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## Clinical Utility of the Adapted Biopsychosocial Model: An Initial Validation Through Peer Review

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## Clinical Utility of the Adapted Biopsychosocial Model: An Initial Validation Through Peer Review

### Abstract

**Background:** The World Health Organization has called on health care providers to adopt a biopsychosocial approach to improve health and well-being and reduce disability. While a variety of holistic models exist in occupational therapy, none are explicitly biopsychosocial and use language consistent with both the World Health Organization's *International Classification of Functioning, Disability and Health* and the *Occupational Therapy Practice Framework*. Following the recent introduction of the Adapted Biopsychosocial Model (A-BPSM), this study served as an initial step toward validation of this model for use in occupational therapy.

**Method:** A qualitative descriptive design was implemented with a maximum variation purposive sample of 30 participants, including occupational therapy students, clinicians, and educators. The participants were interviewed regarding their perceptions of the utility of the A-BPSM. A thematic analysis approach was used.

**Results:** The participant data supported three major themes relating to the participants' perceptions of the A-BPSM: clarity, utility, and anticipated competence for application.

**Conclusion:** The findings support an initial step toward validation of the model and serve to offer occupational therapists an adapted biopsychosocial model of care. Recommendations include further evaluation of this model in comparison with existing models, as well as the application of the model to other disciplines.

### Comments

The authors report no potential conflicts of interest.

### Keywords

Adapted Biopsychosocial Model, A-BPSM, biopsychosocial, Biopsychosocial Model, frame of reference, holistic, model, occupational therapy, theory

### Credentials Display

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The World Health Organization (WHO, 2001, 2013) has called on health care providers to adopt a biopsychosocial approach to care. This call has echoed across geographic borders, health care professions, continuum of care, body systems, diagnoses, and life span. Through this integrated and holistic consideration of biological, psychological, and sociological factors (Wade & Halligan, 2017), occupational therapists may work to address a more diverse and comprehensive set of factors to improve health and well-being and reduce disability (WHO, 2001, 2013).

This biopsychosocial approach would seem to be in keeping with occupational therapy's professional identity as holistic providers. Despite the existence of a variety of holistic models in the profession, however, no model was found in the occupational therapy literature that collectively and explicitly addressed biopsychosocial factors in language consistent with both the WHO's *International Classification of Functioning, Disability, and Health* (ICF; WHO, 2001, 2013) and the American Occupational Therapy Association's (AOTA) *Occupational Therapy Practice Framework* (OTPF; AOTA, 2014a). To address this gap, Gentry et al. (2018) introduced the Adapted Biopsychosocial Model (A-BPSM).

Much of the current body of literature on a biopsychosocial approach to medical care was based on the seminal work of Engel (1977, 1978) who proposed that biology alone cannot account for all illness and disability. Engel's biopsychosocial approach further identified mechanisms by which biopsychosocial factors may exert significant influence over response to intervention and client outcomes. In 2002, Brewer et al. further adapted Engel's biopsychosocial model to address biopsychosocial factors in injury rehabilitation, which included (a) fixed factors, such as injury characteristics and sociodemographic factors, their impact on modifiable areas of impact, including biological factors, psychological factors, and social-contextual factors, and their dynamic interaction with each other; (b) intermediate biopsychosocial outcomes; and, ultimately, (c) rehabilitation outcomes (Brewer, 2007, 2009).

In the decades following the initial 2002 introduction of the Brewer et al. model, a growing body of evidence supported the benefit and efficacy of a biopsychosocial approach in improving outcomes and quality of care (Gatchel et al., 2014; Kress et al., 2015; Price et al., 2019; Wade & Halligan, 2017). Meanwhile, the WHO, through the ICF (2001, 2013), advocated for an explicit biopsychosocial approach to care across geographic borders, populations, and providers. This call for a more holistic and biopsychosocial approach to care on an international scale has been echoed on a national level as evidenced by biopsychosocial language modeled by the American Medical Association (AMA, 2014a, 2014b; Osipov, 2014; Sadigh, 2013), the National Academy of Medicine (Boat et al., 2016; Counts et al., 2018; NAM, 2018), and the Association of American Medical Colleges (AAMC, n.d., 2011; Englander et al., 2013, Smith et al., 2013). This language has also been adopted by medical providers (Farre & Rapley, 2017; Smith et al., 2013) as well as allied health providers, including nursing (American Nurses Credentialing Center, 2015; Lall & Restrepo, 2017; Renjith et al., 2016), athletic training (Bejar et al., 2017, Schuyler et al., 2018), physical therapy (American Physical Therapy Association, 2013, 2018; Beneciuk & George, 2015; Elven et al., 2015), speech therapy (American Speech-Language-Hearing Association, 2018; Cunningham et al., 2017; Wylie et al., 2013), and occupational therapy (AOTA, 2011, 2014a, 2014b, 2016, 2017a, 2017b).

While studies support the valuation and role of holistic models by occupational therapists (Larsson-Lund & Nyman, 2017; Shinohara et al., 2012; Wong & Fisher, 2015), findings suggest that occupational therapists tend to favor the application of a biomechanical approach, as well as other

similar bottom-up/reductionist approaches to care, with greater frequency than more inclusive top-down approaches (Ahn, 2016; Colaianni & Provident, 2010; National Board for Certification in Occupational Therapy, 2004; O'Neal et al., 2007). On its face, it would seem that this disproportionate emphasis on the biological aspects of care might represent a disconnect from (a) national and international calls for a biopsychosocial approach to care and (b) occupational therapy's professional identity of applying a holistic approach to incorporate psychological and social factors, alongside biological factors, in addressing the client as a whole (Crosby et al., 2015; Granquist et al., 2015; Jaini & Lee, 2015; Jasemi et al., 2017).

