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Validation of an evidence-based dietetic practice instrument and the association between level of education and use of evidence-based dietetic practices among registered dietitian nutritionists

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By

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DCN DISSERTATION

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Dedication

This dissertation is dedicated to my two biggest supporters: my husband, Bryan, and my mother. Their support and encouragement throughout my doctoral journey have been instrumental in achieving the dissertation milestone.

I am immensely grateful for my kindhearted husband, who has patiently supported and reassured me every step of the way. I am fortunate that I have been able to share both a living and working space with my biggest cheerleader for the last year-plus. His regular check-ins, ability to listen, and words of encouragement are what keep me committed to my goals.

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List of Abbreviations

AACN	American Association of Critical Care Nurses
ACEND	Accreditation Council for Education in Nutrition and Dietetics
ADA	American Dietetic Association
AHRQ	Agency for Healthcare Research and Quality
AND	Academy of Nutrition and Dietetics
ANDHII	Academy of Nutrition and Dietetics' Health Informatics Infrastructure
ANOVA	Analysis of variance
AOT	Active open-minded thinking
ARCC	Advancing Research and Clinical practice through close Collaboration model
CAADE	Commission on Approval/Accreditation of Dietetics Education
CADE	Commission on Accreditation for Dietetics Education
CCTDI	California Critical Thinking Disposition Inventory
CDE	Certified Diabetes Educator
CDR	Commission on Dietetic Registration
CNSC	Certified Nutrition Support Clinician
CRDN	Accreditation Council for Education in Nutrition and Dietetics' Required Core Competencies
CVI	Content Validity Index
DCES	Diabetes Care and Education Specialist
DCN	Doctorate in Clinical Nutrition
DPG	Dietetic Practice Group
DPT	Doctor of Physical Therapy
EAL	Evidence Analysis Library
EBDP	Evidence-based dietetic practice
EBM	Evidence-based medicine
EBP	Evidence-based practice
EBPB	Evidence-Based Practice Beliefs scale
EBP-KABQ	Modified Knowledge, Attitudes, and Behavior Questionnaire
EBPQ	Evidence-Based Practice Questionnaire
EBPSE	Evidence-Based Practice Self-Efficacy Scale
EPIC	Evidence-Based Practice Confidence Scale
ERI	Evidence-Based Practice Readiness Inventory
FEM	Future Education Model
HSRT-N	Health Sciences Reasoning Test with Numeracy
ICC	Intraclass correlation coefficient
ICDA	International Confederation of Dietetic Associations
IFN	Integrative and functional nutrition
IRB	Institutional Review Board
JHNEBP	Johns Hopkins Nursing Evidence-Based Practice Model
KAB	Knowledge, Attitudes, and Behavior survey
KABQ	Abbreviated name of modified Knowledge, Attitudes, and Behavior Questionnaire (i.e., EBP-KABQ)
KACE	Knowledge, Attitudes, Access, and Confidence survey
KAP	Knowledge, Attitudes, and Practice of Research survey
KRDN	Accreditation Council for Education in Nutrition and Dietetics' Required Core Knowledge
K-REC	Knowledge of Research Evidence Competencies
KT	Knowledge translation
MDC	Minimal detectable change
OCRSIEP	Organization Cultural and Readiness Scale for Systemwide Integration of Evidence-Based Practices
OT	Occupational therapy/therapist
PAK	Perceptions, Attitudes, and Knowledge
PBE	Practice-based evidence
PEN	Practice-based Evidence in Nutrition
PET	Practice, Question, Evidence, and Translation
PICO/PICOT	Population, intervention/issue of interest, comparison group, time frame
PT	Physical therapy/therapist
QAMUR	Quality Assurance Model Using Research
Quick-EBP-VIK	Quick Evidence-Based Practice Value, Implementation, and Knowledge survey

RDN	Registered dietitian nutritionist
RU	Research utilization
SCT	Social Cognitive Theory
SLP	Speech language pathologist
SLT	Social Learning Theory
SR	Systematic review
STEM	Science, technology, engineering, and math
TPB	Theory of Planned Behavior
TRA	Theory of Reasoned Action
UNF	University of North Florida
USDE	United States Department of Education

Abstract

Evidence-based practice (EBP) is associated with improved and consistent patient care and reduced healthcare costs. While dietetic didactic and practice requirements emphasize EBP, there is a lack of a valid and reliable instrument that measures both objective and subjective knowledge of EBP among registered dietitian nutritionists (RDNs). Content validity was conducted with 11 experts and resulted in a 38-item survey that included ten items assessing objective knowledge of EBP. Items were deemed clear and appropriate for the survey goals and intended audience based on a face validity review among 16 RDNs with varying backgrounds. A pilot evaluation (n = 12) pre- and post-research methods course found responsiveness to the objective knowledge subscale; however, this was only statistically significant with the pre-validation instrument (p = .05, r = .57). Internal consistency reliability (n = 482) was acceptable for the survey (Cronbach's α = .91) and its subscales. However, the objective knowledge subscale was low (Cronbach's α = .41), likely due to too few items and variation in EBP exposure and training among participants. Test-retest (n = 335) found a good degree of reliability within the objective knowledge subscale at both timepoints (ICC = .71). Secondarily, this instrument was used to assess associations between level of education (i.e., bachelor's, master's, doctoral) and objective knowledge of EBP (n = 482). This research suggests that each increasing degree type further supports the knowledge of EBP concepts (all comparisons p < .001). Other predictors of EBP include recency of degree completion, peer-reviewed publications, and specialty certifications. Moderate positive associations (r = .41, p < .001) were found between subjective and objective knowledge measures, suggesting RDNs may be relatively accurate in their self-assessed knowledge of EBP. Future research should evaluate the efficacy of EBP training, particularly among practitioners further from degree completion.

Introduction

The term evidence-based medicine, also coined evidence-based practice (EBP) to include all health care disciplines, was first defined in the 1990s. Today, the Academy of Nutrition and Dietetics (AND) defines evidence-based dietetics practice (EBDP) as the "process of asking questions, systematically finding research evidence, and assessing its validity, applicability and importance to nutrition and dietetics practice decisions; and applying relevant evidence in the context of the practice situation including professional expertise and the values and circumstances of patients/clients, customers, individuals, groups, or populations to achieve positive outcomes."[1] Consequently, the concept of EBDP implies the need for critical thinking, professional judgment, and the comprehension and critical appraisal of research. Further, the use of EBDP is recognized as an ethical responsibility among registered dietitian nutritionists (RDN).[2,3]

There have not been substantial changes to the didactic degree requirements for RDNs since the inception of dietetics education. However, in an effort to promote the position of RDNs within the healthcare team and keep pace with the degree requirements of other allied health professions, the RDN credential is moving from a bachelor's degree to a graduate degree requirement as of 2024.[4] The existing literature on the use of EBDP among RDNs is limited and has suggested a false sense of competence[5] and knowledge gaps, particularly with the interpretation and evaluation of statistical findings.[6,7] Given that the Master of Science degree requirements inherently expose RDNs to more research concepts than that of the undergraduate curriculum, it is postulated that those with graduate-level degrees are better prepared to utilize and implement EBDP. Therefore, this research seeks to evaluate the role of educational level (i.e., highest degree attained) on objective knowledge of EBDP. Additionally, background and

demographic variables will be evaluated to determine predictors of knowledge, attitudes, behaviors, and implementation of EBDP. This research also aims to assess the validity and reliability of an objective knowledge EBDP tool among RDNs that can be widely used within the field of nutrition and dietetics.

While RDNs often report feeling competent in their ability to follow EBDP[5,8] and translate research into practice,[9] the implementation of EBDP may be limited if practitioners do not have adequate knowledge and skills. Following the theoretical framework of the Theory of Planned Behavior along with constructs from the Social Cognitive Theory, even with well-intentioned plans to act on a behavior (i.e., high perceived behavioral control or behavioral capacity to follow EBDP), if the knowledge and skills required to apply EBDP are lacking, then the implementation of EBDP will not occur. As a result, this research includes both objective and perceived knowledge measures while also assessing attitudes, behaviors, and implementation of EBDP.

Portions of four unique EBP surveys that have been previously validated within other health care disciplines were adapted for nutrition and dietetics. The final instrument was assessed for content and face validity, as well as test-retest reliability of the objective knowledge portion of the instrument using intraclass correlation coefficients (ICC) and internal consistency reliability using Cronbach's alpha. Analysis of variance (ANOVA) tests were used to evaluate the association between the highest degree earned and the highest nutrition and dietetics degree earned on EBP knowledge scores. Regression models were used to assess the role of projected predictive variables on EBP knowledge, attitudes, behaviors, and implementation. Correlation coefficients were used to assess the accuracy of RDNs' self-assessed knowledge compared to objective knowledge scores.

Chapter 1: Significance/Literature Review

In an effort to be recognized as an equivalent with other allied health professions[4,10–12] and provide nutrition and dietetic practitioners with the knowledge, skills, and research proficiency necessary to provide high-quality patient care, the education requirements to obtain the RDN credential are increasing. As of January 1, 2024, the current baccalaureate degree requirement will transition to a minimum graduate degree requirement.[11–13] Since the mid-1990s, it has been well-established that RDNs feel that the most significant challenges facing the field include the three R's: lack of public recognition of the value of services (respect), general awareness of the field (recognition), and adequate compensation (rewards).[4,13] Consistent implementation of EBP among RDNs may address these challenges, as EBP is associated with the highest quality of patient care, reduced healthcare costs, and prevents wide variations in patient care, resulting in the best possible outcomes.[14]

Given that EBP is the backbone of the nutrition and dietetics profession, moving towards a graduate degree requirement with greater exposure to research and its translation to practice seems to be an advantageous transition; however, there is little data within the field to corroborate this relationship. This research aims to better understand and address gaps in RDN EBP care through the development of a reliable and valid survey instrument specific to nutrition and dietetics evaluating the knowledge, attitudes, behaviors, and implementation of EBP among RDNs in a variety of dietetic practice settings. This survey also intends to provide insight into the role of educational level and other predictive factors in the utilization of EBP and address knowledge-related gaps that may exist among current practitioners. Additionally, objective and subjective knowledge measures will be compared to determine the accuracy of RDNs' self-assessment of EBP knowledge.

Overview of the Dietetics Education System

Dietetics education dates back to 1914 when Johns Hopkins Hospital was the inaugural facility to offer approved dietetics training courses.[15] Shortly thereafter, in 1917, the American Dietetic Association (ADA), presently AND, was formed with the primary focus of establishing standards of dietetic practice.[16,17] However, by the 1920s and 1930s, ADA recognized a need for education-focused requirements.[16,17] By 1923, the Education Section of ADA had developed requirements and standards of curricula for both academic and on-site hospital training. In 1927, the "Outline for Standard Course for Student Dietitians in Hospitals" was approved.[17] This Outline for Standard Course required that students who desired a career in dietetics have a baccalaureate degree in food and nutrition, as well as a minimum of six months of supervised hospital training under a dietitian.[17] This educational structure still fundamentally remains in place today.[4]

The turning point for dietetics education came in 1974 when the Division of Education of ADA was granted independent accreditation oversight over coordinated undergraduate dietetics programs and dietetic internships by the United States Department of Education (USDE) and the Commission on Postsecondary Accreditation.[16,17] This shift toward autonomous accreditation allowed nutrition and dietetics to keep pace with other allied health professions.[17] By the 1990s, after the creation of several education subunits to meet compliance standards, ADA's bylaws were amended to grant administrative autonomy to allow for USDE recognition.[17] The Division of Education was renamed the Commission on Approval/Accreditation of Dietetics Education (CAADE), which later was abbreviated to Commission on Accreditation of Dietetics Education (CADE) in 1999.[17] In 2012, CADE was changed to the Accreditation Council for Education in Nutrition and Dietetics (ACEND) to follow the organizational name change to AND.[17]

To tackle the restructuring of health care in the early 1990s, the 1994 Future Search Conference took place to bring together diverse perspectives to establish new directions for the future of dietetics practice, education, and credentialing.[16,17] Some of the priorities requiring immediate action included enhancing research skills among dietetic professionals, equipping educators to teach their students critical thinking, and stressing greater scope of practice roles.[16,17] Leaders felt that "A curriculum that teaches students how to obtain, evaluate, and use information and that instills a sense of inquiry is needed to prepare broadly educated, creative, and critically thinking persons who are capable of change and professional growth."[18]

In 2006, the Phase 2 Future Practice and Education Task Force was appointed by the ADA House of Delegates to describe the future of dietetic practice. Based on the challenges noted by those within the field, the 2008 Phase 2 Future Practice and Education Task Force recommended that a higher level of practice was needed to meet the challenges and demands of the workplace. While increasing degree requirements had been a topic of discussion for several years prior, the 2012 Visioning Report from AND first announced this transition.[4] The Education Task Force postulated that the graduate degree requirement could address concerns regarding respect, recognition, and rewards (three R's) among RDNs and contribute to the advancement of EBP among RDNs. Additionally, this shift could foster and build critical thinking skills and provide a higher standard of patient care.[4]

ACEND accreditation standards are updated about every five years, with the 2017 Accreditation Standards for Nutrition and Dietetics Programs being the most recent standards required to guide didactic curriculum and learning activities (Appendix A). Domain 1 of Standard 5 of the 2017 standards, titled 'Science and Evidence Base of Practice,' requires programs to prepare students for the "Integration of scientific information and translation of

research into practice."[19] Moreover, while concepts of EBP are implied within each of the knowledge and competency requirements of Domain 1 and intersect with other domains, EBP is explicitly mentioned within KRDNs 1.1, 1.2, and CRDN 1.2 (Figure 9).[19] Most recently, a second draft of the proposed 2022 ACEND standards were issued in 2021 with similar recommendations regarding the use and implementation of EBP through Standard 3, Domain 1 (Figure 10): "Scientific and Evidence Base of Practice: Integration of scientific information and translation of research into practice."[20]

In response to the increasing degree requirement to obtain the RDN credential, the Future Education Model (FEM) was developed and released in 2017 for demonstration programs based on degree status (e.g., associate, bachelor's, and graduate).[21] The FEM was constructed around a combined, coordinated program that includes concurrent supervised internship experience, simulation, and didactic learning that includes both knowledge and competency-based requirements. The competency and performance indicators follow a 'Knows,' 'Shows,' and 'Does' model to assess skill development and advancement.[22] Similar to the 2017 standards, the term EBP is stated twice in the FEM curriculum within Unit 1: Foundational Knowledge and Unit 6: Critical Thinking, Research, and Evidence-Informed Practice, but its concepts, including 'evidence-informed practice,' are widespread (Figure 11).[22] However, the term 'evidence-informed' used with the FEM should be cited with caution as it may result in greater confusion and could convey that science is an option rather than the norm in practice-based decisions.[23]

The 2019 Compensation & Benefits Survey of the Dietetics Profession reported that the educational profile of RDNs is nearly split, with roughly 46% with a bachelor's degree and 53% with a graduate degree (50% master's, 3% doctoral) as the highest degree held.[24] Regardless, advancing degree requirements and program restructuring can be an additional burden for

didactic programs and students. Still, research from physical therapists (PTs) that had obtained the Doctor of Physical Therapy (DPT) found that the vast majority of students valued the DPT and felt that the benefits of the doctoral degree outweighed any hardships.[10] Moreover, DPT level PTs have reported that additional education enhanced their ability to follow EBP, and a small percentage felt that it had increased their credibility with third-party payers.[10]

The field of nutrition and dietetics has made meaningful strides over the last century, but there is still additional work to be done to address the three Rs. Furthermore, the anticipated growth of dietetics within the next decade is beyond that of many other occupations due to the more widely recognized role of nutrition in health and well-being.[25] Thus, now is the time to assess the role of advanced education and EBP aptitude among nutrition and dietetic practitioners. As noted from the development of advanced practice nursing[26] and the advancement of PT education requirements,[10] increasing dietetics education requirements and better preparing RDNs to implement EBP and perform outcomes-based research is a step in the right direction.[4]

Background and History of Evidence-Based Practice

While some of the constructs of EBP date back to ancient civilizations,[27,28] the term 'evidence-based practice' is a rather new concept. In the 1970s, Archie Cochrane, who inspired the creation of Cochrane Library and Cochrane Reviews,[29,30] acknowledged that clinicians should only utilize procedures deemed to be effective.[31,32] Before this, most medical decisions were based on clinicians' experience and beliefs.[31,32] In 1981, faculty in the Department of Epidemiology and Biostatistics at McMaster University began writing a series of articles for the Canadian Medical Association Journal that focused on teaching clinicians how to appraise and critically evaluate research.[33] Hence, while the concept was gaining traction a half-century

ago,[31,32,34] the term did not appear in medical literature until the early 1990s, then referred to as evidence-based medicine (EBM).[27,34]

Florence Nightingale is recognized as the pioneer of evidence-based nursing, which began in the 1800s with the inclusion of experimentations and critical evaluation of how the environment influenced patient outcomes.[31] From a dietary standpoint, the treatment of scurvy is one of the earliest and most widely known examples of utilizing evidence in practice, as well as the extent of the consequences associated with ineffective dissemination and translation of evidence. The initial discovery of citrus fruit, later recognized as the role of ascorbic acid in the treatment of scurvy, dates back to 1591 when James Lancaster found that his sailors recovered after eating oranges and lemons.[27] As a result, Lancaster required all sailors on subsequent expeditions to consume a spoonful of lemon juice each morning.[27] Despite the effectiveness noted by Lancaster, another 154 years passed before James Lind conducted what has been touted by some as one of the first controlled therapeutic trials evaluating the role of dietary influences in the treatment of scurvy.[27,35] Moreover, it took another seven years for Lind's results to be published, and another 40 years before carrying lemon juice on ships became a common practice.[27]

The designation later progressed to EBP to encompass the broad range of health care practitioners that could implement its concepts,[31] and to recognize the role of patient values in clinical decisions, which is described in greater detail below.[27,31,34] The expansion of the definition dispelled some of the myths that saw EBP as a "cookbook" approach or one-size-fits-all recommendation based on any available evidence.[36] Evidence-based practice seeks to apply and tailor the best available evidence for each patient or client while still incorporating clinical judgment.

Over the last several decades, a paradigm shift towards using research to guide practice-based decisions resulted in the evolution of clinical research. Whereas randomized controlled trials were scarce in the 1960s, since that time, clinicians have increasingly relied on novel research to aid in the development of best practices.[32] However, it was not until the Affordable Care Act that EBP became a mandated requirement for patient care.[37,38] As a result, the depth of healthcare-related research has rapidly grown, and EBP has even been referred to as the "fourth revolution" of healthcare, following 1) the launch of health insurance, 2) the demands to reduce health care costs, and 3) outcomes-based research.[30] Despite the accelerated growth of EBP, only a trivial portion of the existing research has successfully been applied and translated into clinical practice.[39]

Today, EBP is seen as a benchmark in the healthcare system as its value-add model promotes clinical effectiveness and optimal patient health outcomes. For instance, the Institute of Medicine[40] set a goal that 90% of clinical decisions would be based on the best available evidence by 2020. However, it is worth noting that recent estimates in the primary care setting found that only half of the recommendations provided were evidence-based, and less than 20% were based on high-quality evidence.[41]

Given that nutrition is a relatively new science that is continually advancing through research, an extensive understanding of EBP is indispensable for all nutrition and dietetic practitioners. However, the concepts of EBP were only recently introduced into the dietetics education curriculum. Consequently, those RDNs who completed their didactic curriculum prior to 2008 likely need professional training on the concepts of EBP.[42] Regardless, the continued use and application of EBP among nutrition professionals will only further validate the role of

the RDN as part of the healthcare team, improve clinical practice, help translate nutrition research into policy and guidelines, and promote insurance reimbursement for nutrition services.[7]

Evidence-Based Practice: Definitions

The initial literature defining EBM emphasized the role of critical evaluation research and its translation in guiding clinical practice.[28,32] It was even overtly stated that implementing EBM requires clinicians to acquire new skills in order to conduct efficient literature searches and evaluation and move away from operating under intuition and unsystematic evidence.[32] David Sackett was the first to provide a definition of EBM that is still utilized today, stating that EBM is "the conscientious, explicit and judicious use of current best evidence in making decisions about the care of individual patients."[14,28,31,43–45] Over the years this definition has expanded to merge and align these concepts to allow for its application within a variety of health-related disciplines and recognize its multi-faceted approach through the renaming to EBP.[31]

Today, there are three fundamental domains of EBP, which include: 1) critical appraisal of the most pertinent external evidence to translate into clinical decisions, 2) clinical expertise or internal evidence from outcome and quality improvement projects, and 3) consideration of patient preferences and values.[14] Scientific research and practice-based evidence (PBE) are referred to as external and internal evidence, respectively.[46] Therefore, the clinician is considering research utilization and incorporating their clinical expertise and patient preferences when ultimately making decisions regarding patient care. When there is little or no applicable research available, then internal evidence, clinical expertise, and patient preferences can be used concurrently to guide decisions.[45]

Research has been the foundation of dietetics since its inception and is critical to the advancement of EBP.[42] Research and PBE are closely intertwined with EBP. In order to better

discern this relationship, research and PBE can be described as the sources of knowledge and stimuli for EBP.[46] The analogy of an umbrella best portrays the relationship between EBP, research, and quality improvement or PBE. The fabric of the umbrella represents EBP, the handle being research, and the supports of the fabric are quality improvement or PBE.[46]

There was an uptick in the literature surrounding the application of evidence-based decision making within dietetics around the late 1990s.[33,42,43] By 2001, the AND's House of Delegates called for an increased emphasis on practice and outcomes-based research to promote EBP.[42] This "new" evidence-based process would not minimize the relevance of academic knowledge, clinical skills, and clients' needs but would stress the requirement for critical evaluation of research and careful consideration of the best evidence available to guide clinical decisions.[43,44] Evidence-based dietetics practice is the basis of nutrition and dietetic practice and decision-making. The term EBP is written twice within AND's Code of Ethics,[3] and is recognized as a key tenet within the International Code of Ethics and Code of Good Practice from the International Confederation of Dietetic Associations (ICDA).[2] Furthermore, AND's Code of Ethics for the Nutrition and Dietetics Profession requires practitioners to abide by the principles of non-maleficence, autonomy, beneficence, and justice.[3] Each of these ethical principles evokes parallels to that of EBP, as using the best evidence available is foundational to ethical practice.[3,47]

The most recent definition of EBDP from AND states that "Evidence-based dietetics practice involves the process of asking questions, systematically finding research evidence, and assessing its validity, applicability, and importance to nutrition and dietetics practice decisions; and applying relevant evidence in the context of the practice situation, including professional expertise and the values and circumstances of patients/clients, customers, individuals, groups, or

populations to achieve positive outcomes."[48] Per AND's Definition of Terms List, professional expertise considers the cumulated experience, education, and professional skills of the RDN.[1] Keeping in mind this definition of EBDP, there is undoubtedly a need for an extensive understanding of research and its clinical interpretation for practical application.

The Academy of Nutrition and Dietetics provides practitioners with EBDP recommendations through the Evidence Analysis Library (EAL), systematic reviews, position papers, and practice papers.[49] However, given the rate at which nutrition science evolves, it would be challenging to keep such comprehensive resources up-to-date and applicable to all patient populations. For instance, it may take upwards of 17 years before the development of an innovative treatment or therapy reaches patients in academic medical centers; therefore, there would be an even greater lag time in reaching the majority of patients in community non-academic medical settings.[5] As a result, practitioners must engage in EBDP focused continuing professional education and continually re-evaluate EBDP best practices to provide the most effective and up-to-date patient care.

Evidence-Based Practice: The Seven Steps and Associated Models

While there are several step-based EBP models with corresponding concepts,[14,50,51] per Melnyk et al,[14] there are seven sequential steps associated with utilizing and following EBP.[14] The first step, step 0, cultivating a spirit of inquiry, is a pre-requisite before moving onto the six other action steps. A spirit of inquiry implies that practitioners are continually questioning and re-evaluating their practice. In this phase, initially, one must challenge their own beliefs to prevent myside bias and approach any findings with skepticism, or with active open-minded thinking (AOT).[14,52] Further, a supportive work environment and culture that fosters a spirit of inquiry is required for EBP to flourish.[14]

The second step, or first action/step 1, requires practitioners to formulate a question of interest following a PICO (patient/population, intervention or issue of interest, comparison intervention or group, outcome) or PICOT (PICO with 'T' for the inclusion of time frame) format. If the PICO components are not well established before researching the question, then practitioners likely will be presented with too much information that may not be relevant to the question at hand. Further, if multiple questions arise, priority is given to those questions that occur more regularly or have more significant outcome-related concerns.[14]

Step 2 begins the search process to obtain the best evidence available. Within this search, keywords from the PICO question should be used to help narrow the search. When considering types of external evidence to utilize, the level of the evidence, as well as the quality of the evidence, will ultimately determine the strength of the evidence. Therefore, level 1 evidence, recognized as systematic reviews and meta-analyses are an excellent place to begin the search given that they are at the top of the hierarchy of evidence.[14,50] Systematic reviews are conducted by experts within the field of interest and follow a rigorous process of pre-appraising and synthesizing the existing literature on a topic. Those systematic reviews that evaluate and compare quantitative data from many studies are meta-analyses.[14] Though, given the rate at which evidence evolves, the publication date should always be considered. If these pre-appraised reviews are not available, then practitioners should continue to work down the levels of evidence (Table 1).

Table 1. Rating System for the Hierarchy of Evidence for Treatment-Related or Therapeutic Studies[14,52–54]

Rating/Level of Evidence	Source of Evidence
Level I	Systematic review or meta-analysis of RCTs
Level II	Well-conducted RCTs
Level III	Well-designed controlled trials without randomization
Level IV	Well-designed observational studies (e.g., case-control, cohort)

Level V	Systematic review of descriptive and qualitative studies (e.g., metasynthesis)
Level VI	Single descriptive or qualitative study
Level VII	Opinion and or reports of authorities or expert committees

Regardless of the level of the evidence obtained by the practitioner, step 3, the critical appraisal of the evidence, is still essential. Some may erroneously assume that because the research is published that it is well-conducted. Therefore, this step requires careful review and critical thought. While many questions likely need to be addressed to determine the value of the research, there are three main areas to consider: validity, reliability, and applicability. Therefore, there must be a strong understanding of research methodology and statistical interpretation, as well as the ability to weigh risk versus benefit and generalizability as it relates to the specific patient. This step has concerns regarding uniformity of approach, as dietetic practitioners likely have varying levels of experience and exposure in critically evaluating the evidence.[48] This step is becoming an unprecedented consideration given the imminent graduate degree educational requirement to become an RDN.

Once the latest research has been critically appraised and professional expertise has been exercised, then step 4 aims to evaluate the risks and benefits of the proposed care decision(s). These potential outcomes should be shared, discussed, and deliberated with the patient, family, or other relevant parties in a concerted manner. This process allows for patients to partake in the decision-making process and for practitioners to acknowledge patient preferences and values. Step 5 involves the documentation and evaluation of these practice-based encounters through quality improvement initiatives that provide insight into practice-based outcomes to determine best practices. Assuming these outcomes are beneficial, then the final step (step 6) would be the dissemination of EBP change among a broader audience to decrease the implementation gap in

practice. One example of applying clinical practice outcomes into EBP would be the use of AND's Health Informatics Infrastructure (ANDHII). ANDHII is an online data collection tool that allows RDNs to track care-related outcomes while also providing additional supportive evidence to improve broader nutrition EBP recommendations.[55] Moreover, poster presentations, journal clubs, rounds, newsletters are all noteworthy tools to promote the dissemination of EBPs.[14]

There is a need for meaningful discussion around how to best disseminate and adopt EBP findings, as it takes an average of 17 years for research to be translated into clinical practice.[56] To reduce the lag time between new research evidence and practitioner implementation, the Agency for Healthcare Research and Quality (AHRQ) has developed a 3-step framework to promote the adoption of EBP in healthcare settings.[57,58] These steps include: 1) knowledge creation and distillation, 2) diffusion and dissemination, and 3) end-user adoption, implementation, and institutionalization.[57,58] While the first two steps have been achieved through research investigation and publication, the third step has not yet been fully realized.[57] This finalized process allows for the timely development of EBP guidelines that can be disseminated amongst stakeholders, to ultimately be implemented on a larger scale among organizations and institutions.[57,58]

Many of the existing EBP models have come from the field of nursing but often are relevant to many healthcare disciplines. Per Mitchell et al,[59] EBP models are said to be grouped into three major categories: 1) EBP, Research Utilization (RU), and Knowledge Translation (KT) processes; 2) Strategic/Organizational Change Theory to Promote Uptake and Adoption of New Knowledge; and 3) Knowledge Exchange and Synthesis for Application and Inquiry.[59,60] To

narrow the focus for the purposes of this review, the models below fall within the first major category of EBP, RU, and KT processes.

The Stetler Model of Evidence-Based Practice

The Stetler Model of EBP originated from the initial 1976 Stetler/Marram Model for RU that was developed to reduce the knowledge translation gap. Critical thinking is one of the central tenants of this model. The modifications of this model over the years have incorporated an "integrated package of tools and resources for EBP."[60] This multi-phase model is geared toward the individual advanced-level practitioner, as it requires critical appraisal of research findings to realize effective EBP decisions. The Stetler model includes the following phases: 1) preparation or the identification of a priority need, 2) validation or the critical analysis and summary of a body of evidence (i.e., systematic review or practice guideline), 3) comparative evaluation/decision-making based on utilization criteria, 4) translation/application or adapting research into practice application, and 5) evaluation or determine if the goal of the EBP decision was attained.[60]

The Johns Hopkins Nursing Evidence-Based Practice Model

The Johns Hopkins Nursing Evidence-Based Practice Model (JHNEBP) from 2017 includes three corresponding components: Inquiry, Practice, and Learning.[61] Comparable to that noted by Melnyk et al,[14] this model states that the concept of inquiry is foundational and that a spirit of inquiry or sense of curiosity aids in the detailed evaluation of practice-based questions and innovative thinking processes.[61] The practice domain covers all of the components of day-to-day practice, including the ability to initiate the PET process (Practice Question, Evidence, and Translation) to continually validate or update practice decisions.[60,61]

The PET process is at the core of this model and is iterative to imply the need for constant process improvement. By working through these processes, practitioners can gain new insight, promote the continuation of learning, and foster organizational culture that places a high value on learning.[61] The JHNEBP PET process includes 19-steps, with steps 1-6 covered during the Practice Question phase, steps 7-11 covering the Evidence phase, and 12-19 covering the action plan and pathways for Translation.[61]

The Iowa Model Revised: Evidence-Based Practice to Promote Excellence in Healthcare

The Iowa Model merges the philosophies of implementation science through the Quality Assurance Model Using Research (QAMUR) with Rogers' 2003 Diffusion of Innovations theory, which explains how innovative concepts or behaviors are adopted and disseminated.[60,62] This model is unique as it has feedback loops that guide the EBP application process with specific decision points designed for interprofessional collaboration.[63] Decision points are identified by a diamond shape, and include the following: determination of the topic prioritization (e.g., Is this topic a priority?), the need for research when insufficient evidence is available (e.g., Is there sufficient evidence?), and the use for alternative measures if change adoption is inappropriate for the practice setting (e.g., Is change appropriate for adoption in practice?).[60] The starting point of this model identifies a problem or knowledge-focused triggers that can be a result of any question regarding practice standards. Assuming the area identified is a topic of interest among stakeholders, then it proceeds through each step with a final goal of disseminating results.[60,63] While this model was developed by nurses, it has been effective in its application within various disciplines and has been used as the framework for operational issues and educational programs.[60,64]

The revised Iowa Model was recently re-evaluated and refined to address changes in healthcare. This revision was based on the review of the original model, consideration of other EBP models, and discussions with a range of stakeholders. The validation and refinement of the revised Iowa Model took place through an EBP conference in 2015, with primary changes including specific mentions of the role of patient engagement and the expansion of research translation.[64]

The Advancing Research and Clinical practice through close Collaboration Model

The Advancing Research and Clinical practice through close Collaboration (ARCC) model differs from other EBP models in that it emphasizes a system-wide approach to create a culture of EBP but can also be used for both individual and organizational change.[60,65] To improve healthcare quality and patient outcomes, the conceptual framework of ARCC is based on the cognitive-behavioral theory to guide behavior change and the control theory, which suggests there should be motivation for change if there is a discrepancy between a standard or goal and the current state.[60] Due to the number of barriers that exist when employing EBP, the ARCC model includes EBP mentors and champions as key constituents to improving EBP environmental culture and removing barriers that hinder EBP implementation.[60,65]

The constructs of this model include 1) organizational culture and readiness, 2) EBP mentors, and 3) EBP beliefs.[60] The first construct can be assessed using the Organizational Culture and Readiness Scale for System-Wide Integration of EBP (OCRSIEP), whereas beliefs can be evaluated through the EBP Beliefs scale (EBPB).[60] Through numerous studies, both tools have established face and content validity with internal consistency reliabilities greater than 0.85.[60] Greater emphasis on EBP within organizations is said to increase EBP implementation and healthcare outcomes. In a recent test of this model, Melnyk et al found that a sequential

format of the ARCC Model over a 12-month time frame within a large acute care hospital led to significant increases in EBP beliefs and implementation while also strengthening EBP organizational culture and improving patient outcomes.[65]

Stevens Star Model of Knowledge Transformation

As indicated by the name, Stevens Star Model uses a 5-point star to exemplify the major stages of knowledge transformation. Akin to the term knowledge translation, knowledge transformation is defined as the ability to turn primary research findings into EBP action through a series of stages.[60] The first point or stage describes the identification of primary research through research databases (i.e., Discovery Research). The second point represents the development of synthesized evidence summaries or reports (i.e., Evidence Summary), which can move to point 3, the translation into practice guidelines (i.e., Translation to Guidelines). The last two points include integrating the best evidence into practice (i.e., Practice Integration) and the evaluation of the impact that EBP has on health outcomes and care efficiency (i.e., Process, Outcome Evaluation).[60,66] Varying from other models, the Stevens Star Model stresses the importance of knowledge transformation and the relevancy and usefulness of different forms of knowledge in practice-based decisions.

The Star Model has been used as a basis for nursing EBP competencies at a variety of educational levels, including associate to doctoral.[60,66] These core competencies include: 1) providing patient-centered care, 2) working in interdisciplinary teams, 3) employing EBP, 4) applying quality improvement, and 5) utilizing informatics.[66] The Evidence-Based Practice Readiness Inventory (ERI) was developed to measure confidence in performing these five EBP competencies. As noted with the other models, this tool has also exhibited strong psychometric properties.[60]

Evidence-Based Practice: Knowledge Translation

The application and translation of research to practice includes both the critical research evaluation and patient value domains. Practitioners must be able to determine if research outcomes related to their question of interest are applicable or translatable to practice. Additionally, RDNs must determine if the available research findings can be extrapolated to their specific patient and their patient's values. Therefore, translating research into practice, also known as knowledge translation (KT) or implementation science,[67] is required to make sound EBP decisions. The Canadian Institute of Health Research defines KT as "a dynamic and iterative process that includes synthesis, dissemination, exchange and ethically-sound application of knowledge to improve health, provide more effective health services and products, and strengthen the health care system."[68] Given the focus on the research evidence domain of EBP, it is recognized that KT is necessary before research findings are considered compatible with practice.[60]

Knowledge translation is the basis of EBP.[68] The goal of KT is to reduce the knowledge-to-practice gap that is often experienced due to the inability to keep up with the sizeable amount of research that is regularly being published.[68] Bridging this gap allows for successful implementation of evidence-based care. Nevertheless, KT is recognized as a challenge as there is a considerable lag in the implementation of research into practice.[56,67] The abovementioned Stevens Star Model of Knowledge Transformation (Stevens Star Model of Knowledge Transformation subheading) is an EBP model immersed in the role of the science of EBP, improvement science, and connecting evidence into practice.[60]

Evidence-Based Practice: Critical Thinking

Critical thinking is a broad concept defined by the American Association of Critical Care Nurses (AACN) as "the complex cognitive process of questioning, seeking information, analyzing, and synthesizing, drawing conclusions from available information, and transforming knowledge into action."[69] These processes correspond with the methods required of research utilization and KT which make critical thinking and higher-order reasoning skills vital for EBP. When translating research, one must consider the strength of the evidence, evaluate the research design, methodology, results, and its relation to the original practice question. Critical appraisal demands that practitioners are proficient in assessing the quality, credibility, and translation of research to practice while also bearing in mind the patient's values and preferences and professional expertise.[69] Thus, all practice-based decisions require critical thought and judgment at each stage while cohesively joining together the three domains of EBP.

Comparable to many science, technology, engineering, and math (STEM) disciplines, nutrition is a field that is riddled with misinformation. The complexity of practice-based decisions requires that RDNs have the dexterity to apply critical thought. Critical thinking is required of each of the four parts of the Nutrition Care Process and Model (Nutrition Assessment, Nutrition Diagnosis, Nutrition Intervention, and Nutrition Monitoring and Evaluation), and included as part of the dietetics education accreditation standards and Standards of Practice/Standards of Professional Performance documents.[70]

Integrative and functional nutrition (IFN) RDNs provide one example of an area of dietetic practice that demands greater critical thought as there are few EBP guidelines available. As a result, Goodman et al[70] evaluated critical thought among IFN RDNs using two validated Health Sciences Reasoning Test with Numeracy (HSRT-N) and the California Critical Thinking

Disposition Inventory (CCTDI). All IFN RDNs had scores that indicated a strong degree of critical thinking; however, IF RDNs within medical centers had consistently higher scores when compared to those in private practice.[70] Nonetheless, the only significant difference was within the 'Inquisitiveness' attribute of the CCTDI.[70] Considering that medical centers allow for greater interdisciplinary collaboration when compared to private practice, it is thought that this relationship might promote inquisitiveness among those IF RDNs working in medical centers.[70] Still, the concept of AOT within EBP may be of concern as the lowest CCTDI attribute was 'Truth-Seeking,' which may promote false interpretations or a focus on research that only aligns with personal beliefs.[70]

Additionally, those that have high-level critical thinking skills have been found to make better decisions with less unnecessary risk, which is the underpinning of EBP.[71] Stanovich[72] found that critical thinking and intelligence are only modestly associated. However, without a strong basis of research knowledge, the EBP process can only go so far. As previously mentioned, it is also imperative to note that egocentric bias can very easily shroud critical thinking.[72] Consequently, those with high-level critical thinking are able to apply AOT and act as skeptics, considering both the strengths and weaknesses of opposing views.[72]

Evidence-Based Practice: Self-Efficacy

Self-efficacy is one of the constructs associated with Bandura's Social Cognitive Theory (SCT). This theory postulates that learning occurs based on social stimuli and is influenced by a dynamic and reciprocal interplay of personal, behavioral, and environmental factors.[73] Self-efficacy describes an individual's confidence in his or her ability to perform behaviors necessary to produce specific outcomes.[74] The key differentiating factor between self-confidence and self-efficacy is that while self-confidence tends to be a fixed trait, self-efficacy will vary depending

on the situational context.[75] Therefore, knowledge alone is not enough to motivate the performance of a task. Considering that self-efficacy is a predictor of behavior,[76] it has been proposed that practitioners with higher EBP self-efficacy are more likely to implement EBP into practice.

As a result of this theorized correlation between self-efficacy and EBP implementation, several studies have evaluated this relationship. The validation of an EBP survey used to evaluate the effect of an EBP course within the master's and doctoral-level nursing curriculum found that self-efficacy scores had the most significant increase from pre- to post-course when compared to three other concept subscales.[77] In another survey validation study, Artino et al[75] found that medical students' self-efficacy significantly increased from year 1 to year 4 of their medical training. Ramis et al[76] utilized seven validated scales to predict undergraduate nursing students' intention to use EBP post-graduation and found that EBP self-efficacy had significant but indirect influences on intention to use. A more recent national study from Boswell et al[78] also reported strong significant positive correlations between EBP and self-efficacy among acute care nurses. Among renal dietitians in Australia and New Zealand, low self-efficacy was a significant barrier to EBP guideline implementation.[8]

Evidence-Based Practice: Barriers and Facilitators

Barriers

Research and science have long been the foundation of dietetics and nutrition[42] and EBP. Nevertheless, numerous barriers limit RDN involvement in research.[16,42,79–81] A few of these barriers to research among RDNs and allied health professionals include a lack of time, administrative support,[80–82] advanced research degrees,[16] and research training and skills.[16,81,82] As a science and healthcare field, this lack of research activity prevents the dietetics profession

from being on the cutting edge. Without foundational research skills, practitioners lack the capacity to fully utilize EBP and make systematic practice-based decisions.

When considering the adequacy of EBP resources, lack of time has been the most commonly cited barrier to the application of evidence-based materials (i.e., EBP, research, systematic reviews, knowledge translation) to practice as it pertains to dietetics[6-8,43,57,68,80,83–86] and other allied health disciplines.[87–90] It has been found that some RDNs do not feel that their workload allows for time for research and that any time allotted to research takes place during personal time.[42,68,80–82,91] Some RDNs have cited reading[68,91] and conducting[92] research as tasks they are willing to complete outside of work, whereas others report a need for work-life balance that does not involve reading[91] or conducting[82] research outside of the workplace. Nonetheless, RDNs have reported interest in research, though only 2% of RDN AND members have utilized a free research toolkit to help initiate research involvement.[80]

Given the workplace time constraints that are often dedicated to patient encounters, RDNs may rely on more experienced colleagues and experts within the field for information.[68,84,91] Even so, they often did not feel comfortable approaching the same person for help[68,91] as they did not want to come across as a nuisance.[91] The development of educational tools for patients or members of the health care team was often reported as the only valid reason for utilizing scientific information during the workday without feeling guilty or judged.[68] However, it was felt that reading research was an employer expectation.[68] In support of these findings, a systematic review evaluating the research culture among a variety of allied health professions found significant barriers related to lack of time, limited research skills, and other work roles taking priority over research and its related activities.[89]

Many feel that they lack the administrative support, organizational culture, or funding that supports involvement in research[42,80,83] and the application of EBP.[9,57,83,85,87,90,93] The interdisciplinary team is a unique influence as it can be seen as both a facilitator and a barrier to EBP among RDNs[68,91] and dietetic interns.[6] Physicians have been referenced as the gatekeepers[91] to use of EBDP given that in many instances physicians have the final say in patient care decisions. Therefore, the interdisciplinary relationship, as well as communication and collaboration, are essential for the advancement of EBDP and progress towards greater RDN respect among other health care disciplines.

Perhaps most concerningly would be the lack of RDNs regularly evaluating and consulting research for practice-based decisions.[94,95] It has been found that half of RDNs utilize evidence-based resources,[95] less than half always use EBP guidelines,[5] and read professional journals less than once a month.[94] These findings are similar to that of speech language pathologists (SLP), which found that most read an average of 2 research articles per month and less than half citing the use of peer-reviewed journals to guide their practice.[87] Additionally, the EAL tends to be a commonly cited EBDP resource among RDNs; yet, the most common frequency of use was annual.[95]

While many health disciplines appear to recognize the relevance and importance of EBP, many practitioners lack the confidence or skills to implement EBP into practice.[84,85,88] Soguel et al[68] discovered that while dietitians reported being involved in the steps of KT, only 28% felt confident in the KT process. Moreover, while nearly all renal dietitians within a study reported following EBP guidelines, just over half had successfully implemented assessment-related EBP guidelines.[8] A study from Chiu[85] conducted among dietitians in Taiwan found that deficient skills in critical appraisal were one of the most commonly cited barriers to EBP. Some RDNs in

non-clinical settings or smaller areas of practice have felt that research was not relevant to their practice,[80] but this theme also surfaced among SLPs and OTs.[87,90] Fulcher-Rood et al[87] found that only half of school-based SLPs felt that research was valuable in making practice-based decisions, whereas others felt that external evidence was not clinically relevant.

Although there are critically pre-appraised resources specific to nutrition and dietetics, such as the EAL, NutriPoint, Practice-based Evidence in Nutrition (PEN), many RDNs still feel there is a lack of synthesized materials and resources to implement EBP in a timely manner.[9,85] A recent qualitative study evaluating EBP use among dietetic interns found that none of the interns were aware of the EAL.[6] Furthermore, systematic reviews (SR) tend to be synonymous with EBP given that SRs are pre-appraised, associated with the highest quality of evidence, and follow rigorous standards to provide a methodical synthesis of the best available literature.[96,97] While SRs are typically the framework for EBP guidelines, qualitative studies have found that few RDNs are able to identify or acknowledge the role of SRs in EBP.[83,91] Gooding et al[83] found that roughly one-third of nutrition professionals lacked confidence in using SRs, and some inaccurately believed all journal articles were based on systematic reviews. Similarly, Thomas et al[84] found that a few RDNs reported local experts as the best source for high-quality EBP guidelines, and one reporting case reports as the best source. Additionally, while some research suggests that many practitioners have access to research databases,[95] very often general web portals[85] or Google searches[87] tend to be the predominant resource for electronic EBP information.

Lack of training has also been a well-established barrier to clinical practice.[7,88,90,95] While nearly all RDNs recognize the importance of EBP,[85,91,93] very few have had dedicated EBP training. Early EBDP research from Thomas et al[84] found that nearly 75% of RDNs did not

follow EBP or ranked themselves as beginners in applying EBP. Vogt et al[7] conducted a prospective randomized-control trial evaluating the benefits of an EBP-based education intervention. While there were significant increases related to the interpretation of statistical results in the intervention group, there were no significant differences in total knowledge scores between the groups.[7] Nonetheless, many RDNs have stated interest in EBP training and related concepts[9,91] and working with a mentor[95] to build EBP skills. Conversely, qualitative research evaluating dietetic interns' perceptions of EBP found that RDN preceptors were often resistant to changing their practice.[6]

Another important limitation of the existing literature on EBP includes the use of self-reported questionnaires. Previous EBP research utilizing self-reported methods has noted concerns regarding bias.[5,98] A systematic review from Davis et al[98] found that the majority of studies demonstrated that physicians were often not able to accurately assess themselves. Concerningly, those with the worst accuracy of self-assessment tended to be the least skilled and the most confident. Similar research conducted among nurses found that there was only a weak, positive correlation between objective knowledge measures and self-reported measures.[99]

Within the dietetics literature, Hand et al[5] found that social desirability bias may influence EBP research findings, with 95% of RDNs reporting being aware and nearly 90% reporting being familiar with an EBP guideline prior to its publication. Remarkably, it was found that those respondents that completed the self-assessment but not the knowledge quiz reported greater self-confidence in their knowledge of this guideline.[5] While there is no way to objectively determine if this self-confidence was overestimated, previous literature suggests this finding may be associated with cognitive or reporting bias.[5] This flawed sense of competence[5,100,101] has been coined within the psychology literature as the Dunning-Kruger

effect, where there is an overinflated self-assessment of skill when compared to actual performance.[102–104]

It has been found that there is a lack of awareness and distinction between all the three domains of EBP (i.e., knowledge translation, patient values and preferences, and personal expertise and clinical judgment) among RDNs.[68,91] Research has found that while RDNs may consider some of these domains in practice, there was a lack of understanding of the breadth of EBP[91] and an inability to translate to EBP to different practice settings and capacities.[68] This finding has been discovered among SLPs[87] and nurses,[106] with most only recognizing the research domain and many having difficulty distinguishing between traditional research and the full scope of EBP.

When evaluating knowledge-based EBP questionnaires, it was found that while dietetic interns and RDNs received similar item scores, the RDNs did have significantly higher baseline (pre-intervention) total scores (65% and 75%, respectively).[6,7] Both groups were lacking in their ability to interpret statistical results and identify the PICO (patient or problem, intervention, comparison, outcomes) format.[6,7] Byham-Gray et al[93] found that those in the process of completing their doctoral degree scored the highest among all other groups on a survey assessing perceptions, attitudes, and knowledge-based components of EBP.

Facilitators

Research modeled around the Transtheoretical Model of Health Behavior Change has found that motivation to change was a key factor associated with the adoption of EBP into clinical dietetic practice.[95] Others have reported motivation and desire for professional development and career advancement as a key enabler to building research skills and EBP.[89,91]

Correspondingly, Ramis et al[76] found that beliefs regarding EBP were the only factor found to significantly influence nurses intention to use EBP in practice.

Evidence-based practice has been recognized as a tool to substantiate clinical decisions among other colleagues and the interdisciplinary team.[68] Workplace culture and mentorship are documented facilitators of research involvement[92] and use of EBP.[88] Even the workplace setting appears to have implications in EBP. Nurses working in academic hospitals have been found to have more positive perceptions of EBP while nurses in other clinical settings or more rural environments tend to have more negative perceptions of EBP.[90]

Research and EBP concepts overlap considerably, and both require practitioners to be adept at finding, interpreting, and applying research to practice. Accordingly, those RDNs that are most involved in research tend to be well-informed about EBP, had more exposure to reading research articles, completed a higher level of education, and recently taken a research course.[42,94] Taking a research-focused academic course at a college or university has been identified as a facilitator of RDN research involvement.[80] Likewise, Byham-Gray et al[93] reported that RDNs with the highest perceptions, attitudes, and knowledge of EBP scores (PAK score) included those that had completed more years of education, had taken a research course, obtained an advanced board certification, worked full-time, or belonged to professional organizations.

The finding of higher education associated with greater implementation of EBP has been demonstrated within other health care disciplines.[88,99,105,106] A systematic review of occupational therapists (OTs) found that within most studies, higher educational degree attainment was also a strong predictor of positive attitudes regarding EBP.[90] While testing the reliability and validity of a nursing and PT EBP survey, respectively, both found that those with the highest levels of

education (i.e., graduate-level degrees) scored higher than those with associate's or baccalaureate degrees.[105,107]

Objective measures of EBP knowledge among nurses have also found significant positive correlations with higher levels of education.[99] Greater self-reported knowledge of research as it pertains to EBP among Japanese nurses was associated with academic background, years of clinical experience, experience in conducting research, and education in EBP.[106] Moore et al[77] found that master's level nursing students that completed EBP-based courses reported an increase in self-reported EBP behaviors, whereas doctoral level nursing students had greater improvements in knowledge scores post-EBP course. Moreover, those doctoral students reported that they performed more EBP behaviors when compared to the master's level.[77] Gigli et al[108] found no relationship between education level and perceived knowledge and value of EBP; however, there were statistically significant positive associations among those nurses with critical care certification when compared to those nurses without specialty certification.

The recency of education may also be a facilitator of EBP.[88,109] Since EBP was not included within most health disciplines' curricula until the last few decades, it seems logical that recency of education could be a catalyst for EBP. Upton et al[110] discovered that the majority of newly credentialed allied health professionals appear to have above-average comprehension and application of EBP. Contrarily, a cross-sectional study evaluating confidence related to EBP among allied health professionals found that most began to lose confidence in their clinical practice and critical analysis skills within the first five years of practice.[109] To further validate the role of higher education, it was discovered that those with postgraduate qualifications were more likely to report greater confidence, suggesting a possible "protective" role by preventing

the degradation of EBP skills.[109] Still, this finding does contradict findings from other studies that found years of experience to be positively associated with EBP.[91,106]

Overall, while there a multitude of factors that influence the use of EBP, this research aims to further dissect the relationship between many of these factors in both the successes and failures of EBP implementation among RDNs. In light of the advancing dietetic degree requirement, as well as the associations seen in previous literature regarding advanced degree attainment and implementation of EBP, this relationship will also be assessed within this survey-based study.

Developing and Validating a Survey

Numerous surveys have been developed to evaluate EBP among a variety of health care disciplines. A systematic review evaluating surveys for knowledge, skills, attitudes, and behaviors related to EBP among OTs found that of 34 applicable surveys, all but one measured EBP behavior, over half measured attitudes, whereas very few included measures of knowledge and skills.[111] Surprisingly, over half of the instruments had reported no validity or reliability testing, and only eight had three or more measurement properties rated as 'excellent.'[111] Of those recommended instruments, only the modified-Knowledge, Attitudes, Behavior (KAB) which originated from Johnston et al, Upton and Lewis, and Van Mullem et al Knowledge, Attitudes, and Practice of Research (KAP) survey measured knowledge, attitudes, and behavior.[111] Only the updated Upton and Lewis questionnaire, Upton and Upton, 2006 Evidence-Based Practice Questionnaire (EBPQ) measured perceived skills. Of these tools, the KAP ranked as excellent for internal consistency, reliability, content validity, and structural validity with fair clinical utility; Upton and Lewis (1998) and Upton and Upton (2006) ranked excellent on the three formerly mentioned constructs; and the modified-KAB ranked excellent

for internal consistency, structural validity, hypothesis testing with fair clinical utility.[111] One of the major limitations of these cited instruments includes the use of self-reported measures. As discussed earlier, objective measures are needed to provide impartial responses.

Within the field of nursing, Belita et al[112] conducted a psychometric systematic review of tools that measure evidence-informed decision-making competence attributes. Congruent with the literature from OTs, there were 35 unique measures evaluated, with only three tools assessing four areas of competence: knowledge, skills, attitudes/beliefs, and behaviors.[112] Further, only two tools (i.e., School Nursing Evidence-Based Practice Questionnaire and the Evidence-Based Nursing Attitude Questionnaire) reported on four sources of validity, and both have only been evaluated within nursing practice settings. The authors concluded that greater conceptual and psychometric measures were needed, particularly within varied practice settings.[112]

Upton and Upton[113] originally developed the EBPQ for nurses but has now expanded to other disciplines and languages. This survey was created to quantify barriers existing among practitioners. It is comprised of 24-items that are categorized into three subscales based on a factor analysis including the use or practice of EBP, attitudes toward EBP, and perceived knowledge and skills associated with EBP.[114] Internal consistency using Cronbach's α was found to be 0.87 for the entirety of the survey, and 0.85, 0.79, and 0.91 for the practice, attitudes, and knowledge and skills subscales, respectively.[114] Construct validity was confirmed through both convergent and discriminant validity.[113,114]

The 2005 Nursing EBP Survey was recently evaluated to evaluate factor loading, reliability, and discriminant validity through a descriptive cross-sectional study. The Richardson's 5-A's Model was used as the framework which includes: 1) Ask, or develop the clinical question; 2) Acquire, or conduct a systematic search; 3) Appraise or critical appraisal

and synthesis of the findings; 4) Apply, or utilize evidence in patient care decisions; 5) Act and Assess within the clinical setting. While the 2005 version contained 29 five-point Likert-type questions, this study added two open-ended questions to address barriers and facilitators and a demographics section. This electronic survey was open for 23-weeks and met adequate power of .80 and the desired ratio of 10 subjects per variable. Psychometric tests and factor determination were established using parallel analysis, as well as exploratory factor analysis, confirmatory factor analysis, and ANOVA post-hoc comparisons. Factor loadings were all found to be positive and significant, ranging from 0.70-0.94, with four of five factors showing significant differences between education levels and all factors being significant between inpatient and ambulatory nurses.

The Quick-EBP-Value, Implementation, and Knowledge (VIK) survey was evaluated for test-retest reliability, internal consistency, and construct validity through a descriptive study utilizing an online survey.[115] The authors sought a tool that concisely assessed all domains of the EBP process and, through the review of 19 instruments, felt that no tool specifically addressed knowledge.[115] Therefore, this prompted the development and validation of the Quick-EBP-VIK which consists of 25-items that assess nurses' value, implementation, and knowledge of EBP and is based on the theoretical framework of Bandura's Social Cognitive Theory.[115] It was evaluated among nurses in a pediatric hospital through two waves of surveys to assess test-retest reliability.[115] Both waves of surveys achieved a response rate of about 33% with interclass correlation coefficients (ICCs) ranging from 0.43 to 0.80, and Cronbach's α values of at least 0.70 for all assessed domains.[115] However, composite reliability for the implementation domain was 0.66.[115] Again, a major limitation of this survey design was the use of self-reported data, as well as the variability of results depending on the organizational culture of EBP.

Among PTs in clinical practice, the Evidence-Based Practice Confidence (EPIC) Scale was used to assess reliability, minimal detectable change (MDC), and construct validity through a longitudinal mail survey.[107] This EBP survey varies from the aforementioned as it was developed to evaluate the effect of education on increasing practitioner self-efficacy. Internal consistency was found to be 0.89, ICC for test-retest reliability was 0.89, and MDC was 4.1%, which suggests excellent test-retest reliability and acceptable construct validity.[107]

Based on the aforementioned association between self-efficacy and EBP implementation, the Evidence-Based Practice Self-Efficacy Scale (EBPSE) was developed. The scale requires participants to gauge their confidence based on 17 self-efficacy stem questions from 0% (not confident) to 100% (confident). The EBPSE has been tested for reliability and validity among staff and nurses in a large academic medical center using a quasi-experimental design pre- and post-tests alongside a one-year educational program with a comparison group.[116] The internal consistency measured using Cronbach's α was found to be high at each period and with each cohort, ranging between 0.95-0.98.[116] Validity was assessed by comparing scores between cohorts and pre- and post-educational programming, which did find statistically significant differences pre- and post-programming.[116]

The EBP Knowledge, Attitudes, Access, and Confidence (KACE) survey was developed to measure EBP training outcomes within dentistry, as no EBP tool previously met this need for this population. The KACE survey contains 35-items, including ten items each covering knowledge and attitudes, nine items assessing evidence, and six assessing confidence. It has been validated for internal consistency, discriminative validity, responsiveness to the effects of education, and test-retest reliability among dental students and faculty pre- and post-EBP training.[117] When assessing internal consistency, Cronbach's α ranged from 0.21 to 0.78, 0.57 to

0.83, 0.62 to 0.84, and 0.87 to 0.94 for the knowledge, attitudes, evidence-accessing, and confidence scales, respectively. ANOVA and Tukey-Kramer post hoc testing found significant differences among students, residents, and faculty consistent with education and experience. Test-retest using Pearson's coefficient ranged from 0.66 to 0.76 among students and 0.79 among faculty.[117] Other than being validated within the field of dentistry, this survey is also distinctive in that it asks multiple-choice objective knowledge (i.e., test-style items) questions.

More recently, Agossa et al[118] assessed the psychometric properties, including internal consistency reliability, discriminant validity, and responsiveness, of a French translated adaptation of the KACE questionnaire among French-speaking dental students and faculty. As seen with the original English version of the KACE psychometric evaluation, this transcultural adaptation also revealed low internal consistency within the Knowledge subscale with Cronbach's α coefficients ranging between 0.09 to 0.47 among fourth- and fifth-year dental students and -0.46 among the faculty.[118] With the removal of items #3 and #6 from the Knowledge subscale, there was a modest increase in the Cronbach's α among students to 0.16-.48, and became positive among faculty, 0.07.[118] It was proposed that this finding of low internal consistency was likely due to the limited number objective knowledge-based items exploring different EBP topics; however, it was also suggested that there might be a need to redevelop these items within the French version of the KACE.[118]

The Knowledge of Research Evidence Competencies' (K-REC) instrument also objectively measures cognitive research skills using a variety of question categories (e.g., multiple-choice, true or false, short answer, multiple answer).[119] The K-REC was developed from the Fresno test of competence in EBM and focuses exclusively on cognitive research skills for entry-level health professions.[119] It has been assessed for content validity and evaluated

using test-retest and inter-rater reliability among entry-level physiotherapy and human movement students. The reliability measures had Cohen's Kappa and ICC ranging from 0.62 to perfect agreement.[119]

The aforementioned surveys are just a small sampling of the available EBP survey-based tools that exist within the literature. However, the field of nutrition and dietetics lacks an EBP survey with objective measures that has been validated for nutrition practitioners. Since EBP is positioned as the basis of ethical nutrition and dietetic practice, there needs to be a validated tool that can allow for further investigation into EBPs among RDNs. Through the detailed assessment of current dietitian practices, we may be better equipped to prepare future RDNs and support EBP areas of need among current RDNs.

