

**Table 4: Professional behaviors assessment instrument descriptions with recommendations for use**

Instrument/ Outcome Measure	Constructs Assessed	Intervention setting	Intervention timing	Recommendations for use	Key information from study
<b>Physical Therapy</b>					
APBA Dorsey et al <sup>30</sup> (2018)	Professionalism, critical thinking, communications management, interpersonal skills, working relationships (5/7)  Not assessed: professional development or personal balance	Classroom	Professional behavior definitions and expectations are introduced in first term. Reinforced in future semesters. APBA is used at the end of every semester prior to full time clinical education.	Provide early, consistent and ongoing education on expected professional behaviors. Implement professional behavior action plan when substandard professional behaviors are identified by more than one instructor. Develop individualized behavior remediation plans when 3 or more unacceptable behaviors are reported. Students must meet minimum standards to full-time clinical education.	Minimum standard score required before students permitted to begin clinical experiences. 97% of students who achieved the required score successfully completed their full-time clinical education. 64% of the students initially identified with substandard professional behaviors and correctly flagged as needing advising successfully completed full-time clinical education. Identification using the APBA and counseling of at-risk students to mitigate unprofessional behaviors improves successful completion of clinical education rates.
CIET Fitzgerald et al <sup>22</sup> (2007)	Critical thinking, professional development, communications management, personal balance, professionalism, interpersonal skills, working relationships (7/7)	Clinic/ Community	Completed at mid-point and end of every clinical except for during a year-long internship when the CIET was completed quarterly.	Tool intended to evaluate student progress, competence and performance and identify areas for remediation. The CIET compares student performance to that of a “competent clinician” instead of “entry level clinician.” Students must always display the 18 professional behavior items. Monitor students who score below expectations in any behavior and develop a remediation plan. Clinical Instructors should be trained by someone who has used the tool previously.	Outcome tool has 2 sections. Section 1: Professional Behaviors; Section 2: Patient Management. Section 1 is criterion referenced, meaning students should meet all expected behaviors regardless of clinical education experience. Items were found to be representative of current clinical practice and relevant to curriculum. 96% of CIs reported the CIET could be completed in a reasonable amount of time. Students’ professional behaviors improved as they progressed through their clinical internships with 20% needing remediation during their first clinical and no students requiring remediation at the final. Both sections were reported to be completed at the same time, however each section was tested for validity separately.
CPBDL Lucy et al <sup>26</sup> (2018)	Critical thinking, professional development, communications management, personal balance, professionalism, interpersonal skills, working relationships (7/7)	Classroom/ Clinic	Recommended completion of this self- assessment tool during the first semester, prior to first clinical experience, and in the final academic term.	Students complete self-evaluation throughout the didactic program with emphasis on increasing awareness of expected professional behaviors. The CPBDL can also be used as a mentoring tool by faculty or clinical instructors.	Ten essential professional behaviors were identified by the original authors. The CPBDL was reviewed and updated to includes 8 professional behaviors with a six- item response. Intended for student self-assessment in preparation for entry level practice, and it can be used for continuing competency in practicing therapists. Authors state tool could be adapted by other disciplines,