This gap in the occupational therapy literature explicitly addressing biopsychosocial needs across populations and diagnoses and incorporating language consistent with both WHO's *ICF* (2001, 2013) and AOTA's *OTPF* (2014a) was recently addressed with the introduction of the A-BPSM (Gentry et al., 2018; see Appendix A). This adapted model was based on the biopsychosocial model for injury rehabilitation introduced by Brewer et al. (2002). To adapt this model for application in the profession of occupational therapy, WHO/ICF and OTPF language was adopted to enhance alignment with the scope and epistemology of the profession (Gentry et al., 2018).

The A-BPSM was introduced into the body of scholarly peer reviewed literature in occupational therapy to represent a holistic and comprehensive model for occupational therapists; however, further inquiry was required as an initial step toward validation to use in the profession. Most succinctly, the statement of the problem may be distilled to: the newly introduced A-BPSM currently lacks validation for use; validation is needed. Therefore, the purpose of this study was to provide an initial step toward the validation of the A-BPSM for use in occupational therapy. This was accomplished through a peer review process by individuals representing a continuum of the profession.

The research questions that guided this study included the following: What are the participants' perceptions of the (a) perceived clarity and understandability of the A-BPSM, (b) perceived utility of the A-BPSM, and (c) perceived competence in application of the A-BPSM among a diverse group of individuals in the profession of occupational therapy including practicing clinicians, students, and educators?

## Method

### Research Design

Given its inherent focus on the perception of the individual, a qualitative descriptive approach (Stanley, 2015) was implemented to address the identified research question relating to participants' perceptions of the newly introduced A-BPSM. Unlike a phenomenological qualitative approach, which emphasizes the meaning of participants' lived experiences (Creswell & Poth, 2018; DePoy & Gitlin, 2016; Mapp, 2008), a qualitative descriptive (QD) approach may be used to describe, develop, or refine understanding of a phenomenon of which little may be known (Bradshaw et al., 2017; Kim et al., 2017). Further, descriptive designs (both quantitative and qualitative) may serve dual roles: as a formative exploration of new concepts and phenomena and as a foundation on which future work may be built (Niemeyer & Duddy, 2017; Tomlin & Borgetto, 2011). Given the recent introduction of the A-BPSM, and the novelty that this model presented for the participants, a QD approach was adopted; both for its fit with the overarching qualitative methodology of this study, as well as for its fit with the nature and content of the research question (participant perceptions of a novel model [A-BPSM] for occupational therapy practice).

In this qualitative descriptive design, individual and group interviews were conducted using semi-structured interview questions (Creswell & Poth, 2018; Kim et al., 2017; Trochim & Donnelly, 2008). Ethics approval for the study was gained from the Institutional Review Board (IRB) at each of the participating sites, including the University of St. Augustine, Radford University, and the Lewis Gale Medical Center. Informed consent was obtained from each participant prior to participation.

## Population and Sample

### Population

Practicing occupational therapists, graduate-level occupational therapy students, and occupational therapy educators represent the target populations (anticipated participants in and consumers of this research).

### Sample

The sample for this study (n = 30) was composed of three subgroups: practicing occupational therapy clinicians (n = 12), occupational therapy students enrolled in an entry-level master's program (n = 10), and occupational therapy faculty in an entry-level master's program (n = 8) (see Table 1).

**Table 1**

### *Participant Demographics*

	Gender (n)	
	Male	Female
<b>Total Sample (n = 30)</b>	5	25
Clinicians (n = 12)	2	10
Students (n = 10)	2	8
Educators (n = 8)	1	7
<b>Clinician and Educator Groups: Highest Degree (n)</b>		
Bachelor's		7
Master's		6
Clinical Doctorate		3
Academic or Research Doctorate		4
<b>Clinician and Educator Groups: Years in Practice (n)</b>		
0–5 years		3
6–10 years		2
11–15 years		2
16–20 years		4
21 + years		9
<b>Clinician and Educator Groups: Practice Settings *</b>		
Acute Inpatient Rehab		16
Hospital/Acute Care		14
Skilled Nursing Facility/Long Term Care		14
Home Health		13
Outpatient - Adult		13
Academia		9
Independent and Assisted Living Facilities		8
Out-Patient - Pediatrics		7
Schools		6
Mental Health		5
Seating and Mobility		1
Driver Rehab		1

*Note.* Some clinicians indicated more than one practice setting.

A purposive sampling technique was used for this study. Purposive sampling has been described as an intentional, or purposeful, selection of individuals, who, based on specific characteristics, may be uniquely suited to provide insight or feedback on the research question (Creswell & Poth, 2018; DePoy & Gitlin, 2016). Further, in the purposive sampling strategy, a maximum variation approach was used to ensure diversity and richness of data (Kim et al., 2017) through inclusion of sites and/or participants who may represent different perspectives (Creswell & Poth, 2018). This maximum variation was accomplished through the use of three different groups, each representing a different point on the continuum of the profession, including student, clinician, and educator. Among the clinician and educator subgroups, variation was also accomplished through inclusion of participants with a wide variety of practice settings, years of clinical experience, and highest degree earned. Collectively, members of this maximum variation purposive sample (clinicians, students, and educators) were uniquely qualified to offer their perceptions and feedback regarding the newly introduced A-BPSM. Given the qualitative nature of this study, power calculations for sample size were not applicable; however, sampling continued until saturation (redundancy) in the data was achieved (Bradshaw et al., 2017; Fusch & Ness, 2015).

In sum, the qualitative descriptive study design (Bradshaw et al., 2017; Kim et al., 2017), purposive maximum-variation sampling strategy (Creswell, 2013; Creswell & Poth, 2018) and sample size (Kim et al., 2017) were appropriate to the nature of the inquiry and were consistent with other recent peer reviewed publications using a qualitative descriptive approach (Derakhshanrad & Piven, 2020; McAuliffe & Hynes, 2019; Winship et al., 2019).