Chapter 2: Theory

Considering the rapid growth of EBP and implementation science as introduced above, there are implementation theoretical frameworks dedicated to understanding and elucidating the relationship between successful and ineffectual implementation.[120] While there are five categories of implementation theoretical approaches, this study sought to apply concepts of determinant frameworks and classic theories. Both determinant frameworks and classic theories seek to understand and explain influences on implementation-related outcomes; however, determinant frameworks do not specify the mechanisms of change.[120] Thus, determinant frameworks designate general classes or domains of determinants (i.e., independent variables) that tend to promote or hinder the implementation-related outcomes (i.e., dependent variable).[120] Even so, these determinants can be connected to classic theories which can explain how change occurs.[120]

Classic, or classic change, theories are passive in that they describe change but are not designed to provoke change in practice.[120,121] These theories originated from social sciences that are external to implementation science.[120] While these theories were developed to predict health behaviors, they can also be applied to cognitive behaviors, such as practice-based decisions and the utilization of EBP.[120,122] Among the more commonly cited classic theories, the Theory of Planned Behavior (TPB) and the Social Cognitive Theory (SCT) both include self-efficacy as a leading determinant of behavior. Bandura defines self-efficacy as "an individual's belief in his or her capacity to execute behaviors necessary to produce specific performance attainments."[123] Self-efficacy is a widely used construct within health behavior theory because it can be altered by personal and environmental factors. Based on the abovementioned established association between self-efficacy and practitioners' use of EBP[8,75,76,78] (see Evidence-Based Practice: Self-Efficacy subheading), concepts from these theoretical frameworks will aid in describing and parsing out the interrelated influences.

One of the distinct differences between TPB and SCT is the level at which influence is exerted over behavior. The TPB is an individual-level model that centers around personal factors, whereas the SCT considers the interactions of interpersonal characteristics (e.g., environment, social interactions). Since the SCT considers the role of environmental factors in behavior, collective efficacy, or shared belief regarding competence, it has been used to describe the group equivalent of self-efficacy. While the SCT is one of the most widely used theories in health education and promotion programs,[122] very often some constructs (i.e., self-efficacy and observational learning) rather than the entire model are commonly used among a diverse range of health researchers.[124]

Social Cognitive Theory

Albert Bandura developed the Social Learning Theory (SLT) as an expansion of early theory from Miller and Dollard (1941) and Rotter (1954).[125] The SLT later evolved to SCT to include concepts related to cognitive psychology, including the construct of self-efficacy.[73,125] The SCT is based on vicarious social learning through reciprocal relationships with environmental, behavioral, and personal factors, known as reciprocal determinism.[122] The SCT speculates that behavior is a byproduct of a person's learning history, current views of their environment, and intellectual and physical capacities; therefore, behavior can be readily changed through appropriate intervention.[125] The other SCT constructs include behavioral capacity, outcome expectations, self-efficacy, observational learning, and positive and negative reinforcements.[122] Some of the limitations of SCT include the inability to determine the extent to which these factors individually influence behavior and the assumption that environmental changes will always result in individual change.[73]

Self-efficacy is a requirement for behavior change within the SCT. However, if there is a disparity in perceived self-efficacy and actual skill or competency (e.g., inflated sense of competence), then despite altruistic intentions to implement EBP, the behavior cannot be successfully executed (see Figure 1). This phenomenon has been described by Bandura as faulty self-knowledge, or inaccurate appraisal of self-efficacy, often due to limited experience related to the behavior or distortions of recall or processing of the behavior.[126] Moreover, the degree of self-efficacy may also influence the actual behavioral control to follow EBP. Four major factors influence self-efficacy, including 1) mastery experience, 2) social modeling, 3) improving physical and emotional states (i.e., reducing stress and anxiety associated with behavior), and 4) verbal persuasion.[125,127]

Theory of Planned Behavior

The Theory of Reasoned Action (TRA), developed by Martin Fishbein and Icek Ajzen, was originally designed to understand the links between attitudes, intentions, and behaviors.[128] The TRA suggested that behavioral intention is the most critical factor affecting actual behavior. Determinants of behavioral intention include an individual's subjective norms and attitudes toward the behavior.[128] Any alteration of these factors can modify the behavior; therefore, a high degree of agreement between these factors is desired.[128]

Later, Ajzen extended the TRA to TPB through the addition of perceived behavioral control. Thus, the TPB speculates that self-efficacy is a powerful determinant of how successful individuals are in carrying out the desired behavior but recognizes that behavior is primarily influenced by perceived behavioral control.[122] Perceived behavioral control suggests that there are occurrences when individuals do not have conscious control over their actions or lack confidence or control over the desired behavior. As a result, the three factors of the TPB that influence behavioral intention include an individual's attitude, the attitude and acceptance among colleagues and those within the work environment (i.e., subjective norms), and the degree of perceived behavior control or perceived effort.[122] Moreover, the TPB posits that behavioral intentions result in the desired behavior, but some factors can weaken intention-behavior relationships and intentions tend to exaggerate or in some cases underestimate actual behaviors.[129]

Some of the criticisms of the TPB include the absence of emotion in addressing behavioral change (which could also be said of the SCT) and the fluctuations that can occur with both intentions and attitudes over time. The TPB also does not include environmental factors and assumes that individuals have all the resources needed to successfully implement the desired

behavior; however, the consideration of personal or cognitive (e.g., knowledge and skills) and environmental factors within the SCT accounts for these omitted components.[130] Regardless, the TPB has been effective in predicting behavior[122,129] and the focus on achieving a specific intended behavior has been recognized as a strength of this model.[129]

Proposed Theoretical Framework

The TPB and SCT have commonly been used as theoretical frameworks for EBP implementation among health care practitioners. For example, the Quick-EBP-VIK instrument was developed for the field of nursing and is based on the SCT. This instrument includes the domains of value (i.e., personal factors), knowledge (i.e., environment), and implementation (i.e., behavior) and has been found to be an effective tool in assessing EBP culture among nurses.[115] The TPB has also been well-established in dissemination and implementation research and has been extensively used to describe factors influencing clinicians' behavior.[131,132] Moore et al[133] developed an EBP instrument based on the TPB to assess the effect of an EBP course on graduate-level nursing students. The self-efficacy subscale was found to have the most significant increases post-course compared to the other three subscales (i.e., attitudes, support, and behavior), suggesting a role for EBP-based curriculum and professional support in building self-efficacy.[133]

Since the TPB and SCT have shown to be efficacious frameworks within both implementation science and health behavior research, the TPB and constructs from the SCT provided the blueprint for this research. While there are deviations between these two models, it has been suggested that too often the focus is on the dissimilarities of these models, and more integration models should be considered.[128] Based on the existing literature, many determinants of EBP implementation behavior fall within or overlap with constructs of both the TPB and SCT

(Table 2). While the TPB overlays the theoretical framework for this research, constructs of the SCT are also incorporated, as outlined in Figure 1.

Table 2. Determinant factors related to the TPB and SCT and the implementation of EBP among health care professionals within the literature

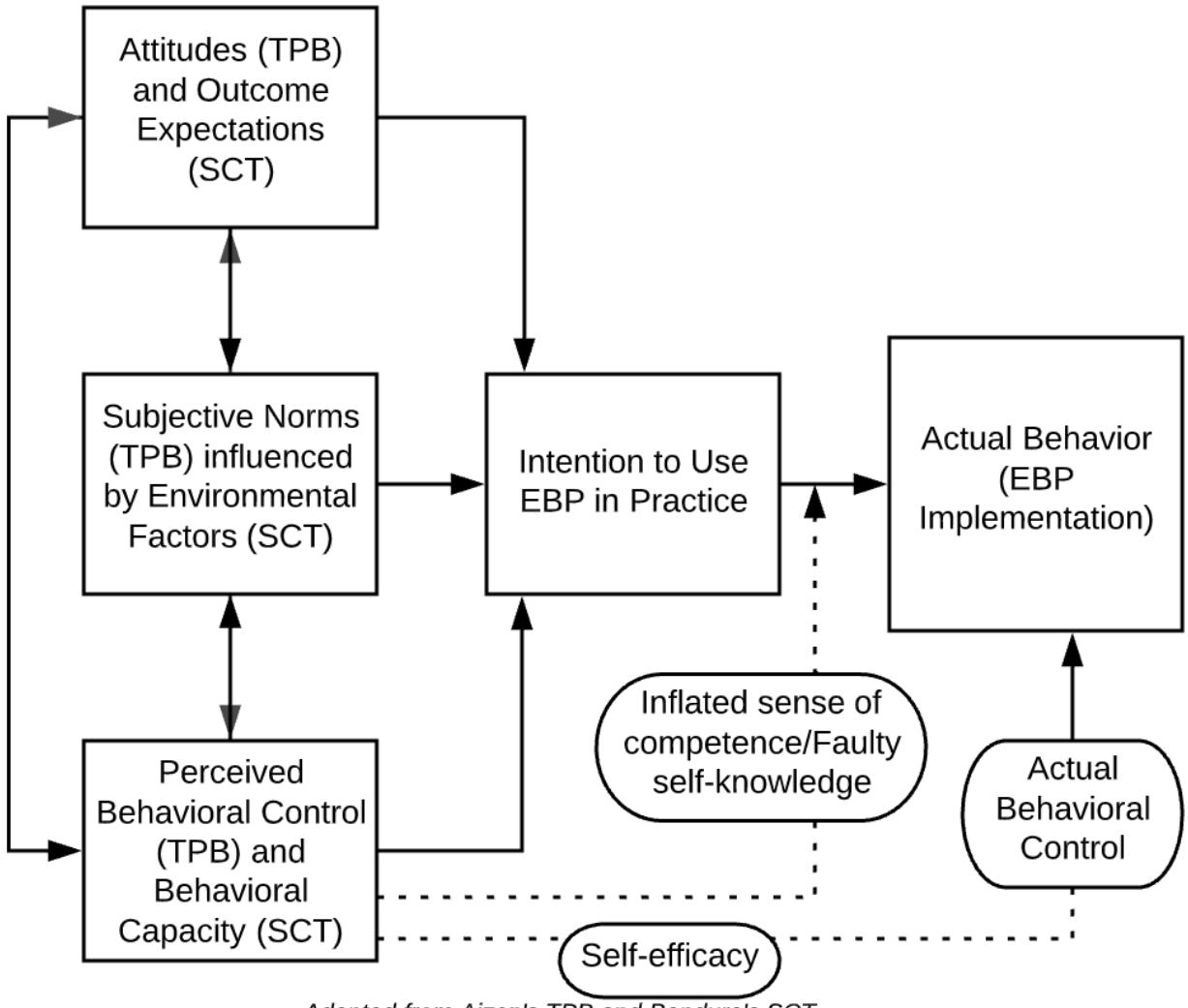
EBP Determinant Factors Based on Literature Review		
Attitudes & Personal Factors	**Subjective Norms & Environmental Factors**	**Perceived Behavior Control & Behavioral Factors**
Demographics (e.g., age, gender, ethnicity, etc.)	Time/Workload	Perceived self-efficacy
Highest degree attained/knowledge	Organizational or facility-based EBP culture	Colleagues and administrative perspectives and values
Previous research experience	Administrative support	Perceived versus actual sense of competence
Motivation or personal interest in EBP	Funding for practice-based research	Self-regulation
EBP-specific training	Access to EBP resources	Collective efficacy
Recency of education	Job description, area of practice	
Involvement in professional organizations	EBP mentors or champions (observational learning)	
Professional experience (e.g., Benner's From Novice to Expert theory)	Geographic location and work setting type (e.g., rural, urban, suburban)	

To address the need for objective knowledge and environmental factors beyond that of normative influences, these constructs from the SCT were included within this framework. For example, behavioral capacity of the SCT describes the knowledge and skills required to perform the desired behavior. Without adequate behavioral capacity and perceived behavioral control, practitioners will not have the ability to execute the behavior effectively. Taking into account the need for rudimentary research skills to make sound EBP decisions, this research postulates that level of education affects behavioral capacity. This construct also aligns with Patricia Benner's From Novice to Expert theory, which describes the progression of knowledge and skills

and places practitioners within five levels of experience from novice to expert.[134] Consequently, both advanced education and professional experience could theoretically build behavioral capacity and increase the implementation of the desired behavior.

As depicted in Figure 1, in addition to the role of the SCT's behavioral capacity within this framework, the environmental construct of the SCT and its probable influence (e.g., setting, access to resources, and time/workload) on EBP implementation will also be addressed. The overlaps of attitudes from the TPB and outcome expectations from the SCT are acknowledged within this framework. Finally, the influence of inflated sense of competence and Bandura's faulty self-knowledge were assessed through comparisons of objective and subjective knowledge measures. While EBP has generally been positively received among practitioners, the positive connotations associated with the use of EBP also seem to have directly manipulated subjective self-reported data. Therefore, despite intentions to perform EBP, if RDNs do not have adequate knowledge or skills, there cannot be successful implementation.

Figure 1. Theoretical framework following the Theory of Planned Behavior with constructs of the Social Cognitive Theory in determining intentions and actual implementation of EBP



Adapted from Ajzen's TPB and Bandura's SCT

Presently, to the author's knowledge, there are no validated EBP instruments measuring objective knowledge exclusively among RDNs. Moreover, very little research has evaluated the objective EBP knowledge of RDNs despite findings that suggest knowledge gaps and subjective survey and interview data that indicate possible social desirability or response bias. Given the role of these two classic theories in determining behavioral intention, the TPB and the abovementioned overlapping and contrasting constructs of the SCT guided the development of an instrument intended to measure and evaluate these factors. Therefore, the subscales for this EBP instrument will include objective measures of knowledge to evaluate behavioral capacity, as

well as items to address attitudes, subjective norms, perceived behavioral control, perceived self-efficacy/competence, and implementation.

Chapter 3: Methodology

Study Aims

The primary aim of this study was to develop a reliable and valid survey that objectively tests knowledge and evaluates self-reported knowledge, attitudes, behaviors, and implementation of EBP among nutrition and dietetic practitioners (Table 3). The validation of this instrument will allow for further investigation into continuing education needs for current RDNs and recommend didactic-related competencies for dietetic students to bridge any EBP knowledge gap in the field of nutrition and dietetics. Psychometric evaluation included face and content validity, internal consistency, and test-retest reliability, as well as survey responsiveness via a pilot study.

Secondarily, the observational, cross-sectional design intended to determine if education level is significantly associated with objective knowledge of EBP at the first survey timepoint administration. In addition to education level, other potential predictive factors were assessed for their influence on EBP. Based on a review of the literature, these proposed factors included highest nutrition and dietetics degree obtained, highest degree in any field, work status (i.e., full- or part-time), recency of nutrition degree completion, years of experience as an RDN, primary geographic work setting (i.e., rural, urban, suburban and state), primary area of practice, specialty board certifications, number of peer-reviewed publications, and preceptor status (i.e., presently, formerly, or never acted as a preceptor for dietetic interns). Lastly, correlations between perceived and actual knowledge of EBP were evaluated to determine accuracy and self-awareness of EBP competency among RDNs (Table 4).

Table 3. Primary research aims and corresponding statistical tests

Primary Aim: ***Evaluate the validity and reliability of the adapted EBP instrument for nutrition and dietetics.***	
Type of Validity	**Type of Proposed Analysis**
Content validity	Item relevancy evaluated on 4-point scale (1-irrelevant, 2-somewhat relevant, 3-quite relevant, 4-extremely relevant); once Content Validity Index (CVI) of 0.78 achieved
Face validity	Dichotomous scale response of 'yes' or 'no' in regard to the favorability of each item; percent agreement for each item and total items to assess interrater agreement
Test-retest reliability	Intraclass correlation coefficients (ICC) of objective knowledge score based on timepoint 1 and timepoint 2 surveys
Internal consistency reliability	Cronbach's α coefficients for RDN sample
Responsiveness of pilot test	Pre- and post-knowledge test results from DCN research methods course using Wilcoxon signed-rank test

Table 4. Secondary research aims and corresponding statistical tests

Secondary Aims:		
Is level of education (i.e., highest degree earned, or highest nutrition and dietetics degree earned) associated with EBP knowledge?		
Independent Variable	**Dependent Variable**	**Proposed Statistical Analysis**
Highest Degree Earned Any Field	EBP Knowledge (total combined score, sub-scores)	ANOVA
Highest Nutrition/Dietetics Degree Earned	EBP Knowledge (total combined score, sub-scores)	ANOVA
What other variables predict EBP behavior and implementation?		
Independent Variables	**Dependent Variable**	**Proposed Statistical Analysis**
Highest degree – any field Highest degree – nutrition & Dietetics Work status (i.e., full-time or part-time) Years of experience Area of practice Specialty certifications Geographical setting type Recency of education	EBP Knowledge (total combined score)	Multiple linear regression
	EBP Self-Reported Knowledge & Skill	Multiple linear regression (total subscale score)
	EBP Attitudes	
	EBP Behavior	
	EBP Outcome/Implementation	
	Q19: I am confident in my ability to use EBP.	Ordinal logistic regression (per item)

Preceptor status Peer-reviewed publications	Q20.1: Using EBP increases the likelihood that the proposed nutrition therapy recommendation is effective.	
	Q23: On average, how much time do you spend reading the latest research evidence?	
	Q27.6: EBP should be an integral part of nutrition and dietetic practice.	
Are there correlations between self-assessed knowledge and objective knowledge measures among RDNs?		
Objective knowledge scores versus (ratio) self-reported knowledge measures (ordinal)	Pearson's correlation coefficient	

Study Design

Phase 1: Survey Development & IRB Approval

This study examined the validity and reliability of an EBP survey among RDNs. In developing the survey content, EBP questionnaires that had been previously validated within other health care disciplines were selected based on their applicability to the theoretical framework and the research questions of interest (Appendix C). The selection of surveys proposed to be used within this research study are discussed in greater detail in the Data Collection subheading. The subscales taken from the abovementioned instruments for this study have been adapted to specifically address nutrition and dietetic practitioners. Additionally, detailed demographic data were added to evaluate prospective barriers and facilitators that have been previously mentioned in the literature.

All survey item measures were quantitative (e.g., categorical, scales, and continuous numerical scores, see Appendix C). Test-retest reliability requires data collection at two

timepoints; therefore, the initial unabridged, validated survey was administered during November-December 2020. The second partial survey covering the objective knowledge subscale only (i.e., modified KACE and K-REC) was administered roughly seven weeks later during February-March 2021. Therefore, complete data collection from the first timepoint was used for statistical analysis for internal consistency reliability and the secondary research aims.

Due to concerns regarding participant identification for test-retest reliability, the primary investigator completed Attachment A (Figure 12) which is required for an expedited Institutional Review Board (IRB) review. The research package underwent a limited review, and after minor revisions was approved and identified as exempt (Figure 13) by the IRB at the University of North Florida (UNF) in October 2020. Once IRB approval was granted and the notification was forwarded to CDR, the primary researcher was granted access to two lists of 5,000 randomly selected RDNs.

Phase 2: Pilot Testing with Doctorate in Clinical Nutrition Students

The initial instrument (i.e., prior to validation studies) was pilot tested during the Fall 2020 semester with Doctorate in Clinical Nutrition (DCN) students enrolled in HUN 7831: Grant Development. This course also includes concepts related to research methods. Students enrolled in HUN 7831 were provided with the survey link the first week of the Fall 2020 semester (week of August 17, 2020). Near the end of the Fall 2020 semester (week of November 16, 2020), the same DCN students enrolled in HUN 7831 were requested to participate in the same survey to assess the responsiveness of the objective knowledge measures (i.e., Do EBP objective knowledge scores increase after completing a doctoral-level course associated with research methodology?). Due to the small sample size (n = 12), Wilcoxon signed-rank test was used to evaluate the median difference between pre- and post-test objective knowledge scores.

Phase 3: Psychometric Evaluation of the Survey Instrument

The following measures were used to evaluate the psychometric properties of the survey instrument:

Part 1: Content validity was conducted to confirm that the survey instrument included all necessary and relevant items and eliminates redundant items.

The survey was preliminarily reviewed for edits, revisions, additions, and deletions by dissertation committee members before undergoing the first review of content validity. In late August-early September 2020, the primary investigator contacted 14 content experts with expertise in evidence-based dietetic practice, clinical nutrition, nutrition research, and/or dietetics-focused survey development via email for content validity assessment (Appendix F for reviewer details). Those experts that agreed to participate received an email discussing the research aims, a PDF of the proposed instrument, and a Qualtrics link to the content validity review (Figure 14).

For the first 'Participant Demographics and Characteristics' section, experts were asked to provide suggestions for revisions for each item, and suggestions for additional items or comments at the end of the section. For the remaining six sections (Table 5), which covered the survey subscales of self-reported knowledge, behavior, implementation, attitudes, perceived knowledge and skill, and objective knowledge, experts were asked how relevant each item was to the overall goal of the survey based on a 4-point Likert scale (e.g., Irrelevant, Somewhat Relevant, Quite Relevant, Extremely Relevant). Comments and suggestions for wording revisions were also requested after each item and at the end of each section, as well as final comments and feedback at the end of the survey. All feedback provided from reviewers was implemented or discussed for further evaluation with the dissertation committee.

Table 5. Survey sections and corresponding original instrument

Section Section	Original Instrument
Section 1: Demographics & Background	
Section 2: Self-Reported Knowledge of EBP	Modified EBP-KABQ Knowledge Subscale
Section 3: Self-Reported Behavior Regarding EBP	Modified EBP-KABQ Behavior Subscale
Section 4: Self-Reported Outcome, Decision, and Implementation of EBP	Modified EBP-KABQ Outcome, Decision, and Implementation Subscale
Section 5: Self-Reported Attitudes Regarding EBP	Modified EBP-KABQ Attitudes Subscale
Section 6: Perceived Knowledge and Skills Related to EBP	EBPQ Perceived Knowledge and Skills Subscale
Section 7: Test of Objective Knowledge of EBP	K-REC and KACE Knowledge Subscale

The Content Validity Index (CVI) was calculated to determine if revisions, deletions, and additions needed to be made based on the overall relevance of individual survey items and the breadth of the complete survey. When assessing the CVI of each survey item, those items identified by experts as 'Extremely Relevant' or 'Quite Relevant' were scored as a '1', and those items identified as 'Somewhat Relevant' or 'Irrelevant' were scored as a '0'. All items with CVI scores less than 0.78 were removed from the survey.

Part 2: Face validity was conducted to ensure the instrument was easy to use and instructions were well-defined and clear.

Upon completion of content validity, several emails were sent to current dietetic interns, DCN students, and UNF Nutrition & Dietetics Department faculty to request participation in the face validity review (Appendix G). This review was conducted to ensure the survey is clear, easy-to-follow, and measures what it is intended to be measured. The face validity reviewers were selected based on their varying backgrounds in nutrition and dietetics to ensure clarity was established among a varied group of RDNs and prospective RDNs (i.e., dietetic interns).

Face validity reviewers were sent an email that included the research aims, a PDF copy of the updated survey based on the content validity review, and a Qualtrics link to complete the review. Each survey item requested a binary 'Yes' or 'No' response regarding each item's clarity and appropriateness based on the research aims. If reviewers selected 'No' to a survey item, they were then prompted to provide open-ended feedback on the item's clarity, design, and wording. Percent agreement scores were calculated for each item and as an average for the complete survey.

At the end of each of the seven survey sections, participants were asked to provide feedback and suggestions for additional questions to be included. At the conclusion of the face validity review, reviewers were requested to provide any final comments and an estimation of the amount of time required for the completion of the original PDF survey provided. Lastly, feedback was requested regarding the ordering of each survey subscale to encourage survey completion (e.g., background/demographics first/midway/last, objective knowledge questions first/midway/last, and subjective questions first/midway/last). All feedback provided from reviewers was implemented or discussed for further evaluation with the dissertation committee.

Part 3: Pilot data evaluation investigated the suitability and responsiveness of the survey instrument in relation to a doctoral-level course with a focus on research methods.

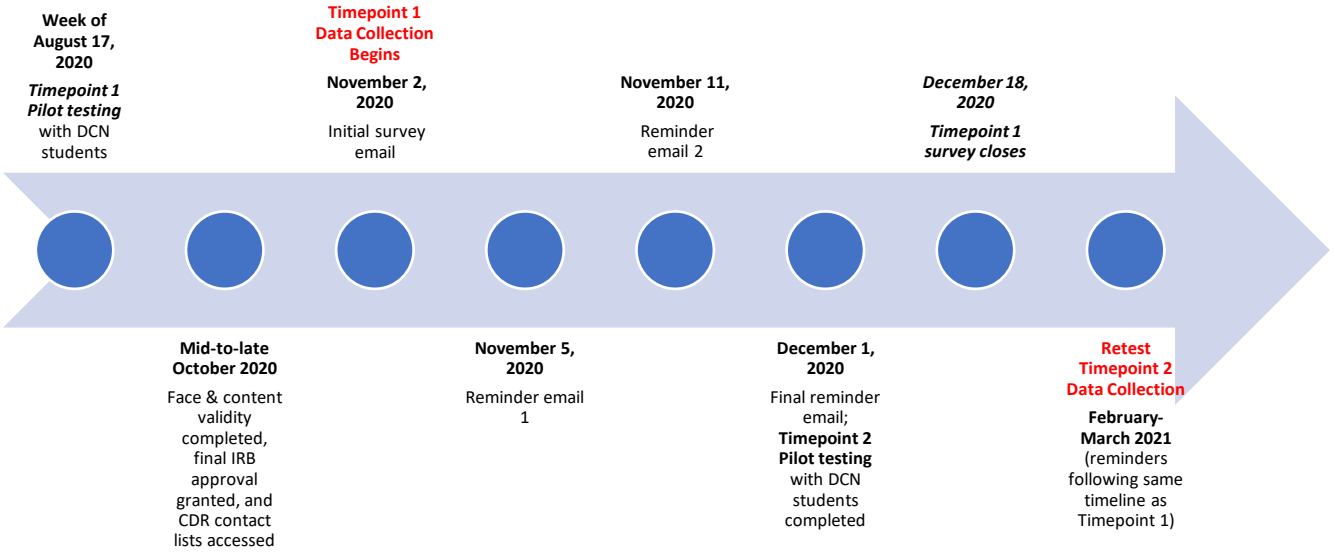
The survey was administered at the beginning and 14-weeks later at the end of a research methods course within the DCN program (see Phase 2: Pilot Testing with Doctorate in Clinical Nutrition Students).

Part 4: Internal consistency reliability determined the consistency of the instrument across survey items.

Cronbach's α coefficients were calculated to assess internal consistency of each survey subscale, as well as the total EBP survey, using the survey item responses from timepoint 1. ***Part 5: Test-retest reliability*** ensured consistency of responses from the targeted research population data (i.e., RDNs) at two timepoints using ICC.

The last phase evaluated test-retest reliability, which required survey measures to be completed by participants at both timepoint 1 and timepoint 2. Test-retest reliability was only completed with the RDN study group, as the pilot group was exposed to a course that would influence post-test results and, therefore, the application of test-retest reliability. The initial study survey (timepoint 1) remained open for eight weeks to allow for an adequate number of participants to account for anticipated missing data, outliers, and timepoint 2 survey attrition. In early February 2021, roughly seven weeks after the initial survey closed, participants were asked to complete only the objective knowledge subscale of the survey again. The re-test/timepoint 2 survey also remained open for eight weeks following the same recruitment and email reminder strategy as timepoint 1 (Figure 2). The survey implementation and reminder timeline for participant emails followed recommendations from Dillman et al.[135]

Figure 2. Timeline for survey dissemination



Phase 4: Evaluating Secondary Aims

Secondary aims were evaluated using data from timepoint 1 from the RDN sample as outlined below in the Data Analysis section. Also, see Table 4 for secondary research questions.

Study Participants

Eligibility criteria included that participants must have earned and maintained registration of the RDN credential through CDR and be working 20 or more hours per week within a relevant nutrition and dietetics position. Exclusion criteria included those that were retired, not presently credentialed as an RDN, not working at least 20 hours per week as an RDN, or working as an RDN for less than six months. These criteria were selected to ensure that participants were credentialed RDNs with sufficient recent field-based experience to be able to provide the most accurate current outlook of EBP among RDNs. The evaluation of EBP-related factors among RDNs allowed for the identification of gaps in EBP knowledge, attitudes, behaviors, and implementation specific to nutrition and dietetic professionals.

During July 2020, the investigator completed and submitted the Request Form for Use of the Commission on Dietetic Registration (CDR) Database Information application to CDR to gain access to randomly selected RDNs for survey participation (see Appendix B and CDR Student Research Project General Registry Database Form). CDR allows student researchers to apply to access 5,000 contacts from the general registry if the research goals support the mission and vision of AND and CDR. Given concerns regarding sufficient participation at timepoint 2 for accurate assessment of test-retest reliability, the researcher requested and was permitted access to two lists of 5,000 randomly selected RDN contacts. Once IRB approval was obtained in October 2020, two Excel contact lists were received from CDR which contained the RDN's first and last name, city, state, and email address.

Once CDR contact lists were acquired, duplicates between the two lists were identified (*n* = 237) and removed and one incomplete email address contact was removed, leaving 9,762 CDR contacts for the final email distribution list. These 9,762 contacts were then assigned a unique, random identifier via Excel using the =RANDBETWEEN function to allow the researcher to anonymize participant responses and data while still being able to pair responses from the second timepoint retest survey. This process was completed several times until all contacts had unique, non-matching identifiers to allow for the de-identification of participants.

All CDR provided contact information were securely stored on a password-protected server. The Excel data with unique identifiers was then securely uploaded into Qualtrics. An embedded data element was added to the survey flow to allow for only the ParticipantID (i.e., unique identifier) to be captured among those that start and/or complete the survey. A contact list trigger was added to the initial survey to allow for the creation of a 'Test-Retest Contact

List,' which allowed only those that completed the first survey to be contacted regarding the second retest survey.

Data Collection

Categorical, scale, and continuous measures were collected within this survey-based research (Appendix C). Demographic questions were categorical (both nominal and ordinal) or continuous, whereas the EBP survey questions were measured on a scale or continuously. Variables obtained from the participant demographics section included gender, race, ethnicity, age, highest degree earned any field, highest nutrition and dietetics degree earned, work status (i.e., full-time or part-time), year of highest nutrition degree completion (i.e., recency of nutrition degree completion), years of RDN experience, state of primary practice/work, geographic description of primary work setting (i.e., rural, urban, suburban), primary practice area, specialty certifications, number of peer-reviewed publications, and preceptor status (i.e., presently, formerly, or never acted as a preceptor for dietetic interns). EBP-based survey sections included the following subscales: objective knowledge, perceived knowledge and skill, attitudes, behavior, and implementation outcomes. Objective knowledge measures were further subcategorized based on the EBP topic following the K-REC guidelines, including research question, search strategy, research design, critical appraisal, research evidence statistics, and levels of evidence. Each of the KACE items was worth one point per item, whereas the K-REC varies from a half to two points per item, both following the original scoring procedure.

Data collection followed the timeline, as listed in Figure 2. Survey collection remained open for eight weeks during each timepoint. Seven weeks after the close of the timepoint 1 survey, the timepoint 2 survey containing only the ten objective knowledge items were sent again in early February 2021. This time span was chosen as it had been long enough for

participants to not remember or recall their original responses, but short enough to prevent greater experience and exposure to EBP. Timepoint 2 participant total objective knowledge scores were matched to the corresponding unique participant identifier from timepoint 1 total objective knowledge score to assess test-retest reliability while maintaining participant anonymity.

At the first survey administration time point, participants completed the full EBP survey consisting of questions pertaining to participant demographics and both objective knowledge and self-reported measures to correspond with the previously indicated theoretical framework. The EBP instruments utilized include the EBP Knowledge subscale of the Knowledge, Attitudes, Access, and Confidence Evaluation (KACE) from Hendricson et al,[117] the Knowledge of Research Evidence Competencies' instrument (K-REC) from Lewis et al,[119] the modified Knowledge, Attitudes, and Behaviours Questionnaire (modified-KAB) originally from Johnston[136] and modified by Shi et al[137] (EBP-KABQ), and the perceived knowledge and skills subscale of the Evidence-Based Practice Questionnaire (EBPQ) from Upton and Upton.[110,114,138] All of which have been validated within other health care disciplines and have been adapted for the field of dietetics for the purposes of this study.

The K-REC survey has been found to have test-retest and interrater reliability scores that range from moderate to excellent (0.62 to perfect agreement).[119] This instrument was originally modified from the Fresno test which has been recognized as the best available instrument to evaluate cognitive skills of EBP; however, this instrument formerly did not apply to disciplines outside of medicine and required short essay answers, often taking respondents up to 60 minutes to complete.[119] Therefore, the goal of the K-REC was to develop an abbreviated valid and

reliable version of the Fresno test that could be used within all health professions that is quick and simple to score, making this tool an excellent fit for the research goals of this study.

Within this study, seven of nine items from the original K-REC instrument were modified for nutrition and dietetics and used in the initial survey prior to validation studies. These seven items were included as they could easily be transformed into a scored format that did not require an open-ended response. However, only four K-REC items (five response items due to the inclusion of one multi-part item) remained after the completion of the content validity review due to CVI scores less than 0.76 for three of the items. The K-REC items included in the final survey assessed the following EBP topics: search strategy (two points), research design (one point), critical appraisal of research (one point), and statistical interpretation (two-part item worth a total of 2 points).

The KACE instrument includes objective knowledge measures and sections addressing attitudes, access to evidence, and confidence in skills. For the purposes of this research, only the knowledge subscale was used. These questions are easy to use within quantitative survey research as they are already pre-formatted into ten multiple-choice questions with only one correct response. This tool was developed for the field of dentistry and was adapted from existing validated tools. The KACE has been evaluated using four tests of reliability and validity. While the item consistency for the knowledge subscale had more variability than other subscales (Cronbach's α ranging from 0.21-0.78), Hendricson et al[117] noted that this finding has been seen within other knowledge-based instruments. Moreover, the survey was found to have good discriminative validity, test-retest reliability, and adequate responsiveness to training effects.[117]

Of the ten items KACE knowledge subscale adapted for nutrition and dietetics used within the validation studies of this research, only five items remained after the content validity review due to CVI scores less than 0.76 for five of the items. These five items included in the final survey assessed knowledge of levels of research evidence (two items worth one point each) and research design (three items worth one point each).

The majority of the EBP-KABQ items, modified from the KAB questionnaire from Johnston et al, were used within this survey.[136,137] Shi et al[137] modified the KAB from Johnston et al[136] to address a variety of health professionals (EBP-KABQ), which was found to have higher internal consistency than the original KAB (Cronbach's α of 0.85 versus 0.71-.0.88, respectively) and supported a priori construct validation hypotheses.[137] The EBP-KABQ includes four domains, including self-reported knowledge, attitudes, behavior, and outcomes/decisions (i.e., implementation). These measures were of interest as they fit well within the theoretical framework of this study. After content validity review, three of the eight KABQ behavior subscale items were deleted due to CVI scores less than 0.76.

To match all of the objective knowledge measures within both the K-REC and KACE, there needed to be more specific self-reported knowledge measures to evaluate correlations between actual and perceived knowledge. Upton and Upton's[111] EBPQ is one of the few validated EBP tools that measures both perceived knowledge and skills. To fill this void within the survey, only the perceived knowledge and skills subscale matrix table from the EBPQ were included. The EBPQ has been found to have excellent internal consistency, reliability, and content validity.[111]

To reduce participant fatigue early on, self-assessed questions were asked prior to objective knowledge questions.[139] While there is the risk of response bias by asking self-

assessed questions first, including challenging test-style questions early in a survey is associated with greater perceived burden and, thus, fewer completed surveys.[139] The ordering of survey items was also evaluated during the face validation process; however, there was no consensus among the reviewers.

Data Analysis

The survey remained open for the full eight weeks at each timepoint to achieve an adequate a priori sample size at both time points. Additional subjects were needed at the first survey administration to account for probable participant attrition. When determining a priori sample size based on the use of multiple regression analyses, there were several proposed recommendations. Traditional regression sample size estimations based on a ratio of 10 subjects per predictor variable have been projected to severely underestimate sample size, and likely should be closer to a ratio of 70:1 or even upwards of 100:1.[140] Green (1991) has proposed that for a medium effect ($R^2 = 0.07$, $\beta = .20$), if testing β weights for statistical significance, then the sample size should equal 104 plus the number of independent variables.[140,141] Yet, it has been suggested that even with a moderate number of independent variables, often as many as 300 to 400 subjects are still required.[140] Moreover, Maxwell[140] has questioned the validity of many of the commonly cited multiple regression analysis sample size recommendations. Maxwell's calculation of sample size with multiple regression analysis, assuming a power of .80 and that all medium zero-order correlations among variables with four or five predictor variables, 311 and 419 subjects are still required, respectively.[140]

When considering reliability sample size estimation, Charter[142] found that sample sizes used in internal consistency studies are often too small, and at least 400 subjects are needed for precise reliability estimation. These figures also correspond with sample size estimations based

on population size (i.e., ~100,000 RDNs) with a 5% margin of error and based on a 5% significance level (a priori estimated $n = 383$). Given that the primary goal of this study was to assess survey reliability and validity and that more participants in turn means greater precision, this study sought a sample size of at least 400. All survey items included a 'Request Response' to encourage completion.

Data analysis for the primary aim of testing for validity and reliability included the use of CVI to determine overall relevance and breadth of the selected survey (content validity), percent agreement to assess the degree of interrater agreement (face validity), Cronbach's α to assess internal consistency, and test-retest reliability using ICC. The data from the first timepoint were used to assess internal consistency reliability, as well as the secondary research aims of evaluating the role of education and other predictive factors on EBP knowledge and use. ANOVAs were used to examine associations between the highest degree earned in any field, and highest nutrition and dietetics degree earned (i.e., bachelor's, master's, and doctorate) and EBP objective knowledge subscale scores.

Both the item score (ordinal) and total score of each survey subscale (continuous/ratio) were calculated to allow for ordinal logistic regression and multiple regression model analysis, respectively. Multiple linear regression analyses were used to determine the predictive capacity of the following predictive variables: highest degree earned in any field, highest degree earned in nutrition and dietetics, nutrition and dietetic work status (i.e., full-time or part-time), years of dietetic-related experience, recency of education, area of practice, specialty certifications, geographic practice location environment type (i.e., urban, rural, suburban), number of peer-reviewed publications, and preceptor status on each EBP survey subscale score (i.e., objective knowledge, self-reported knowledge/skills, attitudes, behaviors, outcomes/implementation).

These variables were selected as they have been documented as predictors of EBP within the literature and correspond to the theoretical framework. Predictors were entered into the model using a stepwise method and checked for multicollinearity.

Lastly, Pearson's correlation coefficient was used to assess the relationship between objective and self-reported EBP knowledge among RDNs to determine how accurately practitioners gauge their knowledge of EBP. The abovementioned variables and corresponding statistical tests are listed in Table 3, Table 4, and Appendix C. All data were analyzed using the IBM SPSS Statistics version 26 (IBM Corp. Released 2019.) at an α of .05.

Chapter 4: Results

Primary Aim: Assessment of Validity and Reliability of the Instrument

Part 1: Content Validity

Of the 14 expert reviewers contacted, 11 completed the content validity review process (Appendix F). Nine of the reviewers held terminal degrees (e.g., PhD or DCN) and RDN credentials, one held a PhD only, and one was an RDN and DCN student. The mean years of relevant experience among the reviewers was 27.7 years. The majority of the reviewers worked in higher education and/or research (81.8%) with expertise primarily in research and survey design (45.5%).

All survey items with CVI scores of less than 0.78 were removed from the original survey, which included the deletion of 11 survey items; three were subjective behavior and implementation items and the other eight items covered objective knowledge (Table 6). The remaining ten objective knowledge items included in the survey totaled a maximum score of 11 points (see Data Collection subheading for additional details). Several modifications were made

in each survey section based on the feedback provided by the reviewers. Reviewer feedback that was not implemented was further deliberated among a panel of RDNs.

Table 6. Content validity index scores by item in pre-validation survey

Content Validity Index Score	Item #	Total Number of Items Deleted
0.91	15, 16.1, 16.2, 17, 19.1-19.4, 23.1, 24, 26.3-26.12, 27.2, 27.4, 27.6-27.14, 28, 36	0
0.82	16.3, 16.4, 16.5, 22, 23.2, 25, 26.1, 26.2, 27.1, 27.3, 27.5, 29, 32, 33, 34, 37, 39, 42, 43	0
0.73 (deleted)	21, 35, 40, 41	4
0.64 (deleted)	18.1-18.2, 20, 38, 44, 45	5
0.55 (deleted)	30, 31	2

Part 2: Face Validity

Sixteen reviewers completed the face validity review in its entirety. Eight of the reviewers were current dietetic interns, five were current DCN students (two DCN non-faculty; three DCN current faculty), and three were full-time faculty in a nutrition and dietetics department (Table 7). The average total percent agreement for all items among face validity reviewers was 95.1% (Table 8). Twenty-four of the 38 items were in perfect agreement. Thirteen of the remaining 14 items achieved 87.5% agreement (15 of 16 reviewers in agreement). Nine of these 13 items with 87.5% agreement were resolved through the implementation of reviewer feedback, and the other four items were determined to be unnecessary modifications. Only one item [item 28.1-28.14] had 76.7% agreement (14 of 16 reviewers in agreement), but the disagreement among both reviewers was related to a formatting issue that was able to be resolved.

Table 7. Face validity reviewer details

Face Validity Reviewer Details	Number Reporting
Nutrition & Dietetic Faculty Member	3
Current Dietetic Intern	8
Current DCN Student	2
Current DCN Student & Faculty Member	3
Total Number of Face Validity Reviewers	16

Table 8. Face validation reviewer percent agreement by item and total percent agreement

Item #	Agreement - Yes	Agreement - No	Total # Responses	Percent Agreement
Item 1	16	0	16	100.00%
Item 2	16	0	16	100.00%
Item 3	16	0	16	100.00%
Item 4	16	0	16	100.00%
Item 5	16	0	16	100.00%
Item 6	16	0	16	100.00%
Item 7	15	1	16	87.50%
Item 8	16	0	16	100.00%
Item 9	15	1	16	87.50%
Item 10	15	1	16	87.50%
Item 11	16	0	16	100.00%
Item 12	15	1	16	87.50%
Item 13	16	0	16	100.00%
Item 14	16	0	16	100.00%
Item 15	15	1	16	87.50%
Item 16	15	1	16	87.50%
Item 17	16	0	16	100.00%
Item 18	16	0	16	100.00%
Item 19	16	0	16	100.00%
Item 20	16	0	16	100.00%
Item 21	15	1	16	87.50%
Item 22	16	0	16	100.00%
Item 23	15	1	16	87.50%
Item 24	16	0	16	100%

Item 25	16	0	16	100.00%
Item 26	16	0	16	100.00%
Item 27	15	1	16	87.50%
Item 28	14	2	16	76.67%
Item 29	15	1	16	87.50%
Item 30	15	1	16	87.50%
Item 31	15	1	16	87.50%
Item 32	16	0	16	100.00%
Item 33	15	1	16	87.50%
Item 34	16	0	16	100.00%
Item 35	16	0	16	100.00%
Item 36	16	0	16	100.00%
Item 37	16	0	16	100.00%
Item 38	16	0	16	100.00%
Total Percent Agreement				95.11%

Part 3: Pilot Data Responsiveness

Of the 12 students enrolled in a granting writing and research methods doctoral-level course in Fall 2020, eight of the students scored higher on the validated version of the total objective knowledge survey subscale after completing the course. One student did not show any improvement and three had a decline in performance over the course of the semester. A Wilcoxon signed-rank test found that there was not a statistically significant increase in the validated version of the objective knowledge survey subscale score post-course completion (*Mdn* = 6.25) when compared the pre-course score (*Mdn* = 6.00), z = 1.57, p = .117, r = .45.

When evaluating the original, pre-validation objective knowledge subscale score among the 12 students, nine students scored higher, one received the same score, and two had a decline in performance after completing the course. Conversely, the pre-validation version of the objective knowledge subscale was significantly higher in scores post-course (*Mdn* = 11.50) when compared to the pre-course assessment scores (*Mdn* = 9.75), *z* = 1.96, *p* = 0.05, *r* = .57.

Part 4: Internal Consistency Reliability Analysis

The total EBP survey (54 response items) was found to have an acceptable level of internal consistency as evidenced by a Cronbach's α of .79. However, with the removal of item #21 (i.e., percentage of nutrition recommendations based on evidence, 0-100%), the 53 response items had excellent internal consistency with a Cronbach's α of .91. All subjective items, which included ten survey items consisting of 44 total response items (five items included multi-part matrix items), also had an acceptable level of internal consistency with a Cronbach's α of .79. Similarly, with the removal of item #21, the 43 subjective response items had excellent internal consistency with a Cronbach's α of .92. There were a total of nine KABQ survey items that made up 30 response items (including four multi-part matrix items) with a Cronbach's α of .69; however, with the removal of survey item #21 the Cronbach's α was .87 which suggests a good level of internal consistency.

The KABQ Attitudes subscale included two survey items with 15 response items with a high level of internal consistency with a Cronbach's α of .82. The KABQ Knowledge (without item #21) subscale included two survey items with a total of six response items that had poor internal consistency with a Cronbach's α of .45 (.21 with percentage item included). The KABQ Behavior subscale included two survey items that made up five response items (one four-part matrix item) and had acceptable internal consistency with a Cronbach's α of .78. The KABQ Outcome/Decision/Implementation subscale included two survey items and a total of three response items (one multi-part matrix item) and had an acceptable Cronbach's α of .67. The EBPQ Perceived Knowledge and Skills subscale contained one survey item with 14 multi-part matrix response items that had excellent internal consistency at a Cronbach's α of .93.

The total objective knowledge subscale contained ten items with a Cronbach's α of .41. The five K-REC response items included had a Cronbach's α of .25, whereas the remaining five KACE items had a Cronbach's α of .30. Internal consistency reliability SPSS outputs can be found in Appendix K.1.

Part 5: Timepoint #1 and #2 Objective Knowledge Score: Test-Retest Reliability

Out of the 482 respondents who completed the survey at timepoint 1, 335 also completed the survey at timepoint 2, from February-March 2021 (70% response rate). A good degree of reliability was found between the survey timepoint measures with an average ICC of 0.71 (95% CI, .65 to .77), $F(334, 334) = 3.49$, $p < .001$. Out of the 11 maximum points, the mean objective knowledge scores for timepoint 1 and timepoint 2 were 5.52 ($M = 5.5$, $SD = 1.93$) and 5.66 ($M = 5.5$, $SD = 2.13$), respectively. Test-retest reliability SPSS outputs can be found in Appendix K.2.

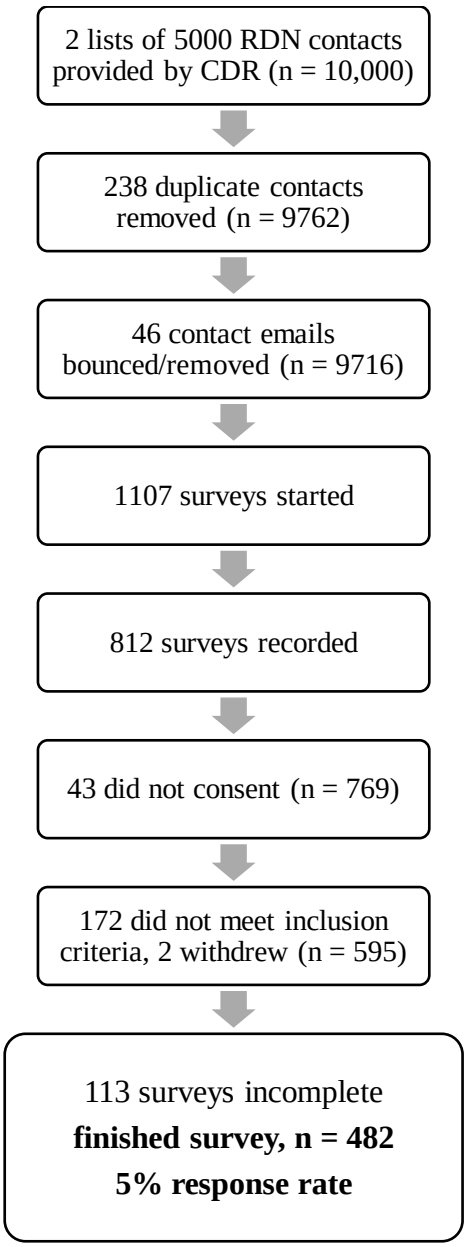
Secondary Aim: Timepoint #1 Data Analysis

Descriptive Statistics

There were 1,107 surveys started and 812 surveys recorded. Of the 812 surveys collected, 595 participants consented and met inclusion criteria, and 482 completed the survey and were included in data analysis (Figure 3). The majority of participants were female ($n = 449$, 93.2%), white ($n = 409$, 84.9%), and were not of Hispanic, Latino, or Spanish origin ($n = 437$, 90.7%). The mean age of participants was 42.7 years ($SD = 12.87$), with the majority between the ages of 30-39 years ($n = 129$, 26.8%). Forty-eight states (all except Wyoming and Vermont), the District of Columbia, and Puerto Rico were represented in the sample. California ($n = 47$, 9.8%) and Texas ($n = 35$, 7.3%) had the highest representation, followed by Florida ($n = 26$, 5.4%) and New York ($n = 26$, 5.4%). The majority of participants held a master's degree ($n = 277$, 57.5%) as their highest degree in any field of study and as the highest nutrition and

dietetics-related degree (*n* = 248, 51.5%) with a mean of 15.9 years since highest degree completion (*SD* = 12.41). Ninety percent of those with master's degrees (*n* = 248) and 87% of those with doctoral degrees (*n* = 20) as the highest degree held had completed these degrees in nutrition and dietetics (Table 9 and Table 10).

Figure 3. Flow chart of timepoint 1 survey contacts and participation



Eighty-eight percent of participants (*n* = 425) reported working full-time (i.e., more than 30 hours per week) with a mean of 15.37 years of experience (*SD* = 12.37). The most frequently cited area of practice was acute care/inpatient (*n* = 155, 23.9%; Figure 4). Practice geographic setting was most commonly cited as more suburban (*n* = 193, 40%) and more urban (*n* = 188, 39%). Most participants did not hold any specialty nutrition certifications (*n* = 334, 69.3%) and had not published peer-reviewed research (*n* = 377, 78.2%). It was most frequently reported that participants were currently acting as a preceptor for dietetic interns (*n* = 204, 42.3%). Among those that did hold nutrition specialty certifications, the most commonly held specialty was the Diabetes Care and Education Specialists (DCES), formerly Certified Diabetes Educator (CDE) credential (*n* = 49, 10.2%), followed by the Certified Nutrition Support Clinician (CNSC) credential (*n* = 37, 7.7%).

Table 9. Participant characteristics from timepoint 1 survey (*n* = 482)

Participant Characteristics	**Frequency (%)**
Years of Experience[a]	15.37 (12.37)
Current Work Status	
Full-time	425 (88.2)
Part-time	57 (11.8)
Highest Degree Held in Any Field	
Bachelor's degree	182 (37.8)
Master's degree	277 (57.5)
Doctoral or other terminal degree	23 (4.8)
Highest Nutrition/Dietetics-Related Degree	
Bachelor's degree	214 (44.4)
Master's degree	248 (51.5)

Doctoral degree	20 (4.1)
Specialty Nutrition Certifications	
Yes, 1	133 (27.6)
Yes, > 1	15 (3.1)
No	334 (69.3)
Number of Peer-Reviewed Published Articles	
None	377 (78.2)
1-3	77 (16)
4-6	10 (2.1)
7-9	6 (1.2)
10 or more	12 (2.5)
Years Since Highest Nutrition/Dietetics-Related Degree[a]	15.88 (12.41)
Preceptor Status	
Yes, present preceptor	204 (42.3)
Past preceptor	148 (30.7)
No, never preceptor	130 (27)
Practice Setting	
Acute Care/Inpatient	115 (23.9)
Ambulatory Care (e.g., Outpatient, Home Care)	94 (19.5)
Community or Wellness	67 (13.9)
Consultation & Business	14 (2.9)
Education & Research	27 (5.6)
Food & Nutrition Management	32 (6.6)
Long-Term Care	51 (10.6)
Other	82 (17)

Geographic Location of Primary Work Setting	
More rural	72 (14.9)
More suburban	193 (40)
More urban	188 (39)
Other	28 (5.8)

[a]Mean (SD)

Figure 4. Highest degree held in nutrition and dietetics by primary practice setting/area of practice

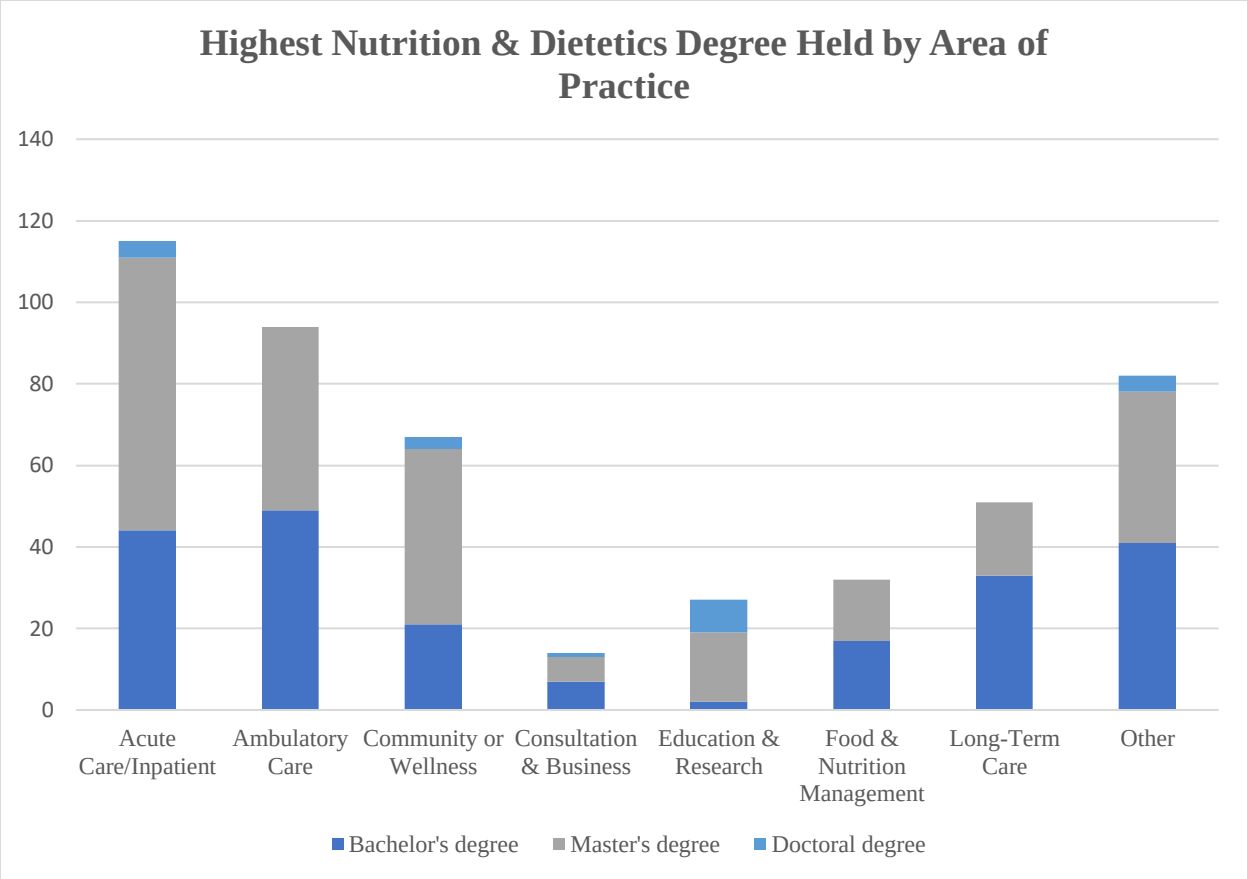


Table 10. Participant demographics from timepoint 1 survey (*n* = 482)

Participant Demographics	Frequency (%)
Hispanic, Latino, or Spanish Origin	
Yes	37 (7.7)
No	437 (90.7)
Prefer not to answer	7 (1.5)
Race	
American Indian and Alaska Native	6 (1.2)
Asian	22 (4.6)
Black or African American	10 (2.1)
White	409 (84.9)
Multiracial	13 (2.7)
Prefer not to answer	13 (2.7)
Other	9 (1.9)
Gender	
Female	449 (93.2)
Male	29 (6)
Prefer not to answer	4 (0.8)
Age	
***M* = 42.74 (*SD* = 12.87)**	
23-29	89 (18.5)
30-39	129 (26.8)
40-49	96 (19.9)
50-59	103 (21.4)
60-69	47 (9.8)
70-77	9 (1.9)

Association Between Level of Education and EBP Knowledge

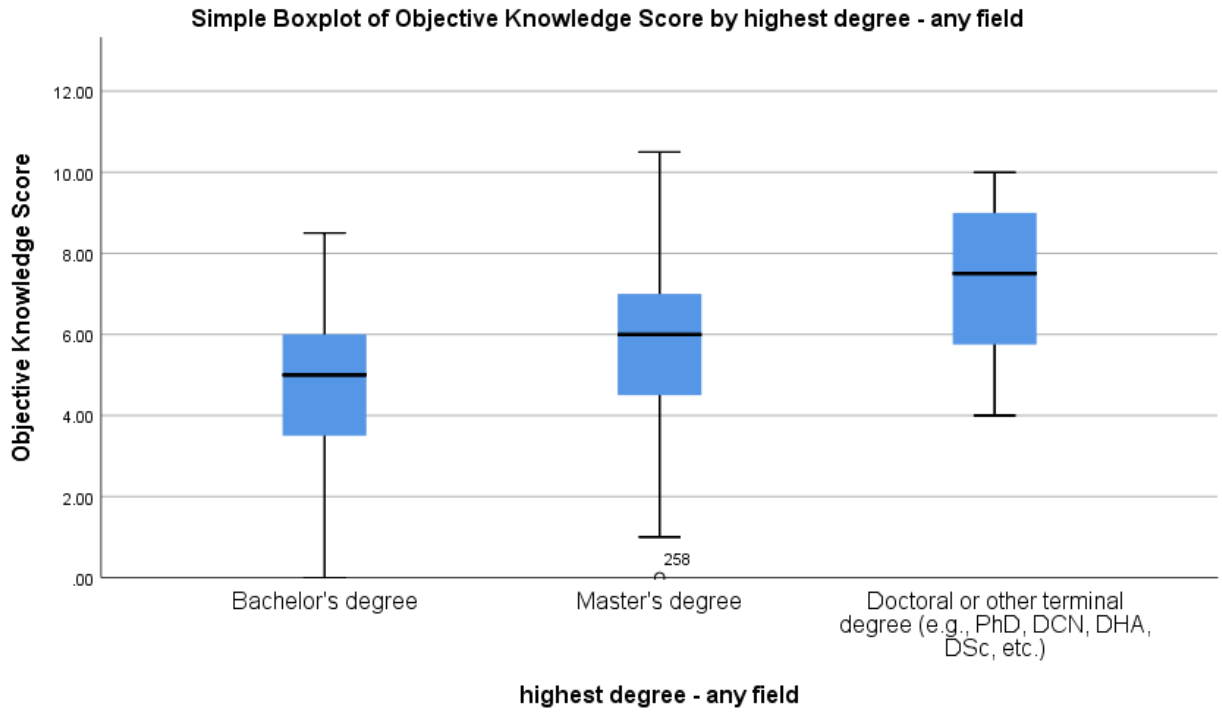
Highest Degree Earned in Any Field Associated with EBP Objective Knowledge

Prior to conducting a one-way ANOVA to determine the variance in mean objective knowledge score by highest degree in any field, assumptions of normality were assessed. Based on an inspection of the boxplot, four outliers were found among the master's degree participants. However, after deleting the outliers there were no meaningful changes to the ANOVA findings; therefore, these outliers were included in the data analysis. Scores were normally distributed

based on a visual inspection of Normal Q-Q Plots (Figure 42, Figure 43, and Figure 44). Moreover, there was homogeneity of variances, as assessed by Levene's test of homogeneity of variances (p = .290).