GABA May et al <sup>9</sup> (1995)	Professionalism, critical thinking, professional development, communications management, personal balance, interpersonal skills, working relationships (7/7)	Classroom/ clinic	During orientation and throughout the didactic program, instructors provide education on the 10 generic abilities. Self- Assessment was completed before and after 18-week clinical internship. Clinical supervisors completed assessments at midterm and final for each rotation. Used every semester thereafter as needed.	Encourage consistent and early integration. Instruction is reinforced by each faculty member using assessment exercises within individual courses. Faculty should provide multiple opportunities to practice behaviors and receive feedback from faculty and other students throughout the didactic program for each of the 10 abilities. Clinical instructors use the assessment tool as a basis for narrative evaluation for 6 week and 9-week full time CE experiences. Students should demonstrate behaviors listed in the advanced complexity level to pass each rotation.	Authors created instrument to establish constructs and behavioral criteria to measure generic abilities necessary for professional practice. Key is timely feedback based on assessment with explicit criteria. GABA scores are based on three complexity levels progressing with student level of experience, which provides ability to assess student competency at various points in the professional program to gauge progress towards competence. This ability-based assessment should complement knowledge-based assessment, not replace it.
PBAT May et al <sup>27</sup> (2010)	Professionalism, critical thinking, professional development, communications management, personal balance, interpersonal skills, working relationships (7/7)	Classroom/ clinic	During orientation and throughout the didactic program, instructors provide education on the 10 generic abilities. No recommendations for timing for the assessment were included in the article.	Use PBAT for student self-assessment, peer feedback, and instructor assessment throughout didactic and clinical portions of program. Allow formal opportunities for students to reflect on progress towards entry-level performance.	Authors revised and renamed the GABA to Professional Behaviors assessment. They used the 10 generic abilities identified in the GABA as a starting point, but they updated the expected behavior criteria based on increased autonomy and generational differences. PBAT scores are based on four behavioral criteria levels: Beginning, intermediate, entry level, post-entry level with updated criteria for each level. Must include plan for the student to follow-up with academic and/or clinical instructors to discuss behaviors. No peer-review publication.
PTCVSA Denton et al <sup>29</sup> (2017)  Anderson & Hall <sup>28</sup> (2018)	Professionalism, professional development, personal balance, interpersonal skills, working relationships, critical thinking, communications management (7/7)	Classroom	Complete after first year in a professional program and after a full-time clinical education experience; Not for use with first year students	Formative self-assessment tool for students to rate frequency of performance for the sample behaviors. Faculty should not use the PTCVSA to assess professionalism in students who have not completed any clinical rotations, however, may be useful to build a framework of expected behaviors.	<p>The PTCVSA is a self-assessment that includes 7 core values (accountability, altruism, integrity, caring/compassion, excellence, professional duty, and social responsibility). It includes a total of 68 behavioral indicators for the core values.</p> <p>Denton et al found the tool not reliable or valid measure for first year students due to abstract nature of the core values. Anderson and Hall determined the total score of the tool to be useful as a formative self-assessment to track professionalism changes over time, but not used for high stake decisions, as not all item may be appropriate for student usage.</p> <p>The core value structure has not been assessed for construct validity.</p>

Occupational Therapy					
OTAS Hubbard et al <sup>32</sup> (2007)	Professionalism, critical thinking, professional development, communications management, personal balance, interpersonal skills, working relationships (7/7)	Clinic	Used for midterm assessment during Level II fieldwork as a summative assessment. Reliability study completed at weeks 9 and 11 of fieldwork.	Clinical instructors should use the OTAS during full time clinical fieldwork to provide constructive feedback and communication to students throughout fieldwork to help them achieve acceptable levels of professional behaviors.	The OTAS was developed to assess professional behavior as a supplement for the American Occupational Therapy Association Fieldwork Performance Evaluation tool. Consists of 14 items with subscales. Strong consistency with the FWPE. Developed to be used formatively to provide remediation and counseling along with summatively at the conclusion of fieldwork. Sensitive to identifying students who would be hired at completion of fieldwork. However, tool only validated in literature for summative assessment at time of this publication.
PDE Randolph <sup>34</sup> (2002)	Professionalism, critical thinking, professional development, communications management, personal balance, interpersonal skills, working relationships (7/7)	Classroom	Orientation to PDE provided during first semester. Information about professional behaviors is incorporated into didactic coursework through lecture and discussion. Faculty should assess students using the PDE on a specific schedule.	During the didactic portion of the program, faculty should use the PDE to assess students' professional behaviors and determine those at risk for difficulties in fieldwork. At-risk students are reviewed monthly by faculty and should receive remediation through professional advisement. If they still do not meet the expectations, then they cannot progress to fieldwork rotations. If no improvement noted, student can be placed on professional probation, with consequence of possible dismissal from program.	The revised PDE has 28 classroom and laboratory behaviors that are based on fieldwork and practice goals. This is completed during the didactic portion of the program. Formal evaluation completed by faculty and meetings held on an as needed basis with students who are identified as at risk for professional behavior issues prior to clinical practice. Translation of behaviors in the classroom/ lab to fieldwork needs further study.
PRFC-L1 Koenig et al <sup>23</sup> (2002)	Professionalism, critical thinking, professional development, communications management, personal balance, interpersonal skills, working relationships (7/7)	Clinic/ Community	Supervisors completed assessments at end of the Level 1 fieldwork for each student and discussed the results.	Clinical instructors use the tool to provide formative evaluation of OT and OTA student professional behaviors during Level I fieldwork, which can improve students' awareness of expected behaviors.	The PRFC-L1 consists of 12 professional behavior items with objective definitions. Valid to discriminate between students on their first rotation and fourth rotation. Students should achieve higher levels of professional behaviors as they advance through their fieldwork rotations. Helps to identify students who need interventions to help them achieve appropriate professional behaviors.
SPBQ Yuen et al <sup>25</sup> (2016)	Professionalism, professional development, communications management, personal balance,	Classroom	Students should complete the self-assessment during the academic setting, but no specific time frame was recommended.	Self-assessment tool used to supplement personal and professional behavior development in academic setting. Advisors can review and offer feedback. Recommended combining the self-assessment with peer	The student professional behavior questionnaire was developed and validated for self-assessment of professional behaviors by entry level OT students. Includes nine behaviors rated on a 5-point Likert scale which are divided into 3 factors: commitment to learning, skills for learning, cultural competence.