### ***Sample as Peer Reviewers***

The concept of peer review is well represented in the larger body of scientific literature, including the social sciences (Bornmann, 2008; Greve et al., 2013; Polka et al., 2018) and biophysical sciences (Alberts et al., 2008; Bergum et al., 2017; Davis et al., 2018; Kelly et al., 2014). Peer review serves to ensure that meaningful questions are addressed and accurate conclusions are drawn (and reported on) based on appropriate methodology (Kelly et al., 2014). Further, peer review serves to ensure the trustworthiness and validity of the research (Polka et al., 2018). In this study, occupational therapy clinicians, students, and educators served as peer reviewers, providing unique insights regarding the potential use of the newly introduced A-BPSM in the field of occupational therapy. For example, while all sub groups were able to speak to the basic elements of the research question(s), the clinicians were able to provide unique insights regarding the direct and immediate application of models in the clinical setting. Further, the educators were able to speak to academic, theoretical, and clinical-instructional applications while the students were able to offer unique insights regarding understandability and perceived usefulness of the model to support a holistic approach to future practice. Beyond this initial form of peer review (from which participant data was collected), subsequent sections outline additional methods of peer review that were adopted, including peer review by a third author, presentation of process and findings to a peer panel of occupational therapists, and finally, submission for a blinded peer review in consideration for publication.

### **Recruitment and Selection**

Following IRB approval of the participating sites, recruitment was initiated to obtain a maximum variation purposive sample of occupational therapy students, educators, and practicing clinicians. Second-year graduate students were recruited from an accredited master of occupational therapy program, faculty were recruited from two accredited master of occupational therapy programs (including

the program from which the student sample was drawn), and practicing clinicians were recruited from a regional medical center. All sites were located in the Southeastern region of the United States.

Study-related informational fliers were emailed to 48 prospective participants (occupational therapy students, educators, and practicing clinicians known to the researchers at the identified data collection sites). Because of variability of both frequency and consistency of email access in the clinical setting, printed information fliers were posted in clinicians' staff offices in the medical center. Individuals interested in participating were invited to attend a 45- to 60-min information session introducing both the A-BPSM and the proposed study. In-person and on-site and virtual session options were offered to accommodate the needs of the potential participants.

Individuals who expressed interest in participating in the study were considered for inclusion if they had attended an informational session and were either (a) a second-year student enrolled in an entry-level graduate occupational therapy program; (b) an instructor or faculty member teaching in an entry-level graduate occupational therapy program; or (c) a practicing clinician employed at a local regional medical center or a clinician known to the investigators who was accessible in the community outside of the clinic setting. Exclusion criteria included any student whose grade may be influenced by the investigator and any clinician over whom the investigator may have any supervisory role. Documentation of informed consent was obtained from all participants entering the study prior to participation, and all participants were informed that they could leave the study at any time. From the original pool of 48 prospective participants, sampling continued until saturation (repetition) in the data of each subgroup had been reached, which occurred at 30 participants (clinicians [ $n = 12$ ], students [ $n = 10$ ], educators [ $n = 8$ ]). All participants who were admitted ( $n = 30$ ) completed the study.

### **Research Instruments and Data Collection**

In keeping with the qualitative descriptive design of the study, the participants were interviewed regarding their perceptions relating to the clarity, utility, and perceived competence for use of the newly-introduced A-BPSM. An interview protocol was used to collect demographic data, as well as semi-structured interviews with open-ended questions (see Appendix B). These questions with prompts were crafted collaboratively with a content expert familiar with qualitative research methodologies as well as the A-BPSM to invite in-depth conversation in the context of initiating validation of the A-BPSM through a peer review process. Questions were pilot-tested and peer reviewed by an occupational therapist not involved in the study prior to implementation. The interviews were performed by the primary investigator and lasted 45–60 min. They were completed in individual and small group settings, depending primarily on participant preference, with secondary considerations of scheduling and availability of appropriate space. The interviews ( $n = 30$ ) were not collected until responses became repetitive and saturation was reached.

The interviews were recorded with the participants' permission and transcribed verbatim by an external source to increase validity of the data. Each participant was provided with a copy of their transcript for review, and an opportunity was provided for clarification to ensure accuracy as part of a member-checking process. Journaling and research memos were used to record additional information relating to study design, process, observations, and impressions in order to provide for triangulation with participant interview data, as well as to proactively identify and mitigate any potential sources of researcher bias.

## **Data Analysis**

Verbatim transcripts of the interviews were read by the primary investigator and second author, which provided independent analysis of the interview transcripts. A thematic analysis approach (Creswell & Poth, 2018; Trochim & Donnelly, 2008; Vaismoradi et al., 2013) was systematically applied in which transcribed participant interview data was coded, codes were categorized, and themes in the data were identified. Dedoose (Version 8.0.42), a computer assisted qualitative data analysis software suite, allowed for collaboration between the researchers regarding code development, code application, and thematic development, as well as measures of interrater reliability (SocioCultural Research Consultants, 2018). The third author, familiar with research methods, the A-BPSM, as well as the model from which it was adapted, served as a peer reviewer, auditing both the process and the findings. This third member of the research team was not involved with study design, data collection, or data analysis, providing for a greater degree of objectivity.

## **Analytic Tools**

Supplemental data analysis was augmented with Dedoose, version 8.0.42 (SocioCultural Research Consultants, 2018), a commercially available web-based qualitative data analysis suite that allowed for collaboration between the principal investigator and the second author, who was a content resource in the areas of qualitative design, sampling, design and composition of interview questions and protocols, instrumentation, data collection, and thematic data analysis (including coding, categorization of codes, and identification of themes). In addition, this software allowed for tests of intercoder reliability. Cohen's Kappa ( $\kappa$ ) was selected as an appropriate measure of interrater reliability for two or more coders when applying nominal (including binomial) data (Davey et al., 2010; Nili et al., 2017). More specifically, the pooled Cohen's Kappa was used in Dedoose to establish degree of agreement between coders across multiple items and codes (DeVries et al., 2008; SocioCultural Research Consultants, 2018). Cohen's Kappa ( $\kappa$ ) = .75 indicated substantial agreement (McHugh, 2012) and excellent clinical significance (Cicchetti, 1994) of interrater reliability between the principal investigator and second author.