The mean objective knowledge score was 5.43 points (SD = 1.97, range 0 to 10.50 points). The objective knowledge score was significantly different between the varying degree types, F (2, 479) = 22.807, p < .001. Objective knowledge score increased as highest degree held increased, from bachelor's (M = 4.85, SD = 1.77) to master's (M = 5.64, SD = 1.99) to doctoral/terminal degree (M = 7.41, SD = 1.90). Tukey post-hoc analysis revealed a statistically significant increase in objective knowledge by increasing degree type (all comparisons had p < .001; Figure 5 and Figure 45). Master's from bachelor's had an increase of 0.79 points (95% CI [0.36, 1.21]), doctoral from master's had an increase of 1.77 points (95% CI [0.81, 2.74]), and doctoral from bachelor's increased 2.56 points (95% CI [1.58, 3.54]).

Figure 5. Boxplot of objective knowledge score by highest degree in any field among participants

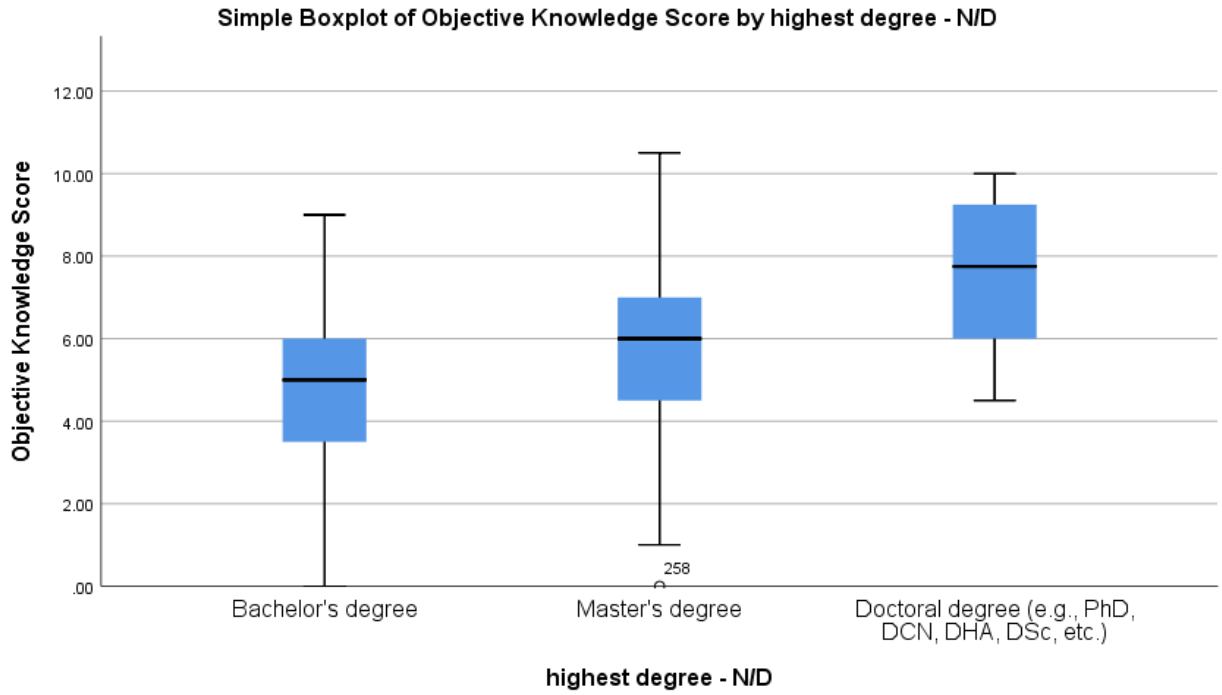


Highest Degree Earned in Nutrition & Dietetics Associated with EBP Objective Knowledge

When evaluating the association between highest nutrition and dietetics-specific degree earned and EBP knowledge, an inspection of the boxplot identified one outlier among the master's degree group. Similar to the 'highest degree earned in any field' variable, deleting this outlier did not produce any meaningful changes to the ANOVA findings. Scores were again normally distributed based on a visual inspection of Normal Q-Q Plots. There was homogeneity of variances based on Levene's test of homogeneity of variances (p = .945).

As found with the 'degree type in any field' variable above, the objective knowledge score was significantly different based on the highest nutrition and dietetics degree type held by participants, F (2, 479) = 24.23, p < .001. Objective knowledge score increased as the highest nutrition and dietetics degree held increased, from bachelor's (M =4.93, SD =1.86) to master's (M =5.68, SD =1.92) to doctoral/terminal degree (M =7.70, SD =1.78). Tukey post-hoc analysis found a statistically significant increase in objective knowledge score with increasing nutrition and dietetics-specific degree type (all comparisons had p < .001; Figure 6 and Figure 46). Doctoral degree participants scored 2.77 and 2.02 points higher than bachelor's (95% CI [1.7, 3.8]) and master's (95% CI [.99, 3.1]) degree holders, respectively. Master's participants had a 0.75-point higher mean objective knowledge score when compared to bachelor's degree participants (95% CI [.34, 1.2]). ANOVA SPSS outputs can be found in Appendix L.

Figure 6. Boxplot of objective knowledge score by highest degree in nutrition and dietetics among participants



Prediction of Survey Subscales and Items

Prediction of Objective Knowledge Score

A backward selection multiple regression model was used to evaluate the predictive value of participant characteristics on objective knowledge score. Residuals were independent, as assessed by a Durbin-Watson statistic of 2.02. There was no evidence of multicollinearity, as assessed by tolerance values greater than 0.1. Variables initially entered in the model included: nutrition work status (i.e., full-time or part-time), years working as an RDN, primary area of practice, obtainment of a nutrition specialty certification, number of peer-reviewed publications, year of highest degree completion (i.e., recency of degree completion), geographic location of primary work setting, preceptor status, highest degree held in any field, and highest degree in nutrition and dietetics. The final model explained 13.6% of the variability in the objective knowledge subscale score and included the variables: year of highest nutrition and dietetic degree completion (i.e., recency of degree completion), number of peer-reviewed publications,

and highest degree in any field, F (3, 473) = 24.90, $p < .001$, $R^2 = .136$ (Table 11). Both models had a small effect size, using Cohen's classification.

Table 11. Multiple regression analysis objective knowledge score with the fewest predictor variables

Objective Knowledge Score	***B***	***SE (B)***	***β***	***R^2***	***ΔR^2***	***p-value***
Constant	4.208	.302		.136	.131	.000
# of peer-reviewed articles	.536	.116	.218			.000
Highest degree – any field	.575	.166	.165			.001
Year of highest nutrition & dietetics degree completion (recency of education)	-.029	.007	-.184			.000

Prediction of Total Subjective Measures

A backward selection multiple regression model with the same ten variables as with the objective knowledge score was fit to the model to assess predictors of total subjective knowledge score among participants. The final model included four variables: year of highest nutrition and dietetics degree completion, specialty certifications, peer-reviewed article publication, and highest degree in any field. Residuals were independent, as assessed by a Durbin-Watson statistic of 2. There was no evidence of multicollinearity, as assessed by tolerance values greater than 0.1. This model indicated that these four variables explained 21.6% of the variability in the total subjective measures of EBP, F (4, 467) = 32.20, $p < .001$, $R^2 = .216$ (Table 12).

Table 12. Multiple regression analysis subjective knowledge score with the fewest predictor variables

Subjective Knowledge Score	***B***	***SE (B)***	***β***	***R^2***	***ΔR^2***	***p-value***
Constant	209.604	4.063		.216	.209	.000
# of peer-reviewed articles	8.389	1.469	.258			.000
Highest degree – any field	6.958	2.064	.153			.001
Year of highest nutrition & dietetics degree completion (recency of education)	-.640	.088	-.309			.000
Specialty certification	2.658	1.192	.092			.026

Prediction of KABQ Subscale-Subjective Knowledge Measures

Following the same methodology as above, a backward selection model using the same ten predictor variables was used to assess the KABQ Knowledge subscale. The final model contained five variables: geographic location of practice setting, area of practice, peer-reviewed publications, highest nutrition and dietetic degree, and years of highest nutrition and dietetic degree completion (i.e., recency of degree completion). However, area of practice did not significantly contribute to the model (p = .067). Residuals were independent, as assessed by a Durbin-Watson statistic of 2.2. There was no evidence of multicollinearity, as assessed by tolerance values greater than 0.1. This model indicated that these five variables explained 15.1% of the variability in the subjective knowledge measures (from the KABQ original survey) of EBP, F (5, 470) = 16.68, p = .001, R^2 = .151 (Table 13).

Table 13. Multiple regression analysis of KABQ Knowledge (no Item #21) subscale with the fewest predictor variables

KABQ Subjective	***B***	***SE (B)***	***β***	***R^2***	***ΔR^2***	***p-value***

Knowledge Score						
Constant	31.221	.816		.151	.142	.000
Highest degree – nutrition & dietetics	.835	.351	.116			.018
Geographic location	.479	.219	.094			.029
Area of practice	-.123	.067	-.080			.067
Peer-reviewed publications	1.113	.244	.218			.000
Year of highest nutrition and dietetic degree completion (recency of degree completion)	-.069	.015	-.208			.000

Prediction of KABQ Subscale-Behavior Measures

A backward selection model assessed the ten predictor variables and yielded a final model containing three variables: area of practice, peer-reviewed publications, and year of highest nutrition and dietetic degree completion (i.e., recency of degree completion). Residuals were independent, as assessed by a Durbin-Watson statistic of 1.97. There was no evidence of multicollinearity, as assessed by tolerance values greater than 0.1. This model indicated that these three variables explained 13.6% of the variability in the behavioral measures of EBP, F (3, 472) = 24.77, $p < .001$, $R^2 = .136$ (Table 14).

Table 14. Multiple regression analysis of KABQ Behavior subscale with the fewest predictor variables

KABQ Behavior Score	***B***	***SE (B)***	***β***	***R^2***	***ΔR^2***	***p-value***
Constant	15.469	.539		.136	.131	.000
Years of highest nutrition and	-.081	.018	-.202			.000

dietetic degree completion						
Area of practice	-.200	.082	-.107			.015
Peer-reviewed publications	1.914	.268	.309			.000

Prediction of KABQ Subscale-Outcome/Implementation Measures

A backward selection model assessed the ten predictor variables and yielded a final model which included three variables: area of practice, highest degree in nutrition and dietetics, and year of highest nutrition and dietetic degree completion (i.e., recency of degree completion). However, only highest degree in nutrition and dietetics significantly added to the prediction (p = .005). Residuals were independent, as assessed by a Durbin-Watson statistic of 2.01. There was no evidence of multicollinearity, as assessed by tolerance values greater than 0.1. This model indicated that these three variables explained 4.1% of the variability in the outcome or implementation-related measures of EBP, F (3, 471) = 6.70, $p < .001$, $R^2 = .041$ (Table 15).

Table 15. Multiple regression analysis of KABQ Outcomes/Implementation subscale with the fewest predictor variables

KABQ Outcome-Implementation Score	***B***	***SE (B)***	***β***	***R^2***	***ΔR^2***	***p-value***
Constant	15.789	.400		.041	.035	.000
Year of highest nutrition and dietetics degree completion	-.016	.009	-.086			.069
Area of practice	-.071	.040	-.081			.077
Highest degree – nutrition and dietetics	.537	.189	.132			.005

Prediction of KABQ Subscale-Attitude Measures

A backward selection model assessed the ten predictor variables and yielded a final model which contained four variables: specialty certifications, peer-reviewed article publication, highest degree in any field, and year of highest nutrition and dietetics degree completion (i.e., recency of degree completion). Residuals were independent, as assessed by a Durbin-Watson statistic of 2.01. There was no evidence of multicollinearity, as assessed by tolerance values greater than 0.1. This model indicated that these four variables explained 14.4% of the variability in the attitude-related measures of EBP, F (4, 471) = 19.80, $p < .001$, $R^2 = .144$ (Table 16).

Table 16. Multiple regression analysis by KABQ Attitude subscale with the fewest predictor variables

KABQ Attitude Score	***B***	***SE (B)***	***β***	***R^2***	***ΔR^2***	***p-value***
Constant	76.465	1.790		.144	.137	.000
Highest degree – any field	1.998	.914	.104			.029
Year of highest nutrition and dietetic degree completion	-.272	.039	-.310			.000
Specialty certifications	1.067	.525	.088			.043
Peer-reviewed publications	2.054	.639	.152			.001

Prediction of EBPQ Subscale-Perceived Knowledge/Skills Measures

A backward selection model with the ten predictor variables yielded a final model which contained four variables: preceptor status, year of highest nutrition and dietetics degree completion (i.e., recency of degree completion), peer-reviewed article publication, and highest degree in any field. Residuals were independent, as assessed by a Durbin-Watson statistic of 1.98. There was no evidence of multicollinearity, as assessed by tolerance values greater than

0.1. This model indicated that these four variables explained 15.9% of the variability in the knowledge and competence measures (from EBPQ original survey) of EBP, F (4, 469) = 22.16, $p < .005$, $R^2 = .159$ (Table 17).

Table 17. Multiple regression analysis of EPBQ Perceived Knowledge and Skills subscale with the fewest predictor variables

EBPQ Competence Score	***B***	***SE (B)***	***β***	***R^2***	***ΔR^2***	***p-value***
Constant	71.450	2.001		.159	.152	.000
Highest degree – any field	3.150	.941	.159			.001
Year of highest nutrition and dietetic degree completion	-.183	.040	-.201			.000
Peer-reviewed publications	3.334	.655	.239			.000
Preceptor status	1.157	.585	.085			.049

Predictors of Self-Reported Confidence in EBP

Ordinal logistic regression was used to evaluate predictive participant characteristics associated with moving one unit up the Likert-scale for selected subjective survey items that were thought to be directly associated with EBP and the corresponding theoretical framework. The model evaluated all ten of the abovementioned participant predictor variables on the Likert-scale item #19, "I am confident in my ability to use EBP." There was no evidence of multicollinearity, as assessed by tolerance values greater than 0.1. The assumption of proportional odds was met, as assessed by a full likelihood ratio test comparing the fit of the proportional odds model to a model with varying location parameters, $\chi^2(125) = 103.55$, $p = .92$. The both the Pearson and deviance goodness-of-fit tests indicated that the model was a good fit to the observed data, $\chi^2(2795) = 2901.11$, $p = .08$ and $\chi^2(2795) = 869.90$, $p = 1.00$, respectively.

The final model significantly predicted the dependent variable over and above the intercept-only model, $\chi^2(25) = 43.67$, $p = .01$.

None of the proposed predictive variables had a statistically significant effect on self-reported confidence in using EBP. However, the odds of being confident in their ability to use EBP of those who were working in Education & Research was 2.77 (95% CI, 1.01 to 7.59) times that of those participants reporting working in 'Other' areas of practice, $\chi^2(1) = 3.91$, $p = .048$.

Predictors of Reported Effectiveness of EBP

Ordinal logistic regression was used to evaluate predictive participant characteristics associated with moving one unit up the Likert-scale for survey item #20.1, "Using EBP increases the likelihood that the proposed nutrition therapy recommendation is effective." There was no evidence of multicollinearity, as assessed by tolerance values greater than 0.1. The assumption of proportional odds was met, as assessed by a full likelihood ratio test comparing the fit of the proportional odds model to a model with varying location parameters, $\chi^2(125) = 67.50$, $p = 1$. Both the deviance and Pearson goodness-of-fit tests indicated that the model was a good fit to the observed data, $\chi^2(2789) = 843.02$, $p = 1$ and $\chi^2(2789) = 2233.87$, $p = 1$, respectively. However, the final model did not significantly predict the dependent variable over and above the intercept-only model, $\chi^2(25) = 35.93$, $p = .07$.

Predictors of Time Spent Reading Research

Ordinal logistic regression was used to evaluate predictive participant characteristics associated with moving one unit up the Likert-scale for survey item #23, "On average, how much time do you spend reading the latest research evidence?" There was no evidence of multicollinearity, as assessed by tolerance values greater than 0.1. The assumption of proportional odds was met, as assessed by a full likelihood ratio test comparing the fit of the

proportional odds model to a model with varying location parameters, $\chi^2(380) = 153.95$, $p = 1$. Both the deviance and Pearson goodness-of-fit tests indicated that the model was a good fit, $\chi^2(2320) = 1548.99$, $p = 1$ and $\chi^2(2320) = 2349.90$, $p = .33$, respectively. The final model did significantly predict the dependent variable over and above the intercept-only model, $\chi^2(25) = 84.51$, $p < .001$.

Both the number of peer-reviewed articles published and the attainment of specialty certifications significantly increased the odds of moving one unit up the 6-point ordinal ranking scale for the survey item addressing time spent reading the latest research evidence, $\chi^2(4) = 24.02$, $p < .001$ and $\chi^2(2) = 7.48$, $p = .02$, respectively. The odds of spending greater time reading research of those who had never published, published 1-3, 4-6, and 7-9 peer-reviewed manuscripts were .06 (95% CI, .01 to .30), .11 (95% CI, .02 to .46), .17 (95% CI, .02 to .91), and .50 (95% CI, .06 to 6.01) times, respectively, that of those who had published greater than 10 peer-reviewed manuscripts. However, only those with no publications, 1-3, and 4-6 publications were significant, $\chi^2(1) = 15.71$, $p < .001$, $\chi^2(1) = 9.50$, $p = .002$, and $\chi^2(1) = 4.32$, $p = .04$, respectively. The odds of spending greater time reading research of those without nutrition specialty certifications and one specialty certification were .74 (95% CI, .50 to 1.08) and 2.54 (95% CI, .91 to 7.07) times that of those with more than one nutrition specialty certification, respectively. However, neither of these predictions within the specialty certifications variable were significant, $\chi^2(1) = 2.43$, $p = .12$, $\chi^2(1) = 3.19$, $p = .07$, respectively.

Predictors of EBP as an Integral Practice Component

Ordinal logistic regression was used to evaluate predictive participant characteristics associated with moving one unit up the Likert-scale for survey item #27.6, "Evidence-based practice should be an integral part of nutrition and dietetic practice." There was no evidence of

multicollinearity, as assessed by tolerance values greater than 0.1. The assumption of proportional odds was met, as assessed by a full likelihood ratio test comparing the fit of the proportional odds model to a model with varying location parameters, $\chi^2(125) = 85.79$, $p = 1$. Both the deviance and Pearson goodness-of-fit tests indicated that the model was a good fit, $\chi^2(2795) = 952.42$, $p = 1$ and $\chi^2(2795) = 2823.02$, $p = .35$, respectively. The final model did significantly predict the dependent variable over and above the intercept-only model, $\chi^2(25) = 60.60$, $p < .001$.

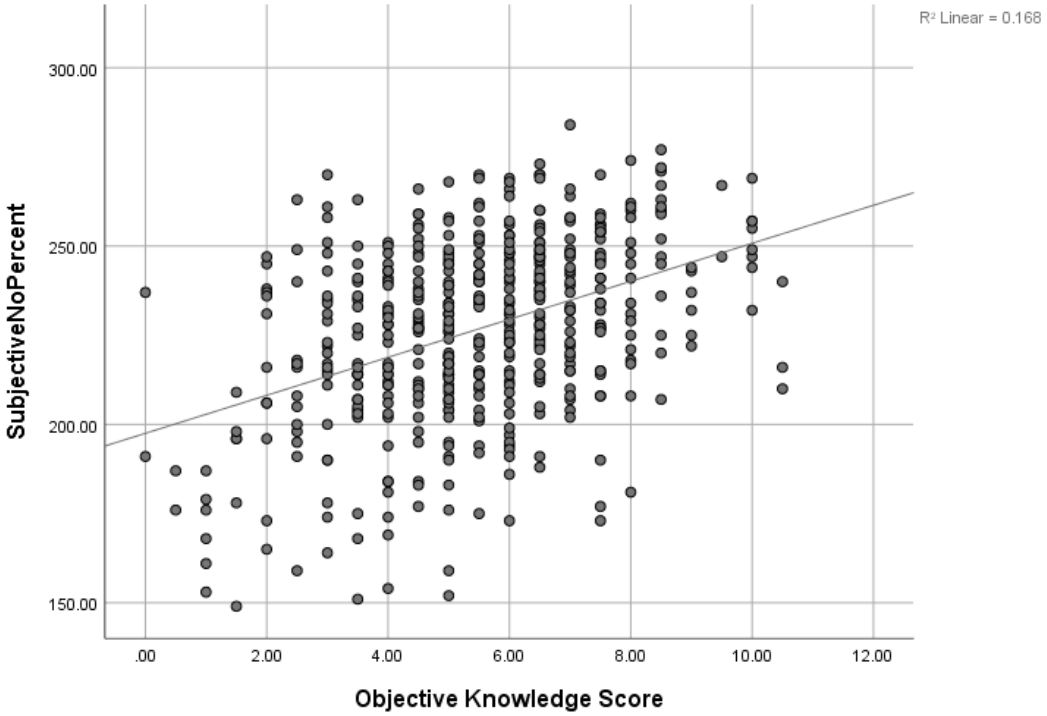
Work status and year of highest nutrition and dietetic degree completion had a significant effect on the odds of moving one unit up the Likert-scale for the survey item stating that EBP is a critical component of nutrition and dietetic practice. The odds of reporting that EBP was a critical component of nutrition and dietetics practice of those working part-time (i.e., 20-30 hours per week) was .51 (95% CI, .28 to .95) times that of those working full-time, $\chi^2(1) = 4.51$, $p = .03$. An increase in years since highest nutrition and dietetic degree completion was associated with slight increase in the odds of considering EBP to be an integral part of practice, with an odds ratio of 1.04 (95% CI, 1.00 to 1.09), $\chi^2(1) = .22$, $p = .04$. All SPSS outputs from regression models can be found in Appendix M.

Correlations Between Self-Assessed and Actual EBP Knowledge

Pearson's correlation was run to evaluate the association between objective knowledge and subjective knowledge scores (without item #21). Preliminary analyses found the relationship to be linear without any outliers as determined through the inspection of a scatterplot (Figure 7). Both variables were normally distributed, with objective knowledge score with a skewness of -.07 (standard error = .11) and kurtosis of -.08 (standard error = .22), and subjective knowledge score with a skewness of -.53 (standard error = .11) and kurtosis of .05 (standard

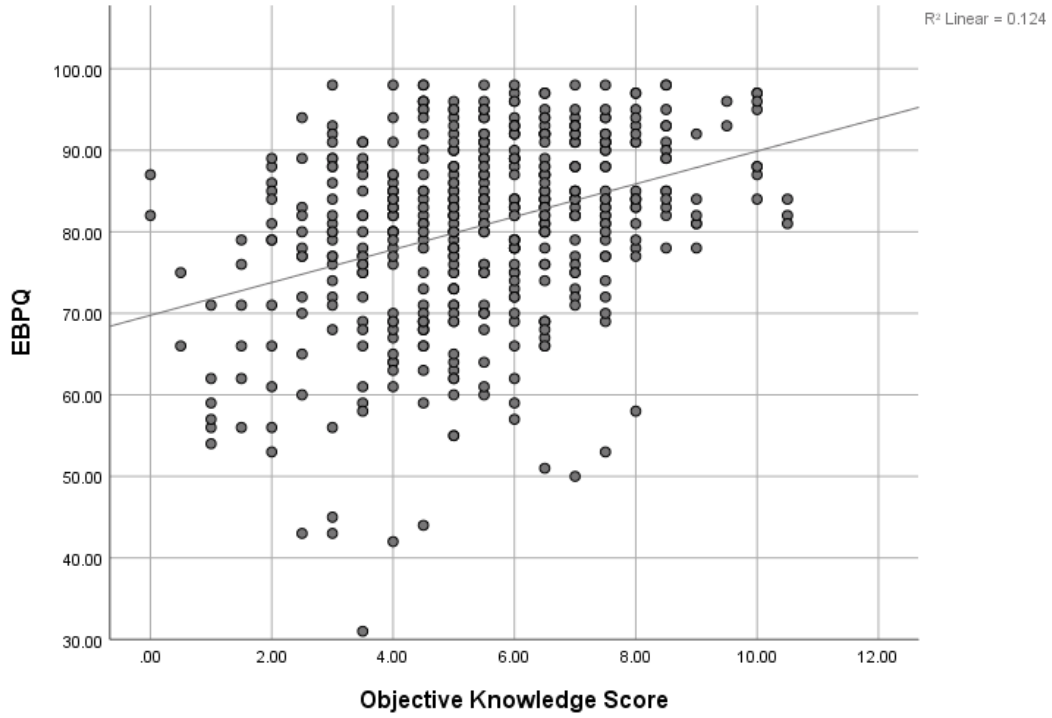
error = .22). There was a significant moderate positive correlation between objective knowledge score and subjective knowledge score, $r(475) = .41$, $p < .001$. Subjective knowledge score explained 16.8% of the variability in objective knowledge score (Figure 7).

Figure 7. Association between objective and subjective knowledge among RDNs



Due to inconsistency in subjective item scoring between subscales (i.e., use of both ascending and descending scoring), the EBPQ subscale was also assessed since all items were scored in a similar fashion (e.g., Strongly Agree = 7; Strongly Disagree = 1; with 'Strongly Agree' being the desired response). When looking at only the EBPQ Perceived Knowledge and Skills subscale, there was still a moderate positive correlation with objective knowledge score, $r(481) = .35$, $p < .001$. The EBPQ score explained 12.4% of the variability in objective knowledge score (Figure 8). Pearson's correlation coefficient SPSS outputs can be found in Appendix N.

Figure 8. Association between objective knowledge and perceived knowledge and skills (i.e., EPBQ subscale)



Chapter 5: Discussion

Evidence-based practice is recognized as a core competency for all health professions and used as a benchmark within healthcare organizations. In nutrition and dietetics, EBP is a focal point of the AND's Code of Ethics for the Nutrition and Dietetic Profession,[3] the ICDA's Code of Ethics and Code of Good Practice,[2] and a key component of both didactic and supervised practice accreditation requirements to become an RDN. Prior to this research, there was very little literature evaluating tangible EBP knowledge among RDNs, and there was a lack of a validated tool to assess the accuracy of perceived knowledge of EBP. Therefore, the primary aim of this study was the validation of an instrument to assess both objective and subjective EBP outcomes among RDNs. The findings suggest that this instrument is appropriate for assessing RDN subjective and objective knowledge, behaviors, attitudes, and outcomes/implementation of EBP, as detailed below.

Primary Research Objective

Content and Face Validation

For this research study, a more concise objective knowledge subscale was developed through expert content validity evaluation, which reduced overlapping objective knowledge items between the two surveys (i.e., KACE and K-REC). The original pre-validation objective knowledge subscale contained 18 response items (8 K-REC items and 10 KACE items). The post-content validation subscale included ten response items (5 KACE items, 5 K-REC items) covering the following topics: search strategy, research design, critical appraisal, research evidence statistics, research design, and levels of evidence. The expert review significantly reduced the number of repeated items on a single topic while still maintaining all of the relevant topics from the original surveys, with the exception of the 'research question' topic (i.e., PICO model) from the K-REC instrument (Table 6). The removal of these items allowed for less redundancy and the inclusion of only the most relevant items within each subscale while still assessing necessary aspects of knowledge, attitudes, behaviors, and implementation of EBP among RDNs.

The purpose of the face validity review was to establish clarity of items among a broad range of RDNs; therefore, reviewers had varying professional dietetic backgrounds, education, and experience levels. Thus, both dietetic interns (pre-RDN credentialing), RDNs enrolled as DCN students, and nutrition and dietetic faculty were invited to complete the face validity review. The majority of items (24 of 38 items; 63%, Table 8) achieved perfect agreement among all reviewers. The remaining items were able to be resolved through wording or formatting changes or were further deliberated with RDN experts. As a result, this survey may be

considered clear and appropriate among dietitians in all areas of practice and with varying levels of experience, including novices, such as dietetic interns.

Survey Responsiveness

In a preliminary analysis of survey responsiveness of the objective knowledge subscale, this instrument was piloted among students enrolled in one of the DCN 'Research Core Requirement' courses during the Fall 2020 semester. This course, HUN 7831: Grant Development, also included concepts related to research methodology. Learning objectives of this course relevant to the survey include interpreting different types of nutrition research, effectively using search engines to answer research questions, and critiquing research articles. While most students did have an improvement in objective knowledge score over the course of the semester with both the pre-and post-validation instruments, only the pre-validation survey resulted in significant responsiveness. The responsiveness of the original KACE instrument among dental students and residents,[117] as well as among French fifth-year dental students in an adapted version,[118] both demonstrated statistically significant differences pre-and post-course. However, only the original English version was based on an EBP-specific course and/or EBP and research methods course,[117] whereas the French version was based on an epidemiology course.[118]

Given that HUN 7831: Grant Development only covers three of the required nine credit hours of the research core DCN requirements, this may have influenced the validated version's responsiveness to this course. Several EBP concepts, such as research evidence statistics and design, are more heavily discussed in other research courses, particularly in NGR 7843: Statistical Interpretation for Advanced Practice. In addition, after the content validity review,

three items related to search strategy and one item related to levels of evidence were removed, both of which are objectives included in the Grant Development course.

Due to the dispersion of EBP concepts in research coursework, future research should assess EBP objective knowledge of DCN/graduate students pre- and post-completion of all research-focused coursework rather than based on a single course. Another consideration would be implementing EBP-focused courses in place of traditional 'research' coursework as part of graduate-level dietetic degree program requirements. The proposal to update research courses with EBP-focused coursework has been endorsed within nursing, as associations have been found between greater EBP competence among younger, more highly educated nurses that may have completed coursework specific to EBP.[38] Moore et al[133] found that modified research courses that focused on EBP concepts resulted in improved behaviors, attitudes, and self-efficacy regarding EBP among Master of Science in Nursing and Doctorate of Nursing Practice students. A potential barrier to this approach would be due to the fact that many educators likely completed their degrees and/or were in practice prior to the recognition of EBP as a required standard of practice, and thus, may not have encountered EBP as a focus of their curricula or practice. Future studies may also consider evaluating the effectiveness of EBP-focused research coursework compared to research only on the understanding of both research and EBP principles within nutrition and dietetics.

Internal Consistency and Test-Retest Reliability

To further evaluate the reliability of this modified instrument for dietetics, both internal consistency and test-retest reliability were assessed. Due to the inclusion of an item from the KABQ Knowledge subscale that required a percent-based numerical response on a scale from 0-100 (item #21), rather than limited response options/Likert scale items, the interpretation of the

internal consistency was altered. Consequently, without item #21, the total EBP survey and the subjective response items were found to have excellent internal consistency among RDNs (Cronbach's α = .92). The KABQ items that were included demonstrated good internal consistency (Cronbach's α = .87), which was very similar to the original modified EBP-KABQ (Cronbach's α = .85), both of which removed item #21 (#7 in original EBP-KABQ).[137] Upon greater reflection on item #21 (i.e., 'What percentage of your nutrition recommendations are based on evidence from research?), this item may be unnecessary or even incompatible as EBP decisions should also consider professional expertise and patients' preferences and values.

Internal consistency was acceptable and similar or higher among the Attitudes (Cronbach's α = .82) and Behavior (Cronbach's α = .77) subscales compared to the original modified EBP-KABQ validation study.[137] However, internal consistency for both the Knowledge (Cronbach's α = .45 without item #21) and Outcome, Decision, Implementation (Cronbach's α = .67) subscales were lower. The small number of response items within the KABQ Knowledge and Outcome, Decision, Implementation subscales, three and six items, respectively, may have also considerably affected the internal consistency, as discussed in greater detail below.

Questionable internal consistency and confirmatory factor analysis of the modified EBP-KABQ Knowledge subscale (Cronbach's α = .66) were documented within the original validation study among health professionals involved in pain management (e.g., occupational therapists, physical therapists).[137] The original EBP-KABQ Knowledge subscale analysis[137] had one item with low factor loading. With the removal of this item (#20.2 within this survey, or item #3 in the original EBP-KABQ: 'Clinical trials and observational methods are equally valid in establishing treatment effectiveness'), along with item #21, the Cronbach's α increased to .70

and .66 within this study and original survey, respectively. Shi et al[137] attributed this outlier item to possible confusion between the terms 'observational study' and 'clinical observation' or disagreement regarding the quality of observational studies. This comparable finding within this study suggests that participants may not have an understanding of the hierarchy of research or may not be in agreement regarding levels of research evidence. This disagreement may also be due to the often required observational methodology in nutrition research as a clinical trial study design may pose ethical concerns.

Conversely, the questionable internal consistency of the KABQ Knowledge subscale could also potentially be attributed to survey fatigue, as item #20.2 was the only item in this subscale coded in an ascending fashion (i.e., reverse scoring), and hence, required a different response on the Likert scale when compared to the other subscale items. The mix of perceived and objective knowledge-type items within this subscale may also have contributed to the lower reliability. Nonetheless, the EBPQ Perceived Knowledge and Skills subscale had excellent internal consistency (Cronbach's $\alpha = .93$). This high degree of internal consistency with the EBPQ has also been demonstrated among nurses[114] and other allied health professionals[110], and thus, should be considered a reliable measure of self-reported knowledge and skills among RDNs.

The most concerning internal consistency reliability findings were within the objective knowledge subscale (i.e., K-REC and KACE), as all analyses resulted in unacceptable reliability. This finding of poor internal consistency with the KACE Knowledge (i.e., 'quiz' items) subscale was also found with the original KACE[117] and French translated and adapted KACE[118] validation studies. Both of the KACE psychometric evaluations were conducted among dental students and faculty, with Cronbach's α ranging from .21-.78 and -.46-.47, respectively.[117,118] Conversely,

the original K-REC validation study had good interrater and internal consistency reliability and a moderate degree of test-retest reliability.[119]

Given that the survey was reviewed by content experts, a diverse group of RDNs, and dietetic interns, this eliminates much of the concern regarding ambiguity or lack of clarity contributing to poor internal consistency. Still, there are a few proposed explanations for the inadequate internal consistency demonstrated within the objective knowledge subscale. First, knowledge-based instruments with too few items have been found to be problematic in achieving high internal consistency.[143] Increasing the number of items within this portion of the survey would theoretically reduce measurement error and increase the consistency of scores.[143,144] Too few items was cited as a potential source of inadequate internal consistency in the original KACE Knowledge subscale, which also included ten items.[117] Furthermore, Bradley and Herrin[145] had similar difficulties in achieving appropriate internal consistency with condensed EBP knowledge instruments. While including additional objective knowledge items may increase internal consistency, it would come at the participants' expense (i.e., time and fatigue).

Secondarily, there may have been significant variability in the difficulty of items depending on the participant's background and knowledge which could contribute to the reliability of the findings.[143] The psychometric evaluations that were previously completed within other disciplines (e.g., dentistry, physiotherapy, and human movement) were conducted among students and faculty, often as part of an EBP-focused course or training intervention,[117–119] whereas this study had an observational, cross-sectional design. Furthermore, since the audience of this survey was current RDN practitioners with a mean of nearly 16 years (*SD* = 12.41) since highest nutrition and dietetics degree completion, significant variability in

knowledge of EBP concepts among participants might be expected and could be a detriment to internal consistency.

Lastly, there may also be some concern that items are assessing varying domains of EBP knowledge. There were several distinct EBP topics covered within the objective knowledge subscale that may have contributed to poor internal consistency. Since EBP-focused educational courses and continuing education differ within most RDNs' curricula, it is possible that participants had varying levels of exposure to each of these EBP-related topics. These proposed threats to internal consistency substantiate the theory from the pilot analysis that reducing the number of objective knowledge items and covering only certain aspects of EBP within one of the research courses of the DCN program may have affected the responsiveness of the condensed, validated version of the survey.

Only the ten objective knowledge items were distributed two months after the original survey distribution for test-retest reliability analysis to reduce participant burden at timepoint 2. This time frame was selected and agreed upon among RDN experts to prevent participant recall of items from the first survey while still not permitting too much time to pass to avoid participants from acquiring further knowledge on the topic. There was a very modest 0.14-point (1.3%) increase in objective knowledge score among participants at the second timepoint; however, this does not eliminate the risk of participants researching these questions after completing the first survey and/or prior to the second survey. Nevertheless, the objective knowledge items were found to be consistent and stable through the assessment of test-retest reliability (ICC = 0.71). This outcome corroborates previous validation studies of both the KACE Knowledge subscale[117] (Pearson's correlation from 0.66-0.76) and K-REC[119] (ICC = 0.88). Overall, while there may be concerns regarding the number of items and variability of

EBP concepts covered in the objective knowledge portion of the survey for the intended audience, the responses at both timepoints were reliable and consistent.

Secondary Research Objectives

Association Between Level of Education and EBP Knowledge

With the much-debated transition to the graduate degree requirement to sit for the RDN registration exam in 2024, there is little data specific to dietetics to support that the higher degree requirement will equate to greater practitioner competency. The findings from this study support the hypothesis that the higher the degree held among RDNs, the greater the objective EBP knowledge. There was a significant improvement in objective knowledge score with each increasing degree type, and the association held regardless of degree focus (i.e., nutrition and dietetics-related degree versus non-nutrition and dietetics-related degree). This positive correlation between level of education and EBP knowledge has also been noted among nurses,[99] and corroborates self-assessed findings from Byham-Gray et al,[93] which found that higher perceptions, attitudes, and perceived knowledge of EBP scores were positively correlated with level of education and years of education.

Prediction of Survey Subscales and Items

While the predictive variables of peer-reviewed publications, highest degree in any field, and recency of degree completion only explained about 14% of the variability in objective knowledge scores, the trends noted within this research support the theoretical framework. For example, each increase in degree type (i.e., bachelor's, master's, doctoral/terminal degree) regardless of degree focus and each increase in the number of peer-reviewed publications resulted in an increase (ß = .17 and .22, respectively) in objective knowledge score. This finding suggests that a higher level of education and research exposure supports increased knowledge of

EBP concepts, both of which may build behavioral capacity among RDNs. Further supporting the role of education, it was found that each year that had passed since the completion of the highest nutrition and dietetics degree resulted in a slight but significant reduction in objective knowledge score (ß = -.18).

Interestingly, greater time since degree completion was a significant predictor with negative associations (i.e., reduced scores) in all seven survey subscales, although this prediction was not significant within the KABQ Outcome and Implementation subscale. Nevertheless, each year further from nutrition and dietetics degree completion was associated with a very slight but significant increase in the odds of reporting that 'EBP is an integral part of nutrition and dietetics practice,' with an odds ratio of 1.04 (95% CI, 1.00 to 1.09, $p = .04$). Subsequently, this infers that while there was a decline in objective and perceived knowledge, attitudes, behavior, and implementation of EBP as RDN practitioners progressed further from degree completion, there was still an acknowledgment of the importance of EBP.

The negative association between greater time since degree completion and the EBP survey subscales also corresponds with the theory that the increasing emphasis on EBP in recent years assumes that those who completed their didactic and supervised training experiences in earlier years likely did not have EBP exposures during their training. While not statistically significant, Upton et al[110] discovered a similar finding in that newly qualified allied health professionals that had become eligible in more recent years and were less than 30 years of age trended towards more frequent implementation of EBP. Within nursing, younger age and academic training have been distinguished as significant facilitators of EBP.[88] Additionally, Klaic et al[109] found that allied health professionals began to lose confidence in their ability to perform EBP activities within the first five years of beginning clinical practice. However, those

allied health professionals with postgraduate qualifications were able to avoid the degradation of EBP skills over time.[109] Thus, postgraduate education or qualifications may extend behavioral capacity to promote continued EBP self-efficacy. Future research may seek to assess this relationship between time since degree completion and level of education on maintenance of EBP knowledge among RDNs.

In support of the theoretical framework of this research, it appears that greater time away from degree completion is associated with diminished behavioral capacity and likely may also reduce perceived behavioral control. Therefore, even with intentions to apply EBP in practice, those further from degree completion may have inadequate actual behavioral control or lack the environmental support needed to foster the implementation of EBP. While EBP was still acknowledged as a vital aspect of practice as participants moved further from degree completion, weakened behaviors, knowledge, attitudes, and implementation of EBP may also result from declining behavioral capacity and self-efficacy associated with distancing from the didactic curriculum.

While it may seem intuitive to associate years since degree completion with years of RDN experience as comparable variables, unlike years since degree completion, years of RDN experience was the only variable that was not predictive of any of the survey subscales. The lack of association between years of experience and survey subscales appears to contradict the philosophy behind Benner's From Novice to Expert theory, in that greater RDN experience did not seem to build EBP competence or expertise within this study. Nevertheless, as mentioned above, this lack of association with experience could also be related to the recency of EBP as a requisite for healthcare standards and didactic program curricula. Considering this proposition, it

would seem plausible that recency of degree completion would be more indicative of EBP expertise than years of experience.

The only other variable predictive of reporting that EBP was an integral part of nutrition and dietetic practice was work status. Dietitians working part-time were only about half as likely to report EBP as an integral part of practice compared to RDNs working full-time. This finding aligns with previous literature, which found that those RDNs working full-time were more likely to have greater perceptions, attitudes, and self-reported knowledge of EBP.[93]

The number of peer-reviewed publications was the predictive variable most commonly found to be positively correlated with the survey subscales, including six of the seven subscales: objective knowledge (ß = .22), total subjective items (ß = .26), KABQ Knowledge (ß = .22), KABQ Behavior (ß = .31), KABQ Attitudes (ß = .15), and EBPQ Perceived Knowledge and Skills (ß = .24). The number of peer-reviewed publications was a significant predictor of greater time spent reading research. Given that the process of peer-review publication coincides with many aspects of research utilization, these conclusions seem logical and support the hypothesized outcomes. Similarly, previous research has found positive associations between EBP and those working in university or college settings, membership within AND's Research Dietetic Practice Group (DPG), and more frequent reading of research.[93] The process of writing a research manuscript entails regular review of the current literature; therefore, it seems reasonable to conclude that these two variables closely correspond to one another.

The highest degree type (i.e., bachelor's, master's, doctoral/terminal) in any field was the second most commonly significant predictive variable positively associated with EBP, with associations found within four of the seven survey subscales including objective knowledge (ß = .17), total subjective items (ß = .13), KABQ Attitudes (ß = .10), and EBPQ Perceived

Knowledge and Skills (ß = .16) subscales. Whereas highest degree specific to nutrition and dietetics was only a predictive variable in the KABQ Outcome and Implementation subscale (ß = .13); however, it was also the only significant predictor for this subscale in this study. Consequently, as the field advances towards a graduate degree requirement, these findings support the assumption that a graduate degree in any field may strengthen EBP among RDNs; nonetheless, those with graduate backgrounds specific to nutrition and dietetics may be better suited to implement EBP.

Attainment of specialty certifications was also a positive predictor of total subjective knowledge score (ß = .10) and the KABQ Attitudes subscale (ß = .09). This outcome parallels the findings of Byham-Gray,[93] which indicated that advanced-level board certification was a predictor of EBP among RDNs. This result is also consistent with the literature within nursing, which has found that advanced practice certification was positively associated with both practice and attitude factors related to EBP.[106]

Those who reported working in 'Education and Research' were nearly three times more likely to report being confident in their ability to use EBP when compared to those working in 'Other' areas of practice. Given that research heavily overlaps with EBP concepts, this relationship between confidence in EBP and working in education and research seems rational. This association may also be attributed to the subjective and environmental norms of the education and research setting. Byham-Gray et al[93,146] also found that dietitians working in education and research scored significantly higher on surveys related to research involvement, and perceptions, attitudes, and self-reported knowledge of EBP. However, in this study, it should be noted that area of practice was only a significant predictive variable of the KABQ Behavior subscale.

Frequency of reading research was included as part of the ordinal regression analysis as it had previously been recognized as the strongest predictor of self-reported EBP knowledge among dietitians.[147] Not surprisingly, those who most frequently read the latest research evidence were more likely to have published peer-reviewed articles and published a greater number of articles. This association may be linked to the greater self-efficacy of those frequently reading and publishing research in utilizing EBP due to the commonalities of these concepts. Unfortunately, much of the literature has suggested that reading research is not commonly cited in the job description or as an employer expectation of RDNs.[68] Moreover, many RDNs feel that there is often not enough time[6,84,85,95,147,148] or managerial support[9,147] to dedicate to EBP. It has been reported that RDNs feel that time spent with patients or clients takes precedence over reading research,[68] suggesting that environmental and cultural workplace norms may dictate time available to stay current with research evidence.

Preceptor status was only a significant predictive variable of the EBPQ Perceived Knowledge and Skills subscale (ß = .09). This finding suggests that while preceptors view themselves as competent EBP providers, preceptor status alone is not indicative of greater objective knowledge, behaviors, attitudes, and use of EBP, and subsequently, may imply a possible inflated sense of competence. While it may seem burdensome to require additional training, EBP education may be warranted for preceptors and educators, as well as those in managerial level positions overseeing RDNs. Training focused on EBP for RDN leaders and educators theoretically may result in improved environmental and cultural norms to support both self-efficacy and implementation of EBP among all RDNs.

It has been found that nursing preceptors trained through an online evidence-based transition to practice training module contributed to greater implementation of EBP, reduced

patient care errors, and greater job satisfaction among new nurses.[149] Moreover, nursing students that witnessed EBP during clinical placements were more likely to be confident in their ability to use EBP,[150] and one-on-one student-nurse mentorship enhanced understanding and application of EBP.[151] Work environments that nurture EBP and incorporate EBP-focused projects during nursing residency programs have also had a significant positive influence on clinical decision-making and role development among new nurses.[152] Within dietetics, Hinrichs[6] found that interns were highly focused on emulating their preceptors' behaviors, and the use of EBP during the dietetic internship varied depending upon the preceptor. These results suggest that greater preceptor emphasis and involvement in EBP may translate to more adept future RDN practitioners.

Correlations Between Self-Assessed and Actual EBP Knowledge

With EBP being a highly regarded catchphrase among those in science-based disciplines, self-reported measures of EBP knowledge may not suffice in determining actual use and knowledge of EBP due to its popularity and recognition as a standard of practice. For instance, it has been found that RDNs reported familiarity and use of evidence-based nutrition guidelines that had yet to be published.[5] Additionally, studies conducted within several health disciplines found that practitioners and students are often unable to recognize their incompetence.[98,103,104] This phenomenon has been coined the Dunning-Kruger effect.[103] Therefore, this study sought to eliminate concerns surrounding social desirability and response biases by evaluating objective measures (i.e., test/quiz-type items) of EBP while also determining the accuracy of self-assessment.

In contrast to the abovementioned hypothesis, the data suggest that RDNs are relatively accurate in their self-assessment of knowledge and competence in EBP. There was, in fact, a

moderate positive correlation between the objective knowledge and subjective knowledge score among RDNs (r = .41, p < .001), which rebuts the premise of the Dunning-Kruger effect, or the lack of metacognitive monitoring, and the concept of inaccurate appraisal of self-efficacy. Contrarily, only weak positive correlations have been found within nursing,[99] and some studies among physicians[98] have shown inverse associations between self-assessment and observed competence. Additionally, a review of health professions students[153] (i.e., dental, medical, and pharmacy) found that self-assessment was very limited and often inadequate in its accuracy of competence in clinical skills, suggesting that perceptions alone are often insufficient in evaluating skill.

While participants were made aware in all communications that they would be completing quiz-style items, these 'quiz' items were not provided until the end of the survey after the self-reported items. The awareness of the impending quiz items may have been enough to allow for more accurate self-assessment, and/or RDNs may be relatively proficient in self-assessing skill and competence. This finding could be attributed to the ever-evolving nature of dietetics which requires a 'spirit of inquiry,'[14] whereby practitioners are encouraged to consistently question their current practices, and consequently, are often better able to self-assess skill and proficiency. Nonetheless, this is a favorable outcome, as the ability to more accurately self-assess competence is crucial in health science professions as one may unknowingly be providing suboptimal care if confidence exceeds skill.

Strengths of the Research

Previous literature within dietetics utilizing objective knowledge measures of EBP has evaluated the impact of an EBP educational intervention on knowledge,[7] and EBP knowledge among a small sample (n = 14) of dietetic interns.[6] To the author's knowledge, this is the first

validation study of an EBP instrument that includes objective knowledge measures specific to nutrition and dietetic practitioners. Consequently, this validated instrument will allow additional research to be conducted to continuously evaluate objective and subjective knowledge, attitudes, behaviors, and outcomes related to EBP among RDNs. The inclusion of both objective and subjective knowledge questions also allows for the evaluation of the accuracy of self-assessment.

This survey was sent electronically to a nationally representative sample of RDNs, allowing for greater generalizability. The demographics and background of the participants within this study were akin to those within the AND/CDR reports[154,155] and the 2019 AND Benefits and Compensation Survey of the Dietetics Profession,[24] with roughly 90% female, 80% white, the majority working in acute care or clinical nutrition, more than half with a master's degree, and a median age around 40 years. Seventy percent of those that completed the survey at timepoint 1 (n = 482) also completed the survey at timepoint 2 (n = 335). The a priori sample size was exceeded at timepoint 1 and nearly achieved at timepoint 2, which allows for more precise measures of reliability coefficients[142] and provides adequate statistical power for regression analyses.[140]

Limitations

The limitations of this study include the use of some self-reported data, which could be subject to bias or inaccuracies. To limit response bias and examine the role of social desirability bias, this survey included items measuring perceived and actual EBP knowledge. While participants were asked to answer the questions honestly and without using any resources, this does not eliminate the possibility of participants researching or looking up answers to the objective knowledge items. Each survey item included a 'Request Response' alert to promote survey completion, but it did not prevent participants from skipping questions or discontinuing

the survey. As a result, objective knowledge items that were unanswered among those that completed the survey (i.e., clicked through all survey items) were scored as a zero, based on the assumption that respondents did not know the answer. Self-reported portions of the survey were not included in the follow-up reliability survey to reduce participant time burden.

While the instrument evaluated in this research appears to be reliable and valid for nutrition and dietetic practitioners, this does not eliminate the concerns regarding the internal consistency reliability of the objective knowledge subscale. Given that RDNs have had varying levels of exposure and education regarding EBP and the limited number of items provided in the objective knowledge subscale, it is hard to determine the accuracy of the internal consistency findings for this portion of the survey. Additionally, as noted with Shi et al,[137] it would be suggested to remove item #20.2: 'Clinical trials and observational methods are equally valid in establishing treatment effectiveness,' to improve the internal consistency of the KABQ Knowledge subscale. Removal of this item may also avoid overlap with objective knowledge items. Item #21: 'What percentage of your nutrition recommendations are based on evidence from research?,' may also be considered for elimination or rewording due to the lack of consideration of two of the three tenants of EBP (i.e., patient preferences and values and professional expertise) and the conflicting percentage scale compared to the other survey items.

As with any survey-based research study, there is the risk of sampling error or nonresponse bias. While the CDR practitioner database provided a randomized sampling of roughly 10% of the total RDN population in the US, there is a risk that those who participated were more interested or knowledgeable about EBP than the broader RDN population. This risk was minimized by comparing participant characteristics to the available AND and CDR demographic and background information as discussed above. Lastly, it should also be noted

that all phases of this research took place during the COVID-19 pandemic (August 2020-March 2021), which may also have negatively affected participation.

Implications for Practice

This research provides a greater understanding of RDNs' perceived and actual knowledge of EBP and corroborates much of the existing literature regarding variables predictive of greater use and knowledge of EBP. The key outcomes of this research include: 1) the development of an instrument that is determined to be valid and reliable for the evaluation of both perceived and actual knowledge, as well as attitudes, behaviors, and implementation of EBP among RDNs, 2) objective knowledge of EBP was positively associated with level of education, 3) level of education, peer-reviewed publications, specialty certifications, and recency of degree completion support behavioral capacity and outcomes related to EBP among RDNs, and 4) there were moderate positive correlations between self-assessed and actual knowledge of EBP among RDNs.

Evidence-based practices are the underpinnings of nutrition and dietetics and are recognized within each principle of AND's Code of Ethics for the Nutrition and Dietetic Profession and the ICDA's Code of Ethics and Code of Good Practice. The transition to the graduate degree requirement for future credentialing appears to support EBP knowledge among RDNs. However, EBP among RDNs can also be influenced by factors such as research exposure and background (i.e., peer-reviewed publications), attainment of specialty certifications, and recency of nutrition and dietetic degree completion. These associations are likely attributed to greater education and the recency of program curriculum changes focused on EBP. While EBP is included in current didactic and supervised practice requirements and accepted as the standard in healthcare decision-making, it might be recommended to have a greater emphasis on EBP-

centered coursework and continuing education for dietetic students and RDNs, respectively. Based on the findings of this study, it seems that RDNs with advanced degrees and that most recently completed nutrition and dietetic degrees may have greater behavioral capacity and self-efficacy to employ evidence-based decision making.

Since EBP was only added as part of ACEND's program accreditation standards in 2008, it has been suggested that RDNs that completed entry-level didactic requirements prior to this timeframe likely need EBP training.[42] This is especially imperative for RDN leaders, such as preceptors, educators, and those in managerial level RDN positions. Despite intentions to use EBP in practice, those lacking adequate behavioral capacity (i.e., knowledge and skill) will not be able to effectively implement EBP as a practitioner or train interns or RDNs to do the same. Training focused on EBP for RDN leaders and educators theoretically may improve environmental and cultural norms to support both self-efficacy and implementation of EBP among all RDNs. Nonetheless, careful attention to study design should be considered as previous research from Vogt et al[7] had high attrition rates and found only marginal, largely insignificant improvements among an RDN EBP intervention training group. Initial pilot studies should evaluate strategies to incentivize participation and meticulously examine the best platforms and formatting of training to reach the broader RDN population.

Conclusion

To achieve greater respect, recognition, and rewards for RDNs, it is vital to provide EBP-focused continuing education to ensure all RDNs are well suited to provide evidence-based care. Fortunately, RDNs seem to have the self-awareness to recognize their knowledge deficits as it relates to EBP. Future research may employ this validated instrument to evaluate the best methods for disseminating effective EBP education for nutrition and dietetic students and

practitioners, particularly among those further from degree completion. Further comparison and continued evaluation of the effectiveness of current degree program requirements, including the influence of educators and preceptors, in acquiring EBP knowledge should also be considered, especially as programs move toward competency-based education.

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Appendix A **ACEND EBP-Focused Accreditation Standards**

Figure 9. Standard 5, Domain 1 of the Accreditation Council for Education in Nutrition and Dietetics (ACEND) 2017 Coordinated Program Accreditation Standards[19]

Standard 5: cont.

b. The program's curriculum must prepare students with the following core knowledge and competencies:

1. Domain 1. Scientific and Evidence Base of Practice: Integration of scientific information and translation of research into practice.

Knowledge

Upon completion of the program, graduates are able to:

KRDN 1.1	Demonstrate how to locate, interpret, evaluate and use professional literature to make ethical, evidence-based practice decisions.
KRDN 1.2	Use current information technologies to locate and apply evidence-based guidelines and protocols.
KRDN 1.3	Apply critical thinking skills.

Competencies

Upon completion of the program, graduates are able to:

CRDN 1.1	Select indicators of program quality and/or customer service and measure achievement of objectives.
CRDN 1.2	Apply evidence-based guidelines, systematic reviews and scientific literature.
CRDN 1.3	Justify programs, products, services and care using appropriate evidence or data.
CRDN 1.4	Evaluate emerging research for application in nutrition and dietetics practice.
CRDN 1.5	Conduct projects using appropriate research methods, ethical procedures and data analysis.
CRDN 1.6	Incorporate critical-thinking skills in overall practice.

2. Domain 2. Professional Practice Expectations: Beliefs, values, attitudes and behaviors for the professional dietitian nutritionist level of practice.

Knowledge

Upon completion of the program, graduates are able to:

KRDN 2.1	Demonstrate effective and professional oral and written communication and documentation.
KRDN 2.2	Describe the governance of nutrition and dietetics practice, such as the Scope of Nutrition and Dietetics Practice and the Code of Ethics for the Profession of Nutrition and Dietetics; and describe interprofessional relationships in various practice settings.
KRDN 2.3	Assess the impact of a public policy position on nutrition and dietetics practice.
KRDN 2.4	Discuss the impact of health care policy and different health care delivery systems on food and nutrition services.
KRDN 2.5	Identify and describe the work of interprofessional teams and the roles of others with whom the registered dietitian nutritionist collaborates in the delivery of food and nutrition services.
KRDN 2.6	Demonstrate an understanding of cultural competence/sensitivity.
KRDN 2.7	Demonstrate identification with the nutrition and dietetics profession through activities such as participation in professional organizations and defending a position on issues impacting the nutrition and dietetics profession.
KRDN 2.8	Demonstrate an understanding of the importance and expectations of a professional in mentoring and precepting others.

Figure 10. Standard 3, Domain 1 of the Accreditation Council for Education in Nutrition and Dietetics (ACEND) Proposed 2022 Coordinated Program (CP) Accreditation Standards (from April 2021)[20]

Standard 3: cont.

1. Domain 1. Scientific and Evidence Base of Practice: Integration of scientific information and translation of research into practice.

Knowledge

Upon completion of the program, graduates are able to:

KRDN 1.1	Demonstrate how to locate, interpret, evaluate and use professional literature to make ethical, evidence-based practice decisions.
KRDN 1.2	Select and use appropriate current information technologies to locate and apply evidence-based guidelines and protocols.
KRDN 1.3	Apply critical thinking skills.

Competencies

Upon completion of the program, graduates are able to:

CRDN 1.1	Select indicators of program quality and/or customer service and measure achievement of objectives.
CRDN 1.2	Evaluate research and apply evidence-based guidelines, systematic reviews and scientific literature in nutrition and dietetics practice.
CRDN 1.3	Justify programs, products, services and care using appropriate evidence or data.
CRDN 1.4	Conduct projects using appropriate research or quality improvement methods, ethical procedures and data analysis utilizing current and/or new technologies.
CRDN 1.5	Incorporate critical-thinking skills in overall practice.

