the previously summarized articles and specifically address both the strengths and weaknesses of the research presented.

<u>Methods of Statistical Analysis</u>

Structural Equation Modeling (SEM)

SEM has become a popular method of statistical analysis in social sciences and has been used to discuss relationships between variables (Kaplan, 2009). Factor Analysis, both Confirmatory and Exploratory, is considered a type of SEM, and is used to evaluate the structures within a number of variables in order to describe the relationships that exist between them and how together they represent a factor (Portney & Watkins, 2000). Confirmatory Factory Analysis (CFA) is often used in the development of testing instruments, such as questionnaires, to determine the following: the number of factors that underlie the instrument and its items, the factor loadings or relationships between items and factors, and the distribution of these factor loadings (Brown, 2006). In this paper, both Hoffman et al. (2006) and Zuna et al. (2009) used a CFA method to evaluate the FQOL Scale. Wang et al. (2006) also stated that they used a SEM method to evaluate the degree of model fit and structural and measurement invariance. Each study also used additional references to qualify their choice of statistical analysis. Therefore it is felt that each study chose an appropriate method of statistical analysis.

Limitations of SEM and CFA

The biggest limitation and statistical concern for both SEM and CFA is that it is a subjective method of evaluating factors and their relationships (Portney & Watkins, 2000; Kaplan, 2009). As such, researchers can use the statistical results to develop factors and interpret their relationships and distribution as they see fit (Portney & Watkins, 2000). None of the present studies, Hoffman et al. (2006), Wang et al. (2006) and Zuna et al. (2009) specifically commented on this limitation of SEM and CFA. However, each provided thorough descriptions of their methods of statistical analysis and stated the reasons for choosing each method. Additionally, Hoffman et al. (2006) described the qualitative method of developing and organizing the domains and factors related to FQoL which was completed in the first phase of the questionnaire development. Nevertheless, each of these studies was conducted by the same group of researchers and therefore their interpretation of the factors that are most relevant to evaluation family quality of life is subject to their personal biases.

General Study Limitations

Sample Size

In Factor Analysis, there are two common recommendations for sample size: 10 subjects for every item on the questionnaire or a minimum of 200 subjects (C. Lee, personal communication, December 14, 2010). These recommendations are suggested in order to ensure the stability of the correlations between items (C. Lee, personal communication, December 14, 2010). Following these recommendations, researchers using CFA to evaluate the FQOL Scale should aim for 250 subjects (based on the 25 items with a minimum of 200). Hoffman et al. (2006) in both Study 1 and 2 included greater than 200 subjects, 208 and 280 respectively, Zuna et al. (2009) included 696 subjects and Wang et al. (2006) included 120 mother-father surveys (total of 240 subjects). Therefore, each study evaluating the validity and/reliability of the FQOL Scale achieved or closely approached the expected number of subjects to complete CFA or SEM. Summers et al. (2007), included less than 200 participants but did not use Factor Analysis.

Sample Diversity

Hoffman et al. (2006), Wang et al. (2006), Zuna (2009) and Summers et al. (2007) each stated that their sample population was not representative of the general population, which therefore reduces the possibility of the generalization of this data. Specifically, most authors commented that the sample population did not include enough culturally, linguistically and economically diverse families (Hoffman et al., 2006, Wang et al., 2006, Zuna et al., 2009 and Summers et al., 2007). Additionally, Summers et al. (2007), Zuna et al. (2009) and Hoffman et al. (2006) reported that most respondents were mothers. Hoffman et al. (2006) also commented that most families that participated had children with disabilities younger than 12 years of age.

Each of studies did however recruit a number of families with a variety of disabilities ranging from developmental delay to hearing impairment to Attention Deficit Disorders. The wide variety of disabilities types increases the validity of these research studies and increases its appropriateness for use with a number of families. However, in Study 2 of Hoffman et al. (2006) only used a mild, moderate and severe scale as an indicator of disability, which limits the interpretation of data and raises concerns for generalization.

Sampling Procedures and Response Rate

Each of the studies reported their sampling procedures which revealed that most of the participants were recruited from Midwestern states, specifically within the state of Kansas. In Study 1 of Hoffman et al. (2006), authors made a concerted effort to recruit families from a wider demographic region and were able to obtain data from Washington, Kansas, Michigan, Pennsylvania, North Carolina and Texas. Wang et al. (2006), Study 2 in Hoffman et al. (2006) and Summers et al. (2007) each contacted a number of early childhood programs to recruit participants within the Midwestern region of the United States. This tactic likely resulted in their limited number families with older children with disabilities. In regards to response rate, both Wang et al. (2006) and Summers et al. (2007) reported approximately 19% response rate, Zuna et al. (2009) reported a 38% response and Hoffman et al. (2006) did not report these statistics for either study. L. Archibald reports that in survey research the response rate should be 70% (Archibald, 2010). However, authors approached many early intervention centres and therefore they were able to include approximately 200 participants for each study which was appropriate for their method of statistical analysis. Alternatively, more information regarding the reasons for families' non-participation would provide further information about the characteristics of these families which may be relevant to the assessment of family quality of life.