## **Trustworthiness and Rigor**

Numerous sources have identified the inadequacy of quantitative approaches to concepts of reliability, validity, and objectivity in addressing the worth or trustworthiness of qualitative research (Creswell & Poth, 2018; Krefting, 1991; Lincoln & Guba, 1985; Trochim & Donnelly, 2008) because of the differences in design, methodology, and data collected (Lincoln & Guba, 1985). In the qualitative descriptive design of this study, trustworthiness and rigor of the study were addressed through established methods to ensure credibility, transferability, dependability and confirmability of the data, and analysis and presentation of findings (Bradshaw et al., 2017; Creswell & Poth, 2018; Krefting, 1991; Lincoln & Guba, 1985).

## **Credibility**

Credibility represents the truth of the findings, in keeping with concept of internal validity (Krefting, 1991). Credibility was established through the use of strategies including prolonged field experience (8 months), reflexive journaling, member checking, triangulation of data sources (including journal/field notes, printed transcripts of audio-recorded participant interviews, and demographic survey data), peer examination by third researcher/author, and subsequent presentation of findings to a peer panel of occupational therapists (Bradshaw et al., 2017; Krefting, 1991; Luciani et al., 2019).



### ***Transferability***

Transferability refers to the ability to demonstrate that the findings may be applicable in other settings in keeping with the concept of external validity (Krefting, 1991). Transferability may not be the aim of qualitative research, but rather, developing a greater understanding of the phenomena in context (Krefting, 1991). While the final determination regarding perceived transferability of findings may be left to the reader, efforts were made to increase transferability through the use of a maximum-variation purposive sampling approach representing the continuum of the profession, including students, educators, and practicing clinicians (Bradshaw et al., 2017; Krefting, 1991; Luciani et al., 2019). Further, among clinician and educator groups, diversity was ensured through inclusion of participants with a wide variety of practice settings, education, and years in the profession.

### ***Dependability***

Dependability refers to the ability to demonstrate that findings are consistent and how the study could be replicated under similar conditions, in keeping with the concept of reliability (Krefting, 1991). Dependability was achieved through the description of research methods, peer audit and examination, triangulation of data sources, adherence to accepted methods of qualitative data analysis (Bradshaw et al., 2017; Krefting, 1991; Luciani et al., 2019), and the use of accepted methods of assessing intercoder (interrater) reliability (Cicchetti, 1994; Davey et al., 2010; McHugh, 2012).

### ***Confirmability***

Confirmability represents the degree to which findings represent participants or conditions of the research, rather than the biases of the researcher, in keeping with the concept of objectivity (Krefting, 1991). Confirmability was achieved through the use of triangulation of participant data sources, reflexive analysis of journaling and field notes, and peer review (Bradshaw et al., 2017; Krefting, 1991; Luciani et al., 2019).

### ***Findings***

Three significant themes were identified in relation to the participants' perceptions regarding the A-BPSM: clarity of the A-BPSM, utility of the A-BPSM, and perceptions of anticipated competence for application of the A-BPSM. Each theme is presented along with corresponding subthemes in the following sections. The participant data, identified by a randomly-assigned participant number, has been provided in support of identified themes and subthemes. Clinician participants are designated by the prefix C, faculty by F, and student by S. Major themes and corresponding subthemes are summarized in Table 2.

**Table 2**

*Themes & Subthemes*

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**Theme 1: Clarity of the A-BPSM**

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- Subtheme 1A: Organization of visual presentation
  - Subtheme 1B: Interaction between factors
  - Subtheme 1C: Examples are beneficial
  - Subtheme 1D: Speaks the language of OT
- 

**Theme 2: Utility of the A-BPSM**

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- Subtheme 2A: Relevance of the A-BPSM to teaching and clinical instruction
  - Subtheme 2B: Relevance of the A-BPSM to clinical practice
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**Theme 3: Perceptions of Anticipated Competence for Application of the A-BPSM**

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- Subtheme 3A: Already incorporating biopsychosocial factors in practice
  - Subtheme 3B: Supporting current practice
-

## **Theme 1: Clarity of the Adapted Biopsychosocial Model (A-BPSM)**

To ensure a more accurate appraisal of the A-BPSM, the participants answered questions regarding issues of clarity and understandability of the model. Overall, faculty, clinician, and student participants commented positively on the clarity of A-BPSM's structure and content. Statements supporting the clarity of the A-BPSM included "the main thing I like about this [model], is its clarity. I didn't find anything hard to understand because each box is something that we've always talked about in OT ... it's laid out in such a nice, clear way" (F96); "the model outlines the different factors and is very clear about how the psychological and social factors can influence someone's performance. I like the outline of the biopsychosocial outcomes" (C28); and "I think the model is very easy to understand and I love how it is laid out ... the model really helps to clear it up if there is a question as to where [the factors] may be leading" (S69).

Four subthemes emerged in this theme: (a) organization and visual presentation of the model, (b) interaction between factors, (c) beneficial nature of examples, and (d) A-BPSM speaks the language of OT.

### ***Subtheme 1A: Organization and Visual Presentation***

The participant data supported the larger theme of clarity and understandability through shared perceptions of the benefit of the overall organization and visual representation of the A-BPSM. In speaking to this, the faculty participants remarked, "[the model] gives you sort of a road map, or a world map ... where to begin" (F47) and "[the A-BPSM] is something that brings the pieces together and organizes your thinking" (F67). One clinician participant stated, "I like the diagram. It helps and is categorized well. It has multiple bullet points that help us identify the areas under each factor category. I think that is very clear and not difficult to understand" (C82). Another clinician noted,

Visually, it causes less anxiety than some of the models. Some [other models] are so abstract – I just don't understand what it actually means. This [model] is pretty clear. I like ... the examples that guides you all the way through to ... a reasonable conclusion. (C8)

The student participants remarked, "it would be a quick way to frame thoughts and organize yourself as a therapist" (S46) and "I love the way the model is laid out because I am a very visual learner ... a very quick way to orient myself to the client ... helps orient my treatment plan" (S36).