Figure 11. Sample Unit of EBP-focused ACEND Standards for Future Education Model Graduate Degree Programs[22]

Unit 6: Critical Thinking, Research and Evidence-Informed Practice **Integrates evidence-informed practice, research principles and critical thinking into practice.**	
Competencies	**Example Performance Indicators**
6.1 Incorporates critical thinking skills in practice. **(D)**	6.1.1 Considers multiple factors when problem solving. **(D)** 6.1.2 Incorporates the thought process used in critical thinking models. **(D)** 6.1.3 Engages in reflective practice to promote change and continuous learning. **(D)**
6.2 Applies scientific methods utilizing ethical research practices when reviewing, evaluating and conducting research. **(D)**	6.2.1 Identifies, explains and applies the steps of the scientific method and processes. **(D)** 6.2.2 Articulates a clear research question or problem and formulates a hypothesis. **(D)** 6.2.3 Identifies and demonstrates appropriate research methods. **(D)** 6.2.4 Interprets and applies research ethics and responsible conduct in research. **(D)** 6.2.5 Collects and retrieves data using a variety of methods (qualitative, quantitative) and technologies. **(D)** 6.2.6 Analyzes research data using appropriate data analysis techniques (qualitative, quantitative, mixed). **(D)** 6.2.7 Translates and communicates research findings and conclusions through a variety of media. **(D)**
6.3 Applies current research and evidence-informed practice to services. **(D)**	6.3.1 Uses research terminology when communicating with other professionals and publishing research. **(D)** 6.3.2 Critically examines and interprets current research and evidence-informed practice findings to determine the validity, reliability and credibility of information. **(D)** 6.3.3 Integrates current research and evidence-informed practice findings into delivery of safe and effective nutrition care. **(D)** 6.3.4 Analyzes and formulates a professional opinion based on the current research and evidence-based findings and experiential learning. **(D)**

Appendix B **Commission on Dietetic Registration Database Request Form**

REQUEST FORM FOR USE OF CDR DATABASE INFORMATION

Commission on Dietetic Registration
the credentialing agency for the Academy of Nutrition and Dietetics
eat right.

Applicant Information
Name _____
(Last) *(First)* *(MI)*
Mailing Address _____
_____
_____

Daytime Phone _____ **Cell Phone** _____

E-Mail Address _____

I am currently an enrolled student at _____

My Research Advisor is_____ _____

Advisor Contact information
Address
_____
_____

Daytime Phone Number _____ **E-mail address** _____

Please attach a letter of support signed by your research advisor, a sample copy of your research survey, a description of your proposed research study methodology and a copy of the cover e-mail or letter that will accompany your survey.

Research Request Evaluation Criteria:
Please provide your response to questions one through five on a separate sheet to be submitted with this application form.

1. Does this research support the Academy's and/or CDR's Mission/Vision?
   Academy
   Vision:
   A world where all people thrive through the transformative power of food and nutrition.

   Mission:
   Accelerate improvements in global health and well-being through food and nutrition.

   CDR
   Vision:
   The Commission on Dietetic Registration protects and promotes the health of the public by supporting practitioner competence, quality practice, lifelong learning and career advancement.
   Mission:
   The Commission on Dietetic Registration administers valid, reliable, and rigorous credentialing processes to protect the public and meet the needs of CDR credentialed practitioners, employers and consumers.
2. Will this research advance the profession of dietetics?
3. Does this research support the Academy's and/or CDR's strategic plan?
4. The sample research survey conforms to generally accepted research survey design standards.
5. Is your college/university US regionally accredited and accredited by the Accreditation Council for Education in Nutrition and Dietetics (ACEND)?

6. The proposed research study description/methodology conforms with the generally accepted research design standards
7. Do you have Institutional Board (IRB) approval?
   Is so, please attach documentation.

Commission on Dietetic Registration Database Information Requested:
(Please select from the following options.)

Database Selections
Please choose one of the following options for a Registered Dietitian Nutritionists random sample Excel list not to exceed 5,000 names. List will include the RDN's name, city, state and email address.

___ Option 1 – General Registry

___ Option 2 – State of Residence, US & US Territories
Please list specific states:

_____ _____ _____ _____ _____

_____ _____ _____ _____ _____

CDR Database Usage Agreement:
The submission of this CDR Database Request Form is subject to the approval of the Commission on Dietetic Registration (CDR). Upon review of the information submitted, you will receive a communication advising whether your request has been approved. Please allow ten days for approval notification. Request will be fulfilled within five days of the notification of approval. Please note that CDR reserves the right to request additional information upon review of information submitted.

I agree to utilize the CDR Database subject to the following terms and conditions:

1. **The CDR database will be used only for the purpose for which it was approved. The list is only be used ONE time to distribute the survey.**
2. **CDR information will not be duplicated, shared, resold or integrated into a permanent database.**
3. **Once a list has been obtained for research purposes from CDR, a list cannot be obtained from the Academy of Nutrition and Dietetics for the same purpose.**
4. **Do not display email addresses of the RDNs in a cover email or letter to protect the privacy of our credentialed practitioners.**
5. **Indicate the anticipated time to complete the survey on the survey and/or in the cover email or letter.**
6. **I will share the final research report with CDR. The anticipated completion date is _____.**

_____

Applicant Signature **Date**

_____

Academic Program Advisor Signature **Date**

Appendix C **Tables Depicting Associated Variables for Data Analysis**

Table 18. Demographic variables to be collected to evaluate personal and environmental factors associated with SCT

Independent Variables	**Level of Measurement**
Highest degree earned	Ordinal (3 categories)
Highest nutrition/dietetics degree earned	Ordinal (3 categories)
Age	Ratio
Gender	Nominal (7 categories)
Race	Nominal (8 non-exclusive categories)
Ethnicity	Nominal (3 categories)
Work status (e.g., PT or FT)	Nominal (3 categories; only 2 categories allow for survey completion) PT: > or = 20 hours/week; FT: > 30 hours per week
Recency of degree completion	Ratio
Years of experience	Ratio
State of practice	Nominal
Description of geographic work setting	Nominal (3 categories)
Area of practice	Nominal (7 categories)
Nutrition specialty certification	Nominal (3 categories)
Number of peer-reviewed publications	Ordinal (5 categories)
Preceptor status	Nominal (3 categories)

Table 19. Objective knowledge measures from K-REC & KACE instruments to assess behavioral control and capacity

17 Survey Items – *Assessing Objective Knowledge Sub-Measures (Dependent Variables)*	**Theoretical Construct Evaluated**	**Level of Measurement**
Search Strategy (K-REC #2,4,5; KACE #3) = 3 points	Behavioral capacity (knowledge)	**Ratio** Measuring score per item (K-REC each question ranges from 0.5-2 points/item; KACE = 1 point/item), score per instrument (KACE = 10 points versus K-REC = 8 points), and total combined score (18 points)
Research Design (K-REC #3; KACE #4,7,8) = 4 points		
Critical Appraisal (K-REC #6; KACE #6,9,10) = 4 points		
Research Evidence Statistics (K-REC #8) = 2 points		
Levels of Evidence (K-REC #9; KACE #1,2) = 3 points		
Research Question (KACE #5) = 1 point		

Table 20. Self-reported survey measures, associated theoretical construct, and level of measurement

33 Survey Items – *Assessing Self-Reported Measures (Dependent Variables)*	**Theoretical Construct Evaluated**	**Level of Measurement**
Knowledge & Skill (EBP-KABQ; EBPQ #3)	Perceived behavior control and behavioral capacity, self-efficacy, outcome expectations	Ordinal per item/Ratio for category score (14-items 7-point Likert scale EBPQ – Poor-Best) & 8-items modified KABQ knowledge section, 7-point Likert Scale- Strongly Agree-Strongly Disagree)
Attitudes (EBP-KABQ)	Intention to use, outcome expectations, subjective norms	Ordinal per item/Ratio for category score (12-items 7-point Likert scale- Strongly Agree-Strongly Disagree)
Behavior (EBP-KABQ)	Implementation, behavioral norms	Ordinal per item/Ratio for category score (4-items 5-point Likert scale – Every day-Never); Ratio (3-items = # hours per week)
Outcome/Decision (EBP-KABQ)	Implementation	Ordinal per item/Ratio for category score (3-items; 6-point Likert scale – Completely-Not at all)

Appendix D **IRB Materials**

Figure 12. IRB Attachment A completed form

UNF
UNIVERSITY of NORTH FLORIDA.

Attachment A - Study Details

Please note: This attachment is required for all submission packages involving research with human participants.

1. **Participants**

a. Number of Participants

How many participants will be enrolled? Please phrase your response as a range of participants required for your study including a minimum and maximum number required. Please differentiate between the anticipated number of participants you will contact for recruitment and the anticipated number of participants required for enrollment. For example, although you might recruit from an anticipated pool of 1000 individuals, only 150-200 participants are required for your study. If you are enrolling more than one population describe the anticipated total enrollment for each.

Two sets of 5000 (10000) registered dietitian nutritionists (RDNs) will be contacted to participate (see question #5 for recruitment methods), with a planned minimum of 500 participants at the first survey distribution and at least 400 of those will re-take the survey at the second time point to conduct test-retest reliability.

b. Participant Population(s)

Describe the participant population(s) including gender, ethnicity, and age range. If any population will be specifically targeted (e.g., UNF students, minors, prisoners, UNF employees) please state as such.

Any credentialed registered dietitian nutritionist (RDN) through the Commission on Dietetic Registration (CDR) that is presently working as an RDN will be eligible to participate. Per CDR, as of July 2020, there are just over 105,000 credentialed RDNs with ~85% identifying as female and over 70% White. Per the Academy of Nutrition and Dietetics 2019 Compensation Report, 95% of nutrition practitioners are female, 90% White (6% of Hispanic heritage, 5% Asian, 3% Black, 2% other), with a median age of 41 years (21% 55 years+; 32% are under 35).

2. **Justification of Sample Size/Data Analysis**

Explain how the data will be analyzed or studied. In your response please indicate which statistical tests you anticipate use in your analyses if any. Describe how the proposed sample size is appropriate for achieving the anticipated results.

The primary aim of this research is to test the validity and reliability of an instrument seeking to evaluate the knowledge, attitudes, behaviors, and implementation of evidence-based practices among registered dietitian nutritionists (RDNs). A test-retest design using intraclass correlation coefficients will be utilized; therefore, participants will be completing a survey at two separate time points.

The secondary research aim seeks to answer the question, "Is level of education associated with knowledge of evidence-based practices?" This question will be evaluated through a cross-sectional design using ANOVA to evaluate the role of highest degree earned on evidence-based practices knowledge score. Additionally, the highest nutrition and dietetics degree earned on evidence-based practices knowledge score will be evaluated using ANOVA. Other predictor variables will be evaluated through the use of regression models. Lastly, correlation coefficients of objective knowledge measures and self-assessed knowledge will be evaluated to determine the accuracy of perceived knowledge when compared to an objective knowledge test.

For multiple regression analysis, upwards of 300-400 subjects with a moderate number of independent variables as been proposed (Maxwell, 2000). For reliability sample size, Charter (2003) recommends at least 400 for precise reliability estimation. Both of these figures correspond with sample size estimations based on population size (i.e., ~100,000 RDNs) with a 5% margin of error and 5% significance level (n = 383).

References

Charter RA. Study samples are too small to produce sufficient precise reliability coefficients. *J Gen Psychol*. 2003;130

(2):117-129.

Maxwell SE. Sample size and multiple regression analysis. *Psychol Methods*. 2002;5(4):434-458.

3. Study Background

Outline any background information that may be relevant to your study. For example, list the research questions you are attempting to answer with this study, indicate whether there has been other research on the topic of interest, and if other research has been conducted on this topic, describe any unexpected problems involving risk or adverse events that occurred with that research. Please include any relevant background details that may be relevant to your proposed study.

Overview: Use of evidence-based practices are associated with improved patient outcomes, greater consistency in patient care, and reduced health care costs. Despite the abundance of literature on the use and evaluation of evidence-based practices within medicine and other relevant health care disciplines, exploration of use of evidence-based practices in nutrition and dietetics is limited. While nutrition and dietetic didactic and practice requirements emphasize the use of evidence-based practices, there have been few investigations into the adequacy of evidence-based practices among registered dietitian nutritionists (RDNs). As of January 1, 2024, candidates seeking to sit for the dietetic registration exam must have completed at least a master's degree in any field. Considering the role of research utilization in sound evidence-based dietetic practice decisions, this increasing graduate degree requirement is hypothesized to improve evidence-based decision-making skills. Moreover, although there are numerous instruments that have been developed to assess health care practitioners' knowledge, attitudes, behavior, and use of evidence-based practices, none have been specifically validated for use among RDNs.

Primary aim: Evaluate the validity and reliability of an adapted evidence-based practice instrument for nutrition and dietetics.

Secondary aims:
1) Is level of education (i.e., highest degree earned or highest nutrition and dietetics degree earned) associated with evidence-based practices knowledge?
2) What other variables predict evidence-based practice knowledge, behaviors, attitudes, and implementation?
3) Are there correlations between self-assessed knowledge and objective knowledge measures among registered dietitian nutritionists? (i.e., Can RDNs accurately self-assess their own knowledge of evidence-based practices?)

4. Study Design

Describe your study design (e.g., longitudinal, cross-sectional, mixed-methods) and type of data to be collected (e.g., archival/secondary data, public observation, survey, interview, focus group). In your response please also describe variables of interest for your research.

Test-retest reliability will require a longitudinal design with the survey completed at the initial time point and then an abbreviated survey again few months later at a second time point. However, the secondary research questions will use a cross-sectional design with only the survey data from the initial time point being used. Internal consistency reliability will also be evaluated using responses from the first time point. Content and face validity will also be assessed using experts within nutrition and dietetics. In order to determine generalizability of the findings and assess predictive factors, participant demographics will be collected including age, gender, race, ethnicity, primary state of practice, primary geographic work setting type (i.e., urban, rural, suburban), work status (i.e., part-time or full-time), primary area of practice (inpatient, outpatient, foodservice, education, etc.). Other participant characteristics being collected for assessment of predictive factors include recency of degree completion, years of experience, number of authored peer-reviewed publications, preceptor/mentor status, and number nutrition specialty certifications (if any).

For the other survey items, objective knowledge will be measured using five categories: search strategy, research design, critical appraisal, research evidence statistics, levels of evidence, and research question. The self-reported items include the following categories: perceived knowledge and skills, attitudes, behavior, and implementation (outcome and decisions) regarding evidence-based practices.

5. Study Procedures

Describe the proposed study procedures, including the sequence and timing of all activities. In your response please also describe the data collection setting (e.g., in person, one-on-one, small groups, large groups, electric/online) and location of data collection (e.g., research lab, place of participant choosing, controlled facility). If the research involves study of existing samples/records, describe how authorization to access samples/records will be obtained.

The primary researcher has submitted forms, revised documents as requested by the Research Subcommittee of the Academy of Nutrition and Dietetics and the Commission on Dietetic Registration (CDR), and has now obtained approval to access 10,000 RDNs through the to the CDR database. The researcher will receive two sets of 5000 RDN contacts (including name and email address) once IRB approval is obtained. Once CDR contacts are received, each will be assigned a unique identifier in Excel (RANDBETWEEN function) and linked to a corresponding UserID in Qualtrics (for test-retest evaluation). Original contact information received from CDR will be stored separately from study data on a password-protected secure drive. All responses will be anonymized in Qualtrics. Only those that participate in the first round survey will be contacted for follow-up test-retest survey participation. By adding a 'Trigger' element in the first survey administration in Qualtrics, the PI will be able to identify contacts (by the unique ID) that completed the first survey (without linking responses). The retest/second round of surveying will only be sent to those that participated in the initial survey which will be identified by their unique identifier.

Presently, tests of content and face validity of the online survey are being conducted with experts in nutrition and dietetics through Qualtrics. Content validity was completed on 9/20 and face validity will be completed by 10/10. Any significant modifications to the survey will be re-sent to the IRB as an amendment prior to the final survey being sent to participants.

The survey will be administered online through Qualtrics at two time points to assess test-retest reliability. The first data collection time point aims to begin in October-November 2020. The data from the first time point will be used to assess internal consistency reliability and secondary research aims as stated above. The survey will remain open for 8 weeks (closed by end of year 2020) or until at least 500 participants have been obtained. Reminder emails will follow Dillman et al, *Tailored Design Method* with emails being sent to prospective participants at day 4, day 10, and week 4 after initial email. Dietetic Practice Groups or other dietetic affiliate groups may be contacted if the designated sample size is not initially achieved. The second data collection will begin around March-April 2021 with reminders at the same time points until at least 400 of the original 500 participants have responded. Again, only those participants from the first survey will be contacted for completion of the second follow-up survey.

Reference:

Dillman DA, Smyth JD, Christian LM. Web Questionnaires and Implementation. In: *Internet, Phone, Mail, and Mixed-Mode Surveys: The Tailored Design Method*. 4th ed. Hoboken, NJ: Wiley; 2014:300-350.

6. Study Materials

List all study materials (e.g., survey questions, interview questions, educational materials) that will or may be used in you study. It will be necessary to submit a copy of all study materials to the UNF IRB for review and approval. Please identify material by title and submit as an independent appendix document when possible. If you plan to utilize copyrighted information, permission from copyright owner may be necessary.

Please see attachments. The final instrument will include questions regarding participant demographics, objective knowledge tests (using the Knowledge category of the KACE survey, 7 of 9 K-REC knowledge questions) and self-reported data (majority of the EBP-KABQ and perceived knowledge and skills of the EBPQ). All instruments were accessible via original papers or after receiving permissions via a website. The author of the original EBP-KABQ (known as the KAB) was contacted for permission since only the modified version was available online.

7. Debriefing

If any form of deception is to be used, it will be necessary to justify your reasons for including that deception. In your response please describe your proposed debriefing procedures. It will also be necessary to submit a copy of debriefing materials that will be utilized. If you will not debrief participants, please state as such in the space below.

No forms of deception will be used. Please see draft of participant email.

8. Benefits, Compensation, and Risk

a. Participant Benefits

Describe anticipated benefits (e.g., health screening, increased knowledge as a result of an intervention) to research participants. If participants will not benefit directly, state so here.

No specific participant benefits, but the outcomes from this study plan to be used to improve the field of nutrition and dietetics, which in turn benefits patients and clients, as outlined below.

b. Societal Benefits

Describe anticipated benefits to society (e.g., added knowledge to the field of study) or a specific class of individuals (e.g., athletes or autistic children).

The use of evidence-based practices in patient and client care is associated with more consistent care, improved patient outcomes, and reduced health care costs. This research will provide nutrition and dietetics with a validated tool to identify knowledge and behavior-related gaps that exist in providing evidence-based care among registered dietitian nutritionists to provide the highest quality nutrition care.

c. Compensation

Describe compensation (e.g., extra credit toward course grade, reimbursement for travel expenses) to research participants. If participants will not be compensated, state so here. *Please note that monetary compensation may require collection of name, social security number, and address be reported to UNF controller's office.

Participants will not be compensated.

d. Potential Risks to Participants

Describe the potential risks to participants and steps taken to minimize risks. Types of risks to consider include: physical, psychological, social, legal, employment, and financial.

Having access to participant names and email addresses does pose a slight risk due to the risk of a data breach of some sensitive information regarding the use and knowledge of evidence-based practices. Therefore, as soon as contacts are received, each participant will be assigned to a unique identifier through Excel (RANDBETWEEN function) that will be linked to a UserID in Qualtrics to protect participants' identity and responses. Original contact information received from CDR will be stored separately from study data on a secure, password-protected secure drive. All survey responses will also be anonymized in Qualtrics.

e. Potential Costs to Participants

Describe the potential costs to participants (e.g., invasion of privacy, time, travel) In your response please also outline how you will attempt to minimize potential costs to participants.

The only cost associated with participation is time. The first survey should take about 20 minutes to complete. In an effort to reduce the time burden at the second attempt, only the objective knowledge portion of the survey will be administered as the other self-reported measures have established validity. Therefore, the second attempt should take no more than 10-15 minutes to complete.

f. Risk/Benefit Analysis

Describe the ratio of risks to benefits. Risks to research participants should be justified by the anticipated benefits to the participants, the researcher's discipline, or society.

Risks are minimal and benefits include greater awareness of knowledge gaps that exist among RDNs to ultimately provide improved consistency and quality of nutrition patient and client care.

9. Data and Safety Monitoring

a. Confidentiality

Describe procedures for protecting confidentiality of data collected and stored. Be sure to state whether any limits to confidentiality exist and identify any external agencies (e.g. study sponsor) that will have access to the data.

Responses will be stored on a secure, password-protected server. These items will be exported to an .sav file or Excel document and saved via a secure server for analysis. All personal identifiers will be removed and linked to a unique identifier as outlined in the study procedures. Original contact information received from CDR will be stored separately from study data on a secure, password-protected secure drive.

b. Data Storage, Security, and Monitoring

Describe your plan for securely storing any and all data. Be sure to identify where data will be stored, the security of this location, and how data will be monitored. **Any breach in data safety and all unexpected problems involving risk must be reported to UNF's IRB immediately (within 3 business days or as soon as practicable).*

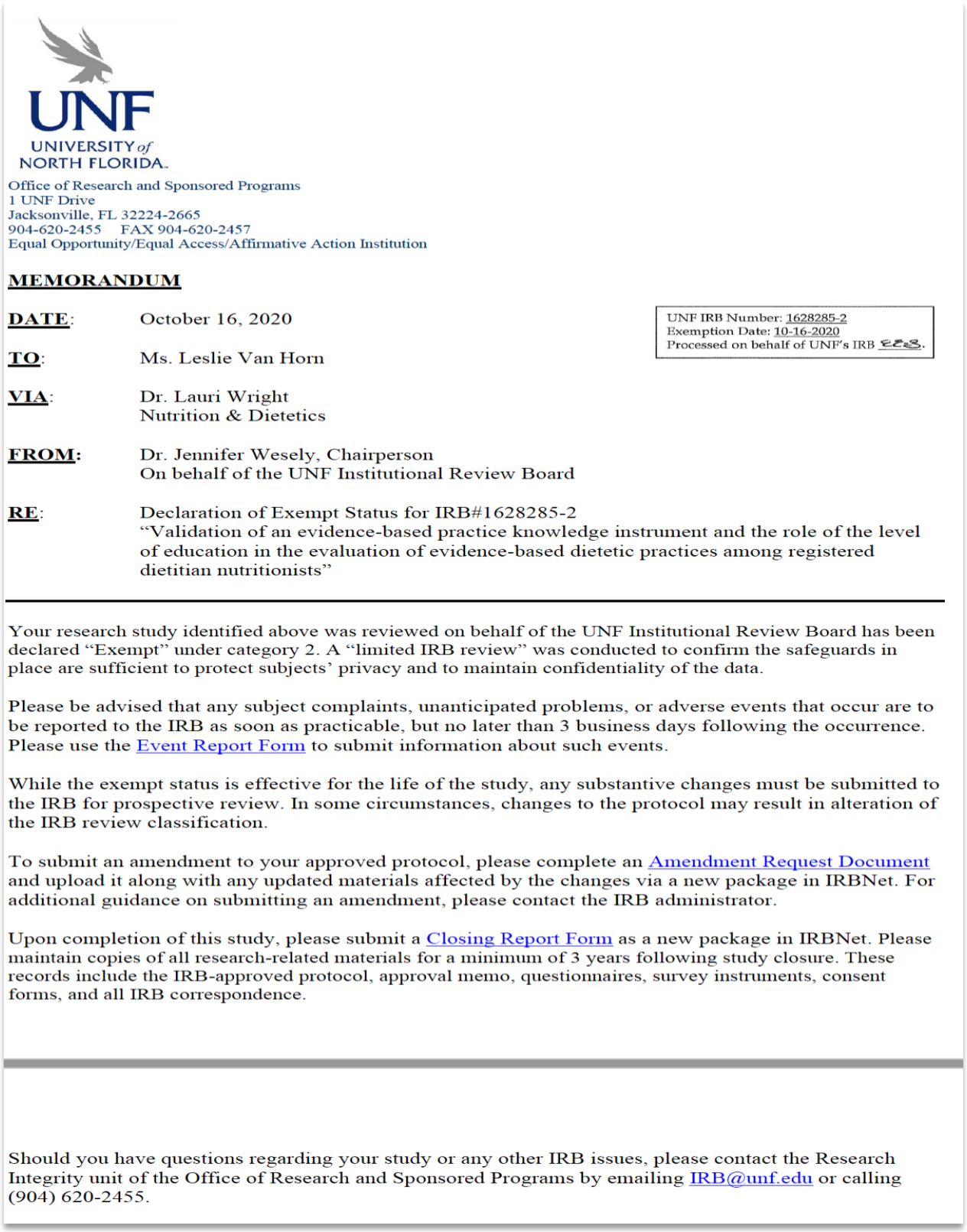
All data will be maintained on a password-protected drive. Data will be maintained for at least three years. After this time, any identifiable information will be destroyed.

c. Safety Monitoring:

Describe your plan for monitoring your participants and identifying any adverse effects they may experience during and (if necessary) after data collection. *Any unexpected problems involving risk must be reported to UNF's IRB immediately (within 3 business days or as soon as practicable).

Participants will be provided with the primary investigator's and primary faculty contact information on multiple occasions to address any concerns that participants may have.

Figure 13. University of North Florida IRB Declaration of Exempt Status Memo



UNF
UNIVERSITY of NORTH FLORIDA.

Office of Research and Sponsored Programs
1 UNF Drive
Jacksonville, FL 32224-2665
904-620-2455 FAX 904-620-2457
Equal Opportunity/Equal Access/Affirmative Action Institution

MEMORANDUM

UNF IRB Number: 1628285-2
Exemption Date: 10-16-2020
Processed on behalf of UNF's IRB

DATE: October 16, 2020

TO: Ms. Leslie Van Horn

VIA: Dr. Lauri Wright
Nutrition & Dietetics

FROM: Dr. Jennifer Wesely, Chairperson
On behalf of the UNF Institutional Review Board

RE: Declaration of Exempt Status for IRB#1628285-2
"Validation of an evidence-based practice knowledge instrument and the role of the level of education in the evaluation of evidence-based dietetic practices among registered dietitian nutritionists"

Your research study identified above was reviewed on behalf of the UNF Institutional Review Board has been declared "Exempt" under category 2. A "limited IRB review" was conducted to confirm the safeguards in place are sufficient to protect subjects' privacy and to maintain confidentiality of the data.

Please be advised that any subject complaints, unanticipated problems, or adverse events that occur are to be reported to the IRB as soon as practicable, but no later than 3 business days following the occurrence. Please use the Event Report Form to submit information about such events.

While the exempt status is effective for the life of the study, any substantive changes must be submitted to the IRB for prospective review. In some circumstances, changes to the protocol may result in alteration of the IRB review classification.

To submit an amendment to your approved protocol, please complete an Amendment Request Document and upload it along with any updated materials affected by the changes via a new package in IRBNet. For additional guidance on submitting an amendment, please contact the IRB administrator.

Upon completion of this study, please submit a Closing Report Form as a new package in IRBNet. Please maintain copies of all research-related materials for a minimum of 3 years following study closure. These records include the IRB-approved protocol, approval memo, questionnaires, survey instruments, consent forms, and all IRB correspondence.

Should you have questions regarding your study or any other IRB issues, please contact the Research Integrity unit of the Office of Research and Sponsored Programs by emailing IRB@unf.edu or calling (904) 620-2455.

Evidence-Based_Practices_Among_RDNs

Start of Block: Demographics

Q1

Welcome to the Evidence-Based Practices Among RDNs Survey!

I am requesting your help to learn more about the use of evidence-based practices (EBP) among registered dietitian nutritionists (RDNs). I am completing my dissertation as part of the requirements for the Doctorate in Clinical Nutrition through the University of North Florida. I am interested in validating an instrument to better understand the knowledge, attitudes, behaviors, and implementation of EBP among RDNs. You will be presented with information relevant to EBP and asked to answer some questions about it. *In order to strengthen the use of EBP within the field of nutrition and dietetics and get an accurate depiction of EBP knowledge and use among RDNs, please answer each question honestly and without utilizing any resources. All responses will remain confidential.*

This research survey will require participation at two time points. This first survey should take around 20 minutes to complete. To ensure this instrument is valid and reliable for RDNs, I would greatly appreciate your participation at a follow-up time point (~4 months from now) to test for the stability reliability of the knowledge portion only. The follow-up survey should take about 10 minutes. Therefore, participation in this study should take ~30 minutes total. Your participation in this research is voluntary. You have the right to withdraw at any point during the study, for any reason, and without any prejudice. If you would like to contact the Principal Investigator in the study to discuss this research, please e-mail Leslie Thompson Van Horn at n01388983@unf.edu.

By clicking the button below, you acknowledge that your participation in the study is voluntary and that you are aware that you may choose to terminate your participation in the study at any time and for any reason.

Please note that this survey will be best displayed on a laptop or desktop computer. Some features may be less compatible for use on a mobile device.

Thank you for your consideration.

- ○ I consent, begin the study (1)
- ○ I do not consent, I do not wish to participate (2)

Q2 Are you currently credentialed as a registered dietitian nutritionist?

- Yes (1)
- No (2)

Skip To: End of Survey If Q2 = No

Q3 Are you presently working within the field of nutrition and dietetics?

- Yes, full-time (> 30 hours per week) (1)
- Yes, part-time (< 30 hours per week) (2)
- Yes, part-time, but less than 20 hours per week (3)
- No (4)

Skip To: End of Survey If Q3 = Yes, part-time, but less than 20 hours per week
Skip To: End of Survey If Q3 = No

Q4 How many years have you been working as a registered dietitian nutritionist?

_____

Skip To: End of Survey If Condition: How many years have you bee... Is Less Than or Equal to 0.5. Skip To: End of Survey.

Q5 What is the highest degree you have completed?

- Bachelor's degree (1)
- Master's degree (2)
- Doctoral degree (e.g., PhD, DCN) (3)

Skip To: Q7 If Q5 = Bachelor's degree

Q6 What is the highest **nutrition/dietetics-related degree** that you have completed?

- ○ Bachelor's degree (1)
- ○ Master's degree (2)
- ○ Doctoral degree (e.g., PhD, DCN) (3)

Q7 How many years has it been since the completion of your highest nutrition-related degree?

_____

Q8 In which state do you currently primarily work?

▼ Alabama (1) ... I do not reside in the United States (53)

Q9 How would you describe the geographic location of your primary work setting?

- ○ More rural (1)
- ○ More urban (2)
- ○ More suburban (3)

Q10 What is your primary area of practice?

- Acute Care/Inpatient (1)
- Ambulatory Care (e.g., Outpatient, Home Care) (2)
- Community or Wellness (3)
- Consultation & Business (4)
- Education & Research (e.g. College/University/Academic Medical Center) (5)
- Food & Nutrition Management (6)
- Long-Term Care (7)

Q11 Do you have any nutrition specialty board certifications? (e.g., renal nutrition, oncology nutrition, gerontological nutrition, obesity and weight management, sports dietetics, pediatric or pediatric critical care nutrition, nutrition support clinician)

- Yes, I have 1 nutrition specialty certification (1)
- Yes, I have more than 1 nutrition specialty certification (2)
- No, I do not have any nutrition specialty certifications (3)

Q12 I identify my ethnicity as:
(select all that apply)

- [ ] Asian (1)
- [ ] Black/African (2)
- [ ] Hispanic/Latino (3)
- [ ] Native American (4)
- [ ] Pacific Islander (5)
- [ ] White (6)
- [ ] Other (7)
- [ ] Prefer not to answer (8)

Q13 What is your gender identity?

- ○ Female (1)
- ○ Male (2)
- ○ Transgender female (3)
- ○ Transgender male (5)
- ○ Gender nonconforming (6)
- ○ Other (7)
- ○ Prefer not to answer (4)

Q14 What was your age on your last birthday?

_____

End of Block: Demographics

Start of Block: KABQ - Knowledge

Q15 Select the most appropriate response.

	Strongly Agree (1)	Moderately Agree (2)	Somewhat Agree (3)	Neutral (4)	Somewhat Disagree (5)	Moderately Disagree (6)	Strongly Disagree (7)
I am confident in my ability to use evidence-based practice. (1)	○	○	○	○	○	○	○

Page Break

Q16 Please indicate how much you agree/disagree with the following statements.

	Strongly Agree (1)	Moderately Agree (2)	Somewhat Agree (3)	Neutral (4)	Somewhat Disagree (5)	Moderately Disagree (6)	Strongly Disagree (7)
Using evidence-based practice increases the certainty that the proposed nutrition therapy recommendation is effective. (1)	○	○	○	○	○	○	○
Clinical trials and observational methods are equally valid in establishing treatment effectiveness. (2)	○	○	○	○	○	○	○
It is important for me to search bibliographic databases to be an effective RDN. (3)	○	○	○	○	○	○	○
It is important for me to critically appraise research papers to be an effective RDN. (4)	○	○	○	○	○	○	○
Evidence and patients/clients are equally important in making practice-based decisions. (5)	○	○	○	○	○	○	○

Page Break

Q17 On a percentage scale from 0-100%, use the slider below to respond to the question.

	0 10 20 30 40 50 60 70 80 90 100
What percentage of your patient/client decisions are based on evidence from clinical research? ()	

Page Break

End of Block: KABQ - Knowledge

Start of Block: KABQ - Behavior

Q18 How frequently do you have questions about managing your patients or clients that might require research evidence to answer?

- ○ times per day (on average) (1) _____
- ○ times per week (on average) (2) _____

Q19 Please indicate how frequently you access the following items:

	Every day (1)	Every other day (2)	Every week (3)	Every month (4)	Never (5)
Clinical research evidence in general (1)	○	○	○	○	○
Clinical research evidence from a textbook (2)	○	○	○	○	○
Clinical research evidence from original research papers (3)	○	○	○	○	○

Clinical research evidence from secondary sources such as the Academy of Nutrition and Dietetics' (AND) Evidence Analysis Library and Position and/or Practice Papers (4)	○	○	○	○	○

Q20 On average, how many **hours per week** do you now look up evidence immediately before, or during patient/client visits?

○ hours/week (1) _____

Q21 On average, how many **hours per week** do you spend looking up evidence in general (i.e., for patients/clients and/or professional development)?

○ hours/week (1) _____

Q22 On average, how many **hours per week** do you spend reading new research evidence?

○ hours/week (1) _____

End of Block: KABQ - Behavior

Start of Block: KABQ - Outcome/Decision/Implementation

Q23 Select the best response for each question based on the scale below.

	Completely (1)	A lot (2)	Moderately (3)	Somewhat (4)	A little (5)	Not at all (6)
How much has the use of evidence-based practice affected your practice decisions? (1)	○	○	○	○	○	○
How much has the use of evidence-based practice affected your patient outcomes? (2)	○	○	○	○	○	○

Q24 How often does new research evidence result in a change in your practice?

- ○ All the time (1)
- ○ Regularly (2)
- ○ Frequently (3)
- ○ Occasionally (4)
- ○ Almost Never (5)
- ○ Never (6)

End of Block: KABQ - Outcome/Decision/Implementation

Start of Block: KABQ - Attitudes

Q25 Considering your present knowledge and ability to locate evidence-based information, how much confidence do you have in your clinical decision-making?

- ○ A lot (1)
- ○ A moderate amount (2)
- ○ Some (3)
- ○ A little (4)
- ○ None at all (5)

Q26 The following questions are asking about your **personal opinion** about evidence-based practice. *There are no incorrect answers.* Please indicate how much you agree/disagree with the following statements.

	Strongly Agree (1)	Moderately Agree (2)	Somewhat Agree (3)	Neutral (4)	Somewhat Disagree (5)	Moderately Disagree (6)	Strongly Disagree (7)
Evidence-based practice is "cookbook" therapy that disregards professional experience. (1)	○	○	○	○	○	○	○
It is easy to find evidence-based research. (2)	○	○	○	○	○	○	○
Evidence-based practice takes too much time. (3)	○	○	○	○	○	○	○

Evidence-based practice ignores the "art" of clinical practice. (4)	○	○	○	○	○	○	○
Previous professional experience is more important than research findings in choosing the best treatment available for a patient. (5)	○	○	○	○	○	○	○
Evidence-based practice should be an integral part of nutrition and dietetic practice. (6)	○	○	○	○	○	○	○
From my personal observation and experience, evidence-based practice is being used currently by my colleagues. (7)	○	○	○	○	○	○	○
I use evidence-based practice because it improves patient/client outcomes. (8)	○	○	○	○	○	○	○

I use evidence-based practice because I believe in it. (9)	○	○	○	○	○	○	○
I use evidence-base practice because my colleagues do. (10)	○	○	○	○	○	○	○
I don't use evidence-based practice because I don't have time. (11)	○	○	○	○	○	○	○
I don't use evidence-based practice because it is difficult to change. (12)	○	○	○	○	○	○	○

End of Block: KABQ - Attitudes

Start of Block: EBPQ - Perceived Knowledge/Skills

Q27 How would you rate your:

	Extremely adequate (1)	Moderately adequate (2)	Slightly adequate (3)	Neither adequate nor inadequate (4)	Slightly inadequate (5)	Moderately inadequate (6)	Extremely inadequate (7)
Research skills (1)	○	○	○	○	○	○	○
IT/Computer skills (2)	○	○	○	○	○	○	○
Monitoring and reviewing	○	○	○	○	○	○	○

of practice skills (3)							
Converting your information needs into a research question (4)	○	○	○	○	○	○	○
Awareness of major information types and sources (5)	○	○	○	○	○	○	○
Ability to identify gaps in your professional practice (6)	○	○	○	○	○	○	○
Knowledge of how to retrieve evidence (7)	○	○	○	○	○	○	○
Ability to critically analyze evidence against set standards (8)	○	○	○	○	○	○	○
Ability to determine how valid (close to the truth) the material is (9)	○	○	○	○	○	○	○
Ability to determine how useful (applicable) the material is (10)	○	○	○	○	○	○	○
Ability to apply information to individual cases (11)	○	○	○	○	○	○	○
Sharing of ideas and information with	○	○	○	○	○	○	○

colleagues (12)							
Dissemination of new ideas about care to colleagues (13)	○	○	○	○	○	○	○
Ability to review your own practice (14)	○	○	○	○	○	○	○

End of Block: EBPQ - Perceived Knowledge/Skills

Start of Block: K-REC

*

Q28 Identify four sources of information that you would have the most confidence in providing valid patient care evidence.

- [ ] General internet search (e.g., Google) (1)
- [ ] Clinical guidelines (2)
- [ ] Peers (e.g., colleagues, experts, lecturers) (3)
- [ ] Systematic reviews (4)
- [ ] Textbooks (5)
- [ ] Professional Organizations (6)
- [ ] Disease-specific support groups (7)
- [ ] Peer-reviewed journals (8)
- [ ] Electronic research database (e.g., PubMed, ScienceDirect, Medline) (9)
- [ ] Other (10)
- [ ] ⊗ I don't know (11)

Page Break

Q29 What type of research design would be the most appropriate to answer the question of whether a dietary component found in food or a supplement would provide a better health outcome?

- ○ Case study (1)
- ○ Randomized controlled trial (2)
- ○ Cross-sectional study (3)
- ○ Cohort study (4)
- ○ Survey (5)
- ○ I don't know (6)

Page Break

Q30 If you completed your literature search on Medline using MeSH (medical subject headings) terms, your search would yield fewer articles than if you conducted a basic search using general terms.

- ○ True (1)
- ○ False (2)
- ○ I don't know (3)

Page Break

Q31 If you used the Boolean operator ‘OR’ in your literature search, it would reduce the number of citations that your search would produce.

- ○ True (1)
- ○ False (2)
- ○ I don't know (3)

Page Break

Q32 You locate an experimental study comparing probiotic supplements and probiotic food sources for Irritable Bowel Disease. How will you determine if the research is methodologically rigorous?

- If the study is in a peer-reviewed journal it is guaranteed that the research methodology is sound. (1)
- Use a critical appraisal tool to appraise the risk of bias. (2)
- Discuss the research with a colleague or expert in the field to validate the findings. (3)
- All of the above. (4)
- I don't know (5)

End of Block: K-REC

Start of Block: K-REC

Q33 The findings of two randomized controlled trials are shown below. Both studies show a significant beneficial effect for the treatment versus control group. Study 1: compared probiotic supplementation versus no supplementation in 24 subjects with IBS with constipation (IBS-C). Daily stool weight averaged 280 g +/- 373 g daily with supplementation. There was a significant difference between stool volume (p=0.001, 95% confidence interval 131-429, effect size 1.2) Study 2: compared probiotic supplementation versus no supplementation in 12 subjects with IBS with constipation (IBS-C). Daily stool averaged 411 g +/- 93 g daily with supplementation. There was a significant difference between stool volume (p=0.04, 95% confidence interval 358-464, effect size 2).
Which study shows the more beneficial effect?

- Study 1 (1)
- Study 2 (2)
- I don't know (3)

Skip To: Q35 If Q33 = I don't know

Q34 ***How did you decide which study produced the more beneficial effect?***

- ○ p-value (1)
- ○ effect size (2)
- ○ mean stool weight (3)
- ○ confidence intervals (4)
- ○ I didn't know the answer (5)

Page Break

Q35 Which of the following ranks study design based on the hierarchy of evidence correctly (with the first design listed being the strongest study design to the last item being the weakest study design)?

- ○ 1) Case-control or cohort study, 2) Review paper based upon expert consensus, 3) Systematic Review, 4) Randomized controlled trial (1)
- ○ 1) Randomized controlled trial, 2) Systematic Review, 3) Case-control or cohort study, 4) Review paper based upon expert consensus (2)
- ○ 1) Systematic review, 2) Randomized controlled trial, 3) Case-control or cohort study, 4) Review paper based upon expert consensus (3)
- ○ 1) Randomized controlled trial, 2) Review paper based upon expert consensus, 3) Systematic Review, 4) Review paper based upon expert consensus (4)
- ○ I don't know (5)

End of Block: K-REC

Start of Block: KACE - Knowledge Only

Q36 Published reports on treatments can be ranked with respect to the strength of the evidence. Which one of the following is the ***most correct statement*** with respect to the ranking of evidence?

- ○ Clinical case studies are ranked higher than randomized controlled trials (1)
- ○ Expert opinion is the lowest level of evidence (2)
- ○ Lab animal research is the highest level of evidence (3)
- ○ Research supported by the National Institutes of Health is the highest level of evidence (4)
- ○ I don't know (5)

Page Break

Q37 In judging the quality of the nutrition and dietetics literature, which one of the following is the highest level of evidence?

- ○ Article on a non-randomized trial that includes references. (1)
- ○ Case report article that has been peer-reviewed and published in the *Journal of the Academy of Nutrition and Dietetics*. (2)
- ○ Academy of Nutrition and Dietetics' Evidence Analysis Library (EAL) recommendation summary on a nutrition-related topic. (3)
- ○ A large-scale cohort study that is representative of the targeted population. (4)
- ○ I don't know. (5)

Page Break

Q38 If you were conducting a PubMed search to answer a practice-based question pertaining to a patient or client, which one of the following would be the ***least productive*** search strategy?

- ○ Limit search to the current year (1)
- ○ Limit search to specified Type of Article (2)
- ○ Limit search using Clinical Queries (3)
- ○ Search using appropriate MeSH terms (4)
- ○ I don't know (5)

Page Break

Q39 Which statement is the most accurate with respect to the number of subjects in a clinical trial?

- ○ A power analysis should be conducted after the data are collected to assess whether sufficient numbers of subjects were enrolled in the study. (1)
- ○ If data are obtained from a large sample, an investigator can be confident that findings are clinically meaningful. (2)
- ○ Only large treatment effects can be observed when very large numbers of subjects are enrolled. (3)
- ○ Too few subjects may not allow true treatment effects to be seen when they, in fact, exist. (4)
- ○ I don't know. (5)

Page Break

Q40 Which of the following best describes PICO?

- ○ A checklist of guidelines to assist researchers with the content required of a systematic review. (1)
- ○ Defines a specific MeSH heading and provides synonyms covered by that heading. (2)
- ○ A process for converting a practice-based problem into a question that can be answered through a search of the literature. (3)
- ○ A technique for combining search terms in order to restrict a search to articles with specified elements. (4)
- ○ I don't know. (5)

Page Break

Q41 A recent study published in *PLOS Medicine* reported that pregnant women with metabolic risk factors that followed a Mediterranean-style diet were found to gain less weight but did not have any significant effects on maternal and offspring outcomes when compared to a control. Which one of the following factors could have contributed to this result?

- ○ Clinical examiners were blinded. (1)
- ○ Patients in the intervention group did not adhere to the Mediterranean diet. (2)
- ○ Patients were assigned to the treatments randomly. (3)
- ○ Too many patients were enrolled in the study. (4)
- ○ I don't know. (5)

Page Break

Q42 A statistical process that quantitatively pools the results of several research studies into one analysis is known as a:

- Cochrane review (1)
- Meta-analysis (2)
- Numbers needed to treat (NNT) analysis (3)
- Systematic review (4)
- I don't know (5)

Page Break

Q43 Which of the following is the most appropriate study design to evaluate the efficacy of a new diagnostic tool for the assessment of malnutrition?

- Blind comparison with a gold standard (1)
- Case-control study (2)
- Randomized clinical trial (3)
- Relative risk difference (RRD) (4)
- I don't know (5)

Page Break

Q44 Which one of the following statements about test sensitivity and specificity is true?

- ○ Test sensitivity defines how many normal individuals the test will correctly identify as normal. (1)
- ○ Normal individuals who have a positive rather than a negative result are classified as true-positives. (2)
- ○ Sensitivity answers the question “If a patient has a positive test result, how likely is he/she to have the disease?” and specificity answers the question “If a patient has a negative test, how likely is he/she not to have the disease?” (3)
- ○ Test specificity is the percentage of diseased individuals who have a positive test result as determined by a reference or a gold standard procedure. (4)
- ○ I don't know. (5)

Page Break

Q45 Which one of the following statements about disease prevalence and incidence is true?

- ○ Incidence refers to the percentage of geographic locations in a region where outbreaks of a certain disease are reported. (1)
- ○ Prevalence refers to the frequency of true-positive tests results per 100,000 population within a one-year period of data collection. (2)
- ○ Incidence is the number of patients per 100,000 population who have a disease at a specific point in time. (3)
- ○ Prevalence is the number of patients per 100,000 population who have a disease at a specific point in time. (4)
- ○ I don't know. (5)

End of Block: KACE - Knowledge Only

Thank you for taking the time to complete this survey. By responding to this survey, you are contributing to the advancement of the field of nutrition and dietetics. As a reminder, I would *greatly appreciate your participation in the follow-up survey*. Please be on the lookout for a follow-up survey email in the coming months.

In the meantime, please feel free to contact the primary investigator with any questions:
Leslie Thompson Van Horn
DCN Student
n01388983@unf.edu

Appendix F **Content Validation Details**

Figure 14. Content Validity Reviewer Sample Recruitment Email

Hi _____,

I am writing to ask for your help with my dissertation research. Given your expertise in dietetics research and evidence-based dietetic practices, I was hoping you might be willing to review an instrument evaluating the use and knowledge of evidence-based practices (EBP) among registered dietitian nutritionists (RDNs).

I am seeking to validate an instrument that measures both objective and self-reported knowledge of EBP, as well as self-reported attitudes, behaviors, and implementation of EBP among RDNs. The secondary goals of this research include assessing the association between educational level (e.g., bachelor's, master's, and doctoral degree) and objective knowledge of EBP. Additionally, I will evaluate the accuracy of RDN self-assessed knowledge compared to objective knowledge of EBP. By validating this tool, I hope to obtain greater insight into the use and knowledge of EBP among RDNs and allow for more research related to this topic within nutrition and dietetics.

In order to ensure the succinctness of this instrument, I need your help in identifying any erroneous items. Moreover, any feedback on the clarity of questions will be requested. The final draft of the survey should take participants ~20 minutes to complete.

If you agree to help, I will email you a link to the review and a PDF of the original survey. If you are able, I would appreciate if you could complete the review by Friday, September 18th.

I want to thank you in advance for your consideration. If you would please let me know either way by Friday, September 4th, so I can plan accordingly. Also, if you know of another content expert that may be able to assist me with this research survey, please let me know.

Thank you again for your consideration.

Best,

Leslie Thompson Van Horn, MS, RDN, LDN
Doctoral Candidate, Doctorate in Clinical Nutrition
University of North Florida
Redacted

Table 21. Area(s) of professional expertise among content validity reviewers

Area of Professional Expertise	Number of Experts Reporting Expertise (Can Select >1 Option)
Research/Survey Design	5
Nutrition Support/Assessment	2
Nutrition & Chronic Disease Prevention	2
Evidence-Based Practice	2
Malnutrition/Food Insecurity	1

Table 22. Primary area(s) of practice among content validity reviewers

Area of Practice	Number of Experts Reporting (Can Select >1 Option)
Higher Education/Teaching/Research	9
Clinical Nutrition/Nutrition Support	2
Public Health	1

Table 23. Credentials currently held among content validity reviewers

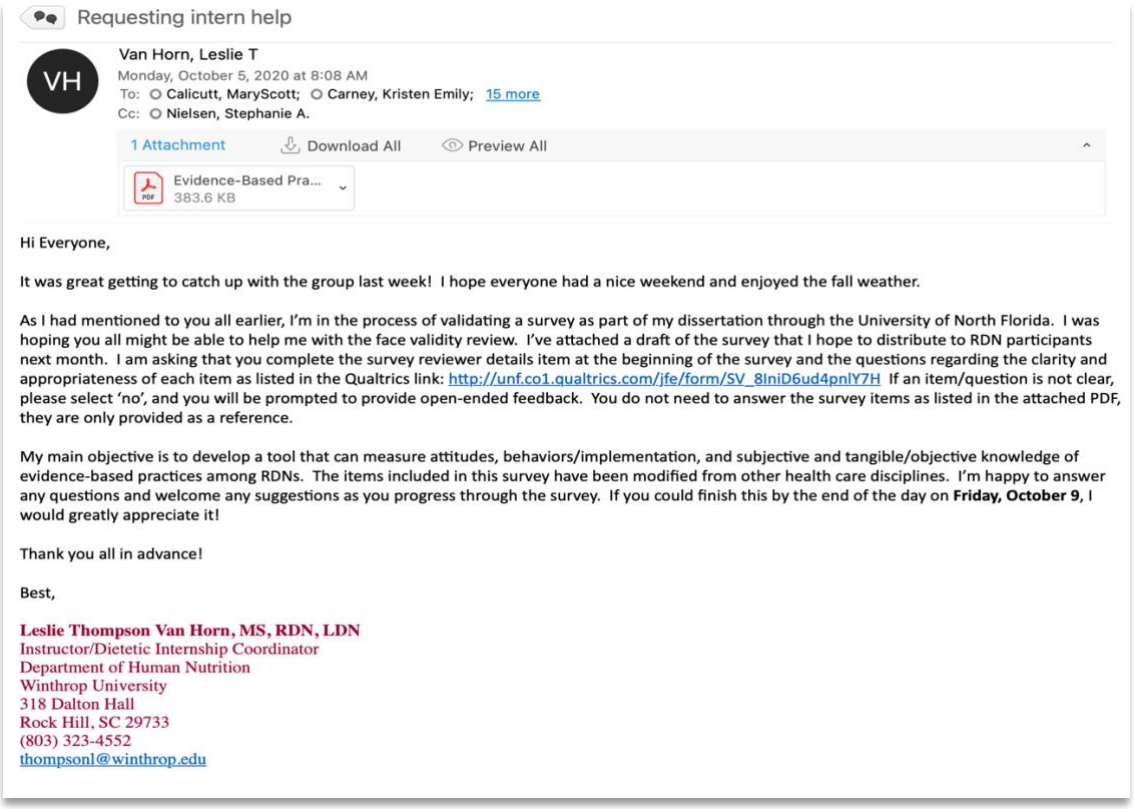
Currently Held Credentials	Number of Experts Reporting
PhD or DCN, RDN	9
PhD only	1
DCN Student, RDN	1

Table 24. Years of experience among content validity reviewers

Years of Experience	Number of Experts Reporting
<15	2 (9 & 10 years)
>15 to <25	2
>25 to <35	5
>35	2

Appendix G **Face Validity Sample Recruitment Emails**

Figure 15. Sample Face Validation Recruitment Emails



Requesting intern help

VH

Van Horn, Leslie T
Monday, October 5, 2020 at 8:08 AM
To: Calicutt, MaryScott; Carney, Kristen Emily; 15 more
Cc: Nielsen, Stephanie A.

1 Attachment Download All Preview All

Evidence-Based Pra... 383.6 KB

Hi Everyone,

It was great getting to catch up with the group last week! I hope everyone had a nice weekend and enjoyed the fall weather.

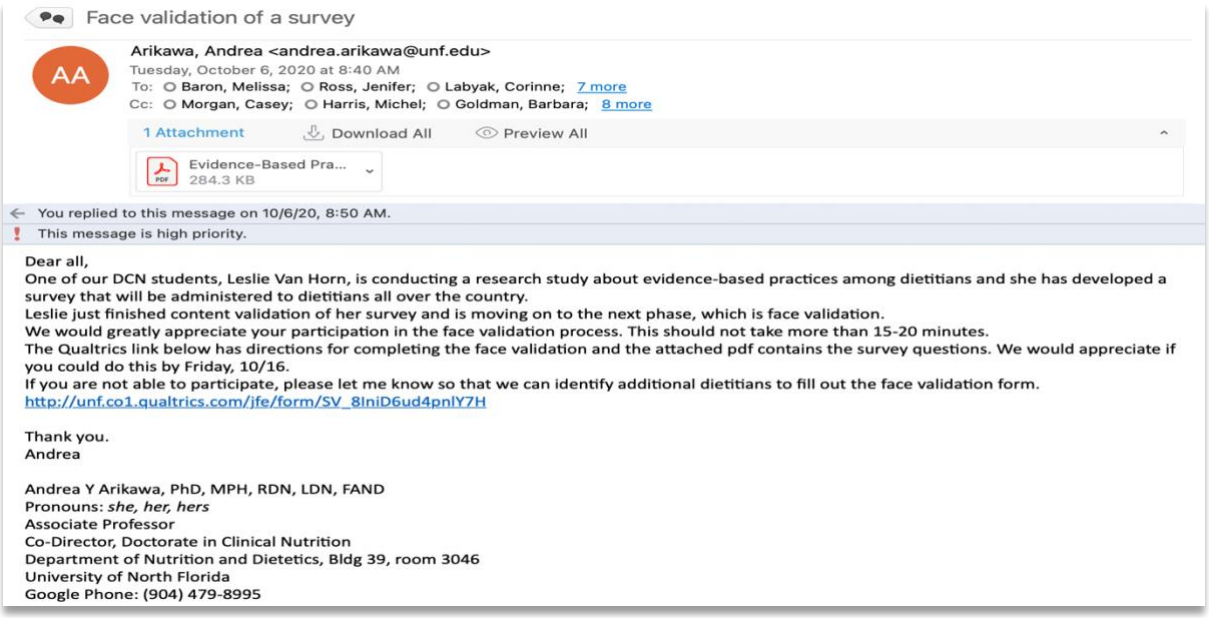
As I had mentioned to you all earlier, I'm in the process of validating a survey as part of my dissertation through the University of North Florida. I was hoping you all might be able to help me with the face validity review. I've attached a draft of the survey that I hope to distribute to RDN participants next month. I am asking that you complete the survey reviewer details item at the beginning of the survey and the questions regarding the clarity and appropriateness of each item as listed in the Qualtrics link: http://unf.co1.qualtrics.com/jfe/form/SV_8lniD6ud4pnlY7H If an item/question is not clear, please select 'no', and you will be prompted to provide open-ended feedback. You do not need to answer the survey items as listed in the attached PDF, they are only provided as a reference.

My main objective is to develop a tool that can measure attitudes, behaviors/implementation, and subjective and tangible/objective knowledge of evidence-based practices among RDNs. The items included in this survey have been modified from other health care disciplines. I'm happy to answer any questions and welcome any suggestions as you progress through the survey. If you could finish this by the end of the day on **Friday, October 9**, I would greatly appreciate it!

Thank you all in advance!

Best,

Leslie Thompson Van Horn, MS, RDN, LDN
Instructor/Dietetic Internship Coordinator
Department of Human Nutrition
Winthrop University
318 Dalton Hall
Rock Hill, SC 29733
(803) 323-4552
thompsonl@winthrop.edu



Face validation of a survey

AA

Arikawa, Andrea <andrea.arikawa@unf.edu>
Tuesday, October 6, 2020 at 8:40 AM
To: Baron, Melissa; Ross, Jenifer; Labyak, Corinne; 7 more
Cc: Morgan, Casey; Harris, Michel; Goldman, Barbara; 8 more

1 Attachment Download All Preview All

Evidence-Based Pra... 284.3 KB

You replied to this message on 10/6/20, 8:50 AM.
This message is high priority.

Dear all,
One of our DCN students, Leslie Van Horn, is conducting a research study about evidence-based practices among dietitians and she has developed a survey that will be administered to dietitians all over the country.
Leslie just finished content validation of her survey and is moving on to the next phase, which is face validation.
We would greatly appreciate your participation in the face validation process. This should not take more than 15-20 minutes.
The Qualtrics link below has directions for completing the face validation and the attached pdf contains the survey questions. We would appreciate if you could do this by Friday, 10/16.
If you are not able to participate, please let me know so that we can identify additional dietitians to fill out the face validation form.
http://unf.co1.qualtrics.com/jfe/form/SV_8lniD6ud4pnlY7H

Thank you.
Andrea

Andrea Y Arikawa, PhD, MPH, RDN, LDN, FAND
Pronouns: *she, her, hers*
Associate Professor
Co-Director, Doctorate in Clinical Nutrition
Department of Nutrition and Dietetics, Bldg 39, room 3046
University of North Florida
Google Phone: (904) 479-8995

Evidence-Based_Practices_Among_RDNs - Content & Face Validated Copy

Start of Block: Demographics

Q1

Welcome to the Evidence-Based Practices Among RDNs Survey!

I am requesting your help to learn more about the use of evidence-based practices (EBP) among registered dietitians (RDs) or registered dietitian nutritionists (RDNs). I am completing my dissertation as part of the requirements for the Doctorate in Clinical Nutrition through the University of North Florida. I am interested in validating an instrument to better understand the knowledge, attitudes, behaviors, and implementation of EBP among RDNs. You will be presented with information relevant to EBP and asked to answer some questions about it. Note that throughout this survey I will use the term RDN to refer to both RDs and RDNs synonymously. This survey will include subjective items, as well as questions that assess tangible knowledge (i.e., quiz-style items) of EBP. *Therefore, in* order to strengthen the use of EBP within the field of nutrition and dietetics and get an accurate depiction of EBP knowledge and use among RDNs, please answer each question honestly and without utilizing any resources. All responses will remain confidential.

This research survey will require participation at two time points. This first survey should take around 20 minutes to complete. To ensure this instrument is valid and reliable for RDNs, I would greatly appreciate your participation at a follow-up time point (~4 months from now) to test for the stability reliability of the knowledge portion only. The follow-up survey should take about 10 minutes. Therefore, participation in this study should take ~30 minutes total. Your participation in this research is voluntary. You have the right to withdraw at any point during the study, for any reason, and without any prejudice. If you would like to contact the Principal Investigator in the study to discuss this research, please e-mail Leslie Thompson Van Horn at n01388983@unf.edu.