	interpersonal skills, working relationships (6/7)  Not assessed: critical thinking			assessment, faculty observation, and student portfolios to further assess professional behaviors.	
U of I SOT PDT Carroll et al <sup>21</sup> (2002)	Professionalism, critical thinking, professional development, communications management, personal balance, interpersonal skills, working relationships (7/7)	Class; Clinic	Recommend student completion of self-assessment every semester.	Self –assessment tool that students complete every semester consisting of academic and clinical subsections. First- year students only complete Academic performance section since they have not had clinical experience. Results of the self-assessment should be used to aid academic advisors in helping students acquire the necessary professional behaviors by enhancing strengths and providing remediation for weaknesses.	The University of Indianapolis School of Occupational Therapy (SOT) professional development tool (PDT) in this study is a modification of an original U of I SOT tool and consists of nine professional behaviors that students self-assess in academic and clinical settings. The entire tool did not achieve significance for test/retest reliability. However, test/retest reliability was significant for 83.78% of questions in first year students and 75.68% in second year students. Participants felt it was a holistic tool as it addressed both classroom and clinical behaviors. A validity study is warranted.
<b>Interdisciplinary</b>					
AGCBE Mpofu <sup>33</sup> (2006)	Professionalism, professional development, communications management, interpersonal skills, working relationships, critical thinking (6/7)  Not assessed: personal balance	Clinic/ Community	Supervisors complete assessment at end of community clinical rotation.	Institutions with various disciplines utilizing community-based clinical sites could implement this assessment once it is validated. Students do not have to be assessed in all areas at all locations. Supervisors should determine most appropriate skills for that placement.	Tool was designed with multiple health professions input and can be used by multiple disciplines with students in interprofessional settings or solo experiences by one health profession. Developed a 64-item assessment that can be used for evaluating students' behaviors and performance in various disciplines in community clinical settings. Includes writing and presentations. Final score is a percentage of total areas assessed divided by total possible scores with items completed. Validity and reliability were not examined.
MMOS Lie et al <sup>24</sup> (2015)	Professionalism, professional development, communications management, interpersonal skills, working relationships Critical thinking (6/7)	Classroom	Evaluation tool for individual and team performance during multidisciplinary simulated experience.	Summative assessment. Faculty should be trained in use of the tool prior to use with emphasis on avoiding over-rating student performance. Recommend two faculty per station to rate students on individual and team behaviors to improve reliability of ratings.	Used the Team Observed Structured Clinical Encounter (TOSCE) and modified McMaster-Ottawa scale to develop a scale to objectively rate individual and team behavior performance of students. Developed 18 behavioral indicators. Faculty were trained to complete assessments of interdisciplinary groups of 4 students. This study did not measure student performance but faculty members' ability to rate student actors correctly. Limitations with identifying individual students performing below expected thresholds due to leniency error. However, faculty were able to

	Not assessed: personal balance				distinguish between higher and lower team performance.
PAT Harris et al <sup>31</sup> (2018)	Professionalism, critical thinking, professional development, communications management, personal balance, interpersonal skills, working relationships (7/7)	Classroom and Clinic	The authors did not specify recommendations for timing, but they suggested students complete the self-assessment several times over their course of studies to track progress towards acceptable professional behaviors.	Online self-assessment for various healthcare students. The PAT can be used to track healthcare students' professional behavior growth during the didactic program and clinical rotations.	The PAT was originally designed for pharmacy students to assess professional attributes. There is evidence of validity and reliability in measuring expected professional behaviors in other healthcare students. The ceiling effect for relationships with others and upholding principles of integrity and respect is high, which allows room for improvement in behaviors over time. The PAT needs further study to examine progress over time within the same cohort rather than comparing scores in different cohorts.

**Key:** AGCBE=Assessment Guidelines for Community-Based Education; CIET=Clinical Internship Evaluation Tool; CPBDL=Comprehensive Professional Behaviours; Development Log; GABA=Generic Abilities Based Assessment; MMOS=Modified McMaster-Ottawa Scale; PAT=Professional Assessment Tool; PDE=Professional Development Evaluation; PRFCCL1=Philadelphia Region Fieldwork Consortium Level 1; PBAT=Professional Behaviors Assessment Tool; PTCVSA=Physical Therapy Core Value Self-Assessment; OTAS=Occupational Therapy Attribute Scale; SPBQ=Student Professional Behavior Questionnaire; U of I SOT PBT=University of Indianapolis School of Occupational Therapy Student Self-Assessment of Professional Behaviors Too