### ***Subtheme 1B: Interaction Between Factors***

In addition, the participant data supported the overall theme of clarity through shared perceptions of the ease of understanding the interaction between biological, psychological, and sociologic factors in the A-BPSM. Both the faculty and clinician participants noted that "biological, psychological, and social factors are all on the same level and all affect each other" (F31) with the "psychological factors front and center," and the model demonstrates how "your biological ... and your social contextual factors [are] interacting" (C81). Furthermore, a clinician participant explained,

I like how the psychological factors are right in the middle and you can clearly see how motivation and behavior are at the center of these things, along with cognitive skills and how they affect the biological factors, the social factors, and then how they move into affecting the outcomes. (C35)

A student participant stated, “characteristics of the injury and sociodemographic factors are for OT and an occupational profile. [A-BPSM] goes into more depth and gives treatment ideas ... I really like that part because it [can be] hard to apply theories” (S36).

***Subtheme 1C: Examples are Beneficial***

Regarding this subtheme, the participants elaborated on their perceptions relating the benefit of examples, including specific biological, psychological, and social-contextual factors; examples of intermediate and rehabilitation outcomes; and the use of case vignettes during the in-service training. Significant statements from clinicians and students exemplified the importance of examples provided in the A-BPSM to help apply the concepts. Such statements included “the fact that it gives examples is really helpful” (S36), “I think that the examples given for treatments and outcomes will help especially when we are going into the field” (S2), and “when looking at it and then applying it to the case study that you gave us in the in-service, I did find it helpful to see the factors in each of the different areas of the biological, psychological, and social contextual” (C23).

***Subtheme 1D: Speaks to the Language of Occupational Therapy***

The participants also shared perceptions relating to how the A-BPSM speaks the language of occupational therapy as a profession. The faculty participants particularly spoke to the use of occupational therapy language in the model. One faculty stated, “the model is well suited to the way we think even though we don’t always hit on all of the components” (F47), while another faculty participant went on to note,

The language is very OT eccentric ... very well suited to our profession. I think [the A-BPSM] makes perfect sense ... we should be looking at the biological, psychosocial, and social factors. Obviously, our patients are affected by things that we cannot necessarily change, and they can affect the outcomes. I think it is a really nice model that works well for OT. It is easy to put into the OT framework and mindset. (F56)

Taken collectively, the participant responses supported the larger theme of clarity and understandability of the A-BPSM for application to the field of occupational therapy.

**Theme 2: Utility of the Adapted Biopsychosocial Model (A-BPSM)**

The theme of perceived utility of the A-BPSM was the most substantial theme identified in this study that positively supported using the A-BPSM because of its structure and content. With this theme, the participants shared perceptions of the anticipated utility of the A-BPSM to the field of occupational therapy. A faculty participant provided one of the most significant comments supporting the utility of the A-BPSM when stating,

In this day and age of interprofessional practice, I think the biopsychosocial model applied to occupational therapy or from the perspective of occupational therapy makes tremendous sense. It helps link us logically to a team of providers that the clients clearly need because it is not just the injury that is presented to us, but all of these other issues, experiences, and responses that the client maybe having to the situation. I think that the model also helps us to understand the interprofessional team much better. I think it can be a very important connection or bridge builder. (F68)

Similarly, one clinician stated, “I think that the model is great ... I think this is what our practice needed ... it looks at things holistically and it is in one model and all together” (C34). Another clinician

noted that “we need a common language, and if everyone was using this sort of model, we could have that common language ... it’s understandable to all disciplines” (C8). Other clinicians reported that the A-BPSM “could be very useful ... it gives you specific [factors] to look at ... then you can center your evaluation ... you can interview and assess the patient in those areas and touch on a wide variety of factors” (C82), and “you could look through [the model] and see if you are missing something. We could ask [ourselves], what am I leaving out? It [the A-BPSM] can help to guide our practice” (C60).

Finally, the student perspectives of the utility of the model were also considered. One student stated, “I think this model is relevant ... we had to list frames of reference for a certain case and I listed six or seven frames of references ... I could have done it with just one [using] this model” (S69). Another student confirmed the utility of the A-BPSM stating, “I think that [A-BPSM] is going to make us think even bigger ... we are holistic and client-centered, but if you follow the steps of the chart, it forces you to think about the bigger picture” (S46).

Two subthemes emerged with this theme, including (a) relevance to teaching and clinical instruction and (b) relevance to clinical practice.

### ***Subtheme 2A: Relevance of the Adapted Biopsychosocial Model (A-BPSM) to Teaching and Clinical Instruction***

In reporting the subtheme, the faculty participants expressed the benefit of the model in organizing and guiding students’ thought process to approach client care when stating, “starting out in a practice, [this model] would be very helpful ... to organize your thinking” (F67). Similarly, another faculty summarized the relevance of the A-BPSM to teaching and clinical practice:

Great for students coming out of a program or even novice clinicians because it lays out the things that we do. I think that occupational therapy ... it takes people, even our students, a long time to know what we do because we do so much. Even when watching an OT, you do not know all of the things we are taking into account. I think that the model does a really nice job of laying it out. (F56)

A clinician, serving as a clinical instructor, noted,

[The A-BPSM] is an educational tool and really helps to tie up all of the different factors together. It helps to understand how [factors] affect each other and how the outcomes maybe affected. Educationally, I think it helps me understand what OT is in general and how we can truly affect the patients. (C41)

Similarly, a student participant stated, “I think the theories we have used throughout our coursework here has taken a piece of each of the three main sections. We have applied theories in each section before, but this model is all encompassing” (S69).