By clicking the button below, you acknowledge that your participation in the study is voluntary and that you are aware that you may choose to terminate your participation in the study at any time and for any reason.

Please note that this survey will be best displayed on a laptop or desktop computer. Some features may be less compatible for use on a mobile device.

Thank you for your consideration.

- ○ I consent, begin the study (1)
- ○ I do not consent, I do not wish to participate (2)

Skip To: End of Survey If Q1 = I do not consent, I do not wish to participate

Page Break

Q2 Are you currently credentialed as a licensed and/or registered dietitian nutritionist?

- ○ Yes (1)
- ○ No (2)

Skip To: End of Survey If Q2 = No

Q3 Are you presently working within the field of nutrition?

- ○ Yes, full-time (more than 30 hours per week) (1)
- ○ Yes, part-time (20-30 hours per week) (2)
- ○ Yes, part-time, but less than 20 hours per week (3)
- ○ No, but currently pursuing a graduate degree in nutrition or other related field (4)
- ○ No (5)

Skip To: End of Survey If Q3 = Yes, part-time, but less than 20 hours per week

Skip To: End of Survey If Q3 = No, but currently pursuing a graduate degree in nutrition or other related field

Skip To: End of Survey If Q3 = No

Q4 How many years have you worked as a registered dietitian nutritionist?

_____

Skip To: End of Survey If Condition: How many years have you bee... Is Less Than or Equal to 0.5. Skip To: End of Survey.

Q5 What is the highest degree in any field of study that you have completed?

- ○ Bachelor's degree (1)
- ○ Master's degree (2)
- ○ Doctoral or other terminal degree (e.g., PhD, DCN, DHA, DSc, etc.) (3)

Skip To: Q7 If Q5 = Bachelor's degree

Q6 What is the highest **nutrition/dietetics-related degree** that you have completed?

- ○ Bachelor's degree (1)
- ○ Master's degree (2)
- ○ Doctoral degree (e.g., PhD, DCN, DHA, DSc, etc.) (3)

Q7 What year did you complete your highest nutrition/dietetics-related degree?

▼ 2020 (1) ... 1950 (71)

Page Break

Q8 In which state do you currently primarily work?

▼ Alabama (1) ... I work equally in multiple states (e.g., virtual/telehealth) (54)

Skip To: Q10 If Q8 = I work equally in multiple states (e.g., virtual/telehealth)

Q9 How would you describe the geographic location of your primary work setting?

- ○ More rural (1)
- ○ More suburban (2)
- ○ More urban (3)
- ○ Other (Please describe) (4) _____

Q10 Which best describes your primary area of practice?

- ○ Acute Care/Inpatient (1)
- ○ Ambulatory Care (e.g., Outpatient, Home Care) (2)
- ○ Community or Wellness (3)
- ○ Consultation & Business (4)
- ○ Education & Research (e.g. College/University/Academic Medical Center) (5)
- ○ Food & Nutrition Management (6)
- ○ Long-Term Care (7)
- ○ Other (Please describe) (8) _____

Q11 Do you have any nutrition specialty certifications? (e.g., Advanced Practitioner Certification in Clinical Nutrition, Certified Diabetes Educator, Certified Nutrition Support Clinician, Board Certification Specialist in: Gerontological Nutrition, Oncology Nutrition, Obesity & Weight

Management, Pediatric Nutrition, Pediatric Critical Care Nutrition, Renal Nutrition, Sports Dietetics)

- ○ Yes, I have 1 nutrition specialty certification (1)
- ○ Yes, I have more than 1 nutrition specialty certification (2)
- ○ No, I do not have any nutrition specialty certifications (3)

Display This Question:

If Q11 = Yes, I have 1 nutrition specialty certification

Or Q11 = Yes, I have more than 1 nutrition specialty certification

Q12 Select all of the specialty certifications/credentials that you presently hold.

- ☐ Advanced Practitioner Certification in Clinical Nutrition (RD-AP or RDN-AP) (1)
- ☐ Diabetes Care and Education Specialists (DCES), formerly Certified Diabetes Educator (CDE) (2)
- ☐ Certified Nutrition Support Clinician (CNSC) (3)
- ☐ Board Certified Specialist in Gerontological Nutrition (CSG) (4)
- ☐ Board Certified Specialist in Oncology Nutrition (CSO) (5)
- ☐ Board Certified Specialist in Obesity & Weight Management (CSOWM) (6)
- ☐ Board Certified Specialist in Pediatric Nutrition (CSP) (7)
- ☐ Board Certified Specialist in Pediatric Critical Care Nutrition (CSPCC) (8)
- ☐ Board Certified Specialist in Renal Nutrition (CSR) (9)
- ☐ Board Certified Specialist in Sports Dietetics (CSSD) (10)
- ☐ Other (Please specify) (11) _____

Q13 How many peer-reviewed articles have you published?

- None (1)
- 1-3 (2)
- 4-6 (3)
- 7-9 (4)
- 10 or more (5)

Q14 Are you a preceptor for dietetic interns?

- Yes, I am currently a preceptor for dietetic interns (or normally would be a preceptor if not for the COVID-19 pandemic). (1)
- I have been a preceptor for dietetic interns in the past, but not recently (i.e., more than 2 years). (2)
- No, I have never been a preceptor for dietetic interns. (3)

Q15 Are you of Hispanic, Latino, or Spanish origin?

- No (1)
- Yes (2)
- Prefer not to answer (3)

Q16 What is your race?

- American Indian and Alaska Native (1)
- Asian (2)
- Black or African American (3)
- Native Hawaiian and Other Pacific Islander (4)
- White (5)
- Multiracial (6)
- Other (8)
- Prefer not to answer (7)

Q17 What is your gender identity?

- Female (1)
- Male (2)
- Transgender female (3)
- Transgender male (5)
- Gender nonconforming (6)
- Other (7)
- Prefer not to answer (4)

Q18 What is your current age?

_____

End of Block: Demographics

Start of Block: KABQ - Knowledge

Q19 Select the most appropriate response.

	Strongly Agree (1)	Moderately Agree (2)	Somewhat Agree (3)	Neutral (4)	Somewhat Disagree (5)	Moderately Disagree (6)	Strongly Disagree (7)
I am confident in my ability to use evidence-based practice. (1)	○	○	○	○	○	○	○

Page Break

Q20 Please indicate how much you agree/disagree with the following statements.

	Strongly Agree (1)	Moderately Agree (2)	Somewhat Agree (3)	Neutral (4)	Somewhat Disagree (5)	Moderately Disagree (6)	Strongly Disagree (7)
Using evidence-based practice increases the likelihood that the proposed nutrition therapy recommendation is effective. (1)	○	○	○	○	○	○	○
Clinical trials and observational methods are equally valid in establishing treatment effectiveness. (2)	○	○	○	○	○	○	○
It is important for me to search bibliographic databases to be an effective RDN. (3)	○	○	○	○	○	○	○
It is important for me to critically appraise research papers to be an effective RDN. (4)	○	○	○	○	○	○	○
Research evidence and patient/client perspectives are equally important in making patient/client care decisions. (5)	○	○	○	○	○	○	○

Page Break

Q21 On a percentage scale from 0-100%, use the slider below to respond to the question.

	0 10 20 30 40 50 60 70 80 90 100
What percentage of your nutrition recommendations are based on evidence from research? ()	

Page Break

End of Block: KABQ - Knowledge

Start of Block: KABQ - Behavior

Q22 Please indicate how frequently you access the following items:

	Every day (1)	Every other day (2)	Every week (3)	Every month (4)	A few times a year (5)	Never (6)
Clinical research evidence in general (1)	○	○	○	○	○	○
Clinical guidelines from a textbook or manual (2)	○	○	○	○	○	○
Clinical research evidence from original research papers (3)	○	○	○	○	○	○
Clinical research evidence from secondary sources such as the Academy of Nutrition and Dietetics' (AND) Evidence Analysis Library (4)	○	○	○	○	○	○

Q23 On average, how much time do you spend reading the latest research evidence?

- ○ Less than 15 minutes per month (1)
- ○ 15-30 minutes per month (2)
- ○ 15-30 minutes every two weeks (3)
- ○ 15-30 minutes per week (4)
- ○ 31-60 minutes per week (5)
- ○ Greater than 1 hour per week (6)

End of Block: KABQ - Behavior

Start of Block: KABQ - Outcome/Decision/Implementation

Q24 Select the best response for each statement based on the scale below.

	Strongly Agree (1)	Moderately Agree (2)	Somewhat Agree (3)	Neutral (4)	Somewhat Disagree (5)	Moderately Disagree (6)	Strongly Disagree (7)
The use of evidence-based practice has affected my nutrition recommendations and/or practice decisions. (1)	○	○	○	○	○	○	○
The use of evidence-based practice has affected my patient or client outcomes. (2)	○	○	○	○	○	○	○

Q25 How often does new research evidence result in a change in your nutrition recommendations?

- All the time (1)
- Regularly (2)
- Frequently (3)
- Occasionally (4)
- Almost Never (5)
- Never (6)

End of Block: KABQ - Outcome/Decision/Implementation

Start of Block: KABQ - Attitudes

Q26 Considering your present knowledge and ability to locate evidence-based information, how much confidence do you have in your practice-based decision-making?

- A lot (1)
- A moderate amount (2)
- Some (3)
- A little (4)
- None at all (5)

Q27 The following questions are asking about your **personal opinion** about evidence-based practice. *There are no incorrect answers.* Please indicate how much you agree/disagree with the following statements.

	Strongly Agree (1)	Moderately Agree (2)	Somewhat Agree (3)	Neutral (4)	Somewhat Disagree (5)	Moderately Disagree (6)	Strongly Disagree (7)

Evidence-based practice is a "cookbook" approach that disregards professional experience. (1)	○	○	○	○	○	○	○
It is easy to follow evidence-based practice. (2)	○	○	○	○	○	○	○
Evidence-based practice takes too much time. (3)	○	○	○	○	○	○	○
Evidence-based practice ignores the judgment of professional expertise. (4)	○	○	○	○	○	○	○
Previous professional experience is more important than research findings in choosing the best nutrition recommendations. (5)	○	○	○	○	○	○	○
Evidence-based practice should be an integral part of nutrition and dietetic practice. (6)	○	○	○	○	○	○	○
From my personal observation and experience, evidence-based practice is being used currently by my colleagues. (7)	○	○	○	○	○	○	○
I use evidence-based practice because it improves patient/client outcomes. (8)	○	○	○	○	○	○	○
I use evidence-based practice	○	○	○	○	○	○	○

because I believe in it. (9)							
There is adequate time in my job to search for research evidence. (10)	○	○	○	○	○	○	○
I was trained to use evidence-based practice in school and/or during my dietetic internship. (11)	○	○	○	○	○	○	○
I use evidence-based practice because my colleagues do. (12)	○	○	○	○	○	○	○
I don't use evidence-based practice because I don't have time. (13)	○	○	○	○	○	○	○
I don't use evidence-based practice because it is difficult to change my nutrition recommendations. (14)	○	○	○	○	○	○	○

End of Block: KABQ – Attitudes

Start of Block: EBPQ - Perceived Knowledge/Skills

Q28 Please indicate how competent you are regarding the following items as they relate to your nutrition practice. (For non-mobile users, please scroll to the right to see entire scale, if needed.)

	Extremely Competent (1)	Moderately Competent (2)	Slightly Competent (3)	Neither Competent nor Incompetent (4)	Slightly Incompetent (5)	Moderately Incompetent (6)	Extremely Incompetent (7)
Conducting a literature review (1)	○	○	○	○	○	○	○
Conducting primary research (2)	○	○	○	○	○	○	○

Using computers and other technology to answer practice-based questions (3)	○	○	○	○	○	○	○
Monitoring and reviewing my practice-based skills (4)	○	○	○	○	○	○	○
Converting my information needs into a structured, searchable question (5)	○	○	○	○	○	○	○
Identifying research evidence types and sources (6)	○	○	○	○	○	○	○
Identifying gaps in my professional practice (7)	○	○	○	○	○	○	○
Retrieving evidence (8)	○	○	○	○	○	○	○
Critically analyzing evidence against set standards (9)	○	○	○	○	○	○	○
Determining how valid (close to the truth) the material is (10)	○	○	○	○	○	○	○
Determining how useful (applicable) the material is (11)	○	○	○	○	○	○	○
Applying information to individual cases (12)	○	○	○	○	○	○	○

Sharing ideas and information with colleagues (13)	○	○	○	○	○	○	○
Disseminating new ideas about patient/client care to colleagues (14)	○	○	○	○	○	○	○

End of Block: EBPQ - Perceived Knowledge/Skills

Start of Block: K-REC

*

Q29 Identify the top four sources of information that you would have the most confidence in providing valid patient care evidence.

- [ ] General internet search (e.g., Google) (1)
- [ ] Clinical guidelines (2)
- [ ] Peers (e.g., colleagues, experts, lecturers) (3)
- [ ] Systematic reviews (4)
- [ ] Textbooks (5)
- [ ] Professional Organizations (6)
- [ ] Disease-specific support groups (7)
- [ ] Peer-reviewed journals (8)
- [ ] Electronic research database (e.g., PubMed, ScienceDirect, Medline) (9)
- [ ] Other (10)
- [ ] ⊗ I don't know (11)

Page Break

Q30 What type of research design would be the most appropriate to answer the question of whether a dietary component found in food or a supplement would provide a better health outcome?

- Case study (1)
- Randomized controlled trial (2)
- Cross-sectional study (3)
- Cohort study (4)
- Survey (5)
- I don't know (6)

Page Break

Q31 You locate an experimental study comparing probiotic supplements and probiotic food sources for Irritable Bowel Disease. How will you determine if the research is methodologically rigorous?

- If the study is in a peer-reviewed journal it is guaranteed that the research methodology is sound. (1)
- Use a critical appraisal tool to appraise the risk of bias. (2)
- Discuss the research with a colleague or expert in the field to validate the findings. (3)
- All of the above. (4)
- I don't know (5)

End of Block: K-REC

Start of Block: K-REC

Q32 The findings of two randomized controlled trials are shown below. Both studies show a significant beneficial effect for the treatment versus control group. Study 1: compared probiotic supplementation versus no supplementation in 24 subjects with IBS with constipation (IBS-C). Daily stool weight averaged 280 g +/- 373 g daily with supplementation. There was a significant difference between stool volume (p=0.001, 95% confidence interval 131-429, effect

size 1.2) Study 2: compared probiotic supplementation versus no supplementation in 12 subjects with IBS with constipation (IBS-C). Daily stool averaged 411 g +/- 93 g daily with supplementation. There was a significant difference between stool volume (p=0.04, 95% confidence interval 358-464, effect size 2).
Assuming greater stool output is preferred, which study shows the more beneficial effect?

- ○ Study 1 (1)
- ○ Study 2 (2)
- ○ I don't know (3)

Skip To: End of Block If Q32 = I don't know

Q33 ***How did you decide which study produced the more beneficial effect?***

- ○ p-value (1)
- ○ effect size (2)
- ○ mean stool weight (3)
- ○ confidence intervals (4)

Page Break

End of Block: K-REC

Start of Block: KACE - Knowledge Only

Q34 Published reports on treatments can be ranked with respect to the strength of the evidence. Which one of the following is the ***most accurate statement*** with respect to the ranking of evidence?

- Clinical case studies are ranked higher than randomized controlled trials (1)
- Expert opinion is the lowest level of evidence (2)
- Lab animal research is the highest level of evidence (3)
- Research supported by the National Institutes of Health is the highest level of evidence (4)
- I don't know (5)

Page Break

Q35 In judging the quality of the nutrition and dietetics literature, which one of the following is the highest level of evidence?

- Article on a non-randomized trial that includes references. (1)
- Case report article that has been peer-reviewed and published in the *Journal of the Academy of Nutrition and Dietetics*. (2)
- Academy of Nutrition and Dietetics' Evidence Analysis Library (EAL) recommendation statement on a nutrition-related topic. (3)
- A large-scale cohort study that is representative of the targeted population. (4)
- I don't know. (5)

Page Break

Q36 Which statement is the most accurate with respect to the number of subjects in a clinical trial?

- ○ A power analysis should be conducted after the data are collected to assess whether sufficient numbers of subjects were enrolled in the study. (1)
- ○ If data are obtained from a large sample, an investigator can be confident that findings are clinically meaningful. (2)
- ○ Only large treatment effects can be observed when very large numbers of subjects are enrolled. (3)
- ○ Too few subjects may not allow true treatment effects to be seen when they, in fact, exist. (4)
- ○ I don't know. (5)

Page Break

Q37 A statistical process that quantitatively pools the results of several research studies into one analysis is known as a:

- ○ Cochrane review (1)
- ○ Meta-analysis (2)
- ○ Numbers needed to treat (NNT) analysis (3)
- ○ Systematic review (4)
- ○ I don't know (5)

Page Break

Q38 Which of the following is the most appropriate study design to evaluate the efficacy of a new diagnostic tool for the assessment of malnutrition?

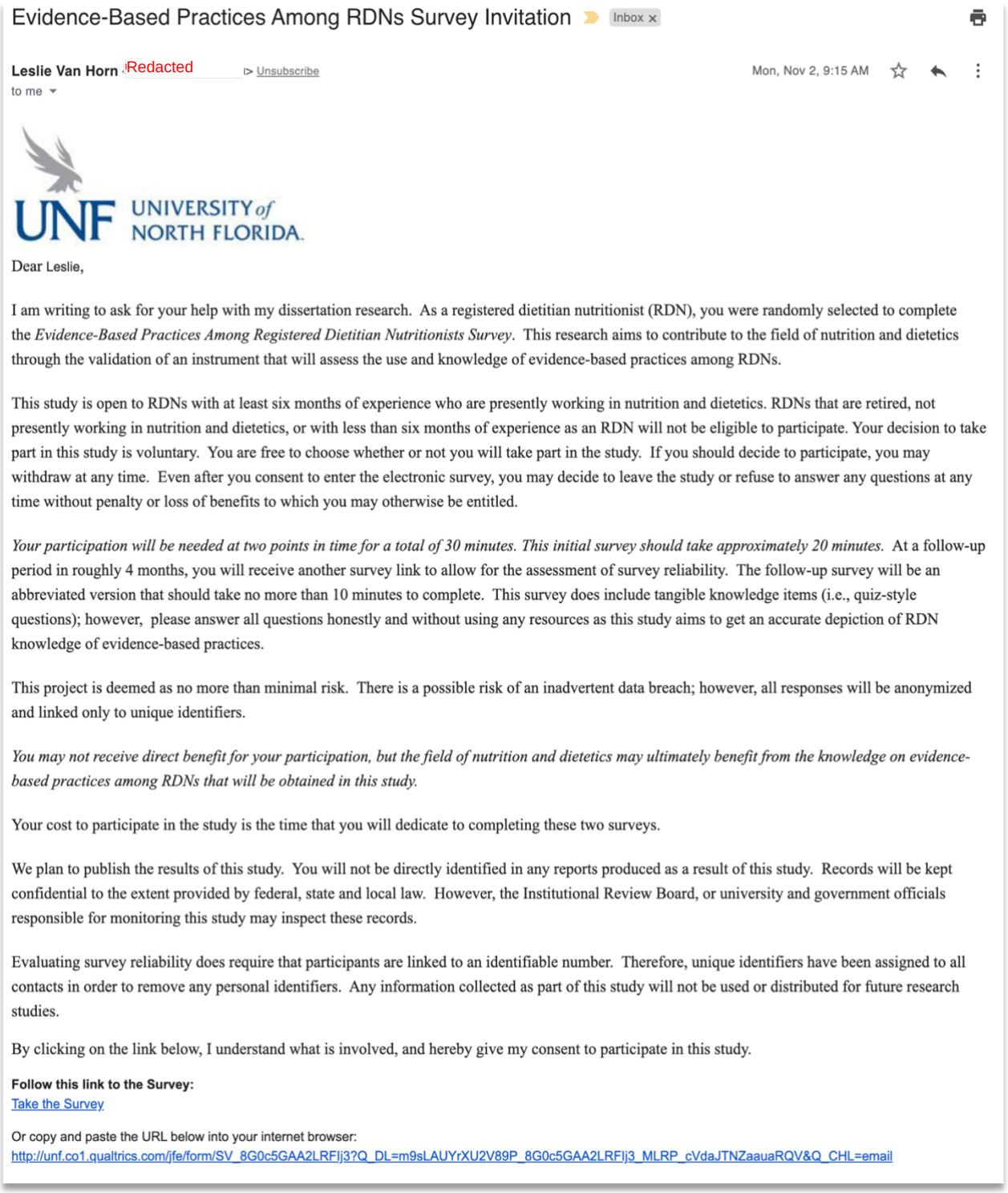
- Blind comparison with a gold standard (1)
- Case-control study (2)
- Randomized clinical trial (3)
- Relative risk difference (RRD) (4)
- I don't know (5)

Page Break

End of Block: KACE - Knowledge Only

Appendix I **Survey Participant Email Correspondence**

Figure 16. Initial Timepoint 1 Participant Email



Evidence-Based Practices Among RDNs Survey Invitation Inbox ×

Leslie Van Horn Redacted > Unsubscribe Mon, Nov 2, 9:15 AM

to me

UNF UNIVERSITY of NORTH FLORIDA.

Dear Leslie,

I am writing to ask for your help with my dissertation research. As a registered dietitian nutritionist (RDN), you were randomly selected to complete the *Evidence-Based Practices Among Registered Dietitian Nutritionists Survey*. This research aims to contribute to the field of nutrition and dietetics through the validation of an instrument that will assess the use and knowledge of evidence-based practices among RDNs.

This study is open to RDNs with at least six months of experience who are presently working in nutrition and dietetics. RDNs that are retired, not presently working in nutrition and dietetics, or with less than six months of experience as an RDN will not be eligible to participate. Your decision to take part in this study is voluntary. You are free to choose whether or not you will take part in the study. If you should decide to participate, you may withdraw at any time. Even after you consent to enter the electronic survey, you may decide to leave the study or refuse to answer any questions at any time without penalty or loss of benefits to which you may otherwise be entitled.

Your participation will be needed at two points in time for a total of 30 minutes. This initial survey should take approximately 20 minutes. At a follow-up period in roughly 4 months, you will receive another survey link to allow for the assessment of survey reliability. The follow-up survey will be an abbreviated version that should take no more than 10 minutes to complete. This survey does include tangible knowledge items (i.e., quiz-style questions); however, please answer all questions honestly and without using any resources as this study aims to get an accurate depiction of RDN knowledge of evidence-based practices.

This project is deemed as no more than minimal risk. There is a possible risk of an inadvertent data breach; however, all responses will be anonymized and linked only to unique identifiers.

You may not receive direct benefit for your participation, but the field of nutrition and dietetics may ultimately benefit from the knowledge on evidence-based practices among RDNs that will be obtained in this study.

Your cost to participate in the study is the time that you will dedicate to completing these two surveys.

We plan to publish the results of this study. You will not be directly identified in any reports produced as a result of this study. Records will be kept confidential to the extent provided by federal, state and local law. However, the Institutional Review Board, or university and government officials responsible for monitoring this study may inspect these records.

Evaluating survey reliability does require that participants are linked to an identifiable number. Therefore, unique identifiers have been assigned to all contacts in order to remove any personal identifiers. Any information collected as part of this study will not be used or distributed for future research studies.

By clicking on the link below, I understand what is involved, and hereby give my consent to participate in this study.

Follow this link to the Survey:
Take the Survey

Or copy and paste the URL below into your internet browser:
http://unf.co1.qualtrics.com/jfe/form/SV_8G0c5GAA2LRFIj3?Q_DL=m9sLAUYrXU2V89P_8G0c5GAA2LRFIj3_MLRP_cVdaJTNZaauaRQV&Q_CHL=email

If you have any questions about this study, you may contact me at the following:
Researcher: Leslie Thompson Van Horn, MS, RDN, LDN
Doctoral Candidate, University of North Florida
Instructor, Winthrop University
Address: Redacted
Telephone: Redacted
Email: Redacted

You may also contact me through my faculty advisor at the following:
Faculty Advisor: Dr. Lauri Wright, PhD, RDN, LD/N, FAND
Address: University of North Florida, Building 39, Room 3051
Telephone: (904) 620-1426
Email: l.wright@unf.edu

UNF IRB Contact Information:
IRB@unf.edu
904-620-2498

Please note that you have the option to save or print a copy of this informed consent document for your records. To print this informed consent page from a PC, look for a Print icon at the top of the web browser. If you do not see a Print icon, right-click anywhere on the informed consent text and select "Print" from the menu that appears. If you are using a Mac computer you can print the screen by pressing the Command, Shift and 3 buttons simultaneously. Screenshots are automatically placed on your desktop by default

Follow the link to opt out of future emails:
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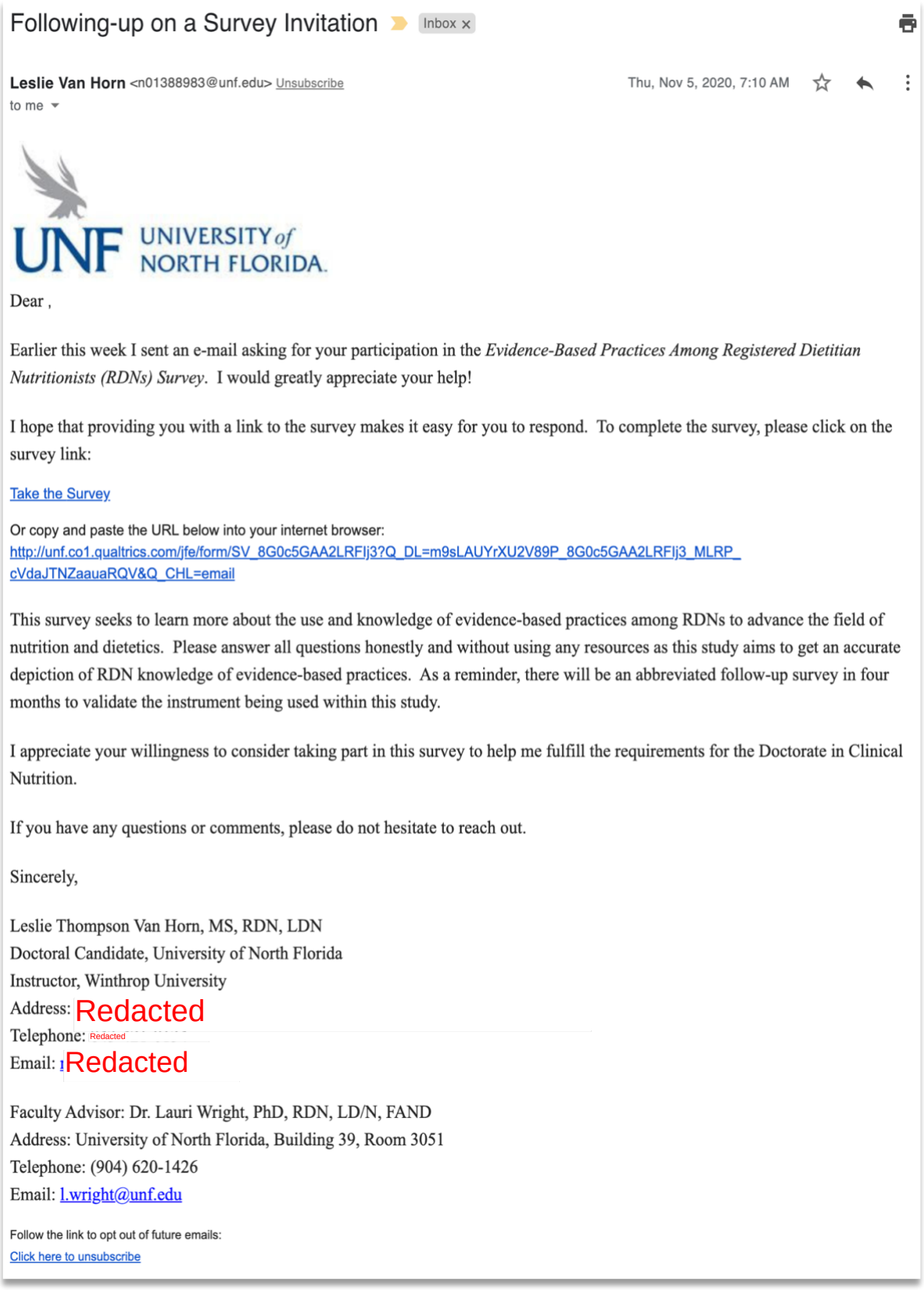
Figure 17. Timepoint 1 Reminder 1 Email



Following-up on a Survey Invitation Inbox ×

Leslie Van Horn <n01388983@unf.edu> Unsubscribe Thu, Nov 5, 2020, 7:10 AM

to me

UNF UNIVERSITY of NORTH FLORIDA.

Dear ,

Earlier this week I sent an e-mail asking for your participation in the *Evidence-Based Practices Among Registered Dietitian Nutritionists (RDNs) Survey*. I would greatly appreciate your help!

I hope that providing you with a link to the survey makes it easy for you to respond. To complete the survey, please click on the survey link:

Take the Survey

Or copy and paste the URL below into your internet browser:
http://unf.co1.qualtrics.com/jfe/form/SV_8G0c5GAA2LRFIj3?Q_DL=m9sLAUYrXU2V89P_8G0c5GAA2LRFIj3_MLRP_cVdaJTNZaauaRQV&Q_CHL=email

This survey seeks to learn more about the use and knowledge of evidence-based practices among RDNs to advance the field of nutrition and dietetics. Please answer all questions honestly and without using any resources as this study aims to get an accurate depiction of RDN knowledge of evidence-based practices. As a reminder, there will be an abbreviated follow-up survey in four months to validate the instrument being used within this study.

I appreciate your willingness to consider taking part in this survey to help me fulfill the requirements for the Doctorate in Clinical Nutrition.

If you have any questions or comments, please do not hesitate to reach out.

Sincerely,

Leslie Thompson Van Horn, MS, RDN, LDN
Doctoral Candidate, University of North Florida
Instructor, Winthrop University
Address: Redacted
Telephone: Redacted
Email: Redacted

Faculty Advisor: Dr. Lauri Wright, PhD, RDN, LD/N, FAND
Address: University of North Florida, Building 39, Room 3051
Telephone: (904) 620-1426
Email: l.wright@unf.edu

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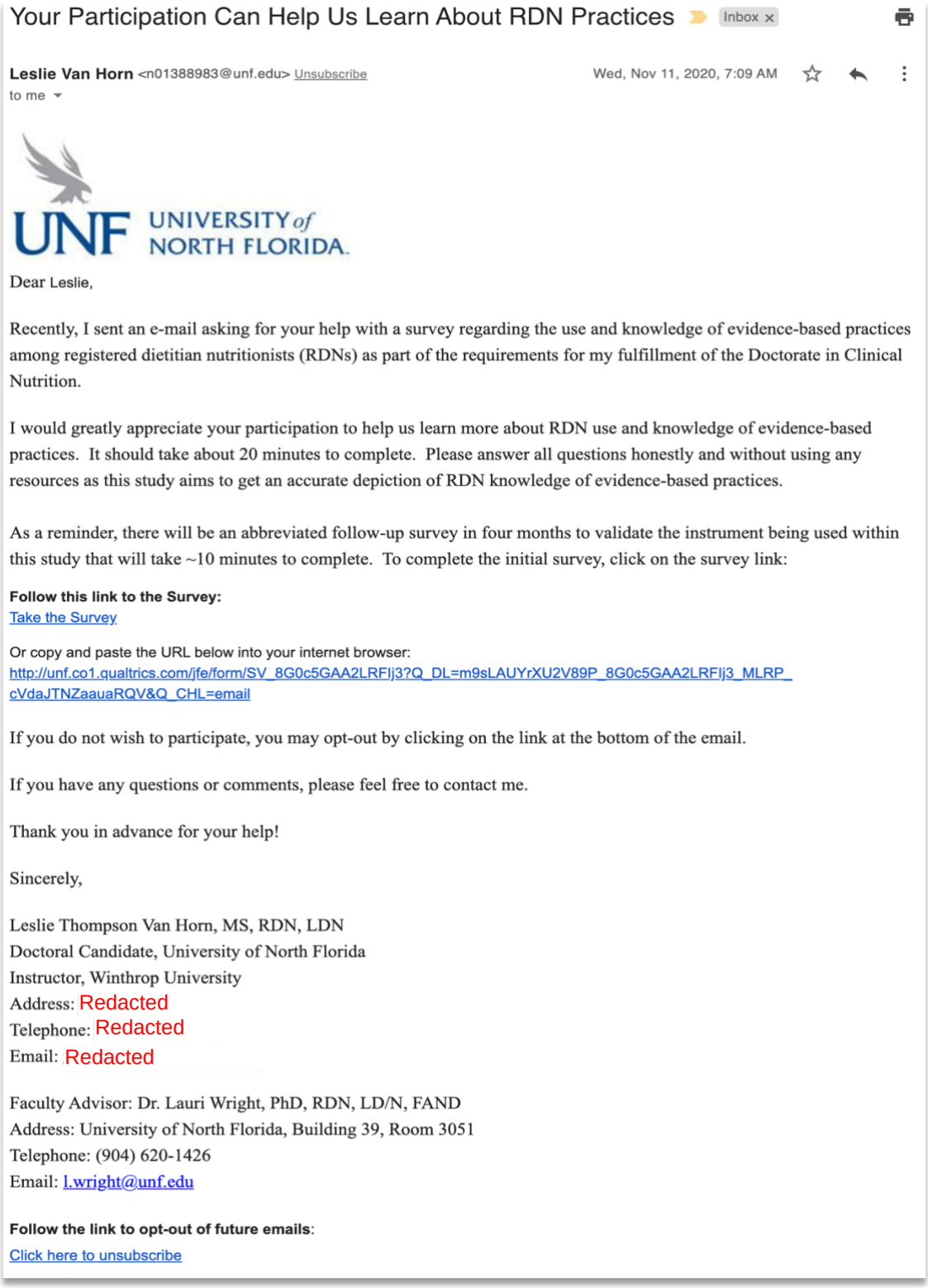
Figure 18. Timepoint 1 Reminder 2 Email



Your Participation Can Help Us Learn About RDN Practices Inbox ×

Leslie Van Horn <n01388983@unf.edu> Unsubscribe Wed, Nov 11, 2020, 7:09 AM

to me

UNF UNIVERSITY of NORTH FLORIDA.

Dear Leslie,

Recently, I sent an e-mail asking for your help with a survey regarding the use and knowledge of evidence-based practices among registered dietitian nutritionists (RDNs) as part of the requirements for my fulfillment of the Doctorate in Clinical Nutrition.

I would greatly appreciate your participation to help us learn more about RDN use and knowledge of evidence-based practices. It should take about 20 minutes to complete. Please answer all questions honestly and without using any resources as this study aims to get an accurate depiction of RDN knowledge of evidence-based practices.

As a reminder, there will be an abbreviated follow-up survey in four months to validate the instrument being used within this study that will take ~10 minutes to complete. To complete the initial survey, click on the survey link:

Follow this link to the Survey:
Take the Survey

Or copy and paste the URL below into your internet browser:
http://unf.co1.qualtrics.com/jfe/form/SV_8G0c5GAA2LRFIj3?Q_DL=m9sLAUYrXU2V89P_8G0c5GAA2LRFIj3_MLRP_cVdaJTNZaauaRQV&Q_CHL=email

If you do not wish to participate, you may opt-out by clicking on the link at the bottom of the email.

If you have any questions or comments, please feel free to contact me.

Thank you in advance for your help!

Sincerely,

Leslie Thompson Van Horn, MS, RDN, LDN
Doctoral Candidate, University of North Florida
Instructor, Winthrop University
Address: Redacted
Telephone: Redacted
Email: Redacted

Faculty Advisor: Dr. Lauri Wright, PhD, RDN, LD/N, FAND
Address: University of North Florida, Building 39, Room 3051
Telephone: (904) 620-1426
Email: l.wright@unf.edu

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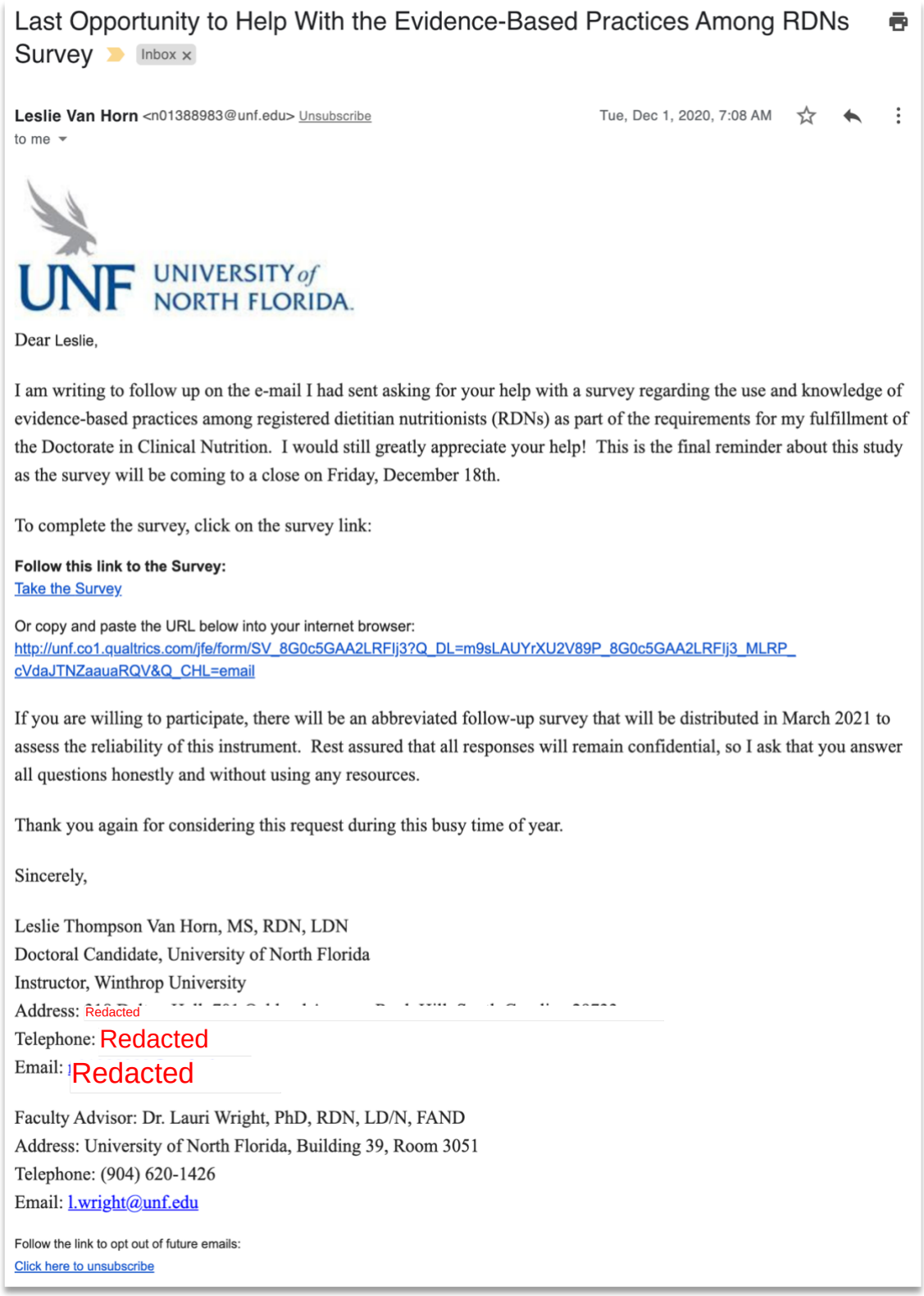
Figure 19. Timepoint 1 Reminder 3/Final Email



Last Opportunity to Help With the Evidence-Based Practices Among RDNs Survey

Inbox ×

Leslie Van Horn <n01388983@unf.edu> Unsubscribe

Tue, Dec 1, 2020, 7:08 AM

to me

UNF UNIVERSITY of NORTH FLORIDA.

Dear Leslie,

I am writing to follow up on the e-mail I had sent asking for your help with a survey regarding the use and knowledge of evidence-based practices among registered dietitian nutritionists (RDNs) as part of the requirements for my fulfillment of the Doctorate in Clinical Nutrition. I would still greatly appreciate your help! This is the final reminder about this study as the survey will be coming to a close on Friday, December 18th.

To complete the survey, click on the survey link:

Follow this link to the Survey:
Take the Survey

Or copy and paste the URL below into your internet browser:
http://unf.co1.qualtrics.com/jfe/form/SV_8G0c5GAA2LRFlj3?Q_DL=m9sLAUYrXU2V89P_8G0c5GAA2LRFlj3_MLRP_cVdaJTNZaauaRQV&Q_CHL=email

If you are willing to participate, there will be an abbreviated follow-up survey that will be distributed in March 2021 to assess the reliability of this instrument. Rest assured that all responses will remain confidential, so I ask that you answer all questions honestly and without using any resources.

Thank you again for considering this request during this busy time of year.

Sincerely,

Leslie Thompson Van Horn, MS, RDN, LDN
Doctoral Candidate, University of North Florida
Instructor, Winthrop University
Address: Redacted
Telephone: Redacted
Email: Redacted

Faculty Advisor: Dr. Lauri Wright, PhD, RDN, LD/N, FAND
Address: University of North Florida, Building 39, Room 3051
Telephone: (904) 620-1426
Email: l.wright@unf.edu

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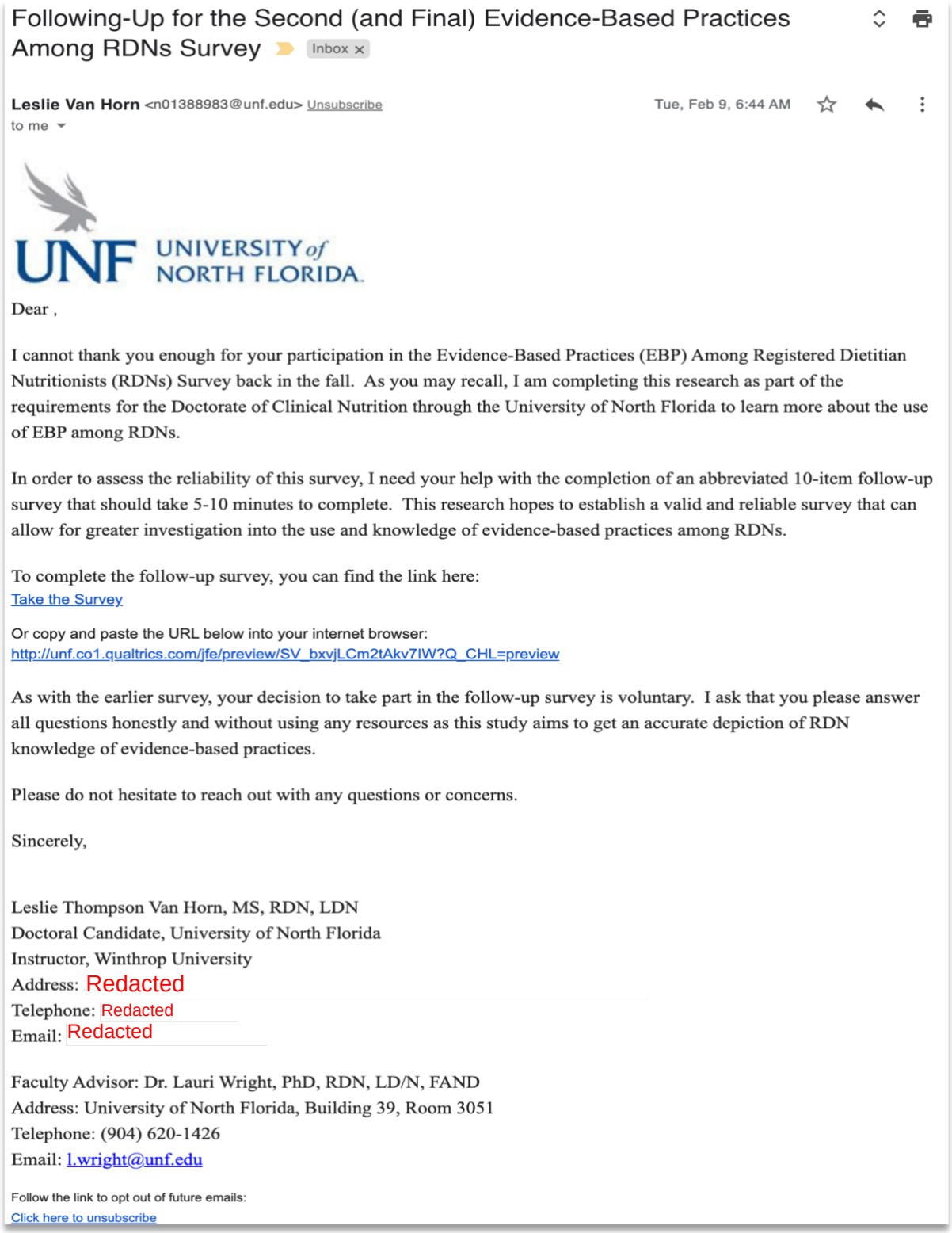
Figure 20. Timepoint 2 Initial Participant Email



Following-Up for the Second (and Final) Evidence-Based Practices Among RDNs Survey

Inbox ×

Leslie Van Horn <n01388983@unf.edu> Unsubscribe

Tue, Feb 9, 6:44 AM

to me

UNF UNIVERSITY of NORTH FLORIDA.

Dear ,

I cannot thank you enough for your participation in the Evidence-Based Practices (EBP) Among Registered Dietitian Nutritionists (RDNs) Survey back in the fall. As you may recall, I am completing this research as part of the requirements for the Doctorate of Clinical Nutrition through the University of North Florida to learn more about the use of EBP among RDNs.

In order to assess the reliability of this survey, I need your help with the completion of an abbreviated 10-item follow-up survey that should take 5-10 minutes to complete. This research hopes to establish a valid and reliable survey that can allow for greater investigation into the use and knowledge of evidence-based practices among RDNs.

To complete the follow-up survey, you can find the link here:
Take the Survey

Or copy and paste the URL below into your internet browser:
http://unf.co1.qualtrics.com/jfe/preview/SV_bxvjLCm2tAkv7IW?Q_CHL=preview

As with the earlier survey, your decision to take part in the follow-up survey is voluntary. I ask that you please answer all questions honestly and without using any resources as this study aims to get an accurate depiction of RDN knowledge of evidence-based practices.

Please do not hesitate to reach out with any questions or concerns.

Sincerely,

Leslie Thompson Van Horn, MS, RDN, LDN
Doctoral Candidate, University of North Florida
Instructor, Winthrop University
Address: Redacted
Telephone: Redacted
Email: Redacted

Faculty Advisor: Dr. Lauri Wright, PhD, RDN, LD/N, FAND
Address: University of North Florida, Building 39, Room 3051
Telephone: (904) 620-1426
Email: l.wright@unf.edu

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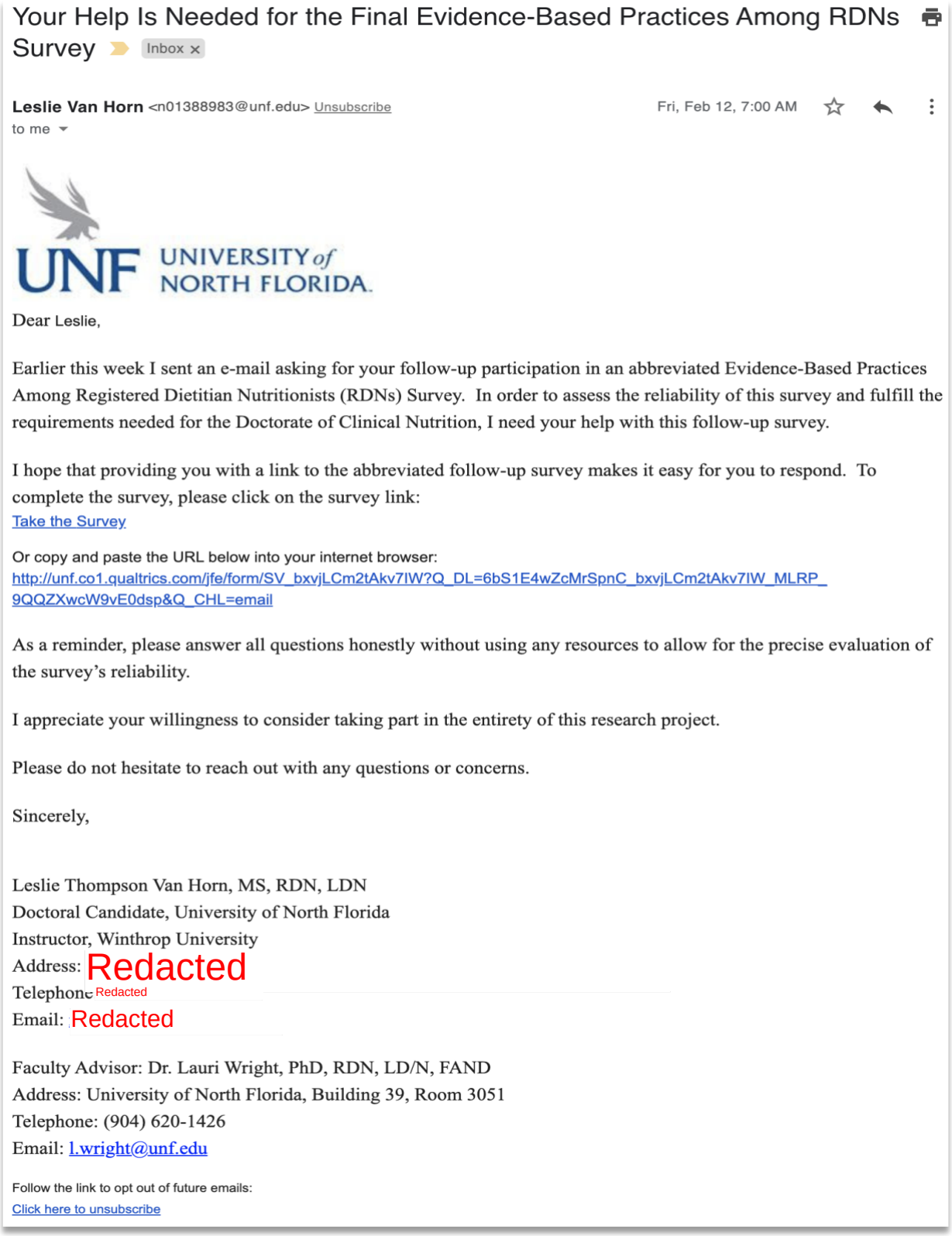
Figure 21. Timepoint 2 Reminder 1 Email



Your Help Is Needed for the Final Evidence-Based Practices Among RDNs Survey

Inbox ×

Leslie Van Horn <n01388983@unf.edu> Unsubscribe

Fri, Feb 12, 7:00 AM

to me

UNF UNIVERSITY of NORTH FLORIDA

Dear Leslie,

Earlier this week I sent an e-mail asking for your follow-up participation in an abbreviated Evidence-Based Practices Among Registered Dietitian Nutritionists (RDNs) Survey. In order to assess the reliability of this survey and fulfill the requirements needed for the Doctorate of Clinical Nutrition, I need your help with this follow-up survey.

I hope that providing you with a link to the abbreviated follow-up survey makes it easy for you to respond. To complete the survey, please click on the survey link:
Take the Survey

Or copy and paste the URL below into your internet browser:
http://unf.co1.qualtrics.com/jfe/form/SV_bxvjLCm2tAkv7IW?Q_DL=6bS1E4wZcMrSpnC_bxvjLCm2tAkv7IW_MLRP_9QQZXwcW9vE0dsp&Q_CHL=email

As a reminder, please answer all questions honestly without using any resources to allow for the precise evaluation of the survey's reliability.

I appreciate your willingness to consider taking part in the entirety of this research project.

Please do not hesitate to reach out with any questions or concerns.

Sincerely,

Leslie Thompson Van Horn, MS, RDN, LDN
Doctoral Candidate, University of North Florida
Instructor, Winthrop University
Address: Redacted
Telephone: Redacted
Email: Redacted

Faculty Advisor: Dr. Lauri Wright, PhD, RDN, LD/N, FAND
Address: University of North Florida, Building 39, Room 3051
Telephone: (904) 620-1426
Email: l.wright@unf.edu

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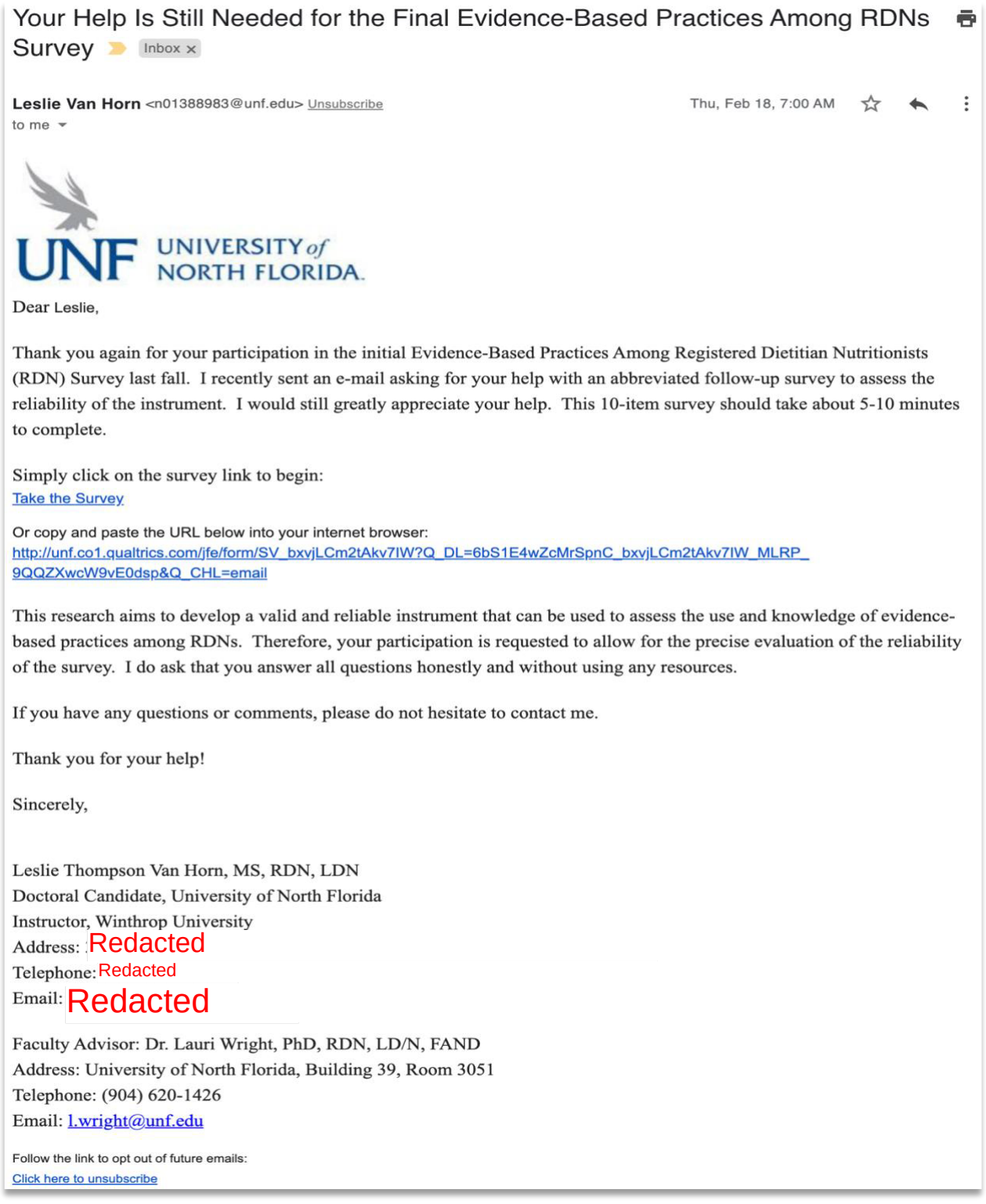
Figure 22. Timepoint 2 Reminder 2 Email



Your Help Is Still Needed for the Final Evidence-Based Practices Among RDNs Survey

Inbox ×

Leslie Van Horn <n01388983@unf.edu> Unsubscribe

Thu, Feb 18, 7:00 AM

to me

UNF UNIVERSITY of NORTH FLORIDA.

Dear Leslie,

Thank you again for your participation in the initial Evidence-Based Practices Among Registered Dietitian Nutritionists (RDN) Survey last fall. I recently sent an e-mail asking for your help with an abbreviated follow-up survey to assess the reliability of the instrument. I would still greatly appreciate your help. This 10-item survey should take about 5-10 minutes to complete.

Simply click on the survey link to begin:
Take the Survey

Or copy and paste the URL below into your internet browser:
http://unf.co1.qualtrics.com/jfe/form/SV_bxvjLCm2tAkv7IW?Q_DL=6bS1E4wZcMrSpnC_bxvjLCm2tAkv7IW_MLRP_9QQZXwcW9vE0dsp&Q_CHL=email

This research aims to develop a valid and reliable instrument that can be used to assess the use and knowledge of evidence-based practices among RDNs. Therefore, your participation is requested to allow for the precise evaluation of the reliability of the survey. I do ask that you answer all questions honestly and without using any resources.

If you have any questions or comments, please do not hesitate to contact me.

Thank you for your help!