Conclusive Research Statements

Hoffman et al. (2006), Wang et al. (2006) and Zuna et al. (2009) state that family-centered service providers and policy-makers are stressing the importance of QoL and FQoL as a positive outcome for their families and children. Hoffman et al. (2006) states that the FQOL Scale has the potential to be an outcome measure, pre-and post-test measure of treatment effectiveness and research tool to further explore the dynamics of FQoL (Beach Center on Disability, 2010). Additionally, as Summers et al. (2007) reported that service adequacy along with disability support and material well-being were most related to and predictors of FQoL, one could use this scale to evaluate provision of services. However, these statements may be over-stated at this time as this group of researchers has presented a limited number of convergent validity analyses of the scale (Hoffman et al., 2006). As well, their sample limitations presented in each study limit the generalization of this tool beyond Midwestern states. Additionally, considering the qualitative nature of QoL, authors should be cautious in stating that this scale can be a sole outcome measure for QoL.

Discussion

Overall, the research presented indicates that the Beach Center FQOL Scale is a psychometrically sound measure that has the potential to be a useful tool in both the research and clinical realms. However, future research should continue in order to support the wider use of this scale. Specifically, it is recommended that future research include populations of varying geographical areas, such as Canada or European countries. Additional research should also be completed by a neutral party in order to validate the statistical findings of the Beach Center on Disability research team. Finally, researchers should also consider investigating the implied relationship between individual QoL and FQoL and how reliably this relationship can be measured and defined.

Clinical Implications

The Beach Center FQOL Scale has the potential to be a relevant and useful tool for Speech-Language Pathologists and other health professionals working with families. In particular, current training and best practice standards argue that health professionals should strive to assist clients as well as their families in achieving good individual and family QoL. This measure can provide an objective tool for assessing this traditionally qualitative construct. Although, this tool does not provide an opportunity for clients to express their concerns, attitudes and feelings explicitly, it does assist the clinician in discovering topics that can be a focus for further discussion.

From a business and service perspective, this tool offers an indirect outcome measure of service satisfaction and overall FQoL. This is an important factor in maintaining and designing effective and efficient service for clients and their families.

For families with children with multiple disabilities, working with a variety of health professionals becomes part of the daily routine. By monitoring and addressing issues with FQoL, health professionals can help to make a family’s daily life manageable and enjoyable.

References

Archibald, L. (2010). *Critical Appraisal 2* [Lecture notes]. London, Ontario: University of Western Ontario, Communication Sciences and Disorders

Beach Center on Disability (2010). Tools: Family quality of life scale. Retrieved December 15, 2010 from http://www.beachcenter.org/resource_library

Brown, T.A. (2006). Confirmatory factor analysis for applied research. Guilford Press: New York, New York

Greenhalgh, T. (2006). *The basics of evidence-based medicine, 3rd ed*. Oxford: Blackwell Publishing.

Hoffman, L., Marquis, J., Poston, D., Summers, J.A. & Turnbull, A. (2006). Assessing family outcomes: Psychometric evaluation of beach center family quality of life scale. *Journal of Marriage and Family, 68,* 1069-1083.

Kaplan, D. (2009). Structural equation modeling: Foundations and extensions. [GoogleBooks version] SAGE Publications Inc.: United States of America.

King, G., Tucker, M.A., Baldwin, P., Lowry, K., LaPorta, J. & Martens, L. (2002). A life needs model of pediatric service delivery: Services to support community participation and quality of life for children and youth with disabilities. *Physical & Occupational Therapy in Pediatrics*, *22*(2), 53-77.

Portney, L.G. & Watkins, M.P. (2000). Multivariate analysis. *Second edition: Foundations of clinical research: Applications to practice* (607-620). Prentice-Hall Inc.: New Jersey, United States of America.

Summers, J.A., Marquis, J., Mannan, H., Turnbull, A.P., Fleming, K., Poston, D.J., Wang, M. & Kupzyk, K. (2007). Relationship of perceived adequacy of services, family-professional partnerships, and family quality of life in early childhood service programmes. *International Journal of Disability, Development and Education*, *54*(3), 319-338.

Wang, M. & Brown, R. (2009). Family quality of life: A framework for policy and social services provisions to support families of children with disabilities. *Journal of Family Social Work, 12*, 144-167.

Wang, M., Summers, J.A., Little, T., Turnbull, A., Poston, D. & Mannan, H. (2006). Perspectives of fathers and mothers of children with early intervention programmes in assessing family quality of life. *Journal of Intellectual Disability Research, 50*(12), 977-988.

Zuna, N.I., Selig, J.P., Summers, J.A., & Turnball, A.P. (2009). Confirmatory factor analysis of a family quality of life scale for families of kindergarten children without disabilities. *Journal of Early Intervention, 31*(2), 111-125