### ***Subtheme 2B: Relevance to Clinical Practice***

The participants discussed relevance to clinical practice through examples of client-centered care, team integration and communication, and documentation supports. Multiple clinician and student comments addressed the relevance of the A-BPSM to clinical practice. Clinicians stated, “the A-BPSM may help providers ‘think outside of the box’ by looking at this model. We can look at the model and see that several things can be worked on and not just tabletop activities” (C38) and “this model allows us to look at things not necessarily only from a strict biomechanical approach or a strict NDT approach, but challenging us as professionals to think above and beyond” (C34). The student participants responded to

the model's relevance by stating, "I think it is very clear cut and it does give a very broad holistic view of the person ... it would help me approach the client in a more holistic way" (S36) and "it can be used towards a wide variety of ages and diagnoses" (S100).

Considering the role of the A-BPSM in facilitating a client-centered and holistic approach to care, the clinician and faculty participants noted, "[the model] highlights the importance of a person as a whole and gives a reason for what you are doing" (C60) and that "it is about participation, engagement, and what you can do and not so much about the pathology" (F67). To address diverse client-factors as part of a holistic approach, another clinician participant stated,

[The A-BPSM] is a nice holistic view ... I am drawn to the middle of the model. I like how the psychological components are in the middle particularly looking at motivation and patient goals and starting from there. To some degree, it is finding out the personality of the patient and how the patient is when you first enter the room. Are they telling you that they want to get better and hope to get up and start moving around and they want to participate? That sets the tone for being able to set goals together and work towards a positive outcome (C35).

Considering the role of the A-BPSM in supporting a team approach to care, the clinician participants stated, "I feel like part of the underlying thought behind it is that it's not just for OTs, but it's supposed to be universal language, and universal for multiple disciplines to use" and "if my nurse partner and I are talking the same language, and we are teaming up together, we see better patient satisfaction." Similarly, a clinician discussed how the A-BPSM supported the team approach to care, "[the model] strengthens ... conversations ... not only with the interdisciplinary [team], but also with families ... this is for everybody. This is to help open communication lanes."

Finally, considering the role of the A-BPSM in supporting documentation, a clinician participant stated,

We are always being pushed to have more 'meat' in the documentation, and this is 'meat'! I mean, with these phrases, you can put together a note that would be understandable, and hopefully would help the payers do their part so that this whole [rehab process] can keep going. (C8)

Collectively, the clinician, faculty, and student participant data supported the primary theme of perceived utility and relevance of the A-BPSM for occupational therapy practice.

### **Theme 3: Perceptions of Anticipated Competence for Application of the Adapted Biopsychosocial Model (A-BPSM)**

The clinician, faculty, and student participants reported positive perceptions of anticipated competence with the application of the core concepts of the A-BPSM (a biopsychosocial approach to client care) in current or future clinical practice. In speaking to anticipated competence in applying the model to practice in the profession, a faculty participant expressed,

We are always talking models, theories, and frames of reference with our students every single day ... I don't feel there's a learning curve to take this and carrying out with students or clients. It would be very understandable to them. (F37)

Both the clinician and student participants expressed their anticipated competence for application of the core constructs of the A-BPSM in clinical practice. One clinician commented that "it would be pretty

easy to apply this model to an OT perspective because it puts what we are all about in a nutshell” (C60). Similarly, a student summarized the anticipated ease of applying the A-BPSM when stating, “I feel confident that I could use this model. Looking at all of the different factors and what is encompassed in each of those factors looks at everything that I would address with a client” (S85).

Two subthemes emerged with this theme: (a) already incorporating biopsychosocial factors into current practice and (b) the A-BPSM supports current practice.

### ***Subtheme 3A: Already Incorporating Biopsychosocial Factors in Current Practice***

Several of the participants reported perceptions that biopsychosocial factors may already be considered and/or addressed to some degree in their current clinical practice. In speaking to this, the clinicians stated that “I [would] like to think that I am already doing this ... that I am paying attention to the whole person and the motivating factors” (C30), and “people who really take their treatment from a holistic perspective and try to think outside of the box are doing this” (C34). Further, one clinician noted that,

I think that the model can be very relevant because as OTs, many of us do treat from a holistic frame of reference. We cannot just look at the disease or just the diagnosis, but you have to look at the whole person ... at their whole situation. Everything has to be taken into account because it will affect their recovery, motivation, goals, and outcomes. (C23)

### ***Subtheme 3B: Supporting Current Practice***

In the larger theme of anticipated competence for application of the core constructs of the A-BPSM to occupational therapy practice, the participant data also supported the role that the A-BPSM might play in supporting current practice. Considering the role of the A-BPSM in the subtheme, the clinicians reported that “this [model] is what validates what I am doing” (C34), and “this gives a more objective means to explain what you are doing while you are assessing, treating, and educating your patient” (C23). Similarly, a faculty participant spoke about how the A-BPSM supports current practice:

As an example, a spinal cord injury ... [there’s] the result of that injury ... the family dynamics, and the emotional response to things. The framework of the biopsychosocial model that you have written about and presented to us made complete sense to me ... bringing in all of those pieces truly reinforced how I approached how I practice. (F68)

Accordingly, the participant data supports the thematic development of perceived competence. This support represents both a general perception of anticipated competence with clinical application of the core constructs of the A-BPSM, as well as more specific perceptions of how biopsychosocial factors are incorporated into clinical practice and how anticipated competence with the A-BPSM may support current clinical practice.