Sincerely,

Leslie Thompson Van Horn, MS, RDN, LDN
Doctoral Candidate, University of North Florida
Instructor, Winthrop University
Address: Redacted
Telephone: Redacted
Email: Redacted

Faculty Advisor: Dr. Lauri Wright, PhD, RDN, LD/N, FAND
Address: University of North Florida, Building 39, Room 3051
Telephone: (904) 620-1426
Email: l.wright@unf.edu

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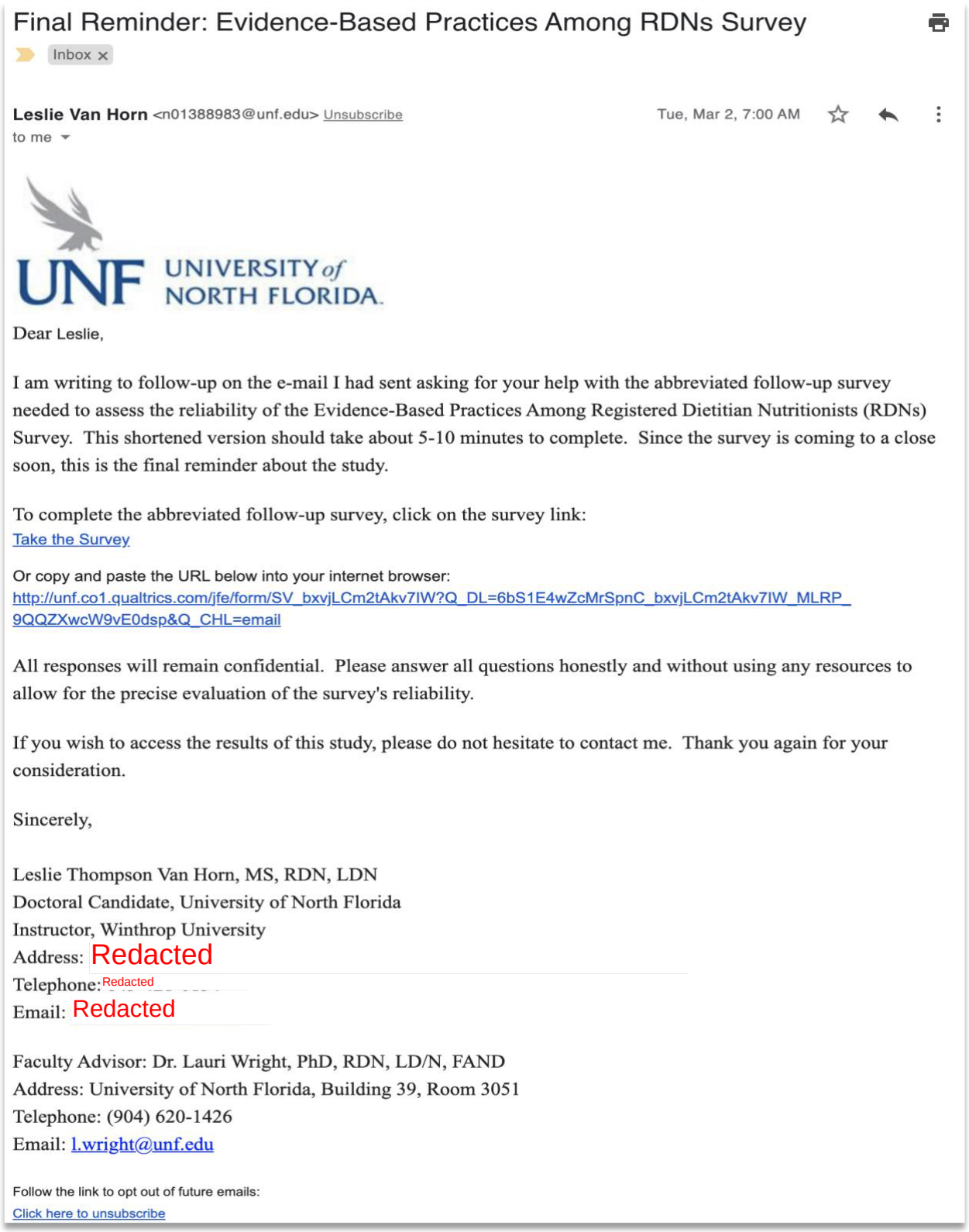
Figure 23. Timepoint 2 Reminder 3/Final Email



Final Reminder: Evidence-Based Practices Among RDNs Survey

Inbox ×

Leslie Van Horn <n01388983@unf.edu> Unsubscribe Tue, Mar 2, 7:00 AM

to me

UNF UNIVERSITY of NORTH FLORIDA.

Dear Leslie,

I am writing to follow-up on the e-mail I had sent asking for your help with the abbreviated follow-up survey needed to assess the reliability of the Evidence-Based Practices Among Registered Dietitian Nutritionists (RDNs) Survey. This shortened version should take about 5-10 minutes to complete. Since the survey is coming to a close soon, this is the final reminder about the study.

To complete the abbreviated follow-up survey, click on the survey link:
Take the Survey

Or copy and paste the URL below into your internet browser:
http://unf.co1.qualtrics.com/jfe/form/SV_bxvjLCm2tAkv7IW?Q_DL=6bS1E4wZcMrSpnC_bxvjLCm2tAkv7IW_MLRP_9QQZXwcW9vE0dsp&Q_CHL=email

All responses will remain confidential. Please answer all questions honestly and without using any resources to allow for the precise evaluation of the survey's reliability.

If you wish to access the results of this study, please do not hesitate to contact me. Thank you again for your consideration.

Sincerely,

Leslie Thompson Van Horn, MS, RDN, LDN
Doctoral Candidate, University of North Florida
Instructor, Winthrop University
Address: Redacted
Telephone: Redacted
Email: Redacted

Faculty Advisor: Dr. Lauri Wright, PhD, RDN, LD/N, FAND
Address: University of North Florida, Building 39, Room 3051
Telephone: (904) 620-1426
Email: l.wright@unf.edu

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Appendix J **SPSS Variable Codes**

Variable Name	Variable Description	Coding
Q1	Survey Item #1: Consent	Yes (1); No (2)
Q2	Survey Item #2: Currently credentialed RDN	Yes (1); No (2)
Q3	Survey Item #3: Presently working in nutrition and dietetics	Yes, FT (i.e., > 30 hours/week) (1); Yes, PT (i.e., < 30 hours/week) (2); Yes, PT but < 20 hours/week (3); No (4)
Q4	Survey Item #4: How many years working as RDN?	Ratio
Q5	Survey Item #5: Highest degree completed	Bachelors (1); Master's (2); Doctoral (3)
Q6	Survey Item #6: Highest nutrition/dietetics degree completed	Bachelors (1); Master's (2); Doctoral (3)
Q7	Survey Item #7: Years since completion of highest nutrition-related degree (i.e., recency of education)	Ratio
Q8	Survey Item #8: Which state do you currently primarily work?	Alphabetized by state including Puerto Rico (1-51); I do not reside in the United States (52); I work equally in multiple states/telehealth (53)
Q9	Survey Item #9: Description of geographic location of primary work setting	More rural (1); More urban (2); More suburban (3); Other (4)
Q10	Survey Item #10: Primary area of practice	Acute Care/Inpatient (1); Ambulatory Care (e.g., Outpatient, Home Care) (2); Community or Wellness (3); Consultation & Business (4); Education & Research (5); Food & Nutrition Management (6); Long-Term Care (7); Other (8)
Q11	Survey Item #11: Nutrition specialty certifications	Yes, 1 certification (1); Yes, > 1 certification (2); No (3)

Recode11SpecialtyCert	Recoded Survey Item #11 for descending code	Yes, 1 certification (3); Yes, > 1 certification (2); No (1)
Q12 (display logic if selected 'Yes' to Q11)	Survey Item #12: Select all specialty certifications	Held (1)
Q12_1	RD-AP or RDN-AP	
Q12_2	CDCES (formerly CDE)	
Q12_3	CNSC	
Q12_4	CSG	
Q12_5	CSO	
Q12_6	CSOWM	
Q12_7	CSP	
Q12_8	CSPCC	
Q12_9	CSR	
Q12_10	CSSD	
Q12_11	Other	
Q13	Survey Item #13: Number of peer-reviewed articles published	None (1); 1-3 (2); 4-6 (3); 7-9 (4); 10 or more (5)
Q14	Survey Item #14: Preceptor for dietetic interns	Yes, current (1); In the past (i.e., > 2 years) (2); No (3)
PreceptorRecode14	Recoded Survey Item #14 for descending code	Yes, current (3); In the past (i.e., > 2 years) (2); No (1)
Q15	Survey Item #15: Ethnicity – Hispanic, Latino, or Spanish origin?	No (1); Yes (2); Prefer not to answer (3)
Q16	Survey Item #16: Race	American Indian and Alaska Native (1); Asian (2); Black or African American (3); Native Hawaiian and Other Pacific Islander (4); White (5); Multiracial (6); Other (7); Prefer not to answer (8)
Q17	Survey Item #17: Gender identity	Female (1); Male (2); Transgender female (3); Transgender male (4); Gender nonconforming (5); Other (6); Prefer not to answer (7)
Q18	Survey Item #18: Age	Ratio
Q19	Survey Item #19: I am confident in my ability to use EBP.	Strongly Agree (1); Moderately Agree (2);

		Somewhat Agree (3); Neutral (4); Somewhat Disagree (5); Moderately Disagree (6); Strongly Disagree (7)
Q19RECODE	Recoded Survey Item #19 descending code	Strongly Agree (7); Moderately Agree (6); Somewhat Agree (5); Neutral (4); Somewhat Disagree (3); Moderately Disagree (2); Strongly Disagree (1)
Q20_1	Survey Item #20.1: Using EBP increases likelihood that recommendation is effective	Strongly Agree (1); Moderately Agree (2); Somewhat Agree (3); Neutral (4); Somewhat Disagree (5); Moderately Disagree (6); Strongly Disagree (7)
Q20.1	Recoded Survey Item #20.1 descending code	Strongly Agree (7); Moderately Agree (6); Somewhat Agree (5); Neutral (4); Somewhat Disagree (3); Moderately Disagree (2); Strongly Disagree (1)
Q20_2	Survey Item #20.2: Clinical trials and observational methods are equally valid	Strongly Agree (1); Moderately Agree (2); Somewhat Agree (3); Neutral (4); Somewhat Disagree (5); Moderately Disagree (6); Strongly Disagree (7)
Q20_3	Survey Item #20.3: It is important for me to search bibliographic databases	Strongly Agree (1); Moderately Agree (2); Somewhat Agree (3); Neutral (4); Somewhat Disagree (5); Moderately Disagree (6); Strongly Disagree (7)

Q20.3	Recoded Survey Item #20.3 descending code	Strongly Agree (7); Moderately Agree (6); Somewhat Agree (5); Neutral (4); Somewhat Disagree (3); Moderately Disagree (2); Strongly Disagree (1)
Q20_4	Survey Item #20.4: It is important for me to critically appraise research papers	Strongly Agree (1); Moderately Agree (2); Somewhat Agree (3); Neutral (4); Somewhat Disagree (5); Moderately Disagree (6); Strongly Disagree (7)
Q20.4	Recoded Survey Item #20.4 descending code	Strongly Agree (7); Moderately Agree (6); Somewhat Agree (5); Neutral (4); Somewhat Disagree (3); Moderately Disagree (2); Strongly Disagree (1)
Q20_5	Survey Item #20.5: Research evidence and patient/client perspectives are equally important	Strongly Agree (1); Moderately Agree (2); Somewhat Agree (3); Neutral (4); Somewhat Disagree (5); Moderately Disagree (6); Strongly Disagree (7)
Q20.5	Recoded Survey Item #20.5 descending code	Strongly Agree (7); Moderately Agree (6); Somewhat Agree (5); Neutral (4); Somewhat Disagree (3); Moderately Disagree (2); Strongly Disagree (1)
Q21_1	Survey Item #21: What % of your nutrition recommendations are based on evidence?	0-100 (% slider response)
Q22_1	Survey Item #22.1: Frequency of access to: Clinical research evidence	Every day (1); Every other day (2); Every week (3); Every month

		(4); A few times a year (5); Never (6)
Q22.1	Recoded Survey Item #22.1 descending code	Every day (6); Every other day (5); Every week (4); Every month (3); A few times a year (2); Never (1)
Q22_2	Survey Item #22.2: Frequency of access to: Clinical guidelines (textbook or manual)	Every day (1); Every other day (2); Every week (3); Every month (4); A few times a year (5); Never (6)
Q22.2	Recoded Survey Item #22.2 descending code	Every day (6); Every other day (5); Every week (4); Every month (3); A few times a year (2); Never (1)
Q22_3	Survey Item #22.3: Frequency of access to: Clinical research from original research	Every day (1); Every other day (2); Every week (3); Every month (4); A few times a year (5); Never (6)
Q22.3	Recoded Survey Item #22.3 descending code	Every day (6); Every other day (5); Every week (4); Every month (3); A few times a year (2); Never (1)
Q22_4	Survey Item #22.4: Frequency of access to: secondary sources	Every day (1); Every other day (2); Every week (3); Every month (4); A few times a year (5); Never (6)
Q22.4	Recoded Survey Item #22.4 descending code	Every day (6); Every other day (5); Every week (4); Every month (3); A few times a year (2); Never (1)
Q23	Survey Item #23: Time spent reading the latest research evidence	<15 minutes/month (1); 15-30 minutes/month (2); 15-30 minutes every 2 weeks (3); 15-30 minutes/week (4); 31-60 minutes/week (5); >1 hour/week (6)

Q24_1	Survey Item #24.1: The use of EBP has affected recommendations and/or practice decisions	Strongly Agree (1); Moderately Agree (2); Somewhat Agree (3); Neutral (4); Somewhat Disagree (5); Moderately Disagree (6); Strongly Disagree (7)
Q24.1	Recoded Survey Item #24.1 descending code	Strongly Agree (7); Moderately Agree (6); Somewhat Agree (5); Neutral (4); Somewhat Disagree (3); Moderately Disagree (2); Strongly Disagree (1)
Q24_2	Survey Item #24.2: The use of EBP has affected my patient/client outcomes	Strongly Agree (1); Moderately Agree (2); Somewhat Agree (3); Neutral (4); Somewhat Disagree (5); Moderately Disagree (6); Strongly Disagree (7)
Q24.2	Recoded Survey Item #24.2 descending code	Strongly Agree (7); Moderately Agree (6); Somewhat Agree (5); Neutral (4); Somewhat Disagree (3); Moderately Disagree (2); Strongly Disagree (1)
Q25	Survey Item #25: How often does research change your recommendations?	All the time (1); Regularly (2); Frequently (3); Occasionally (4); Almost Never (5); Never (6)
Q25RECODE	Recoded Survey Item #25 descending code	All the time (6); Regularly (5); Frequently (4); Occasionally (3); Almost Never (2); Never (1)

Q26	Survey Item #26: Confidence in practice-based decision making?	A lot (1); A moderate amount (2); Some (3); A little (4); None at all (5)
Q26RECODE	Recoded Survey Item #26 descending code	A lot (5); A moderate amount (4); Some (3); A little (2); None at all (1)
Q27_1	Survey Item #27.1: EBP is a "cookbook" approach that disregards experience	Strongly Agree (1); Moderately Agree (2); Somewhat Agree (3); Neutral (4); Somewhat Disagree (5); Moderately Disagree (6); Strongly Disagree (7)
Q27_2	Survey Item #27.2: It is easy to follow EBP	Strongly Agree (1); Moderately Agree (2); Somewhat Agree (3); Neutral (4); Somewhat Disagree (5); Moderately Disagree (6); Strongly Disagree (7)
Q27.2	Recoded Survey Item #27.2 descending code	Strongly Agree (7); Moderately Agree (6); Somewhat Agree (5); Neutral (4); Somewhat Disagree (3); Moderately Disagree (2); Strongly Disagree (1)
Q27_3	Survey Item #27.3: EBP takes too much time	Strongly Agree (1); Moderately Agree (2); Somewhat Agree (3); Neutral (4); Somewhat Disagree (5); Moderately Disagree (6); Strongly Disagree (7)
Q27_4	Survey Item #27.4: EBP ignores judgment of professional expertise	Strongly Agree (1); Moderately Agree (2); Somewhat Agree (3); Neutral (4); Somewhat Disagree (5); Moderately Disagree (6); Strongly Disagree (7)

Q27_5	Survey Item #27.5: Previous professional experience is more important than research findings	Strongly Agree (1); Moderately Agree (2); Somewhat Agree (3); Neutral (4); Somewhat Disagree (5); Moderately Disagree (6); Strongly Disagree (7)
Q27_6	Survey Item #27.6: EBP should be an integral part of dietetic practice	Strongly Agree (1); Moderately Agree (2); Somewhat Agree (3); Neutral (4); Somewhat Disagree (5); Moderately Disagree (6); Strongly Disagree (7)
Q27.6	Recoded Survey Item #27.6 descending code	Strongly Agree (7); Moderately Agree (6); Somewhat Agree (5); Neutral (4); Somewhat Disagree (3); Moderately Disagree (2); Strongly Disagree (1)
Q27_7	Survey Item #27.7: EBP is used by my colleagues	Strongly Agree (1); Moderately Agree (2); Somewhat Agree (3); Neutral (4); Somewhat Disagree (5); Moderately Disagree (6); Strongly Disagree (7)
Q27.7	Recoded Survey Item #27.7 descending code	Strongly Agree (7); Moderately Agree (6); Somewhat Agree (5); Neutral (4); Somewhat Disagree (3); Moderately Disagree (2); Strongly Disagree (1)
Q27_8	Survey Item #27.8: I use EBP because it improves outcomes	Strongly Agree (1); Moderately Agree (2); Somewhat Agree (3); Neutral (4); Somewhat Disagree (5); Moderately Disagree

		(6); Strongly Disagree (7)
Q27.8	Recoded Survey Item #27.8 descending code	Strongly Agree (7); Moderately Agree (6); Somewhat Agree (5); Neutral (4); Somewhat Disagree (3); Moderately Disagree (2); Strongly Disagree (1)
Q27_9	Survey Item #27.9: I use EBP because I believe in it	Strongly Agree (1); Moderately Agree (2); Somewhat Agree (3); Neutral (4); Somewhat Disagree (5); Moderately Disagree (6); Strongly Disagree (7)
Q27.9	Recoded Survey Item #27.9 descending code	Strongly Agree (7); Moderately Agree (6); Somewhat Agree (5); Neutral (4); Somewhat Disagree (3); Moderately Disagree (2); Strongly Disagree (1)
Q27_10	Survey Item #27.10: There is adequate time in my job to search for evidence	Strongly Agree (1); Moderately Agree (2); Somewhat Agree (3); Neutral (4); Somewhat Disagree (5); Moderately Disagree (6); Strongly Disagree (7)
Q27.10	Recoded Survey Item #27.10 descending code	Strongly Agree (7); Moderately Agree (6); Somewhat Agree (5); Neutral (4); Somewhat Disagree (3); Moderately Disagree (2); Strongly Disagree (1)
Q27_11	Survey Item #27.11: I was trained to use EBP in school or internship	Strongly Agree (1); Moderately Agree (2); Somewhat Agree (3); Neutral (4); Somewhat

		Disagree (5); Moderately Disagree (6); Strongly Disagree (7)
Q27.11	Recoded Survey Item #27.11 descending code	Strongly Agree (7); Moderately Agree (6); Somewhat Agree (5); Neutral (4); Somewhat Disagree (3); Moderately Disagree (2); Strongly Disagree (1)
Q27_12	Survey Item #27.12: I use EBP because my colleagues do	Strongly Agree (1); Moderately Agree (2); Somewhat Agree (3); Neutral (4); Somewhat Disagree (5); Moderately Disagree (6); Strongly Disagree (7)
Q27.12	Recoded Survey Item #27.12 descending code	Strongly Agree (7); Moderately Agree (6); Somewhat Agree (5); Neutral (4); Somewhat Disagree (3); Moderately Disagree (2); Strongly Disagree (1)
Q27_13	Survey Item #27.13: I don't use EBP because I don't have time	Strongly Agree (1); Moderately Agree (2); Somewhat Agree (3); Neutral (4); Somewhat Disagree (5); Moderately Disagree (6); Strongly Disagree (7)
Q27_14	Survey Item #27.14: I don't use EBP because it is difficult to change my recommendations	Strongly Agree (1); Moderately Agree (2); Somewhat Agree (3); Neutral (4); Somewhat Disagree (5); Moderately Disagree (6); Strongly Disagree (7)
Q28_1	Survey Item #28.1: Competence in: Conducting a literature review	Extremely Competent (1); Moderately

		Competent (2); Slightly Competent (3); Neither Competent nor Incompetent (4); Slightly Incompetent (5); Moderately Incompetent (6); Extremely Incompetent (7)
Q28.1	Recoded Survey Item #28.1 descending code	Extremely Competent (7); Moderately Competent (6); Slightly Competent (5); Neither Competent nor Incompetent (4); Slightly Incompetent (3); Moderately Incompetent (2); Extremely Incompetent (1)
Q28_2	Survey Item #28.2: Competence in: Conducting primary research	Extremely Competent (1); Moderately Competent (2); Slightly Competent (3); Neither Competent nor Incompetent (4); Slightly Incompetent (5); Moderately Incompetent (6); Extremely Incompetent (7)
Q28.2	Recoded Survey Item #28.2 descending code	Extremely Competent (7); Moderately Competent (6); Slightly Competent (5); Neither Competent nor Incompetent (4); Slightly Incompetent (3); Moderately Incompetent (2); Extremely Incompetent (1)
Q28_3	Survey Item #28.3: Competence in: Using computers and other technology to answer questions	Extremely Competent (1); Moderately Competent (2); Slightly Competent (3); Neither

		Competent nor Incompetent (4); Slightly Incompetent (5); Moderately Incompetent (6); Extremely Incompetent (7)
Q28.3	Recoded Survey Item #28.3 descending code	Extremely Competent (7); Moderately Competent (6); Slightly Competent (5); Neither Competent nor Incompetent (4); Slightly Incompetent (3); Moderately Incompetent (2); Extremely Incompetent (1)
Q28_4	Survey Item #28.4: Competence in: Monitoring and reviewing practice-based skills	Extremely Competent (1); Moderately Competent (2); Slightly Competent (3); Neither Competent nor Incompetent (4); Slightly Incompetent (5); Moderately Incompetent (6); Extremely Incompetent (7)
Q28.4	Recoded Survey Item #28.4 descending code	Extremely Competent (7); Moderately Competent (6); Slightly Competent (5); Neither Competent nor Incompetent (4); Slightly Incompetent (3); Moderately Incompetent (2); Extremely Incompetent (1)
Q28_5	Survey Item #28.5: Competence in: Converting information needs into a searchable question	Extremely Competent (1); Moderately Competent (2); Slightly Competent (3); Neither Competent nor Incompetent (4);

		Slightly Incompetent (5); Moderately Incompetent (6); Extremely Incompetent (7)
Q28.5	Recoded Survey Item #28.5 descending code	Extremely Competent (7); Moderately Competent (6); Slightly Competent (5); Neither Competent nor Incompetent (4); Slightly Incompetent (3); Moderately Incompetent (2); Extremely Incompetent (1)
Q28_6	Survey Item #28.6: Competence in: Identifying research types and sources	Extremely Competent (1); Moderately Competent (2); Slightly Competent (3); Neither Competent nor Incompetent (4); Slightly Incompetent (5); Moderately Incompetent (6); Extremely Incompetent (7)
Q28.6	Recoded Survey Item #28.6 descending code	Extremely Competent (7); Moderately Competent (6); Slightly Competent (5); Neither Competent nor Incompetent (4); Slightly Incompetent (3); Moderately Incompetent (2); Extremely Incompetent (1)
Q28_7	Survey Item #28.7: Competence in: Identifying gaps in my practice	Extremely Competent (1); Moderately Competent (2); Slightly Competent (3); Neither Competent nor Incompetent (4); Slightly Incompetent (5); Moderately

		Incompetent (6); Extremely Incompetent (7)
Q28.7	Recoded Survey Item #28.7 descending code	Extremely Competent (7); Moderately Competent (6); Slightly Competent (5); Neither Competent nor Incompetent (4); Slightly Incompetent (3); Moderately Incompetent (2); Extremely Incompetent (1)
Q28_8	Survey Item #28.8: Competence in: Retrieving evidence	Extremely Competent (1); Moderately Competent (2); Slightly Competent (3); Neither Competent nor Incompetent (4); Slightly Incompetent (5); Moderately Incompetent (6); Extremely Incompetent (7)
Q28.8	Recoded Survey Item #28.8 descending code	Extremely Competent (7); Moderately Competent (6); Slightly Competent (5); Neither Competent nor Incompetent (4); Slightly Incompetent (3); Moderately Incompetent (2); Extremely Incompetent (1)
Q28_9	Survey Item #28.9: Competence in: Critically analyzing evidence against set standards	Extremely Competent (1); Moderately Competent (2); Slightly Competent (3); Neither Competent nor Incompetent (4); Slightly Incompetent (5); Moderately Incompetent (6);

		Extremely Incompetent (7)
Q28.9	Recoded Survey Item #28.9 descending code	Extremely Competent (7); Moderately Competent (6); Slightly Competent (5); Neither Competent nor Incompetent (4); Slightly Incompetent (3); Moderately Incompetent (2); Extremely Incompetent (1)
Q28_10	Survey Item #28.10: Competence in: Determining how valid the material is	Extremely Competent (1); Moderately Competent (2); Slightly Competent (3); Neither Competent nor Incompetent (4); Slightly Incompetent (5); Moderately Incompetent (6); Extremely Incompetent (7)
Q28.10	Recoded Survey Item #28.10 descending code	Extremely Competent (7); Moderately Competent (6); Slightly Competent (5); Neither Competent nor Incompetent (4); Slightly Incompetent (3); Moderately Incompetent (2); Extremely Incompetent (1)
Q28_11	Survey Item #28.11: Competence in: Determining how useful the material is	Extremely Competent (1); Moderately Competent (2); Slightly Competent (3); Neither Competent nor Incompetent (4); Slightly Incompetent (5); Moderately Incompetent (6); Extremely Incompetent (7)

Q28.11	Recoded Survey Item #28.11 descending code	Extremely Competent (7); Moderately Competent (6); Slightly Competent (5); Neither Competent nor Incompetent (4); Slightly Incompetent (3); Moderately Incompetent (2); Extremely Incompetent (1)
Q28_12	Survey Item #28.12: Competence in: Applying information to individual cases	Extremely Competent (1); Moderately Competent (2); Slightly Competent (3); Neither Competent nor Incompetent (4); Slightly Incompetent (5); Moderately Incompetent (6); Extremely Incompetent (7)
Q28.12	Recoded Survey Item #28.12 descending code	Extremely Competent (7); Moderately Competent (6); Slightly Competent (5); Neither Competent nor Incompetent (4); Slightly Incompetent (3); Moderately Incompetent (2); Extremely Incompetent (1)
Q28_13	Survey Item #28.13: Competence in: Sharing idea and information with colleagues	Extremely Competent (1); Moderately Competent (2); Slightly Competent (3); Neither Competent nor Incompetent (4); Slightly Incompetent (5); Moderately Incompetent (6); Extremely Incompetent (7)
Q28.13	Recoded Survey Item #28.13 descending code	Extremely Competent (7); Moderately

		Competent (6); Slightly Competent (5); Neither Competent nor Incompetent (4); Slightly Incompetent (3); Moderately Incompetent (2); Extremely Incompetent (1)	
Q28_14	Survey Item #28.14: Competence in: Disseminating new ideas about patient/client care to colleagues	Extremely Competent (1); Moderately Competent (2); Slightly Competent (3); Neither Competent nor Incompetent (4); Slightly Incompetent (5); Moderately Incompetent (6); Extremely Incompetent (7)	
Q28.14	Recoded Survey Item #28.14 descending code	Extremely Competent (7); Moderately Competent (6); Slightly Competent (5); Neither Competent nor Incompetent (4); Slightly Incompetent (3); Moderately Incompetent (2); Extremely Incompetent (1)	
Q29_1-Q29_11	Survey Item #29: Identify the top four sources of information that you would have the most confidence in providing valid patient care evidence.	1 for items selected following scheme below in SC8	
SC8	Survey Item #29 [sum of Q29_1-Q29_11]: Identify the top four sources of information that you would have the most confidence in providing valid patient care evidence. (**2 points maximum score**)	Q29_1: General internet search (e.g., Google	0 points assigned
		Q29_2: Clinical guidelines	0.5 point assigned
		Q29_3: Peers	0 points assigned

		Q29_4: Systematic Reviews	0.5 point assigned
		Q29_5: Textbooks	0 points assigned
		Q29_6: Professional Organizations	0 points assigned
		Q29_7: Disease-specific support groups	0 points assigned
		Q29_8: Peer-reviewed journals	0.5 points assigned
		Q29_9: Electronic research databases	0.5 points assigned
		Q29_10 Other	0 points assigned
		Q29_11 I don't know	0 points assigned
Q30	Survey Item #30: Type of research design to answer whether a dietary component in food or supplement would provide better health outcome	Case study (1); Randomized controlled trial (2); Cross-sectional study (3); Cohort study (4); Survey (5); I don't know (blank)	
SC9	Survey Item #30 [score of Q30]: Type of research design to answer whether a dietary component in food or supplement would provide better health outcome	1 point assigned if selected 'Randomized controlled trial' (2); otherwise, 0 points assigned	
Q31	Survey Item #31: How to determine if research is methodologically rigorous	If the study is in a peer-reviewed journal…(1); Use a critical appraisal tool…(2); Discuss the research…(3); All of the above (4); I don't know (blank)	

SC10	Survey Item #31 [score of Q31]: How to determine if research is methodologically rigorous	1 point assigned if selected 'Use of a critical appraisal tool to appraise the risk of bias' (2); otherwise, 0 points assigned
Q32	Survey Item #32: Two RCTs with beneficial effect, which has more beneficial effect?	Study 1 (1); Study 2 (2); I don't know (blank)
SC7	Survey Item #32 [score of Q32]: Two RCTs with beneficial effect, which has more beneficial effect?	1 point assigned if selected 'Study 2' (2); otherwise, 0 points assigned
Q33	Survey Item #33: Item #32 follow-up: How did you decide which study?	p-value (1); effect size (2); mean stool weight (3); confidence intervals (4)
SC11	Survey Item #33 [score of Q33]: Item #32 follow-up: How did you decide which study?	1 point assigned if selected 'effect size' (2); otherwise, 0 points assigned
Q34	Survey Item #34: Most accurate statement with respect to the ranking of evidence.	Clinical case studies are ranked higher than RCTs (1); Expert opinion is the lowest…(2); Lab animal research is the highest…(3); Research supported by the NIH is the highest…(4); I don't know (blank)
SC12	Survey Item #34 [score of Q34]: Most accurate statement with respect to the ranking of evidence.	1 point assigned if selected 'Expert opinion is the lowest level of evidence' (2); otherwise, 0 points assigned
Q35	Survey Item #35: Highest level of evidence	Article on a non-randomized trial…(1); Case report article…(2); AND EAL…(3); A large-scale cohort…(4); I don't know (blank)
SC13	Survey Item #35 [score of Q35]: Highest level of evidence	1 point assigned if selected 'AND EAL recommendation

		statement on a nutrition-related topic' (3); otherwise, 0 points assigned
Q36	Survey Item #36: Most accurate with respect to the number of subjects in a clinical trial	A power analysis…(1); If data are obtained from a large sample…(2); Only large treatment effects can be observed when very large numbers of subjects are enrolled (3); Too few subjects may not allow true treatment effects to be seen…(4); I don't know (blank)
SC14	Survey Item #36 [score of Q36]: Most accurate with respect to the number of subjects in a clinical trial	1 point assigned if selected 'Too few subjects may. Not allow true treatment effects to be seen when they, in fact, exist.' (4); otherwise, 0 points assigned
Q37	Survey Item #37: Statistical process that quantitatively pools results into one analysis	Cochrane review (1); Meta-analysis (2); NNT analysis (3); Systematic review (4); I don't know (blank)
SC15	Survey Item #37 [score of Q37]: Statistical process that quantitatively pools results into one analysis	1 point assigned if 'Meta-analysis' (2); is selected; otherwise, 0 points assigned
Q38	Survey Item #38: Most appropriate study design to evaluate the efficacy of a new diagnostic tool	Blind comparison…(1); Case-control study (2); RCT (3); RRD (4); I don't know (blank)
SC16	Survey Item #38 [score of Q38]: Most appropriate study design to evaluate the efficacy of a new diagnostic tool	1 point assigned if 'Blind comparison with a gold standard' (1) is selected; otherwise, 0 points assigned
SC5	Total Objective Knowledge Score [sum of SC7-SC16]	Maximum 11 possible points
SubjectiveKnowledgeScore	Total Subjective Knowledge Item Score	***Recode into Different Variables***: Sum of

		Q19RECODE; Q20.1; Q20_2; Q20.3; Q20.4; Q20.5; Q21_1; Q22.1; Q22.2; Q22.3; Q22.4; Q23; Q24.1; Q24.2; Q25RECODE; Q26RECODE; Q27_1; Q27.2; Q27_3; Q27_4; Q27_5; Q27.6; Q27.7; Q27.8; Q27.9; Q27.10; Q27.11; Q27.12, Q27_13; Q27_14; Q28.1; Q28.2; Q28.3; Q28.4; Q28.5; Q28.6; Q28.7; Q28.8; Q28.9; Q28.10; Q28.11; Q28.12; Q28.13; Q28.14
SubjectiveNoPercent	Total Subjective Knowledge Item Score without Item #21 (%)	***Recode into Different Variables***: SubjectiveKnowledgeScore without Item #21 [Q21_1]
KABQKnowledge	Sum of KABQ Knowledge Subscale	***Recode into Different Variables***: Sum of Q19RECODE; Q20.1; Q20_2; Q20.3; Q20.4; Q20.5; Q21_1
KABQBehavior	Sum of KABQ Behavior Subscale	***Recode into Different Variables***: Sum of Q22.1; Q22.2; Q2.3; Q22.4; Q23
KABQOutcomeImplement	Sum of KABQ Outcome/Decision/Implementation Subscale	***Recode into Different Variables***: Sum of Q24.1; Q24.2; Q25RECODE
KABQAttitude	Sum of KABQ Attitudes Subscale	***Recode into Different Variables***: Sum of Q26RECODE; Q27_1; Q27.2; Q27_3; Q27_4; Q27_5; Q27.6; Q27.7; Q27.8; Q27.9; Q27.10; Q27.11; Q27.12, Q27_13; Q27_14
EBPQKnowledgeCompetence	Sum of EBPQ Perceived Knowledge/Skills Subscale	***Recode into Different Variables***: Q28.1;

		Q28.2; Q28.3; Q28.4; Q28.5; Q28.6; Q28.7; Q28.8; Q28.9; Q28.10; Q28.11; Q28.12; Q28.13; Q28.14
KABQKnowCompetence	Sum of KABQ Knowledge Subscale without Item #21	***Recode into Different Varables***: KABQKnowledge without Item #21 (Q21_1)

Appendix K **SPSS Reliability Analysis Outputs**

Appendix K.1 Internal Consistency Reliability SPSS Analysis Outputs

Figure 24. SPSS Output - Cronbach's α for all EBP survey items (54 items)

```
RELIABILITY
  /VARIABLES=Q19RECODE Q20.1 Q20.3 Q20.4 Q20.5 Q20_2 Q21_1 Q22.1 Q22.2 Q22.3 Q22.4 Q23 Q24.1 Q24.2
    Q25RECODE Q26RECODE Q27.2 Q27.6 Q27.7 Q27.8 Q27.9 Q27.10 Q27.11 Q27.12 Q27_1 Q27_3 Q27_4 Q27_5
    Q27_13 Q27_14 Q28.1 Q28.2 Q28.3 Q28.4 Q28.5 Q28.6 Q28.7 Q28.8 Q28.9 Q28.10 Q28.11 Q28.12 Q28.13
    Q28.14 SC8 SC9 SC10 SC11 SC12 SC13 SC14 SC15 SC16 SC7
  /SCALE('ALL VARIABLES') ALL
  /MODEL=ALPHA.
```

Reliability

Scale: ALL VARIABLES

Case Processing Summary

		N	%
Cases	Valid	400	83.0
	Excluded[a]	82	17.0
	Total	482	100.0

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics

Cronbach's Alpha	N of Items
.791	54

Figure 25. SPSS Output - Cronbach's α for all EBP items except item #21 (%)

```
RELIABILITY
  /VARIABLES=Q19RECODE Q20.1 Q20.3 Q20.4 Q20.5 Q20_2 Q22.1 Q22.2 Q22.3 Q22.4 Q23 Q24.1 Q24.2
    Q25RECODE Q26RECODE Q27.2 Q27.6 Q27.7 Q27.8 Q27.9 Q27.10 Q27.11 Q27.12 Q27_1 Q27_3 Q27_4 Q27_5
    Q27_13 Q27_14 Q28.1 Q28.2 Q28.3 Q28.4 Q28.5 Q28.6 Q28.7 Q28.8 Q28.9 Q28.10 Q28.11 Q28.12 Q28.13
    Q28.14 SC8 SC9 SC10 SC11 SC12 SC13 SC14 SC15 SC16 SC7
  /SCALE('ALL VARIABLES') ALL
  /MODEL=ALPHA.
```

Reliability

Scale: ALL VARIABLES

Case Processing Summary

		N	%
Cases	Valid	400	83.0
	Excluded[a]	82	17.0
	Total	482	100.0

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics

Cronbach's Alpha	N of Items
.913	53

Figure 26. SPSS Output - Cronbach's α for all subjective knowledge items

```
RELIABILITY
  /VARIABLES=Q19RECODE Q20.1 Q20.3 Q20.4 Q20.5 Q20_2 Q22.1 Q22.2 Q22.3 Q22.4 Q23 Q24.1 Q24.2
    Q25RECODE Q26RECODE Q27.2 Q27.6 Q27.7 Q27.8 Q27.9 Q27.10 Q27.11 Q27.12 Q27_1 Q27_3 Q27_4 Q27_5
    Q27_13 Q27_14 Q28.1 Q28.2 Q28.3 Q28.4 Q28.5 Q28.6 Q28.7 Q28.8 Q28.9 Q28.10 Q28.11 Q28.12 Q28.13
    Q28.14 Q21_1
  /SCALE('ALL VARIABLES') ALL
  /MODEL=ALPHA.
```

Reliability

Scale: ALL VARIABLES

Case Processing Summary

		N	%
Cases	Valid	477	99.0
	Excluded[a]	5	1.0
	Total	482	100.0

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics

Cronbach's Alpha	N of Items
.787	44

Figure 27. SPSS Output - Cronbach's α for all subjective knowledge items except item #21 (%)

```
RELIABILITY
  /VARIABLES=Q19RECODE Q20.1 Q20.3 Q20.4 Q20.5 Q20_2 Q22.1 Q22.2 Q22.3 Q22.4 Q23 Q24.1 Q24.2
    Q25RECODE Q26RECODE Q27.2 Q27.6 Q27.7 Q27.8 Q27.9 Q27.10 Q27.11 Q27.12 Q27_1 Q27_3 Q27_4 Q27_5
    Q27_13 Q27_14 Q28.1 Q28.2 Q28.3 Q28.4 Q28.5 Q28.6 Q28.7 Q28.8 Q28.9 Q28.10 Q28.11 Q28.12 Q28.13
    Q28.14
  /SCALE('ALL VARIABLES') ALL
  /MODEL=ALPHA.
```

Reliability

Scale: ALL VARIABLES

Case Processing Summary

		N	%
Cases	Valid	477	99.0
	Excluded[a]	5	1.0
	Total	482	100.0

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics

Cronbach's Alpha	N of Items
.919	43

Figure 28. SPSS Output - Cronbach's α for all KABQ sections

```
RELIABILITY
  /VARIABLES=Q19RECODE Q20.1 Q20.3 Q20.4 Q20.5 Q20_2 Q22.1 Q22.2 Q22.3 Q22.4 Q23 Q21_1 Q24.1 Q24.2
    Q25RECODE Q26RECODE Q27.2 Q27.6 Q27.7 Q27.8 Q27.9 Q27.10 Q27.11 Q27.12 Q27_1 Q27_3 Q27_4 Q27_5
    Q27_13 Q27_14
  /SCALE('ALL VARIABLES') ALL
  /MODEL=ALPHA.
```

Reliability

Scale: ALL VARIABLES

Case Processing Summary

		N	%
Cases	Valid	479	99.4
	Excluded[a]	3	.6
	Total	482	100.0

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics

Cronbach's Alpha	N of Items
.688	30

Figure 29. SPSS Output - Cronbach's α for all KABQ sections, not including item #21 (%)

```
RELIABILITY
  /VARIABLES=Q19RECODE Q20.1 Q20.3 Q20.4 Q20.5 Q20_2 Q22.1 Q22.2 Q22.3 Q22.4 Q23 Q24.1 Q24.2
    Q25RECODE Q26RECODE Q27.2 Q27.6 Q27.7 Q27.8 Q27.9 Q27.10 Q27.11 Q27.12 Q27_1 Q27_3 Q27_4 Q27_5
    Q27_13 Q27_14
  /SCALE('ALL VARIABLES') ALL
  /MODEL=ALPHA.
```

Reliability

Scale: ALL VARIABLES

Case Processing Summary

		N	%
Cases	Valid	479	99.4
	Excluded[a]	3	.6
	Total	482	100.0

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics

Cronbach's Alpha	N of Items
.870	29

Figure 30. SPSS Output - Cronbach's α KABQ Attitudes subscale

Case Processing Summary

		N	%
Cases	Valid	481	99.8
	Excluded[a]	1	.2
	Total	482	100.0

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.822	.847	15

Figure 31. SPSS Output - Cronbach's α KABQ Knowledge subscale

```
RELIABILITY
  /VARIABLES=Q19RECODE Q20.1 Q20.3 Q20.4 Q20.5 Q21_1 Q20_2
  /SCALE('ALL VARIABLES') ALL
  /MODEL=ALPHA.
```

Reliability

Scale: ALL VARIABLES

Case Processing Summary

		N	%
Cases	Valid	481	99.8
	Excluded[a]	1	.2
	Total	482	100.0

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics

Cronbach's Alpha	N of Items
.213	7

Figure 32. SPSS Output - Cronbach's α KABQ Knowledge subscale, no item #21 (%)

```
RELIABILITY
  /VARIABLES=Q19RECODE Q20.1 Q20.3 Q20.4 Q20.5 Q20_2
  /SCALE('ALL VARIABLES') ALL
  /MODEL=ALPHA.
```

Reliability

Scale: ALL VARIABLES

Case Processing Summary

		N	%
Cases	Valid	481	99.8
	Excluded[a]	1	.2
	Total	482	100.0

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics

Cronbach's Alpha	N of Items
.454	6

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted
Q20.1 RECODE	27.1123	14.287	.274	.179	.402
Q20.4 RECODE	27.8773	9.487	.594	.497	.148
Q20.5 RECODE	27.4844	13.542	.178	.179	.433
Clinical trials and observational methods are equally valid	30.4137	15.647	-.163	.119	.695
Q19	27.1622	13.807	.288	.162	.390
Q20.3 RECODE	28.0374	10.349	.511	.488	.221

Figure 33. SPSS Output - Cronbach's α KABQ Behavior subscale

```
RELIABILITY
  /VARIABLES=Q22.1 Q22.2 Q22.3 Q22.4 Q23
  /SCALE('ALL VARIABLES') ALL
  /MODEL=ALPHA.
```

Reliability

Scale: ALL VARIABLES

Case Processing Summary

		N	%
Cases	Valid	481	99.8
	Excluded[a]	1	.2
	Total	482	100.0

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics

Cronbach's Alpha	N of Items
.783	5

Figure 34. SPSS Output - Cronbach's α KABQ Outcome/Decision/Implementation subscale

Case Processing Summary

		N	%
Cases	Valid	480	99.6
	Excluded[a]	2	.4
	Total	482	100.0

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.674	.674	3

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted
Q24.1 RECODE	9.7625	2.699	.584	.430	.461
Q24.2 RECODE	10.1479	2.247	.590	.440	.429
Q25 RECODE	12.3479	3.238	.317	.101	.782

Figure 35. SPSS Output - Cronbach's α EBPQ Perceived Knowledge/Skill subscale

```
RELIABILITY
  /VARIABLES=Q28.1 Q28.2 Q28.3 Q28.4 Q28.5 Q28.6 Q28.7 Q28.8 Q28.9 Q28.10 Q28.11 Q28.12 Q28.13
    Q28.14
  /SCALE('ALL VARIABLES') ALL
  /MODEL=ALPHA.
```

Reliability

Scale: ALL VARIABLES

Case Processing Summary

		N	%
Cases	Valid	479	99.4
	Excluded[a]	3	.6
	Total	482	100.0

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics

Cronbach's Alpha	N of Items
.932	14

Figure 36. SPSS Output - Cronbach's α total objective knowledge subscale (K-REC + KACE)

```
RELIABILITY
  /VARIABLES=SC7 SC8 SC9 SC10 SC11 SC12 SC13 SC14 SC15 SC16
  /SCALE('ALL VARIABLES') ALL
  /MODEL=ALPHA.
```

Reliability

Scale: ALL VARIABLES

Case Processing Summary

		N	%
Cases	Valid	402	83.4
	Excluded[a]	80	16.6
	Total	482	100.0

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics

Cronbach's Alpha	N of Items
.412	10

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted
Q32	5.2015	2.972	.040	.035	.436
Q29	4.5075	2.734	.235	.110	.358
Q30	4.9403	2.844	.222	.117	.367
Q31	5.4677	2.773	.206	.059	.369
Q33	5.6070	2.982	.147	.053	.392
Q34	5.2811	2.499	.341	.168	.307
Q35	5.2836	2.874	.097	.022	.413
Q36	5.2015	2.949	.053	.012	.431
Q37	4.9328	2.861	.216	.124	.370
Q38	5.3607	2.885	.099	.027	.412

Figure 37. SPSS Output - Cronbach's α objective knowledge subscale, K-REC only

```
RELIABILITY
  /VARIABLES=SC7 SC8 SC9 SC10 SC11
  /SCALE('ALL VARIABLES') ALL
  /MODEL=ALPHA.
```

Reliability

Scale: ALL VARIABLES

Case Processing Summary

		N	%
Cases	Valid	402	83.4
	Excluded[a]	80	16.6
	Total	482	100.0

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics

Cronbach's Alpha	N of Items
.248	5

Figure 38. SPSS Output - Cronbach's α objective knowledge subscale, KACE only

```
RELIABILITY
  /VARIABLES=SC12 SC13 SC14 SC15 SC16
  /SCALE('ALL VARIABLES') ALL
  /MODEL=ALPHA.
```

Reliability

Scale: ALL VARIABLES

Case Processing Summary

		N	%
Cases	Valid	479	99.4
	Excluded[a]	3	.6
	Total	482	100.0

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics

Cronbach's Alpha	N of Items
.303	5

Appendix K.2 Descriptive Statistics and Test-Retest Reliability Intraclass Correlation Coefficients of Objective Knowledge Score at Timepoint 1 and Timepoint 2

Figure 39. Timepoint #1 Objective Knowledge Score Descriptive Statistics

Statistics

Objective Knowledge Score

N	Valid	482
	Missing	0
Mean		5.4284
Std. Error of Mean		.08994
Median		5.5000
Mode		5.00
Std. Deviation		1.97452
Variance		3.899
Range		10.50
Minimum		.00
Maximum		10.50
Percentiles	25	4.0000
	50	5.5000
	75	6.5000

Objective Knowledge Score

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	.00	2	.4	.4	.4
	.50	2	.4	.4	.8
	1.00	7	1.5	1.5	2.3
	1.50	6	1.2	1.2	3.5
	2.00	13	2.7	2.7	6.2
	2.50	13	2.7	2.7	8.9
	3.00	25	5.2	5.2	14.1
	3.50	25	5.2	5.2	19.3
	4.00	37	7.7	7.7	27.0
	4.50	37	7.7	7.7	34.6
	5.00	59	12.2	12.2	46.9
	5.50	39	8.1	8.1	55.0

	6.00	49	10.2	10.2	65.1
	6.50	49	10.2	10.2	75.3
	7.00	34	7.1	7.1	82.4
	7.50	32	6.6	6.6	89.0
	8.00	19	3.9	3.9	92.9
	8.50	15	3.1	3.1	96.1
	9.00	6	1.2	1.2	97.3
	9.50	2	.4	.4	97.7
	10.00	8	1.7	1.7	99.4
	10.50	3	.6	.6	100.0
	Total	482	100.0	100.0	

Figure 40. Timepoint #2 Objective Knowledge Score Descriptive Statistics

Statistics

timepoint2

N	Valid	335
	Missing	0
Mean		5.66
Std. Error of Mean		.116
Median		5.50
Mode		7
Std. Deviation		2.129
Variance		4.534
Range		11
Minimum		0
Maximum		11
Percentiles	25	4.00
	50	5.50
	75	7.00

timepoint2

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	0	1	.3	.3	.3
	1	4	1.2	1.2	1.5

	2	6	1.8	1.8	3.3
	2	11	3.3	3.3	6.6
	3	15	4.5	4.5	11.0
	3	8	2.4	2.4	13.4
	4	18	5.4	5.4	18.8
	4	26	7.8	7.8	26.6
	5	24	7.2	7.2	33.7
	5	29	8.7	8.7	42.4
	6	27	8.1	8.1	50.4
	6	25	7.5	7.5	57.9
	7	36	10.7	10.7	68.7
	7	22	6.6	6.6	75.2
	8	34	10.1	10.1	85.4
	8	11	3.3	3.3	88.7
	9	15	4.5	4.5	93.1
	9	8	2.4	2.4	95.5
	10	8	2.4	2.4	97.9
	10	3	.9	.9	98.8
	11	1	.3	.3	99.1
	11	3	.9	.9	100.0
	Total	335	100.0	100.0	

Figure 41. SPSS Output - Intraclass correlation coefficient & descriptive statistics for timepoint 1 & timepoint 2 (test-retest reliability)

Reliability

[DataSet2] \\Client\H$\Dropbox (WU_UNF)\test-retest.sav

Scale: ALL VARIABLES

Case Processing Summary

		N	%
Cases	Valid	335	100.0
	Excluded[a]	0	.0
	Total	335	100.0

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics

Cronbach's Alpha	N of Items
.714	2

Intraclass Correlation Coefficient

	Intraclass Correlation[b]	95% Confidence Interval		F Test with True Value 0			
		Lower Bound	Upper Bound	Value	df1	df2	Sig
Single Measures	.555[a]	.476	.625	3.492	334	334	.000
Average Measures	.714[c]	.645	.769	3.492	334	334	.000

Two-way mixed effects model where people effects are random and measures effects are fixed.

a. The estimator is the same, whether the interaction effect is present or not.

b. Type C intraclass correlation coefficients using a consistency definition. The between-measure variance is excluded from the denominator variance.

c. This estimate is computed assuming the interaction effect is absent, because it is not estimable otherwise.

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
timepoint1	335	0	11	5.52	1.931
timepoint2	335	0	11	5.66	2.129
Valid N (listwise)	335				

Appendix L **ANOVA SPSS Outputs**

Figure 42. Normal Q-Q plots assessing normality for one-way ANOVA - Total objective knowledge score by highest degree in any field – Bachelor's degree

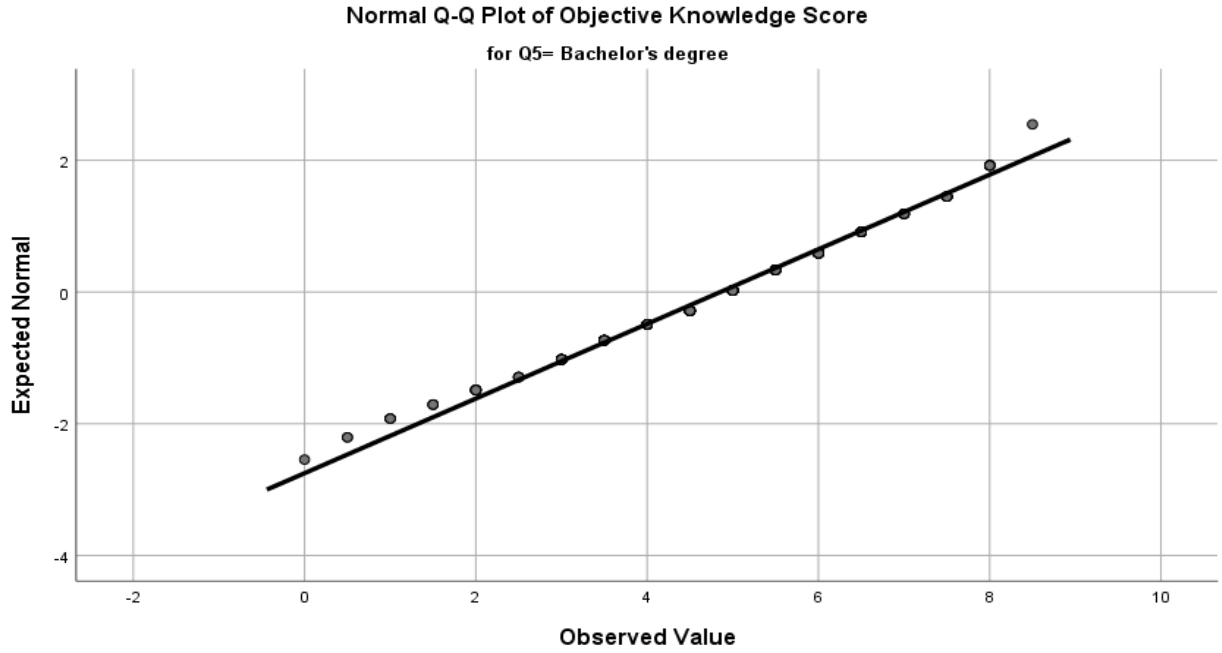


Figure 43. Normal Q-Q plots assessing normality for one-way ANOVA - Total objective knowledge score by highest degree in any field – Master's degree

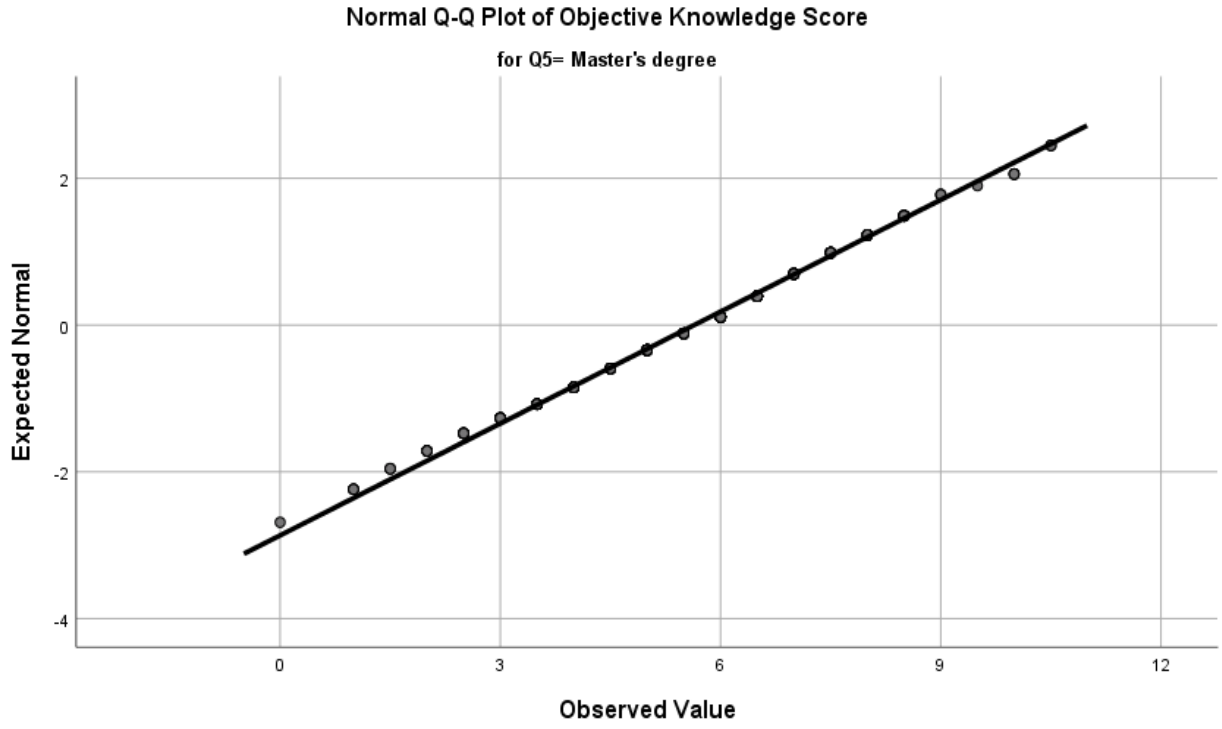


Figure 44. Normal Q-Q plots assessing normality for one-way ANOVA - Total objective knowledge score by highest degree in any field – Doctoral/Terminal degree

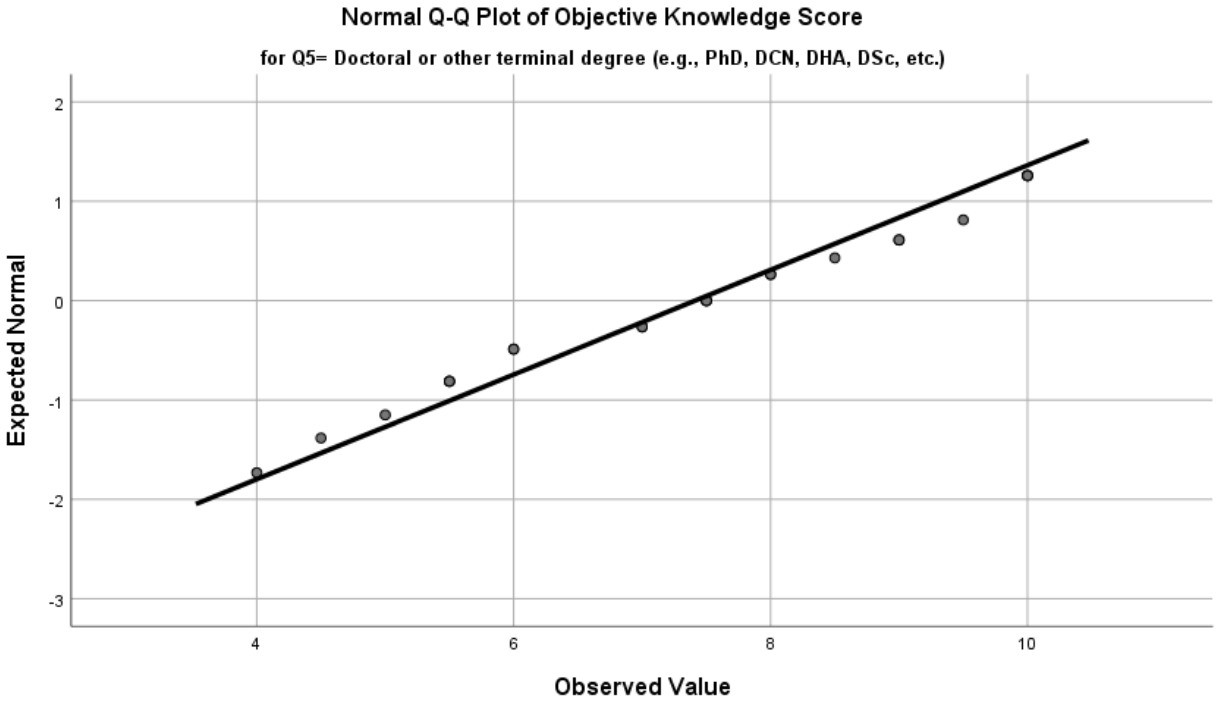


Figure 45. Timepoint 1 Data Analysis ANOVA Objective Knowledge Score by Highest Degree Type Any Field SPSS Outputs

Descriptives

Objective Knowledge Score

	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
					Lower Bound	Upper Bound		
Bachelor's degree	182	4.8544	1.76506	.13083	4.5962	5.1126	.00	8.50
Master's degree	277	5.6408	1.96805	.11825	5.4080	5.8736	.00	10.50
Doctoral or other terminal degree (e.g., PhD, DCN, DHA, DSc, etc.)	23	7.4130	1.89888	.39594	6.5919	8.2342	4.00	10.00
Total	482	5.4284	1.97452	.08994	5.2517	5.6051	.00	10.50

Test of Homogeneity of Variances

		Levene Statistic	df1	df2	Sig.
Objective Knowledge Score	Based on Mean	1.241	2	479	.290
	Based on Median	1.395	2	479	.249
	Based on Median and with adjusted df	1.395	2	471.905	.249
	Based on trimmed mean	1.321	2	479	.268

ANOVA

Objective Knowledge Score

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	163.054	2	81.527	22.807	.000
Within Groups	1712.227	479	3.575		
Total	1875.281	481			

Multiple Comparisons

Dependent Variable: Objective Knowledge Score

Tukey HSD

(I) highest degree - any field	(J) highest degree - any field	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
Bachelor's degree	Master's degree	-.78640*	.18040	.000	-1.2105	-.3623
	Doctoral or other terminal degree (e.g., PhD, DCN, DHA, DSc, etc.)	-2.55865*	.41840	.000	-3.5423	-1.5750
Master's degree	Bachelor's degree	.78640*	.18040	.000	.3623	1.2105
	Doctoral or other terminal degree (e.g., PhD, DCN, DHA, DSc, etc.)	-1.77225*	.41027	.000	-2.7368	-.8077
Doctoral or other terminal degree (e.g., PhD, DCN, DHA, DSc, etc.)	Bachelor's degree	2.55865*	.41840	.000	1.5750	3.5423
	Master's degree	1.77225*	.41027	.000	.8077	2.7368

*. The mean difference is significant at the 0.05 level.