## **Discussion**

Evidence previously presented suggests that occupational therapists use reductionist, impairment-level bottom-up approaches (Ahn, 2016; Colaianni & Provident, 2010; Gentry et al., 2018; Ikiugu, 2012; O’Neal et al., 2007) with greater frequency in clinical practice than more inductive and holistic top-down approaches. However, that is not to say that therapists do not incorporate or place value on holistic models (Gentry et al., 2018; Ikiugu, 2012). The participant data supporting the perceived utility of the A-BPSM is consistent with literature supporting a valuation of a holistic, biopsychosocial approach to care (AOTA, 2011, 2014a, 2014b, 2016, 2017a, 2017b) and the use of

holistic models in occupational therapy practice (Ikiugu, 2012; Ikiugu et al., 2009, Lee et al., 2009, 2012). Moreover, the use of a scoping, inclusive top-down approach may provide an organizing framework under which multiple bottom-up approaches might be inducted in occupational therapy practice. This organizing model of practice (Ikiugu, 2012; Ikiugu et al., 2009) may serve to explain the paradox regarding how occupational therapists may espouse a holistic approach to client care while employing a greater number of bottom-up approaches in addressing a diverse constellation of client factors, contexts and environments, occupations, and performance patterns and skills (AOTA, 2014a). Further, the participants' reports of anticipated competence with the application of the A-BPSM's core constructs would be in keeping with an existing familiarity with the use of an inclusive and holistic over-arching model of occupational therapy practice, one which takes into consideration biological, psychological, and sociodemographic factors.

Beyond valuation (perceived utility) of the A-BPSM, the findings of this study both confirm and extend the profile of the members of the profession who understand, value, and, by extension, are more likely to adopt and apply models such as the A-BPSM in practice. For example, valuation of models in the profession has been correlated with experience and education level (Van Deusen, 1985). In the clinician and educator subgroups, 65% of the participants had achieved a master's degree or higher, and 75% were above the reported median years of professional experience ( $n = 9$  years) reported by AOTA (2015). Further, in the larger body of literature, related concepts of education, knowledge, and understanding have been noted to correlate with selection and application of theory (Ikiugu, 2010, Law & McColl, 1989; Leclair et al., 2013, Lee et al., 2009). Therefore, perceptions of clarity and utility (valuation) of the A-BPSM by the clinician and educator subgroups in the study would not only be consistent with the literature but also might suggest an increased likelihood for adoption and application of the model to practice. However, what is of particular note is that student participants in this study also expressed understanding, perceived utility, and perceived anticipated competence with use. This is of note as little is known of graduate occupational therapy students' perceptions of theory. Of what is known, it has been reported that knowledge of theory improved students' perceptions of professional identity (Ikiugu & Rosso, 2003) and enhanced confidence in student assessment and intervention skills (Ikiugu & Smallfield, 2015). Findings from the student subgroup in this study not only are consistent with the limited information available but also speak to the potential benefit of enhanced education on topics of theories, models, and frames of reference for occupational therapy practice.

In conclusion, the clinician, student, and faculty participant data provided evidentiary support for the clarity/understandability, utility, and perceived anticipated competence for implementation of core constructs of the A-BPSM in clinical and instructional practice. Findings from this study are consistent with limited findings in the literature regarding perceptions of model use in the profession. These findings of perceived clarity, utility, and anticipated competence with application support an initial step toward the validation and adoption of the A-BPSM through a peer review process.

### **Implication for Occupational Therapy and the Health Sciences**

Given the recent introduction of the A-BPSM (Gentry et al., 2018), the broader implications for health sciences may be somewhat more global in nature. However, for occupational therapy (as a component of the larger realm of health providers), an adapted biopsychosocial model of care has been introduced, along with an initial step toward validation for its use in occupational therapy. In addition, through its grounding in the literature, use of this model may serve to add to the professions' knowledge base regarding use of models, as well as support an evidence-based practice approach in the profession.

Further, in the broader sphere of health sciences, the introduction of an integrated biopsychosocial model of care may offer the potential to extend the introduction and adoption of this model to other members of the interprofessional health care team. This potential for use of a shared inter and trans-professional model may offer the potential for adoption of a shared lexicon, and a unified, coordinated, holistic, and client-centered approach to care within, between, and across disciplines.

### **Limitations and Future Research**

The limitations of this study included geography, limitation in a sample subgroup, and inherent participant factors. The findings of this study specifically related to participants who currently live in the Southeastern portion of the United States, which may result in a sample that is not representative of the nation as a whole and may, therefore, limit transferability of findings. In addition, the student subgroup was drawn from a single graduate/master's occupational therapy program. While these students share commonalities with other OT students across the country regarding participation in ACOTE and regionally accredited programs, the effect of regional, university, and department-specific factors cannot be excluded. Further, at the participant level, individuals who volunteer may do so based on a number of motivating factors, including an effort to be helpful, to be part of a community or group, and/or to have their opinions heard. This may serve to shape the participants' responses to what is believed to be needed (Munhall, 1994). This was addressed in this study through instructing the participants that all perspectives would be beneficial in addressing the identified purpose and goal of the study.

Additional recommendations are made regarding continuation of research regarding the A-BPSM. Specifically, continued work toward validation of the model, including comparison of the A-BPSM's overarching conceptual constructs with other holistic top-down models in occupational therapy, further exploration of individual model factors, the dynamic and directional interaction between factors, and impact on factor outcomes. Finally, further research is recommended regarding the potential applicability of the A-BPSM to a broader spectrum of care providers.

### **Conclusion**

Following the recent introduction of the A-BPSM (Gentry et al., 2018) into the larger body of scholarly peer reviewed literature in occupational therapy, this study served as an initial step toward validation of this model for use in occupational therapy through a peer review process. This study provided initial validation of the model through use of a qualitative descriptive design with a maximum variation purposive sample to explore clinicians, educators, and students' perceptions regarding the A-BPSM. This peer review of the A-BPSM yielded an initial validation of the perceived clarity and utility of this model to occupational therapy practice, as well as perceived anticipated competence with application of the core constructs of the A-BPSM in occupational therapy.