Figure 46. Timepoint 1 Data Analysis ANOVA Objective Knowledge Score by Highest Degree in Nutrition & Dietetics SPSS Outputs

Descriptives

Objective Knowledge Score

	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
					Lower Bound	Upper Bound		
Bachelor's degree	214	4.9276	1.85903	.12708	4.6771	5.1781	.00	9.00
Master's degree	248	5.6774	1.91594	.12166	5.4378	5.9170	.00	10.50

Doctoral degree (e.g., PhD, DCN, DHA, DSc, etc.)	20	7.7000	1.78001	.39802	6.8669	8.5331	4.50	10.00
Total	482	5.4284	1.97452	.08994	5.2517	5.6051	.00	10.50

Test of Homogeneity of Variances

		Levene Statistic	df1	df2	Sig.
Objective Knowledge Score	Based on Mean	.056	2	479	.945
	Based on Median	.060	2	479	.941
	Based on Median and with adjusted df	.060	2	473.212	.941
	Based on trimmed mean	.068	2	479	.934

ANOVA

Objective Knowledge Score

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	172.260	2	86.130	24.225	.000
Within Groups	1703.021	479	3.555		
Total	1875.281	481			

Multiple Comparisons

Dependent Variable: Objective Knowledge Score

Tukey HSD

(I) highest degree - N/D	(J) highest degree - N/D	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
Bachelor's degree	Master's degree	-.74985*	.17593	.000	-1.1635	-.3362
	Doctoral degree (e.g., PhD, DCN, DHA, DSc, etc.)	-2.77243*	.44089	.000	-3.8090	-1.7359
Master's degree	Bachelor's degree	.74985*	.17593	.000	.3362	1.1635

	Doctoral degree (e.g., PhD, DCN, DHA, DSc, etc.)	-2.02258*	.43830	.000	-3.0530	-.9921
Doctoral degree (e.g., PhD, DCN, DHA, DSc, etc.)	Bachelor's degree	2.77243*	.44089	.000	1.7359	3.8090
	Master's degree	2.02258*	.43830	.000	.9921	3.0530

*. The mean difference is significant at the 0.05 level.

Appendix M **Regression Models SPSS Outputs and Tables**

Table 25. Multiple regression analysis objective knowledge score with all predictor variables

Objective Knowledge Score	**B**	**SE (B)**	**β**	**R^2**	**ΔR^2**	**p-value**
Constant	5.359	.880		.149	.131	.000
Area of practice	-.024	.033	-.032			.479
Years of RDN experience	.018	.017	.113			.289
Specialty certifications	.081	.098	.037			.408
# of peer-reviewed articles	.521	.119	.212			.000
Highest degree – any field	.580	.334	.166			.083
Highest degree – nutrition & dietetics	-.063	.348	-.018			.857
Preceptor status	-.129	.107	-.054			.229
Year of highest nutrition &	-.046	.017	-.288			.008

dietetics degree completion (recency of education)					
Geographic location	.130	.106	.053		.223
Working status (i.e., part-time, full-time)	-.387	.265	-.064		.145

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.386[a]	.149	.131	1.83699	2.038

a. Predictors: (Constant), PreceptorRecode14, geographic location, year of highest N/D degree completion, WorkStatusRecoded, peer-reviewed articles, Recode11SpecCert, area of practice, highest degree - any field, highest degree - N/D, years of RDN experience

b. Dependent Variable: Objective Knowledge Score

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	275.768	10	27.577	8.172	.000[b]
	Residual	1572.534	466	3.375		
	Total	1848.302	476			

a. Dependent Variable: Objective Knowledge Score

b. Predictors: (Constant), PreceptorRecode14, geographic location, year of highest N/D degree completion, WorkStatusRecoded, peer-reviewed articles, Recode11SpecCert, area of practice, highest degree - any field, highest degree - N/D, years of RDN experience

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B		Correlations			Collinearity Statistics	
		B	Std. Error	Beta			Lower Bound	Upper Bound	Zero-order	Partial	Part	Tolerance	VIF
1	(Constant)	5.359	.880		6.091	.000	3.630	7.088					
	years of RDN experience	.018	.017	.113	1.062	.289	-.015	.051	-.110	.049	.045	.162	6.174
	highest degree - any field	.580	.334	.166	1.736	.083	-.076	1.236	.278	.080	.074	.199	5.016
	highest degree - N/D	-.063	.348	-.018	-.181	.857	-.746	.620	.281	-.008	-.008	.180	5.542
	year of highest N/D degree completion	-.046	.017	-.288	-2.662	.008	-.079	-.012	-.183	-.122	-.114	.156	6.401
	geographic location	.130	.106	.053	1.221	.223	-.079	.339	.079	.056	.052	.975	1.025
	area of practice	-.024	.033	-.032	-.709	.479	-.089	.042	-.046	-.033	-.030	.899	1.113
	peer-reviewed articles	.521	.119	.212	4.363	.000	.286	.756	.261	.198	.186	.772	1.295
	Recode11SpecCert	.081	.098	.037	.829	.408	-.111	.272	.031	.038	.035	.938	1.066
	WorkStatusRecoded	-.387	.265	-.064	-1.461	.145	-.907	.134	-.052	-.068	-.062	.958	1.044
	PreceptorRecode14	-.129	.107	-.054	-1.204	.229	-.340	.082	-.043	-.056	-.051	.918	1.090

a. Dependent Variable: Objective Knowledge Score

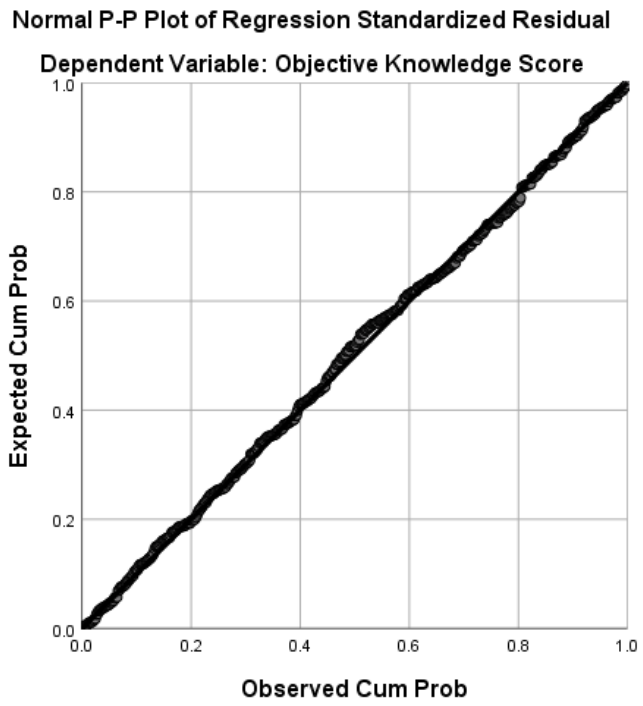


Figure 47. SPSS Output Multiple Regression Backward Stepwise Analysis - Objective Knowledge Predictors

Correlations

		Objective Knowledge Score	years of RDN experience	highest degree - any field	highest degree - N/D	year of highest N/D degree completion	geographic location	area of practice	peer-reviewed articles	Recode11SpecCert	WorkStatus Recoded	PreceptorRecode14
Pearson Correlation	Objective Knowledge Score	1.000	-.110	.278	.281	-.183	.079	-.046	.261	.031	-.052	-.043

	years of RDN experience	-.110	1.000	-.017	-.074	.902	.003	.183	.197	.147	-.066	.136
	highest degree - any field	.278	-.017	1.000	.890	-.151	.085	-.015	.391	.031	-.033	.092
	highest degree - N/D	.281	-.074	.890	1.000	-.235	.071	-.070	.399	.058	-.067	.087
	year of highest N/D degree completion	-.183	.902	-.151	-.235	1.000	.014	.182	.117	.131	-.063	.088
	geographic location	.079	.003	.085	.071	.014	1.000	.011	.103	.037	.083	.010
	area of practice	-.046	.183	-.015	-.070	.182	.011	1.000	.072	-.139	.005	-.159
	peer-reviewed articles	.261	.197	.391	.399	.117	.103	.072	1.000	.052	.026	.014
	Recode11SpecCert	.031	.147	.031	.058	.131	.037	-.139	.052	1.000	.000	.109
	WorkStatusRecoded	-.052	-.066	-.033	-.067	-.063	.083	.005	.026	.000	1.000	.093
	PreceptorRecode14	-.043	.136	.092	.087	.088	.010	-.159	.014	.109	.093	1.000
Sig. (1-tailed)	Objective Knowledge Score	.	.008	.000	.000	.000	.042	.159	.000	.247	.126	.173
	years of RDN experience	.008	.	.357	.053	.000	.476	.000	.000	.001	.076	.001
	highest degree - any field	.000	.357	.	.000	.000	.032	.369	.000	.250	.236	.023
	highest degree - N/D	.000	.053	.000	.	.000	.061	.064	.000	.102	.071	.029
	year of highest N/D degree completion	.000	.000	.000	.000	.	.379	.000	.005	.002	.084	.028
	geographic location	.042	.476	.032	.061	.379	.	.408	.012	.209	.035	.418
	area of practice	.159	.000	.369	.064	.000	.408	.	.058	.001	.457	.000
	peer-reviewed articles	.000	.000	.000	.000	.005	.012	.058	.	.127	.285	.381
	Recode11SpecCert	.247	.001	.250	.102	.002	.209	.001	.127	.	.499	.009

	WorkStatusRecoded	.126	.076	.236	.071	.084	.035	.457	.285	.499	.	.022
	PreceptorRecode14	.173	.001	.023	.029	.028	.418	.000	.381	.009	.022	.
N	Objective Knowledge Score	477	477	477	477	477	477	477	477	477	477	477
	years of RDN experience	477	477	477	477	477	477	477	477	477	477	477
	highest degree - any field	477	477	477	477	477	477	477	477	477	477	477
	highest degree - N/D	477	477	477	477	477	477	477	477	477	477	477
	year of highest N/D degree completion	477	477	477	477	477	477	477	477	477	477	477
	geographic location	477	477	477	477	477	477	477	477	477	477	477
	area of practice	477	477	477	477	477	477	477	477	477	477	477
	peer-reviewed articles	477	477	477	477	477	477	477	477	477	477	477
	Recode11SpecCert	477	477	477	477	477	477	477	477	477	477	477
	WorkStatusRecoded	477	477	477	477	477	477	477	477	477	477	477
	PreceptorRecode14	477	477	477	477	477	477	477	477	477	477	477

Variables Entered/Removed[a]

Model	Variables Entered	Variables Removed	Method

1	PreceptorRecode14, geographic location, year of highest N/D degree completion, WorkStatusRecoded, peer-reviewed articles, Recode11SpecCert, area of practice, highest degree - any field, highest degree - N/D, years of RDN experience[b]	.	Enter
2	.	highest degree - N/D	Backward (criterion: Probability of F-to-remove >= .100).
3	.	area of practice	Backward (criterion: Probability of F-to-remove >= .100).

4	.	Recode11SpecCert	Backward (criterion: Probability of F-to-remove >= .100).
5	.	PreceptorRecode14	Backward (criterion: Probability of F-to-remove >= .100).
6	.	years of RDN experience	Backward (criterion: Probability of F-to-remove >= .100).
7	.	geographic location	Backward (criterion: Probability of F-to-remove >= .100).
8	.	WorkStatusRecoded	Backward (criterion: Probability of F-to-remove >= .100).

a. Dependent Variable: Objective Knowledge Score

b. All requested variables entered.

Model Summary[i]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.386[a]	.149	.131	1.83699	
2	.386[b]	.149	.133	1.83509	
3	.385[c]	.148	.134	1.83408	
4	.383[d]	.147	.134	1.83386	
5	.380[e]	.145	.134	1.83395	
6	.378[f]	.143	.134	1.83371	
7	.375[g]	.141	.133	1.83454	
8	.369[h]	.136	.131	1.83705	2.020

a. Predictors: (Constant), PreceptorRecode14, geographic location, year of highest N/D degree completion, WorkStatusRecoded, peer-reviewed articles, Recode11SpecCert, area of practice, highest degree - any field, highest degree - N/D, years of RDN experience

b. Predictors: (Constant), PreceptorRecode14, geographic location, year of highest N/D degree completion, WorkStatusRecoded, peer-reviewed articles, Recode11SpecCert, area of practice, highest degree - any field, years of RDN experience

c. Predictors: (Constant), PreceptorRecode14, geographic location, year of highest N/D degree completion, WorkStatusRecoded, peer-reviewed articles, Recode11SpecCert, highest degree - any field, years of RDN experience

d. Predictors: (Constant), PreceptorRecode14, geographic location, year of highest N/D degree completion, WorkStatusRecoded, peer-reviewed articles, highest degree - any field, years of RDN experience

e. Predictors: (Constant), geographic location, year of highest N/D degree completion, WorkStatusRecoded, peer-reviewed articles, highest degree - any field, years of RDN experience

f. Predictors: (Constant), geographic location, year of highest N/D degree completion, WorkStatusRecoded, peer-reviewed articles, highest degree - any field

g. Predictors: (Constant), year of highest N/D degree completion, WorkStatusRecoded, peer-reviewed articles, highest degree - any field

h. Predictors: (Constant), year of highest N/D degree completion, peer-reviewed articles, highest degree - any field

i. Dependent Variable: Objective Knowledge Score

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	275.768	10	27.577	8.172	.000[b]
	Residual	1572.534	466	3.375		
	Total	1848.302	476			
2	Regression	275.658	9	30.629	9.095	.000[c]
	Residual	1572.644	467	3.368		
	Total	1848.302	476			
3	Regression	274.024	8	34.253	10.183	.000[d]
	Residual	1574.278	468	3.364		
	Total	1848.302	476			
4	Regression	271.042	7	38.720	11.514	.000[e]

	Residual	1577.260	469	3.363		
	Total	1848.302	476			
5	Regression	267.511	6	44.585	13.256	.000[f]
	Residual	1580.790	470	3.363		
	Total	1848.302	476			
6	Regression	264.574	5	52.915	15.737	.000[g]
	Residual	1583.728	471	3.362		
	Total	1848.302	476			
7	Regression	259.763	4	64.941	19.296	.000[h]
	Residual	1588.539	472	3.366		
	Total	1848.302	476			
8	Regression	252.046	3	84.015	24.895	.000[i]
	Residual	1596.256	473	3.375		
	Total	1848.302	476			

a. Dependent Variable: Objective Knowledge Score

b. Predictors: (Constant), PreceptorRecode14, geographic location, year of highest N/D degree completion, WorkStatusRecoded, peer-reviewed articles, Recode11SpecCert, area of practice, highest degree - any field, highest degree - N/D, years of RDN experience

c. Predictors: (Constant), PreceptorRecode14, geographic location, year of highest N/D degree completion, WorkStatusRecoded, peer-reviewed articles, Recode11SpecCert, area of practice, highest degree - any field, years of RDN experience

d. Predictors: (Constant), PreceptorRecode14, geographic location, year of highest N/D degree completion, WorkStatusRecoded, peer-reviewed articles, Recode11SpecCert, highest degree - any field, years of RDN experience

e. Predictors: (Constant), PreceptorRecode14, geographic location, year of highest N/D degree completion, WorkStatusRecoded, peer-reviewed articles, highest degree - any field, years of RDN experience

f. Predictors: (Constant), geographic location, year of highest N/D degree completion, WorkStatusRecoded, peer-reviewed articles, highest degree - any field, years of RDN experience

g. Predictors: (Constant), geographic location, year of highest N/D degree completion, WorkStatusRecoded, peer-reviewed articles, highest degree - any field

h. Predictors: (Constant), year of highest N/D degree completion, WorkStatusRecoded, peer-reviewed articles, highest degree - any field

i. Predictors: (Constant), year of highest N/D degree completion, peer-reviewed articles, highest degree - any field

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients			95.0% Confidence Interval for B		Correlations			Collinearity Statistics	
		B	Std. Error	Beta	t	Sig.	Lower Bound	Upper Bound	Zero-order	Partial	Part	Tolerance	VIF
1	(Constant)	5.359	.880		6.091	.000	3.630	7.088					
	years of RDN experience	.018	.017	.113	1.062	.289	-.015	.051	-.110	.049	.045	.162	6.174
	highest degree - any field	.580	.334	.166	1.736	.083	-.076	1.236	.278	.080	.074	.199	5.016
	highest degree - N/D	-.063	.348	-.018	-.181	.857	-.746	.620	.281	-.008	-.008	.180	5.542

	year of highest N/D degree completion	-.046	.017	-.288	-2.662	.008	-.079	-.012	-.183	-.122	-.114	.156	6.401
	geographic location	.130	.106	.053	1.221	.223	-.079	.339	.079	.056	.052	.975	1.025
	area of practice	-.024	.033	-.032	-.709	.479	-.089	.042	-.046	-.033	-.030	.899	1.113
	peer-reviewed articles	.521	.119	.212	4.363	.000	.286	.756	.261	.198	.186	.772	1.295
	Recode11SpecCert	.081	.098	.037	.829	.408	-.111	.272	.031	.038	.035	.938	1.066
	WorkStatusRecoded	-.387	.265	-.064	-1.461	.145	-.907	.134	-.052	-.068	-.062	.958	1.044
	PreceptorRecode14	-.129	.107	-.054	-1.204	.229	-.340	.082	-.043	-.056	-.051	.918	1.090
2	(Constant)	5.330	.864		6.168	.000	3.632	7.028					
	years of RDN experience	.017	.017	.110	1.048	.295	-.015	.050	-.110	.048	.045	.166	6.016
	highest degree - any field	.528	.171	.151	3.085	.002	.192	.865	.278	.141	.132	.757	1.320
	year of highest N/D degree completion	-.045	.017	-.283	-2.708	.007	-.078	-.012	-.183	-.124	-.116	.167	5.983
	geographic location	.130	.106	.053	1.222	.222	-.079	.339	.079	.056	.052	.975	1.025
	area of practice	-.023	.033	-.031	-.697	.486	-.089	.042	-.046	-.032	-.030	.905	1.105
	peer-reviewed articles	.517	.118	.211	4.398	.000	.286	.749	.261	.199	.188	.794	1.260
	Recode11SpecCert	.079	.097	.036	.818	.414	-.111	.270	.031	.038	.035	.944	1.060
	WorkStatusRecoded	-.381	.263	-.063	-1.451	.147	-.898	.135	-.052	-.067	-.062	.971	1.030
	PreceptorRecode14	-.129	.107	-.054	-1.208	.228	-.340	.081	-.043	-.056	-.052	.918	1.089

3	(Constant)	5.237	.853		6.138	.000	3.560	6.913					
	years of RDN experience	.017	.017	.105	1.003	.317	-.016	.049	-.110	.046	.043	.167	5.987
	highest degree - any field	.528	.171	.151	3.084	.002	.192	.864	.278	.141	.132	.757	1.320
	year of highest N/D degree completion	-.045	.017	-.285	-2.731	.007	-.078	-.013	-.183	-.125	-.117	.167	5.978
	geographic location	.129	.106	.053	1.216	.225	-.080	.338	.079	.056	.052	.975	1.025
	peer-reviewed articles	.514	.117	.210	4.378	.000	.283	.745	.261	.198	.187	.795	1.258
	Recode11SpecCert	.090	.096	.041	.942	.347	-.098	.279	.031	.043	.040	.968	1.033
	WorkStatusRecoded	-.388	.263	-.064	-1.478	.140	-.904	.128	-.052	-.068	-.063	.972	1.029
	PreceptorRecode14	-.116	.105	-.048	-1.104	.270	-.323	.091	-.043	-.051	-.047	.947	1.056
4	(Constant)	5.334	.847		6.299	.000	3.670	6.998					
	years of RDN experience	.017	.017	.109	1.048	.295	-.015	.050	-.110	.048	.045	.167	5.974
	highest degree - any field	.530	.171	.152	3.101	.002	.194	.867	.278	.142	.132	.758	1.320
	year of highest N/D degree completion	-.045	.017	-.284	-2.723	.007	-.078	-.013	-.183	-.125	-.116	.167	5.977
	geographic location	.132	.106	.054	1.248	.213	-.076	.341	.079	.058	.053	.976	1.024
	peer-reviewed articles	.516	.117	.210	4.392	.000	.285	.747	.261	.199	.187	.795	1.258
	WorkStatusRecoded	-.389	.263	-.064	-1.480	.140	-.904	.127	-.052	-.068	-.063	.972	1.029

	PreceptorRecode14	-.108	.105	-.045	-1.025	.306	-.314	.099	-.043	-.047	-.044	.955	1.047
5	(Constant)	5.220	.840		6.218	.000	3.570	6.870					
	years of RDN experience	.015	.017	.097	.934	.351	-.017	.048	-.110	.043	.040	.170	5.893
	highest degree - any field	.514	.170	.147	3.017	.003	.179	.848	.278	.138	.129	.765	1.308
	year of highest N/D degree completion	-.044	.017	-.278	-2.670	.008	-.077	-.012	-.183	-.122	-.114	.168	5.959
	geographic location	.133	.106	.054	1.248	.213	-.076	.341	.079	.057	.053	.976	1.024
	peer-reviewed articles	.524	.117	.213	4.467	.000	.293	.754	.261	.202	.191	.798	1.253
	WorkStatusRecoded	-.418	.261	-.069	-1.601	.110	-.931	.095	-.052	-.074	-.068	.984	1.017
6	(Constant)	5.180	.838		6.179	.000	3.533	6.828					
	highest degree - any field	.548	.166	.157	3.297	.001	.221	.875	.278	.150	.141	.802	1.247
	year of highest N/D degree completion	-.030	.007	-.190	-4.304	.000	-.044	-.016	-.183	-.195	-.184	.935	1.070
	geographic location	.127	.106	.052	1.196	.232	-.082	.335	.079	.055	.051	.980	1.021
	peer-reviewed articles	.536	.116	.218	4.607	.000	.308	.765	.261	.208	.197	.809	1.236

	WorkStatusRecoded	-.420	.261	-.069	-1.611	.108	-.933	.092	-.052	-.074	-.069	.984	1.016
7	(Constant)	5.369	.824		6.518	.000	3.750	6.988					
	highest degree - any field	.559	.166	.160	3.367	.001	.233	.886	.278	.153	.144	.805	1.243
	year of highest N/D degree completion	-.030	.007	-.189	-4.279	.000	-.044	-.016	-.183	-.193	-.183	.935	1.070
	peer-reviewed articles	.546	.116	.222	4.697	.000	.317	.774	.261	.211	.200	.813	1.230
	WorkStatusRecoded	-.394	.260	-.065	-1.514	.131	-.905	.117	-.052	-.070	-.065	.991	1.009
8	(Constant)	4.208	.302		13.949	.000	3.615	4.801					
	highest degree - any field	.575	.166	.165	3.465	.001	.249	.901	.278	.157	.148	.808	1.238
	year of highest N/D degree completion	-.029	.007	-.184	-4.167	.000	-.043	-.015	-.183	-.188	-.178	.941	1.063
	peer-reviewed articles	.536	.116	.218	4.612	.000	.307	.764	.261	.207	.197	.815	1.226

a. Dependent Variable: Objective Knowledge Score

Collinearity Diagnostics[a]

Variance Proportions

Model	Dimension	Eigenvalue	Condition Index	(Constant)	years of RDN experience	highest degree - any field	highest degree - N/D	year of highest N/D degree completion	geographic location	area of practice	peer-reviewed articles	Recode11SpecCert	WorkStatus Recoded	PreceptorRecode14
1	1	9.264	1.000	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
	2	.647	3.783	.00	.04	.00	.00	.04	.00	.00	.00	.00	.00	.00
	3	.331	5.288	.00	.00	.00	.00	.00	.00	.63	.00	.14	.00	.01
	4	.254	6.039	.00	.01	.00	.00	.00	.01	.07	.44	.17	.00	.02
	5	.180	7.170	.00	.00	.00	.00	.00	.02	.11	.15	.63	.00	.12
	6	.118	8.855	.00	.02	.03	.04	.00	.31	.02	.23	.01	.00	.00
	7	.106	9.368	.00	.00	.01	.01	.01	.23	.05	.15	.00	.00	.59
	8	.052	13.348	.04	.07	.00	.00	.07	.41	.09	.00	.03	.07	.21
	9	.031	17.330	.01	.83	.03	.00	.81	.00	.01	.00	.00	.03	.05
	10	.011	28.908	.01	.02	.90	.87	.04	.00	.00	.00	.01	.01	.00
	11	.006	40.938	.94	.01	.02	.07	.03	.00	.01	.01	.00	.88	.00
2	1	8.375	1.000	.00	.00	.00		.00	.00	.00	.00	.00	.00	.00
	2	.599	3.741	.00	.04	.01		.04	.01	.00	.01	.00	.00	.00
	3	.331	5.032	.00	.00	.00		.00	.00	.62	.00	.16	.00	.01
	4	.243	5.867	.00	.00	.01		.00	.00	.08	.60	.13	.00	.01
	5	.179	6.838	.00	.00	.00		.00	.03	.12	.10	.66	.00	.13
	6	.109	8.784	.00	.00	.01		.01	.51	.06	.01	.00	.00	.41
	7	.078	10.380	.00	.03	.64		.00	.08	.02	.27	.00	.00	.22
	8	.051	12.808	.04	.10	.07		.10	.36	.08	.01	.03	.07	.16
	9	.031	16.513	.01	.82	.20		.83	.00	.01	.00	.01	.03	.05
	10	.006	38.227	.95	.00	.05		.01	.00	.01	.00	.01	.89	.00
3	1	7.674	1.000	.00	.00	.00		.00	.00		.00	.00	.00	.00
	2	.598	3.581	.00	.04	.01		.04	.01		.01	.00	.00	.00

	3	.252	5.518	.00	.00	.01		.00	.00		.47	.33	.00	.02
	4	.192	6.326	.00	.00	.00		.00	.04		.22	.65	.00	.07
	5	.114	8.214	.00	.00	.00		.01	.38		.01	.00	.00	.55
	6	.079	9.865	.00	.02	.59		.00	.15		.26	.00	.00	.21
	7	.054	11.876	.04	.09	.13		.06	.42		.02	.01	.07	.11
	8	.031	15.735	.01	.83	.20		.87	.00		.00	.00	.03	.03
	9	.006	36.485	.95	.00	.05		.01	.00		.00	.01	.90	.00
4	1	6.894	1.000	.00	.00	.00		.00	.00		.00		.00	.00
	2	.594	3.408	.00	.04	.01		.04	.01		.01		.00	.00
	3	.228	5.498	.00	.00	.00		.00	.02		.69		.00	.06
	4	.114	7.785	.00	.00	.00		.01	.39		.01		.00	.55
	5	.079	9.348	.00	.02	.59		.00	.15		.26		.00	.22
	6	.055	11.202	.03	.09	.14		.06	.43		.02		.06	.12
	7	.031	14.899	.01	.84	.20		.87	.00		.00		.03	.04
	8	.006	34.493	.95	.00	.06		.01	.00		.00		.91	.00
5	1	6.026	1.000	.00	.00	.00		.00	.00		.00		.00	
	2	.581	3.219	.00	.04	.01		.04	.01		.01		.00	
	3	.210	5.355	.00	.00	.00		.00	.05		.75		.00	
	4	.087	8.332	.00	.02	.39		.01	.53		.16		.00	
	5	.058	10.169	.03	.08	.32		.04	.40		.07		.05	
	6	.032	13.768	.00	.85	.22		.90	.00		.00		.02	
	7	.006	32.237	.96	.00	.06		.01	.00		.00		.93	
6	1	5.296	1.000	.00		.00		.01	.00		.01		.00	
	2	.352	3.877	.00		.02		.85	.01		.02		.00	
	3	.208	5.049	.00		.00		.01	.06		.76		.00	
	4	.084	7.919	.00		.36		.02	.65		.12		.00	
	5	.054	9.898	.03		.56		.09	.28		.08		.06	

	6	.006	30.201	.96		.05		.03	.01		.00		.93
7	1	4.399	1.000	.00		.00		.01			.01		.00
	2	.347	3.563	.00		.02		.83			.04		.00
	3	.189	4.830	.01		.01		.01			.81		.01
	4	.060	8.527	.02		.91		.11			.14		.04
	5	.006	27.459	.98		.06		.03			.00		.95
8	1	3.457	1.000	.01		.01		.02			.02		
	2	.341	3.183	.00		.03		.79			.07		
	3	.158	4.671	.11		.07		.01			.87		
	4	.044	8.889	.88		.89		.17			.05		

a. Dependent Variable: Objective Knowledge Score

Excluded Variables[a]

Model		Beta In	t	Sig.	Partial Correlation	Collinearity Statistics		
						Tolerance	VIF	Minimum Tolerance
2	highest degree - N/D	-.018[b]	-.181	.857	-.008	.180	5.542	.156
3	highest degree - N/D	-.012[c]	-.121	.904	-.006	.182	5.502	.156
	area of practice	-.031[c]	-.697	.486	-.032	.905	1.105	.166
4	highest degree - N/D	-.003[d]	-.035	.972	-.002	.183	5.456	.156
	area of practice	-.037[d]	-.838	.403	-.039	.929	1.077	.167
	Recode11SpecCert	.041[d]	.942	.347	.043	.968	1.033	.167
5	highest degree - N/D	-.007[e]	-.075	.940	-.003	.184	5.448	.157
	area of practice	-.027[e]	-.630	.529	-.029	.963	1.039	.168
	Recode11SpecCert	.037[e]	.847	.397	.039	.976	1.025	.168
	PreceptorRecode14	-.045[e]	-1.025	.306	-.047	.955	1.047	.167

6	highest degree - N/D	.008[f]	.079	.937	.004	.189	5.303	.189
	area of practice	-.026[f]	-.594	.553	-.027	.964	1.037	.802
	Recode11SpecCert	.039[f]	.899	.369	.041	.979	1.021	.801
	PreceptorRecode14	-.039[f]	-.909	.364	-.042	.968	1.033	.790
	years of RDN experience	.097[f]	.934	.351	.043	.170	5.893	.168
7	highest degree - N/D	.007[g]	.069	.945	.003	.189	5.302	.189
	area of practice	-.026[g]	-.591	.555	-.027	.964	1.037	.805
	Recode11SpecCert	.040[g]	.934	.351	.043	.980	1.021	.803
	PreceptorRecode14	-.040[g]	-.916	.360	-.042	.968	1.033	.793
	years of RDN experience	.089[g]	.864	.388	.040	.170	5.873	.168
	geographic location	.052[g]	1.196	.232	.055	.980	1.021	.802
8	highest degree - N/D	.023[h]	.240	.810	.011	.191	5.234	.191
	area of practice	-.027[h]	-.612	.541	-.028	.964	1.037	.808
	Recode11SpecCert	.040[h]	.918	.359	.042	.980	1.020	.807
	PreceptorRecode14	-.046[h]	-1.072	.284	-.049	.979	1.021	.797
	years of RDN experience	.092[h]	.886	.376	.041	.170	5.872	.168
	geographic location	.046[h]	1.062	.289	.049	.987	1.013	.806
	WorkStatusRecoded	-.065[h]	-1.514	.131	-.070	.991	1.009	.805

a. Dependent Variable: Objective Knowledge Score

b. Predictors in the Model: (Constant), PreceptorRecode14, geographic location, year of highest N/D degree completion, WorkStatusRecoded, peer-reviewed articles, Recode11SpecCert, area of practice, highest degree - any field, years of RDN experience

c. Predictors in the Model: (Constant), PreceptorRecode14, geographic location, year of highest N/D degree completion, WorkStatusRecoded, peer-reviewed articles, Recode11SpecCert, highest degree - any field, years of RDN experience

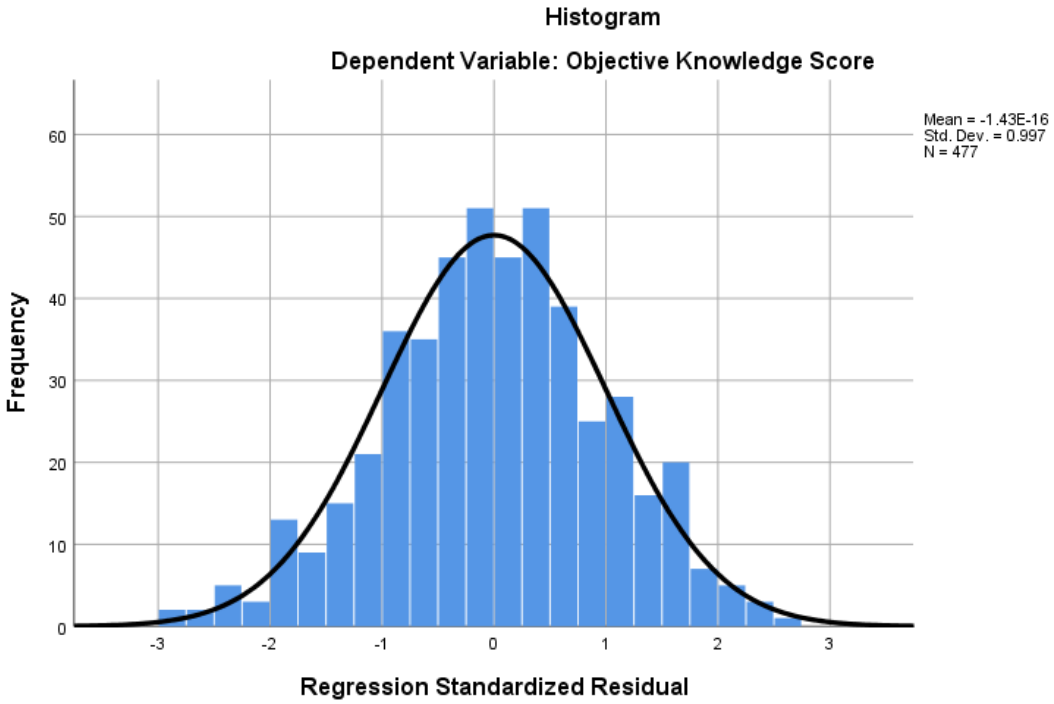
d. Predictors in the Model: (Constant), PreceptorRecode14, geographic location, year of highest N/D degree completion, WorkStatusRecoded, peer-reviewed articles, highest degree - any field, years of RDN experience

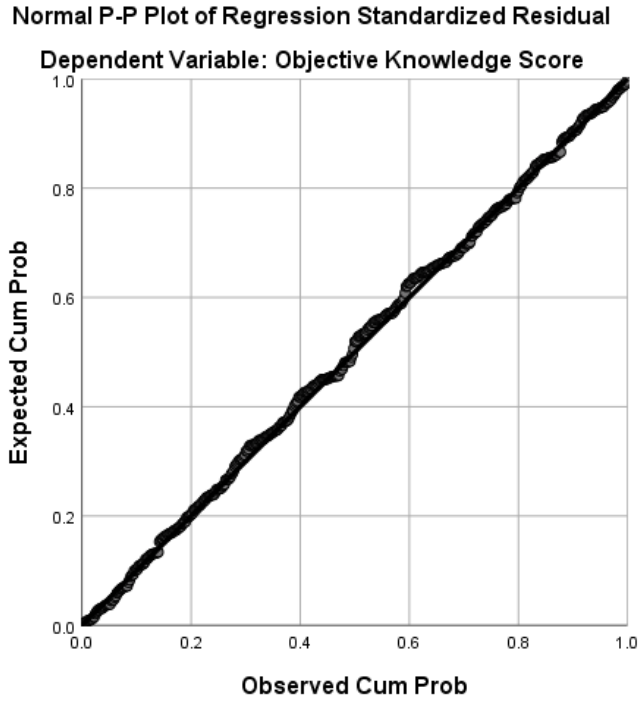
e. Predictors in the Model: (Constant), geographic location, year of highest N/D degree completion, WorkStatusRecoded, peer-reviewed articles, highest degree - any field, years of RDN experience

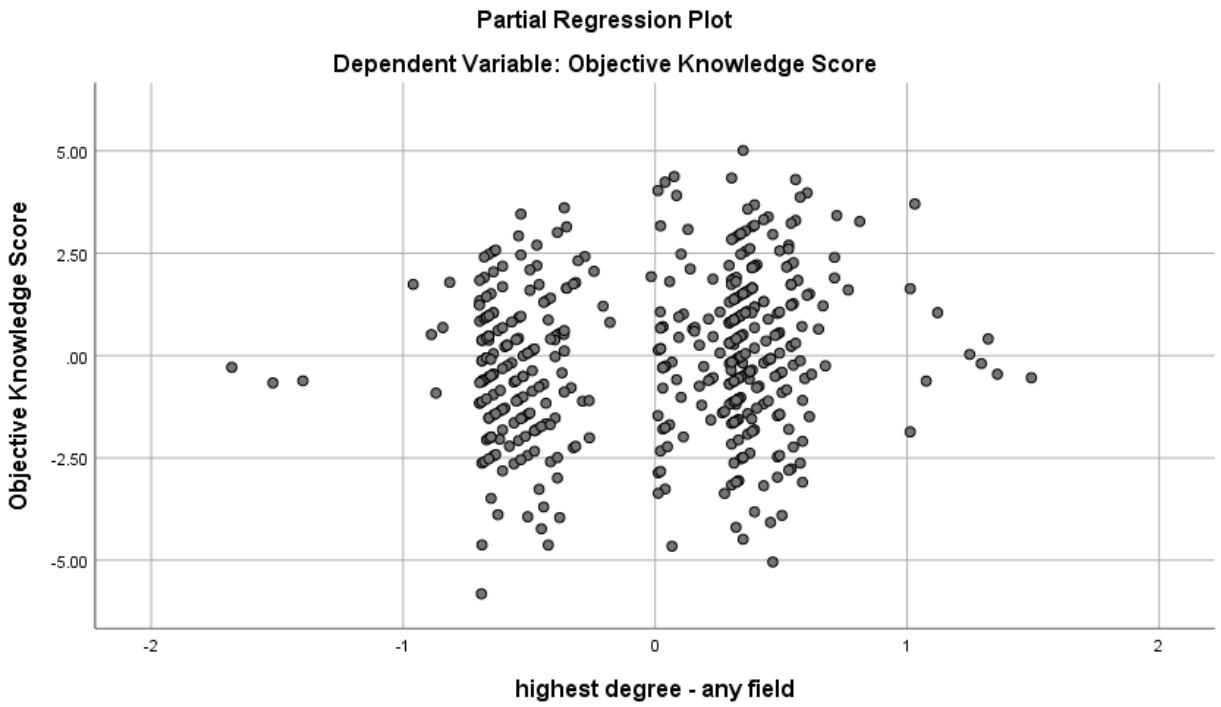
f. Predictors in the Model: (Constant), geographic location, year of highest N/D degree completion, WorkStatusRecoded, peer-reviewed articles, highest degree - any field

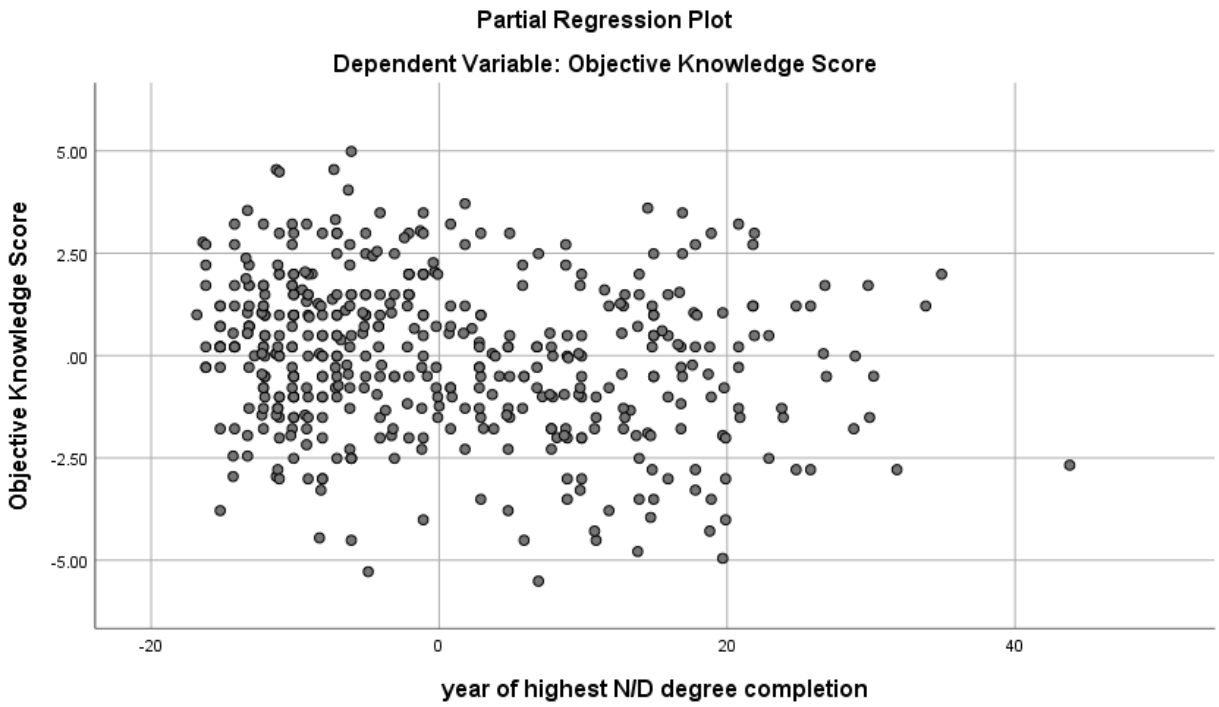
g. Predictors in the Model: (Constant), year of highest N/D degree completion, WorkStatusRecoded, peer-reviewed articles, highest degree - any field

h. Predictors in the Model: (Constant), year of highest N/D degree completion, peer-reviewed articles, highest degree - any field




Normal P-P Plot of Regression Standardized Residual
Dependent Variable: Objective Knowledge Score
Expected Cum Prob
Observed Cum Prob
0.0
0.2
0.4
0.6
0.8
1.0


Partial Regression Plot
Dependent Variable: Objective Knowledge Score
Objective Knowledge Score
5.00
2.50
.00
-2.50
-5.00
-2
-1
0
1
2
highest degree - any field


Partial Regression Plot
Dependent Variable: Objective Knowledge Score
Objective Knowledge Score
5.00
2.50
.00
-2.50
-5.00
-20
0
20
40
year of highest N/D degree completion

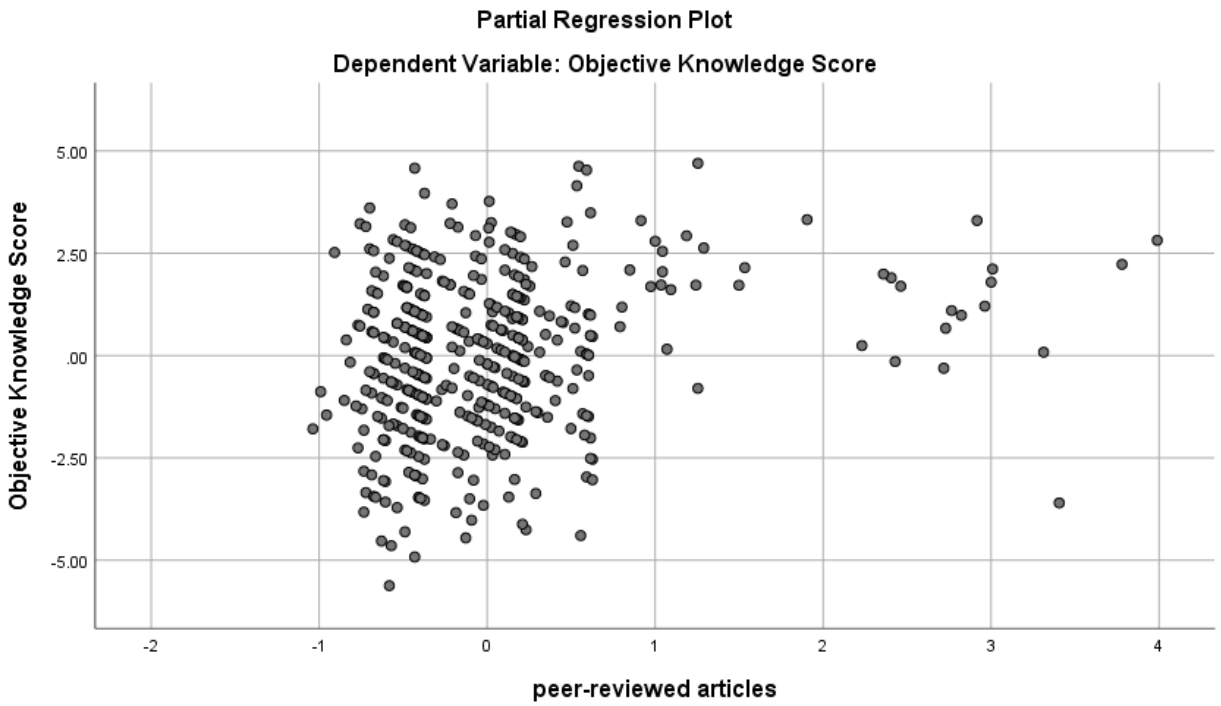


Figure 48. SPSS Output Multiple Regression Subjective Knowledge (no Item #21)

Correlations

	SubjectiveNoPercent	years of RDN experience	highest degree - any field	highest degree - N/D	year of highest N/D degree completion	geographic location	area of practice	peer-reviewed articles	Recode11SpecCert	WorkStatusRecoded	PreceptorRecode14

Pearson Correlation	SubjectiveNo Percent	1.000	-.220	.302	.319	-.290	.080	-.107	.284	.074	-.009	.061
	years of RDN experience	-.220	1.000	-.019	-.077	.902	.001	.181	.203	.147	-.068	.133
	highest degree - any field	.302	-.019	1.000	.892	-.156	.087	-.017	.379	.030	-.037	.098
	highest degree - N/D	.319	-.077	.892	1.000	-.241	.076	-.075	.385	.062	-.071	.092
	year of highest N/D degree completion	-.290	.902	-.156	-.241	1.000	.012	.182	.122	.124	-.067	.080
	geographic location	.080	.001	.087	.076	.012	1.000	.009	.110	.038	.083	.008
	area of practice	-.107	.181	-.017	-.075	.182	.009	1.000	.067	-.132	.005	-.163
	peer-reviewed articles	.284	.203	.379	.385	.122	.110	.067	1.000	.062	.022	.024
	Recode11SpecCert	.074	.147	.030	.062	.124	.038	-.132	.062	1.000	-.003	.107
	WorkStatusRecoded	-.009	-.068	-.037	-.071	-.067	.083	.005	.022	-.003	1.000	.093
	PreceptorRecode14	.061	.133	.098	.092	.080	.008	-.163	.024	.107	.093	1.000
Sig. (1-tailed)	SubjectiveNo Percent	.	.000	.000	.000	.000	.041	.010	.000	.054	.424	.092

	years of RDN experience	.000	.	.341	.047	.000	.495	.000	.000	.001	.070	.002
	highest degree - any field	.000	.341	.	.000	.000	.029	.355	.000	.261	.211	.017
	highest degree - N/D	.000	.047	.000	.	.000	.050	.051	.000	.088	.062	.022
	year of highest N/D degree completion	.000	.000	.000	.000	.	.394	.000	.004	.003	.074	.041
	geographic location	.041	.495	.029	.050	.394	.	.425	.008	.203	.035	.434
	area of practice	.010	.000	.355	.051	.000	.425	.	.074	.002	.457	.000
	peer-reviewed articles	.000	.000	.000	.000	.004	.008	.074	.	.090	.313	.300
	Recode11SpecCert	.054	.001	.261	.088	.003	.203	.002	.090	.	.475	.010
	WorkStatusRecoded	.424	.070	.211	.062	.074	.035	.457	.313	.475	.	.022
	PreceptorRecode14	.092	.002	.017	.022	.041	.434	.000	.300	.010	.022	.
N	SubjectiveNoPercent	472	472	472	472	472	472	472	472	472	472	472
	years of RDN experience	472	472	472	472	472	472	472	472	472	472	472

	highest degree - any field	472	472	472	472	472	472	472	472	472	472	472
	highest degree - N/D	472	472	472	472	472	472	472	472	472	472	472
	year of highest N/D degree completion	472	472	472	472	472	472	472	472	472	472	472
	geographic location	472	472	472	472	472	472	472	472	472	472	472
	area of practice	472	472	472	472	472	472	472	472	472	472	472
	peer-reviewed articles	472	472	472	472	472	472	472	472	472	472	472
	Recode11SpecCert	472	472	472	472	472	472	472	472	472	472	472
	WorkStatusRecoded	472	472	472	472	472	472	472	472	472	472	472
	PreceptorRecode14	472	472	472	472	472	472	472	472	472	472	472

Variables Entered/Removed[a]

Model	Variables Entered	Variables Removed	Method

1	PreceptorRecode14, geographic location, year of highest N/D degree completion, WorkStatusRecoded, Recode11SpecCert, peer-reviewed articles, area of practice, highest degree - any field, highest degree - N/D, years of RDN experience[b]	.	Enter
2	.	highest degree - N/D	Backward (criterion: Probability of F-to-remove >= .100).
3	.	years of RDN experience	Backward (criterion: Probability of F-to-remove >= .100).

4	.	WorkStatusRecoded	Backward (criterion: Probability of F-to-remove >= .100).
5	.	geographic location	Backward (criterion: Probability of F-to-remove >= .100).
6	.	area of practice	Backward (criterion: Probability of F-to-remove >= .100).
7	.	PreceptorRecode14	Backward (criterion: Probability of F-to-remove >= .100).

a. Dependent Variable: SubjectiveNoPercent

b. All requested variables entered.

Model Summary[h]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.474[a]	.225	.208	22.79097	

2	.474[b]	.225	.209	22.76631	
3	.474[c]	.224	.211	22.74318	
4	.472[d]	.223	.211	22.73936	
5	.471[e]	.221	.211	22.73780	
6	.468[f]	.219	.211	22.74451	
7	.465[g]	.216	.209	22.76550	1.995

a. Predictors: (Constant), PreceptorRecode14, geographic location, year of highest N/D degree completion, WorkStatusRecoded, Recode11SpecCert, peer-reviewed articles, area of practice, highest degree - any field, highest degree - N/D, years of RDN experience

b. Predictors: (Constant), PreceptorRecode14, geographic location, year of highest N/D degree completion, WorkStatusRecoded, Recode11SpecCert, peer-reviewed articles, area of practice, highest degree - any field, years of RDN experience

c. Predictors: (Constant), PreceptorRecode14, geographic location, year of highest N/D degree completion, WorkStatusRecoded, Recode11SpecCert, peer-reviewed articles, area of practice, highest degree - any field

d. Predictors: (Constant), PreceptorRecode14, geographic location, year of highest N/D degree completion, Recode11SpecCert, peer-reviewed articles, area of practice, highest degree - any field

e. Predictors: (Constant), PreceptorRecode14, year of highest N/D degree completion, Recode11SpecCert, peer-reviewed articles, area of practice, highest degree - any field

f. Predictors: (Constant), PreceptorRecode14, year of highest N/D degree completion, Recode11SpecCert, peer-reviewed articles, highest degree - any field

g. Predictors: (Constant), year of highest N/D degree completion, Recode11SpecCert, peer-reviewed articles, highest degree - any field

h. Dependent Variable: SubjectiveNoPercent

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	69323.452	10	6932.345	13.346	.000[b]
	Residual	239456.446	461	519.428		
	Total	308779.898	471			
2	Regression	69323.143	9	7702.571	14.861	.000[c]
	Residual	239456.755	462	518.305		
	Total	308779.898	471			
3	Regression	69292.202	8	8661.525	16.745	.000[d]
	Residual	239487.696	463	517.252		
	Total	308779.898	471			
4	Regression	68855.566	7	9836.509	19.023	.000[e]
	Residual	239924.332	464	517.078		
	Total	308779.898	471			
5	Regression	68371.300	6	11395.217	22.041	.000[f]
	Residual	240408.598	465	517.008		
	Total	308779.898	471			
6	Regression	67712.235	5	13542.447	26.178	.000[g]

	Residual	241067.664	466	517.313		
	Total	308779.898	471			
7	Regression	66748.845	4	16687.211	32.198	.000[h]
	Residual	242031.053	467	518.268		
	Total	308779.898	471			

a. Dependent Variable: SubjectiveNoPercent

b. Predictors: (Constant), PreceptorRecode14, geographic location, year of highest N/D degree completion, WorkStatusRecoded, Recode11SpecCert, peer-reviewed articles, area of practice, highest degree - any field, highest degree - N/D, years of RDN experience

c. Predictors: (Constant), PreceptorRecode14, geographic location, year of highest N/D degree completion, WorkStatusRecoded, Recode11SpecCert, peer-reviewed articles, area of practice, highest degree - any field, years of RDN experience

d. Predictors: (Constant), PreceptorRecode14, geographic location, year of highest N/D degree completion, WorkStatusRecoded, Recode11SpecCert, peer-reviewed articles, area of practice, highest degree - any field

e. Predictors: (Constant), PreceptorRecode14, geographic location, year of highest N/D degree completion, Recode11SpecCert, peer-reviewed articles, area of practice, highest degree - any field

f. Predictors: (Constant), PreceptorRecode14, year of highest N/D degree completion, Recode11SpecCert, peer-reviewed articles, area of practice, highest degree - any field

g. Predictors: (Constant), PreceptorRecode14, year of highest N/D degree completion, Recode11SpecCert, peer-reviewed articles, highest degree - any field

h. Predictors: (Constant), year of highest N/D degree completion, Recode11SpecCert, peer-reviewed articles, highest degree - any field

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients			95.0% Confidence Interval for B		Correlations			Collinearity Statistics	
		B	Std. Error	Beta	t	Sig.	Lower Bound	Upper Bound	Zero-order	Partial	Part	Tolerance	VIF
1	(Constant)	214.385	10.965		19.551	.000	192.836	235.933					
	years of RDN experience	-.050	.213	-.024	-.237	.813	-.468	.367	-.220	-.011	-.010	.159	6.277
	highest degree - any field	6.615	4.201	.146	1.575	.116	-1.641	14.871	.302	.073	.065	.197	5.078
	highest degree - N/D	-.107	4.381	-.002	-.024	.981	-8.717	8.503	.319	-.001	-.001	.178	5.613
	year of highest N/D degree completion	-.594	.216	-.287	-2.744	.006	-1.019	-.168	-.290	-.127	-.113	.154	6.511
	geographic location	1.355	1.325	.043	1.023	.307	-1.248	3.958	.080	.048	.042	.973	1.028
	area of practice	-.449	.417	-.047	-1.079	.281	-1.268	.369	-.107	-.050	-.044	.900	1.111
	peer-reviewed articles	8.544	1.509	.263	5.660	.000	5.578	11.510	.284	.255	.232	.781	1.281
	Recode11SpecCert	2.287	1.220	.079	1.875	.061	-.110	4.684	.074	.087	.077	.939	1.064
	WorkStatusRecoded	-3.022	3.290	-.039	-.918	.359	-9.488	3.444	-.009	-.043	-.038	.957	1.045

	PreceptorRecode14	1.697	1.337	.054	1.270	.205	-.930	4.324	.061	.059	.052	.917	1.091
2	(Constant)	214.335	10.764		19.913	.000	193.183	235.487					
	years of RDN experience	-.051	.209	-.025	-.244	.807	-.463	.360	-.220	-.011	-.010	.164	6.109
	highest degree - any field	6.527	2.135	.144	3.057	.002	2.332	10.722	.302	.141	.125	.761	1.314
	year of highest N/D degree completion	-.592	.209	-.286	-2.837	.005	-1.003	-.182	-.290	-.131	-.116	.165	6.076
	geographic location	1.355	1.323	.043	1.024	.306	-1.245	3.955	.080	.048	.042	.973	1.028
	area of practice	-.448	.414	-.047	-1.082	.280	-1.263	.366	-.107	-.050	-.044	.907	1.102
	peer-reviewed articles	8.538	1.489	.263	5.733	.000	5.611	11.465	.284	.258	.235	.800	1.250
	Recode11SpecCert	2.284	1.214	.079	1.881	.061	-.102	4.670	.074	.087	.077	.946	1.057
	WorkStatusRecoded	-3.013	3.265	-.038	-.923	.357	-9.429	3.404	-.009	-.043	-.038	.970	1.031
	PreceptorRecode14	1.697	1.335	.054	1.271	.204	-.927	4.320	.061	.059	.052	.917	1.090
3	(Constant)	214.567	10.711		20.033	.000	193.520	235.615					
	highest degree - any field	6.418	2.086	.141	3.077	.002	2.319	10.517	.302	.142	.126	.796	1.257

	year of highest N/D degree completion	-.638	.091	-.309	-7.028	.000	-.817	-.460	-.290	-.310	-.288	.868	1.152
	geographic location	1.376	1.319	.043	1.043	.298	-1.217	3.968	.080	.048	.043	.977	1.023
	area of practice	-.455	.413	-.047	-1.102	.271	-1.267	.357	-.107	-.051	-.045	.911	1.097
	peer-reviewed articles	8.494	1.477	.261	5.752	.000	5.592	11.396	.284	.258	.235	.812	1.232
	Recode11SpecCert	2.264	1.210	.079	1.871	.062	-.114	4.642	.074	.087	.077	.951	1.052
	WorkStatusRecoded	-2.996	3.261	-.038	-.919	.359	-9.405	3.412	-.009	-.043	-.038	.970	1.030
	PreceptorRecode14	1.656	1.324	.053	1.251	.211	-.945	4.257	.061	.058	.051	.931	1.074
4	(Constant)	206.223	5.677		36.325	.000	195.067	217.379					
	highest degree - any field	6.579	2.078	.145	3.166	.002	2.495	10.662	.302	.145	.130	.801	1.248
	year of highest N/D degree completion	-.630	.090	-.305	-6.972	.000	-.808	-.452	-.290	-.308	-.285	.877	1.141
	geographic location	1.272	1.314	.040	.968	.334	-1.311	3.854	.080	.045	.040	.984	1.016
	area of practice	-.469	.413	-.049	-1.135	.257	-1.280	.343	-.107	-.053	-.046	.913	1.096
	peer-reviewed articles	8.425	1.475	.259	5.713	.000	5.527	11.322	.284	.256	.234	.814	1.228