In so doing, this study demonstrated significance in that (a) the findings demonstrated an initial validation of the A-BPSM, (b) it made a relevant and scholarly contribution to the profession's knowledge base, (c) it provided a touch-point for continued research, and (d) it served to inform and guide occupational therapy practice toward an adapted biopsychosocial approach to care. Further, findings from this study may serve to link evidence-based and best-practice approaches in clinical and educational realms through the introduction and initial validation of the A-BPSM, and, through the grounding of the A-BPSM in the larger body of scholarly, peer reviewed literature. In sum, findings from this study have the potential to support continued validation of this model, advance inquiry into models of practice, promote a holistic biopsychosocial approach to care, and support evidence-based practice.



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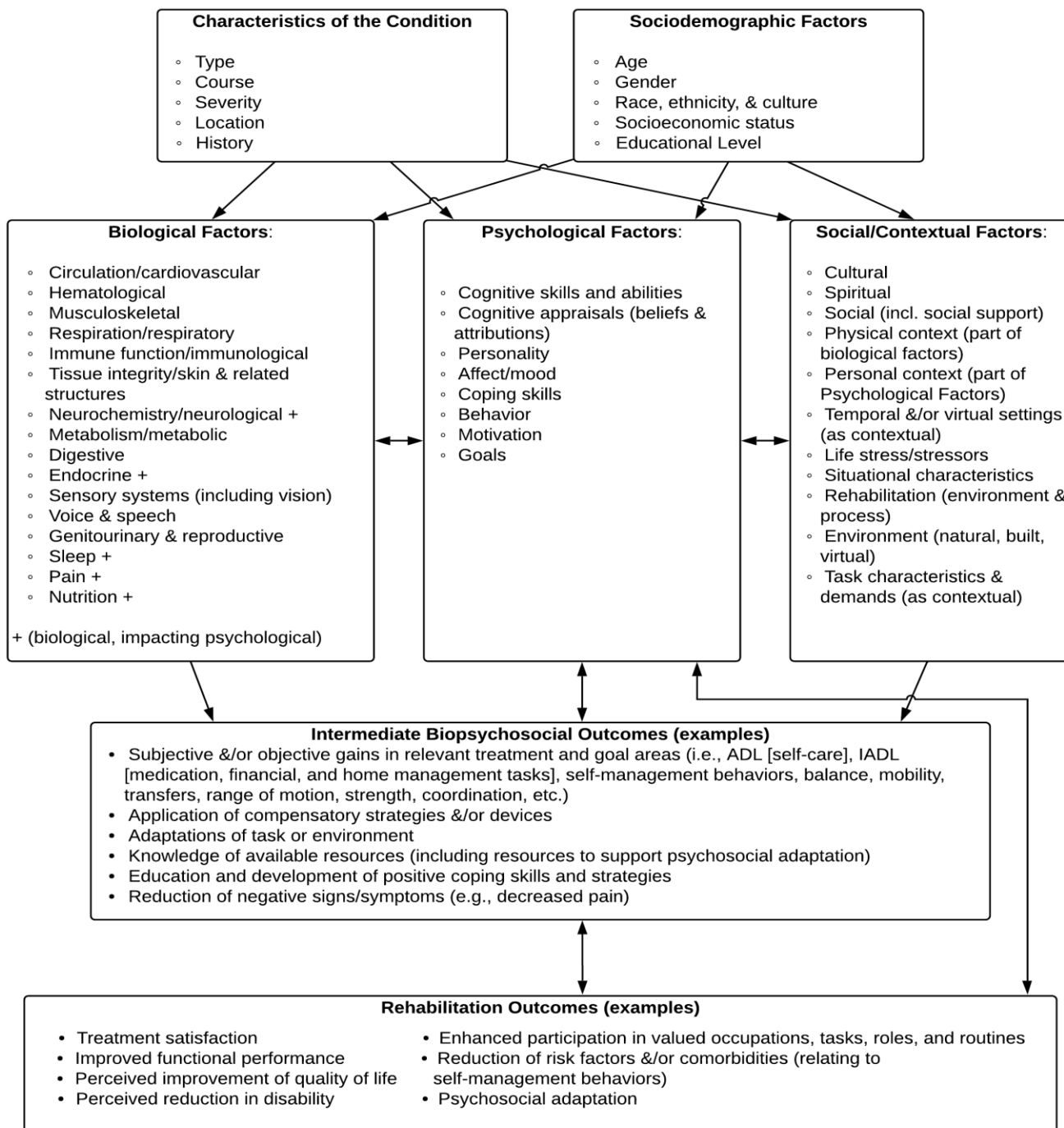
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## Appendix A

### The Adapted Biopsychosocial Model (A-BPSM)



Adapted from "A Biopsychosocial Model of Sport Injury Rehabilitation," by B. W. Brewer, M. B. Andersen, and J. L. Van Raalte, 2002, in D. L. Mostofsky and L. D. Zaichkowsky (Eds.), *Medical and Psychological Aspects of Sport and Exercise*, p. 48. Copyright 2002 by Fitness Information Technology. Adapted from *The Occupational Therapy Practice Framework: Domain and Process* (3rd ed.), by The American Occupational Therapy Association, 2017, *American Journal of Occupational Therapy*, 68. Copyright 2017 by the American Occupational Therapy Association.

## **Appendix B**

### **Interview Questions**

Please consider the Adapted Biopsychosocial Model (A-BPSM) when answering the following questions:

1. (Perceived clarity/understandability):
  - How easy is the A-BPSM to understand?
  - What is most clear?
  - Are there elements that are difficult to understand? If so, what are they?
  - What specifically is unclear?
  
2. (Perceived relevance/utility): I would like to know your thoughts regarding the relevance and usefulness of the A-BPSM to occupational therapy practice.
  - How is it relevant/useful?
  - In what ways ... what makes it useful?
  - How could it be applied?
  - If not relevant/useful, why not?
  
3. (Perceived competence):
  - How confident do you feel in your ability to apply the basic concepts of this model to your current or future practice? Why?
  - What would be needed to increase your level of confidence in applying this model?