	Recode11SpecCert	2.266	1.210	.079	1.873	.062	-.112	4.643	.074	.087	.077	.951	1.052
	PreceptorRecode14	1.520	1.315	.049	1.156	.248	-1.064	4.104	.061	.054	.047	.943	1.060
5	(Constant)	208.837	4.993		41.825	.000	199.025	218.649					
	highest degree - any field	6.678	2.076	.147	3.218	.001	2.599	10.757	.302	.148	.132	.803	1.245
	year of highest N/D degree completion	-.630	.090	-.304	-6.968	.000	-.807	-.452	-.290	-.307	-.285	.877	1.141
	area of practice	-.466	.413	-.048	-1.129	.259	-1.277	.345	-.107	-.052	-.046	.913	1.096
	peer-reviewed articles	8.537	1.470	.263	5.807	.000	5.648	11.425	.284	.260	.238	.819	1.221
	Recode11SpecCert	2.302	1.209	.080	1.904	.058	-.074	4.679	.074	.088	.078	.951	1.051
	PreceptorRecode14	1.517	1.315	.049	1.154	.249	-1.067	4.101	.061	.053	.047	.943	1.060
6	(Constant)	206.646	4.602		44.906	.000	197.603	215.688					
	highest degree - any field	6.637	2.076	.146	3.198	.001	2.558	10.717	.302	.147	.131	.803	1.245
	year of highest N/D degree completion	-.651	.088	-.315	-7.357	.000	-.825	-.477	-.290	-.323	-.301	.916	1.092
	peer-reviewed articles	8.463	1.469	.260	5.761	.000	5.576	11.349	.284	.258	.236	.821	1.218

	Recode11SpecCert	2.503	1.197	.087	2.092	.037	.152	4.854	.074	.096	.086	.973	1.028
	PreceptorRecode14	1.769	1.296	.057	1.365	.173	-.778	4.316	.061	.063	.056	.971	1.030
7	(Constant)	209.604	4.063		51.588	.000	201.619	217.588					
	highest degree - any field	6.958	2.064	.153	3.371	.001	2.902	11.015	.302	.154	.138	.814	1.229
	year of highest N/D degree completion	-.640	.088	-.309	-7.257	.000	-.813	-.467	-.290	-.318	-.297	.923	1.083
	peer-reviewed articles	8.389	1.469	.258	5.709	.000	5.501	11.276	.284	.255	.234	.822	1.217
	Recode11SpecCert	2.658	1.192	.092	2.229	.026	.315	5.001	.074	.103	.091	.981	1.019

a. Dependent Variable: SubjectiveNoPercent

Collinearity Diagnostics[a]

				Variance Proportions										
Model	Dimension	Eigenvalue	Condition Index	(Constant)	years of RDN experience	highest degree - any field	highest degree - N/D	year of highest N/D degree completion	geographic location	area of practice	peer-reviewed articles	Recode11SpecCert	WorkStatusRecoded	PreceptorRecode14
1	1	9.261	1.000	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
	2	.653	3.765	.00	.04	.00	.00	.04	.00	.00	.00	.00	.00	.00

	3	.330	5.294	.00	.00	.00	.00	.00	.00	.64	.00	.13	.00	.01
	4	.249	6.099	.00	.00	.00	.00	.00	.01	.06	.43	.21	.00	.01
	5	.181	7.150	.00	.00	.00	.00	.00	.02	.10	.18	.60	.00	.12
	6	.120	8.801	.00	.02	.03	.04	.00	.30	.02	.23	.01	.00	.00
	7	.106	9.327	.00	.00	.01	.01	.01	.24	.05	.14	.00	.00	.58
	8	.052	13.308	.04	.07	.00	.00	.07	.42	.09	.00	.03	.07	.22
	9	.031	17.421	.01	.83	.03	.00	.81	.00	.01	.00	.01	.03	.05
	10	.011	29.092	.01	.02	.90	.87	.04	.00	.01	.00	.01	.01	.00
	11	.006	40.857	.94	.01	.02	.07	.03	.00	.01	.01	.00	.88	.00
2	1	8.372	1.000	.00	.00	.00		.00	.00	.00	.00	.00	.00	.00
	2	.604	3.723	.00	.04	.01		.04	.01	.00	.00	.00	.00	.00
	3	.330	5.039	.00	.00	.00		.00	.00	.64	.00	.15	.00	.01
	4	.238	5.925	.00	.00	.01		.00	.00	.07	.60	.16	.00	.01
	5	.180	6.817	.00	.00	.00		.00	.03	.11	.12	.64	.00	.13
	6	.109	8.750	.00	.00	.01		.01	.51	.06	.01	.00	.00	.40
	7	.079	10.318	.00	.03	.64		.00	.07	.02	.26	.00	.00	.22
	8	.051	12.763	.04	.10	.07		.09	.37	.08	.01	.03	.07	.17
	9	.030	16.599	.01	.82	.20		.83	.00	.01	.00	.01	.04	.05
	10	.006	38.123	.95	.00	.06		.01	.00	.01	.00	.01	.89	.00

3	1	7.660	1.000	.00		.00		.00	.00	.00	.00	.00	.00
	2	.374	4.524	.00		.01		.50	.01	.18	.01	.03	.00	.01
	3	.315	4.932	.00		.00		.27	.00	.43	.01	.15	.00	.01
	4	.233	5.729	.00		.01		.05	.00	.09	.62	.13	.00	.01
	5	.180	6.532	.00		.00		.04	.03	.13	.10	.65	.00	.13
	6	.109	8.390	.00		.00		.01	.52	.06	.01	.00	.00	.43
	7	.076	10.068	.00		.68		.09	.14	.03	.22	.00	.00	.23
	8	.047	12.701	.05		.24		.01	.29	.08	.02	.03	.10	.18
	9	.006	36.407	.95		.05		.02	.00	.01	.00	.01	.90	.00
4	1	6.701	1.000	.00		.00		.01	.00	.00	.00	.00		.00
	2	.370	4.256	.00		.02		.48	.01	.19	.02	.04		.01
	3	.314	4.619	.00		.01		.30	.00	.42	.01	.14		.01
	4	.230	5.400	.00		.00		.07	.00	.12	.58	.18		.01
	5	.174	6.198	.01		.01		.03	.04	.09	.14	.58		.18
	6	.108	7.861	.00		.00		.01	.57	.06	.01	.00		.40
	7	.075	9.425	.00		.72		.09	.12	.03	.23	.00		.21

	8	.027	15.679	.99		.25		.02	.26	.10	.01	.05		.18
5	1	5.814	1.000	.00		.00		.01		.01	.01	.01		.00
	2	.364	3.999	.00		.02		.44		.20	.02	.05		.01
	3	.313	4.310	.00		.01		.33		.40	.02	.13		.00
	4	.228	5.046	.00		.00		.08		.14	.53	.22		.01
	5	.168	5.880	.01		.02		.01		.06	.15	.51		.28
	6	.080	8.536	.02		.54		.09		.07	.26	.01		.45
	7	.034	13.168	.97		.41		.04		.13	.01	.07		.23
6	1	5.116	1.000	.00		.00		.01			.01	.01		.00
	2	.346	3.846	.00		.02		.83			.03	.00		.00
	3	.243	4.593	.00		.01		.03			.40	.46		.02
	4	.173	5.431	.02		.02		.00			.27	.48		.24
	5	.085	7.750	.04		.41		.04			.28	.01		.57
	6	.037	11.681	.94		.54		.09			.01	.05		.17
7	1	4.244	1.000	.00		.00		.01			.01	.01		
	2	.343	3.520	.00		.03		.81			.05	.00		

	3	.238	4.219	.00		.00		.03			.31	.61		
	4	.133	5.646	.10		.16		.00			.59	.32		
	5	.042	10.069	.89		.80		.14			.04	.06		

a. Dependent Variable: SubjectiveNoPercent

Excluded Variables[a]

Model		Beta In	t	Sig.	Partial Correlation	Collinearity Statistics		
						Tolerance	VIF	Minimum Tolerance
2	highest degree - N/D	-.002[b]	-.024	.981	-.001	.178	5.613	.154
3	highest degree - N/D	-.006[c]	-.064	.949	-.003	.183	5.464	.183
	years of RDN experience	-.025[c]	-.244	.807	-.011	.164	6.109	.164
4	highest degree - N/D	.004[d]	.043	.965	.002	.186	5.390	.186
	years of RDN experience	-.023[d]	-.225	.822	-.010	.164	6.107	.164
	WorkStatusRecoded	-.038[d]	-.919	.359	-.043	.970	1.030	.796
5	highest degree - N/D	.003[e]	.030	.976	.001	.186	5.389	.186
	years of RDN experience	-.029[e]	-.288	.773	-.013	.164	6.080	.164
	WorkStatusRecoded	-.034[e]	-.832	.406	-.039	.978	1.023	.798
	geographic location	.040[e]	.968	.334	.045	.984	1.016	.801
6	highest degree - N/D	.012[f]	.124	.901	.006	.187	5.351	.187
	years of RDN experience	-.036[f]	-.361	.718	-.017	.165	6.055	.165
	WorkStatusRecoded	-.036[f]	-.872	.384	-.040	.979	1.022	.798
	geographic location	.040[f]	.960	.337	.044	.984	1.016	.801
	area of practice	-.048[f]	-1.129	.259	-.052	.913	1.096	.803

7	highest degree - N/D	.016[g]	.166	.868	.008	.187	5.346	.187
	years of RDN experience	-.021[g]	-.205	.838	-.009	.167	5.977	.166
	WorkStatusRecoded	-.030[g]	-.720	.472	-.033	.990	1.010	.810
	geographic location	.039[g]	.954	.340	.044	.984	1.016	.812
	area of practice	-.057[g]	-1.344	.180	-.062	.940	1.064	.814
	PreceptorRecode14	.057[g]	1.365	.173	.063	.971	1.030	.803

a. Dependent Variable: SubjectiveNoPercent

b. Predictors in the Model: (Constant), PreceptorRecode14, geographic location, year of highest N/D degree completion, WorkStatusRecoded, Recode11SpecCert, peer-reviewed articles, area of practice, highest degree - any field, years of RDN experience

c. Predictors in the Model: (Constant), PreceptorRecode14, geographic location, year of highest N/D degree completion, WorkStatusRecoded, Recode11SpecCert, peer-reviewed articles, area of practice, highest degree - any field

d. Predictors in the Model: (Constant), PreceptorRecode14, geographic location, year of highest N/D degree completion, Recode11SpecCert, peer-reviewed articles, area of practice, highest degree - any field

e. Predictors in the Model: (Constant), PreceptorRecode14, year of highest N/D degree completion, Recode11SpecCert, peer-reviewed articles, area of practice, highest degree - any field

f. Predictors in the Model: (Constant), PreceptorRecode14, year of highest N/D degree completion, Recode11SpecCert, peer-reviewed articles, highest degree - any field

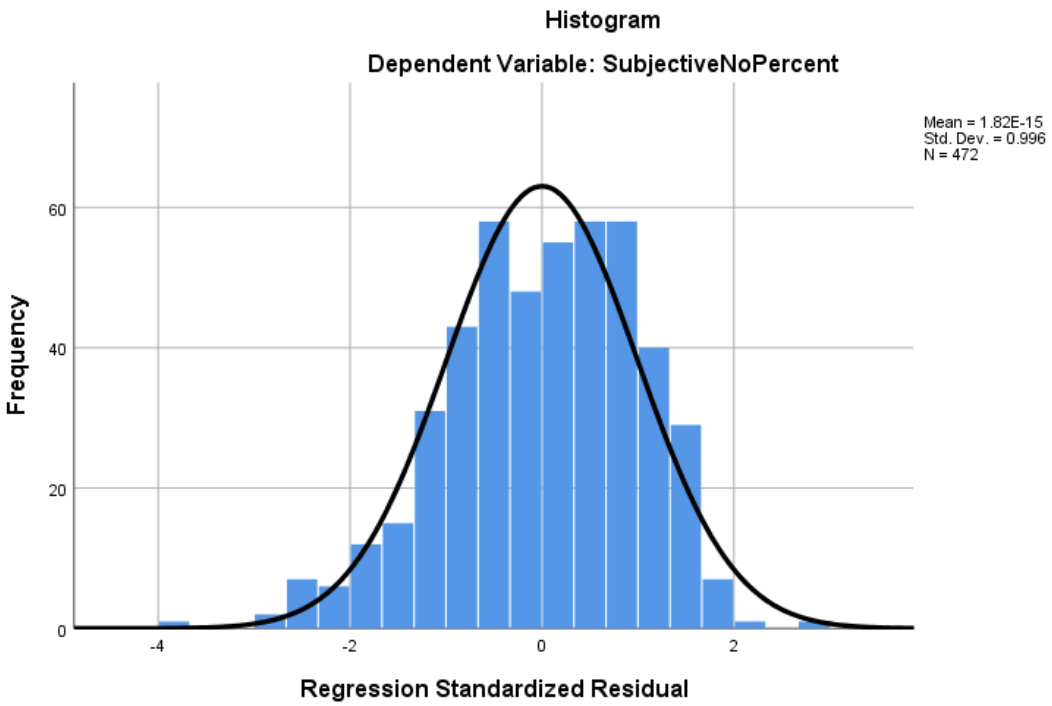
g. Predictors in the Model: (Constant), year of highest N/D degree completion, Recode11SpecCert, peer-reviewed articles, highest degree - any field

Residuals Statistics[a]

	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	197.5358	272.5204	226.4068	11.90451	472
Std. Predicted Value	-2.425	3.874	.000	1.000	472

Standard Error of Predicted Value	1.525	6.258	2.231	.716	472
Adjusted Predicted Value	198.1908	274.1717	226.4083	11.93644	472
Residual	-85.11641	63.98528	.00000	22.66862	472
Std. Residual	-3.739	2.811	.000	.996	472
Stud. Residual	-3.750	2.830	.000	1.001	472
Deleted Residual	-85.64471	64.87000	-.00156	22.89451	472
Stud. Deleted Residual	-3.804	2.852	.000	1.003	472
Mahal. Distance	1.114	34.589	3.992	4.251	472
Cook's Distance	.000	.027	.002	.003	472
Centered Leverage Value	.002	.073	.008	.009	472

a. Dependent Variable: SubjectiveNoPercent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Std. Dev. = 0.996
N = 472
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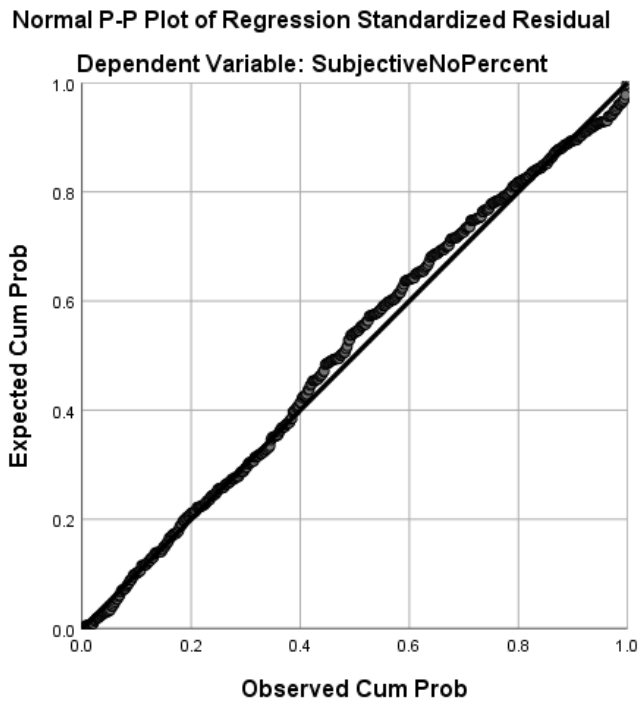
40
20
0
-4
-2
0
2
Regression Standardized Residual


Normal P-P Plot of Regression Standardized Residual
Dependent Variable: SubjectiveNoPercent
Expected Cum Prob
Observed Cum Prob
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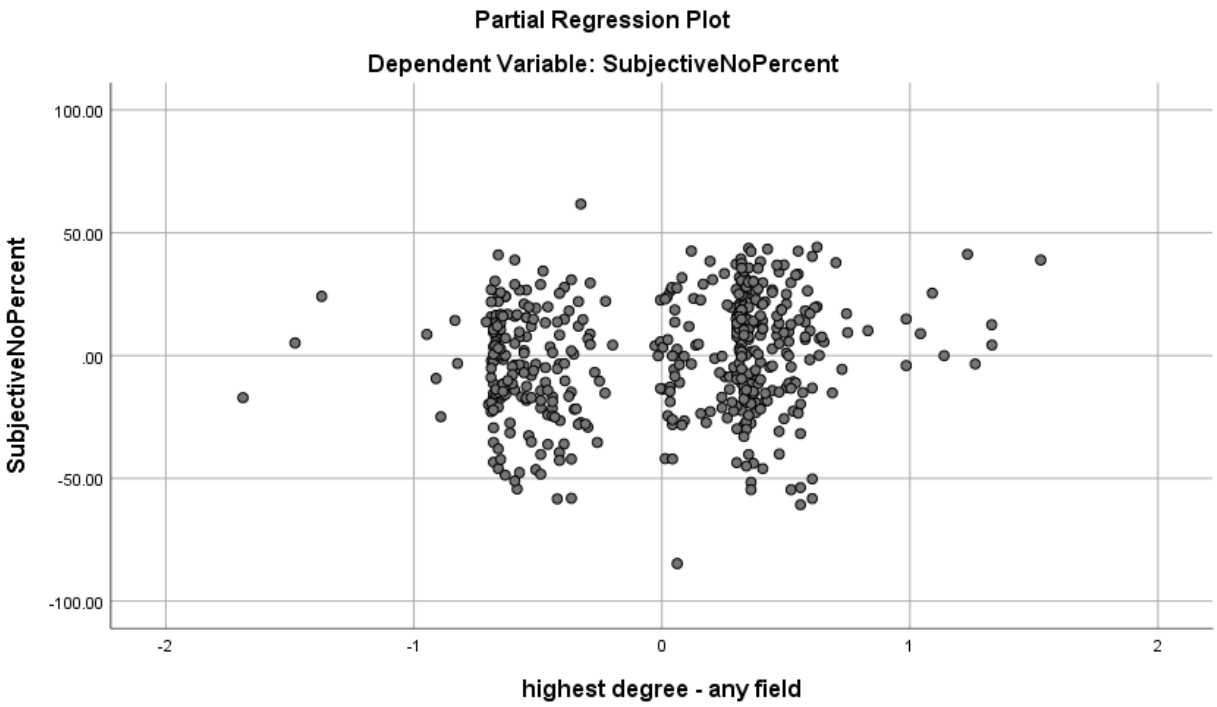
0.2
0.4
0.6
0.8
1.0


Partial Regression Plot
Dependent Variable: SubjectiveNoPercent
SubjectiveNoPercent
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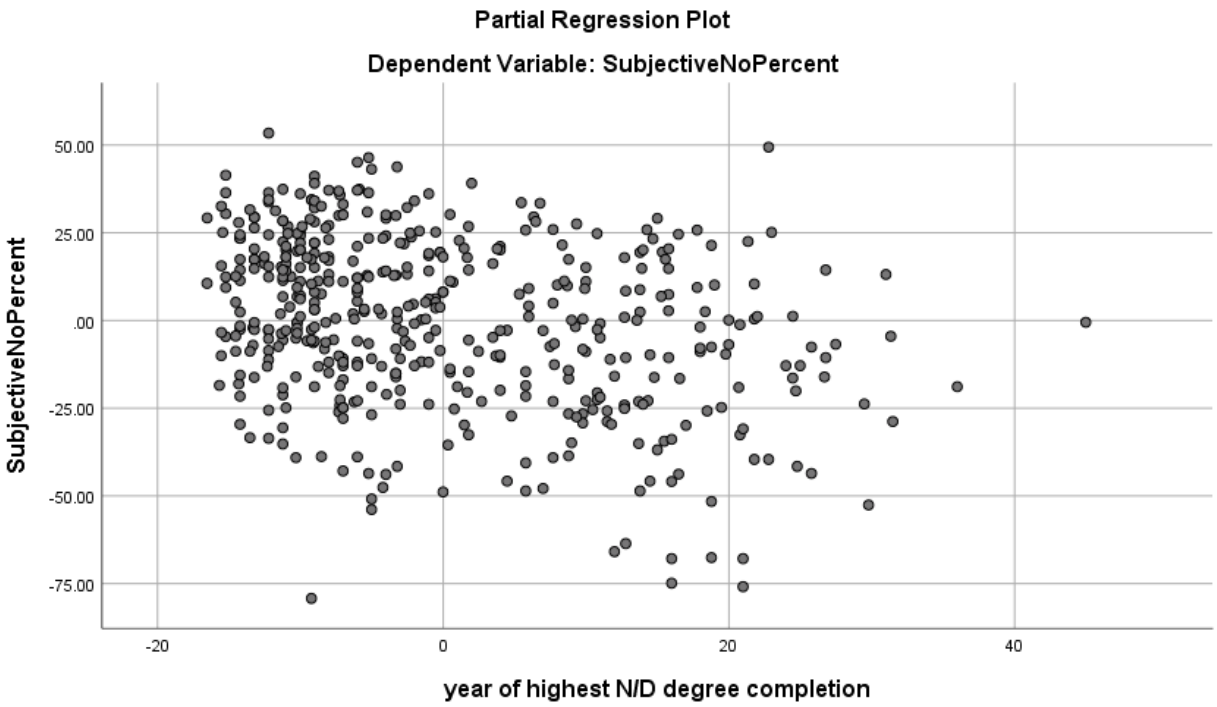
.00
-50.00
-100.00
-2
-1
0
1
2
highest degree - any field


Partial Regression Plot
Dependent Variable: SubjectiveNoPercent
SubjectiveNoPercent
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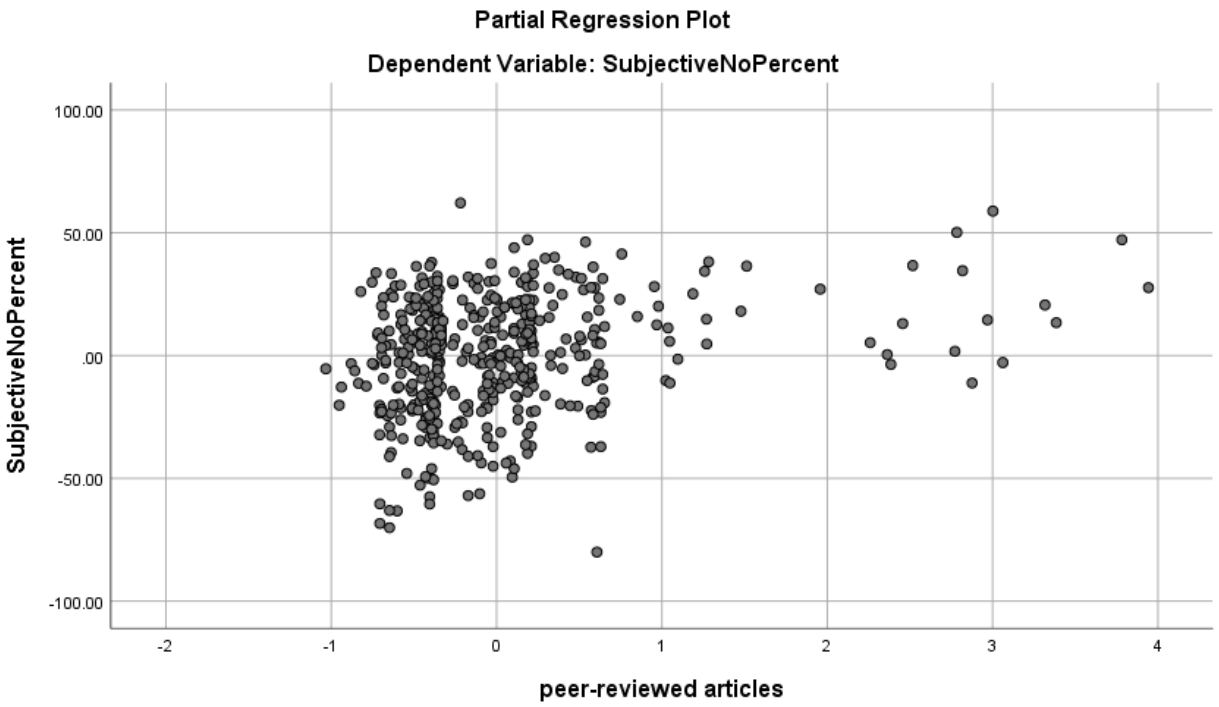
25.00
.00
-25.00
-50.00
-75.00
-20
0
20
40
year of highest N/D degree completion


Partial Regression Plot
Dependent Variable: SubjectiveNoPercent
SubjectiveNoPercent
100.00
50.00
.00
-50.00
-100.00
-2
-1
0
1
2
3
4
peer-reviewed articles

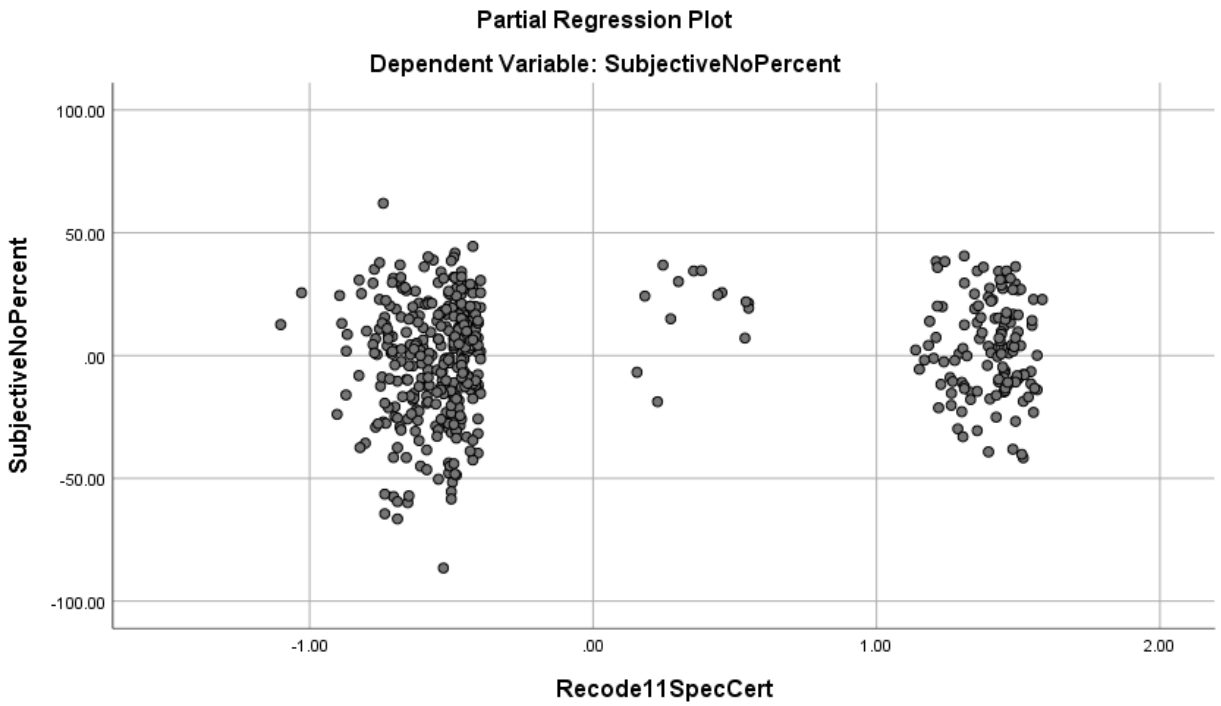


Figure 49. SPSS Output Multiple Regression KABQ Knowledge/Competence (no Item #21)

Correlations

		KABQ KnowCompetence	years of RDN experience	highest degree - any field	highest degree - N/D	year of highest N/D degree completion	geographic location	area of practice	peer-reviewed articles	Recode11SpecCert	WorkStatusRecoded	PreceptorRecode14
	KABQKnowCompetence	1.000	-.156	.232	.265	-.224	.121	-.109	.245	.034	.060	.005

Pearson Correlation	years of RDN experience	-.156	1.000	-.019	-.077	.901	.000	.179	.195	.150	-.067	.134
	highest degree - any field	.232	-.019	1.000	.890	-.154	.084	-.017	.390	.032	-.033	.090
	highest degree - N/D	.265	-.077	.890	1.000	-.238	.070	-.072	.398	.059	-.068	.086
	year of highest N/D degree completion	-.224	.901	-.154	-.238	1.000	.011	.177	.114	.134	-.065	.084
	geographic location	.121	.000	.084	.070	.011	1.000	.008	.102	.038	.083	.008
	area of practice	-.109	.179	-.017	-.072	.177	.008	1.000	.070	-.138	.004	-.163
	peer-reviewed articles	.245	.195	.390	.398	.114	.102	.070	1.000	.054	.025	.012
	Recode11SpecCert	.034	.150	.032	.059	.134	.038	-.138	.054	1.000	.000	.110
	WorkStatusRecoded	.060	-.067	-.033	-.068	-.065	.083	.004	.025	.000	1.000	.092
	PreceptorRecode14	.005	.134	.090	.086	.084	.008	-.163	.012	.110	.092	1.000
Sig. (1-tailed)	KABQKnowCompetence	.	.000	.000	.000	.000	.004	.009	.000	.231	.095	.457
	years of RDN experience	.000	.	.341	.047	.000	.499	.000	.000	.001	.072	.002

	highest degree - any field	.000	.341	.	.000	.000	.033	.354	.000	.244	.233	.024
	highest degree - N/D	.000	.047	.000	.	.000	.064	.058	.000	.098	.069	.031
	year of highest N/D degree completion	.000	.000	.000	.000	.	.401	.000	.006	.002	.080	.033
	geographic location	.004	.499	.033	.064	.401	.	.430	.013	.202	.036	.433
	area of practice	.009	.000	.354	.058	.000	.430	.	.064	.001	.467	.000
	peer-reviewed articles	.000	.000	.000	.000	.006	.013	.064	.	.122	.290	.396
	Recode11SpecCert	.231	.001	.244	.098	.002	.202	.001	.122	.	.497	.008
	WorkStatusRecoded	.095	.072	.233	.069	.080	.036	.467	.290	.497	.	.023
	PreceptorRecode14	.457	.002	.024	.031	.033	.433	.000	.396	.008	.023	.
N	KABQKnowCompetence	476	476	476	476	476	476	476	476	476	476	476
	years of RDN experience	476	476	476	476	476	476	476	476	476	476	476

	highest degree - any field	476	476	476	476	476	476	476	476	476	476	476
	highest degree - N/D	476	476	476	476	476	476	476	476	476	476	476
	year of highest N/D degree completion	476	476	476	476	476	476	476	476	476	476	476
	geographic location	476	476	476	476	476	476	476	476	476	476	476
	area of practice	476	476	476	476	476	476	476	476	476	476	476
	peer-reviewed articles	476	476	476	476	476	476	476	476	476	476	476
	Recode11SpecCert	476	476	476	476	476	476	476	476	476	476	476
	WorkStatusRecoded	476	476	476	476	476	476	476	476	476	476	476
	PreceptorRecode14	476	476	476	476	476	476	476	476	476	476	476

Variables Entered/Removed[a]

Model	Variables Entered	Variables Removed	Method

1	PreceptorRecode14, geographic location, year of highest N/D degree completion, WorkStatusRecoded, peer-reviewed articles, Recode11SpecCert, area of practice, highest degree - any field, highest degree - N/D, years of RDN experience[b]	.	Enter
2	.	highest degree - any field	Backward (criterion: Probability of F-to-remove >= .100).
3	.	PreceptorRecode14	Backward (criterion: Probability of F-to-remove >= .100).

4	.	Recode11SpecCert	Backward (criterion: Probability of F-to-remove >= .100).
5	.	years of RDN experience	Backward (criterion: Probability of F-to-remove >= .100).
6	.	WorkStatusRecoded	Backward (criterion: Probability of F-to-remove >= .100).

a. Dependent Variable: KABQKnowCompetence

b. All requested variables entered.

Model Summary[g]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.393[a]	.154	.136	3.80695	
2	.393[b]	.154	.138	3.80291	
3	.392[c]	.154	.140	3.79928	
4	.392[d]	.153	.141	3.79686	

5	.390[e]	.152	.142	3.79470	
6	.388[f]	.151	.142	3.79467	2.200

a. Predictors: (Constant), PreceptorRecode14, geographic location, year of highest N/D degree completion, WorkStatusRecoded, peer-reviewed articles, Recode11SpecCert, area of practice, highest degree - any field, highest degree - N/D, years of RDN experience

b. Predictors: (Constant), PreceptorRecode14, geographic location, year of highest N/D degree completion, WorkStatusRecoded, peer-reviewed articles, Recode11SpecCert, area of practice, highest degree - N/D, years of RDN experience

c. Predictors: (Constant), geographic location, year of highest N/D degree completion, WorkStatusRecoded, peer-reviewed articles, Recode11SpecCert, area of practice, highest degree - N/D, years of RDN experience

d. Predictors: (Constant), geographic location, year of highest N/D degree completion, WorkStatusRecoded, peer-reviewed articles, area of practice, highest degree - N/D, years of RDN experience

e. Predictors: (Constant), geographic location, year of highest N/D degree completion, WorkStatusRecoded, peer-reviewed articles, area of practice, highest degree - N/D

f. Predictors: (Constant), geographic location, year of highest N/D degree completion, peer-reviewed articles, area of practice, highest degree - N/D

g. Dependent Variable: KABQKnowCompetence

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	1229.170	10	122.917	8.481	.000[b]
	Residual	6739.189	465	14.493		

	Total	7968.359	475			
2	Regression	1229.025	9	136.558	9.443	.000[c]
	Residual	6739.334	466	14.462		
	Total	7968.359	475			
3	Regression	1227.444	8	153.430	10.629	.000[d]
	Residual	6740.915	467	14.435		
	Total	7968.359	475			
4	Regression	1221.603	7	174.515	12.105	.000[e]
	Residual	6746.757	468	14.416		
	Total	7968.359	475			
5	Regression	1214.865	6	202.478	14.061	.000[f]
	Residual	6753.494	469	14.400		
	Total	7968.359	475			
6	Regression	1200.594	5	240.119	16.675	.000[g]
	Residual	6767.765	470	14.400		
	Total	7968.359	475			

a. Dependent Variable: KABQKnowCompetence

b. Predictors: (Constant), PreceptorRecode14, geographic location, year of highest N/D degree completion, WorkStatusRecoded, peer-reviewed articles, Recode11SpecCert, area of practice, highest degree - any field, highest degree - N/D, years of RDN experience

c. Predictors: (Constant), PreceptorRecode14, geographic location, year of highest N/D degree completion, WorkStatusRecoded, peer-reviewed articles, Recode11SpecCert, area of practice, highest degree - N/D, years of RDN experience

d. Predictors: (Constant), geographic location, year of highest N/D degree completion, WorkStatusRecoded, peer-reviewed articles, Recode11SpecCert, area of practice, highest degree - N/D, years of RDN experience

e. Predictors: (Constant), geographic location, year of highest N/D degree completion, WorkStatusRecoded, peer-reviewed articles, area of practice, highest degree - N/D, years of RDN experience

f. Predictors: (Constant), geographic location, year of highest N/D degree completion, WorkStatusRecoded, peer-reviewed articles, area of practice, highest degree - N/D

g. Predictors: (Constant), geographic location, year of highest N/D degree completion, peer-reviewed articles, area of practice, highest degree - N/D

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients			95.0% Confidence Interval for B		Correlations			Collinearity Statistics	
		B	Std. Error	Beta	t	Sig.	Lower Bound	Upper Bound	Zero-order	Partial	Part	Tolerance	VIF
1	(Constant)	29.683	1.827		16.251	.000	26.094	33.273					
	years of RDN experience	.024	.035	.072	.685	.494	-.045	.093	-.156	.032	.029	.163	6.142
	highest degree - any field	.069	.693	.010	.100	.920	-1.292	1.430	.232	.005	.004	.199	5.016

	highest degree - N/D	.742	.721	.103	1.029	.304	-.675	2.160	.265	.048	.044	.180	5.548
	year of highest N/D degree completion	-.090	.036	-.274	-2.540	.011	-.160	-.020	-.224	-.117	-.108	.157	6.376
	geographic location	.464	.221	.091	2.102	.036	.030	.897	.121	.097	.090	.976	1.025
	area of practice	-.123	.069	-.080	-1.775	.077	-.260	.013	-.109	-.082	-.076	.900	1.112
	peer-reviewed articles	1.075	.247	.211	4.345	.000	.589	1.561	.245	.198	.185	.773	1.294
	Recode11SpecCert	.133	.202	.029	.657	.511	-.265	.530	.034	.030	.028	.937	1.067
	WorkStatusRecoded	.550	.549	.044	1.002	.317	-.529	1.629	.060	.046	.043	.958	1.044
	PreceptorRecode14	-.074	.222	-.015	-.334	.739	-.511	.363	.005	-.015	-.014	.918	1.090
2	(Constant)	29.682	1.825		16.268	.000	26.097	33.268					
	years of RDN experience	.024	.035	.072	.683	.495	-.045	.093	-.156	.032	.029	.163	6.134
	highest degree - N/D	.804	.370	.112	2.176	.030	.078	1.531	.265	.100	.093	.685	1.460
	year of highest N/D degree completion	-.090	.035	-.273	-2.543	.011	-.160	-.020	-.224	-.117	-.108	.158	6.333
	geographic location	.465	.220	.091	2.109	.035	.032	.898	.121	.097	.090	.977	1.024

	area of practice	-.123	.069	-.079	-1.774	.077	-.259	.013	-.109	-.082	-.076	.905	1.105
	peer-reviewed articles	1.076	.247	.211	4.360	.000	.591	1.562	.245	.198	.186	.775	1.290
	Recode11SpecCert	.132	.202	.029	.653	.514	-.265	.528	.034	.030	.028	.941	1.063
	WorkStatusRecoded	.553	.547	.044	1.011	.313	-.523	1.629	.060	.047	.043	.962	1.040
	PreceptorRecode14	-.073	.222	-.015	-.331	.741	-.510	.363	.005	-.015	-.014	.919	1.088
3	(Constant)	29.598	1.805		16.400	.000	26.051	33.144					
	years of RDN experience	.023	.035	.068	.649	.517	-.046	.091	-.156	.030	.028	.165	6.050
	highest degree - N/D	.794	.368	.111	2.158	.031	.071	1.517	.265	.099	.092	.690	1.449
	year of highest N/D degree completion	-.090	.035	-.271	-2.533	.012	-.159	-.020	-.224	-.116	-.108	.158	6.321
	geographic location	.465	.220	.091	2.111	.035	.032	.897	.121	.097	.090	.977	1.024
	area of practice	-.119	.068	-.077	-1.745	.082	-.253	.015	-.109	-.080	-.074	.933	1.072
	peer-reviewed articles	1.081	.246	.212	4.391	.000	.597	1.565	.245	.199	.187	.777	1.286
	Recode11SpecCert	.128	.201	.028	.636	.525	-.267	.523	.034	.029	.027	.944	1.060

	WorkStatusRecoded	.532	.543	.042	.980	.328	-.535	1.600	.060	.045	.042	.975	1.026
4	(Constant)	29.751	1.788		16.643	.000	26.238	33.263					
	years of RDN experience	.024	.035	.071	.684	.495	-.044	.092	-.156	.032	.029	.166	6.033
	highest degree - N/D	.808	.367	.113	2.202	.028	.087	1.529	.265	.101	.094	.693	1.444
	year of highest N/D degree completion	-.089	.035	-.269	-2.518	.012	-.159	-.020	-.224	-.116	-.107	.158	6.317
	geographic location	.469	.220	.092	2.135	.033	.037	.901	.121	.098	.091	.978	1.023
	area of practice	-.126	.067	-.082	-1.878	.061	-.258	.006	-.109	-.086	-.080	.960	1.042
	peer-reviewed articles	1.081	.246	.212	4.394	.000	.598	1.565	.245	.199	.187	.777	1.286
	WorkStatusRecoded	.538	.543	.043	.991	.322	-.529	1.605	.060	.046	.042	.975	1.026
5	(Constant)	29.646	1.780		16.655	.000	26.148	33.143					
	highest degree - N/D	.876	.353	.122	2.479	.014	.182	1.570	.265	.114	.105	.747	1.339
	year of highest N/D degree completion	-.067	.015	-.203	-4.441	.000	-.097	-.037	-.224	-.201	-.189	.864	1.158
	geographic location	.461	.219	.090	2.100	.036	.030	.892	.121	.097	.089	.981	1.019

	area of practice	-.124	.067	-.080	-1.845	.066	-.255	.008	-.109	-.085	-.078	.963	1.039
	peer-reviewed articles	1.095	.245	.215	4.467	.000	.613	1.577	.245	.202	.190	.783	1.278
	WorkStatusRecoded	.540	.543	.043	.996	.320	-.526	1.606	.060	.046	.042	.975	1.026
6	(Constant)	31.221	.816		38.271	.000	29.618	32.824					
	highest degree - N/D	.835	.351	.116	2.381	.018	.146	1.525	.265	.109	.101	.757	1.321
	year of highest N/D degree completion	-.069	.015	-.208	-4.565	.000	-.098	-.039	-.224	-.206	-.194	.873	1.146
	geographic location	.479	.219	.094	2.193	.029	.050	.909	.121	.101	.093	.988	1.012
	area of practice	-.123	.067	-.080	-1.838	.067	-.255	.008	-.109	-.084	-.078	.963	1.039
	peer-reviewed articles	1.113	.244	.218	4.551	.000	.632	1.593	.245	.205	.193	.787	1.271

a. Dependent Variable: KABQKnowCompetence

Collinearity Diagnostics[a]

Variance Proportions

Model	Dimension	Eigenvalue	Condition Index	(Constant)	years of RDN experience	highest degree - any field	highest degree - N/D	year of highest N/D degree completion	geographic location	area of practice	peer-reviewed articles	Recode11SpecCert	WorkStatusRecoded	PreceptorRecode14
1	1	9.260	1.000	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
	2	.649	3.777	.00	.04	.00	.00	.04	.00	.00	.00	.00	.00	.00
	3	.332	5.282	.00	.00	.00	.00	.00	.00	.63	.00	.14	.00	.01
	4	.255	6.032	.00	.01	.00	.00	.00	.01	.07	.45	.17	.00	.02
	5	.180	7.164	.00	.00	.00	.00	.00	.02	.10	.15	.64	.00	.12
	6	.119	8.839	.00	.02	.03	.04	.00	.31	.02	.23	.01	.00	.00
	7	.106	9.351	.00	.00	.01	.01	.01	.23	.05	.15	.00	.00	.59
	8	.052	13.347	.04	.08	.00	.00	.07	.41	.09	.00	.03	.07	.21
	9	.031	17.285	.01	.82	.03	.00	.81	.00	.01	.00	.00	.03	.05
	10	.011	28.875	.01	.02	.90	.87	.04	.00	.01	.00	.01	.01	.00
	11	.006	40.931	.94	.01	.02	.07	.03	.00	.01	.01	.00	.88	.00
2	1	8.355	1.000	.00	.00		.00	.00	.00	.00	.00	.00	.00	.00
	2	.612	3.696	.00	.04		.01	.04	.01	.00	.01	.00	.00	.00
	3	.332	5.017	.00	.00		.00	.00	.00	.63	.00	.14	.00	.01
	4	.246	5.828	.00	.00		.01	.00	.00	.06	.57	.13	.00	.01
	5	.179	6.839	.00	.00		.00	.00	.03	.12	.08	.68	.00	.13
	6	.109	8.742	.00	.00		.01	.01	.52	.06	.00	.00	.00	.38

	7	.081	10.153	.00	.04		.59	.00	.03	.01	.32	.01	.00	.23
	8	.052	12.704	.04	.10		.04	.09	.40	.09	.01	.02	.07	.19
	9	.029	16.926	.01	.80		.25	.83	.00	.02	.00	.00	.04	.04
	10	.006	38.716	.95	.01		.08	.02	.00	.01	.01	.00	.89	.00
3	1	7.492	1.000	.00	.00		.00	.00	.00	.00	.00	.00	.00	
	2	.602	3.529	.00	.04		.01	.04	.01	.00	.01	.00	.00	
	3	.324	4.812	.00	.00		.00	.00	.00	.66	.00	.18	.00	
	4	.242	5.563	.00	.00		.01	.00	.01	.05	.53	.24	.00	
	5	.158	6.887	.00	.00		.01	.01	.15	.23	.17	.53	.00	
	6	.090	9.147	.00	.03		.43	.01	.38	.00	.22	.02	.00	
	7	.057	11.438	.03	.09		.18	.05	.45	.05	.05	.03	.06	
	8	.030	15.821	.00	.83		.27	.88	.00	.01	.00	.00	.03	
	9	.006	36.642	.96	.01		.09	.02	.00	.01	.01	.01	.91	
4	1	6.725	1.000	.00	.00		.00	.00	.00	.00	.00		.00	
	2	.596	3.358	.00	.04		.01	.04	.01	.00	.01		.00	
	3	.292	4.803	.00	.00		.01	.00	.00	.81	.10		.00	

	4	.202	5.768	.00	.00		.00	.00	.08	.14	.60		.00
	5	.090	8.622	.00	.03		.39	.01	.45	.00	.20		.00
	6	.058	10.732	.03	.09		.22	.04	.46	.04	.07		.05
	7	.030	14.981	.00	.83		.28	.88	.00	.00	.00		.02
	8	.006	34.630	.96	.01		.09	.02	.00	.01	.01		.91
5	1	6.003	1.000	.00			.00	.01	.00	.01	.00		.00
	2	.375	4.000	.00			.03	.59	.01	.07	.03		.00
	3	.276	4.662	.00			.00	.22	.00	.77	.08		.00
	4	.201	5.459	.00			.00	.00	.08	.11	.64		.00
	5	.086	8.356	.00			.37	.05	.61	.00	.15		.00
	6	.053	10.652	.03			.51	.10	.30	.03	.09		.07
	7	.006	32.633	.96			.08	.04	.01	.01	.01		.92
6	1	5.052	1.000	.00			.00	.01	.00	.01	.01		
	2	.370	3.694	.00			.04	.58	.01	.06	.05		
	3	.276	4.277	.00			.00	.22	.00	.78	.07		
	4	.185	5.232	.02			.01	.00	.15	.10	.64		

	5	.085	7.700	.01			.46	.06	.51	.00	.19			
	6	.032	12.500	.96			.49	.13	.33	.06	.04			

a. Dependent Variable: KABQKnowCompetence

Excluded Variables[a]

Model		Beta In	t	Sig.	Partial Correlation	Collinearity Statistics		
						Tolerance	VIF	Minimum Tolerance
2	highest degree - any field	.010[b]	.100	.920	.005	.199	5.016	.157
3	highest degree - any field	.008[c]	.089	.929	.004	.200	5.010	.157
	PreceptorRecode14	-.015[c]	-.331	.741	-.015	.919	1.088	.158
4	highest degree - any field	.005[d]	.053	.958	.002	.200	4.994	.157
	PreceptorRecode14	-.013[d]	-.294	.769	-.014	.922	1.085	.158
	Recode11SpecCert	.028[d]	.636	.525	.029	.944	1.060	.158
5	highest degree - any field	.003[e]	.029	.977	.001	.200	4.988	.187
	PreceptorRecode14	-.009[e]	-.210	.833	-.010	.935	1.069	.735
	Recode11SpecCert	.029[e]	.671	.502	.031	.946	1.057	.742
	years of RDN experience	.071[e]	.684	.495	.032	.166	6.033	.158
6	highest degree - any field	.009[f]	.092	.927	.004	.201	4.968	.189
	PreceptorRecode14	-.004[f]	-.094	.925	-.004	.948	1.055	.747

	Recode11SpecCert	.030[f]	.688	.492	.032	.946	1.057	.752
	years of RDN experience	.072[f]	.689	.491	.032	.166	6.033	.159
	WorkStatusRecoded	.043[f]	.996	.320	.046	.975	1.026	.747

a. Dependent Variable: KABQKnowCompetence

b. Predictors in the Model: (Constant), PreceptorRecode14, geographic location, year of highest N/D degree completion, WorkStatusRecoded, peer-reviewed articles, Recode11SpecCert, area of practice, highest degree - N/D, years of RDN experience

c. Predictors in the Model: (Constant), geographic location, year of highest N/D degree completion, WorkStatusRecoded, peer-reviewed articles, Recode11SpecCert, area of practice, highest degree - N/D, years of RDN experience

d. Predictors in the Model: (Constant), geographic location, year of highest N/D degree completion, WorkStatusRecoded, peer-reviewed articles, area of practice, highest degree - N/D, years of RDN experience

e. Predictors in the Model: (Constant), geographic location, year of highest N/D degree completion, WorkStatusRecoded, peer-reviewed articles, area of practice, highest degree - N/D

f. Predictors in the Model: (Constant), geographic location, year of highest N/D degree completion, peer-reviewed articles, area of practice, highest degree - N/D

Casewise Diagnostics[a]

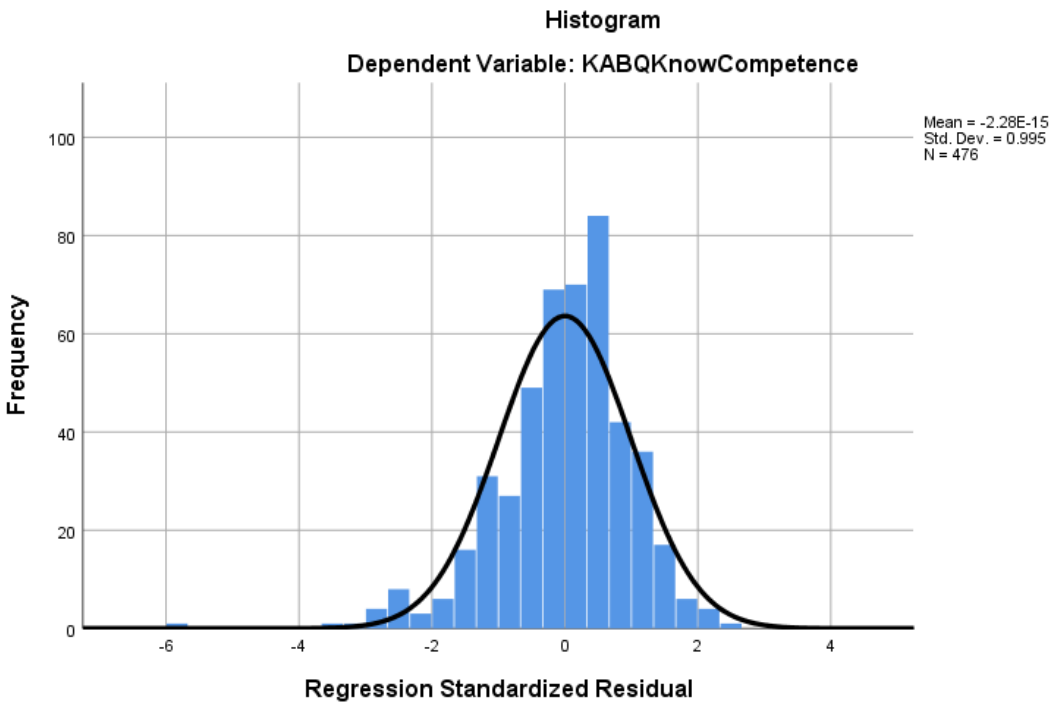
Case Number	Std. Residual	KABQKnowCompetence	Predicted Value	Residual
107	-5.994	12.00	34.7466	-22.74665
205	-3.440	19.00	32.0537	-13.05371
457	-3.259	20.00	32.3655	-12.36555

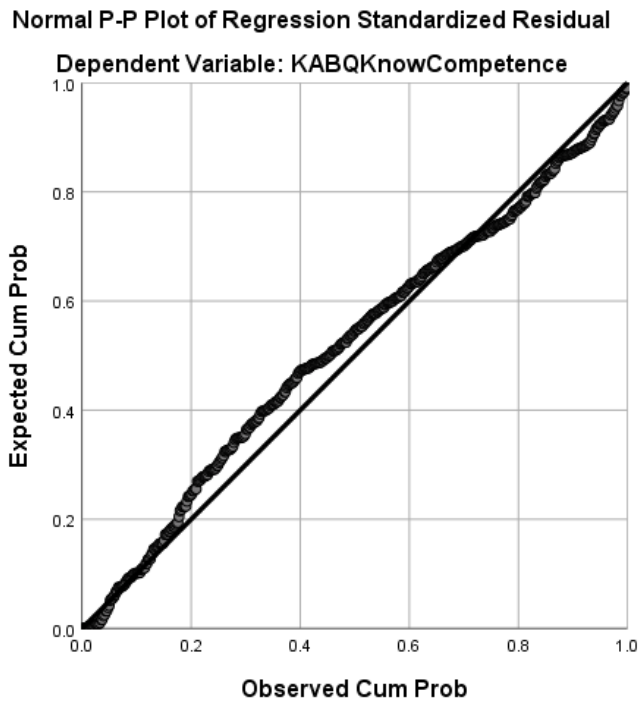
a. Dependent Variable: KABQKnowCompetence

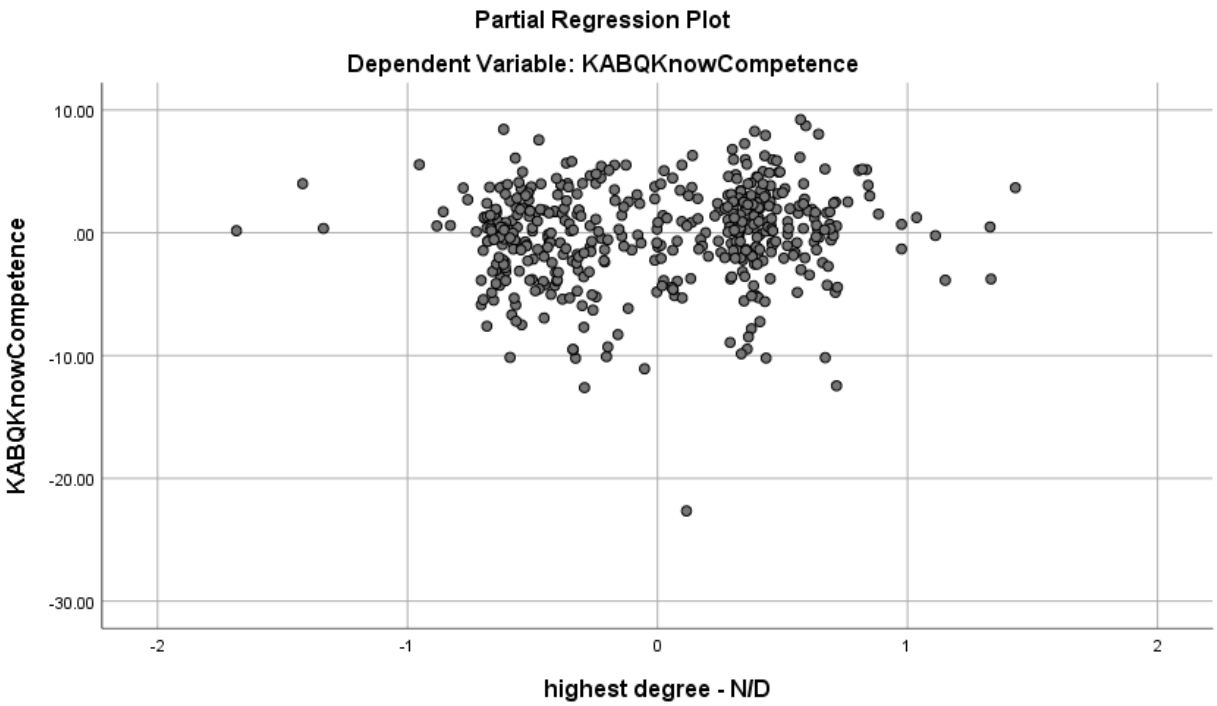
Residuals Statistics[a]

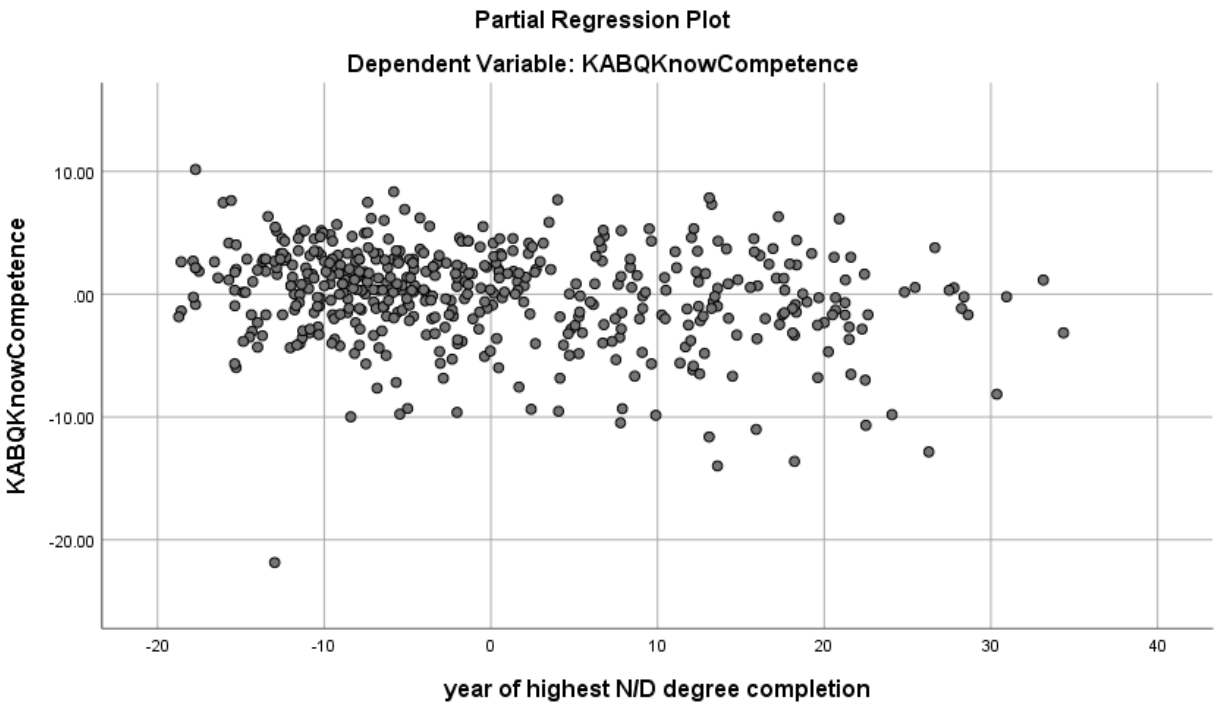
	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	29.7066	39.4678	33.5987	1.58983	476
Std. Predicted Value	-2.448	3.692	.000	1.000	476
Standard Error of Predicted Value	.258	1.038	.410	.115	476
Adjusted Predicted Value	29.7000	39.5546	33.5979	1.59280	476
Residual	-22.74665	8.94090	.00000	3.77464	476
Std. Residual	-5.994	2.356	.000	.995	476
Stud. Residual	-6.031	2.371	.000	1.001	476
Deleted Residual	-23.02689	9.05105	.00080	3.82370	476
Stud. Deleted Residual	-6.272	2.382	-.001	1.007	476
Mahal. Distance	1.192	34.544	4.989	4.234	476
Cook's Distance	.000	.075	.002	.005	476
Centered Leverage Value	.003	.073	.011	.009	476

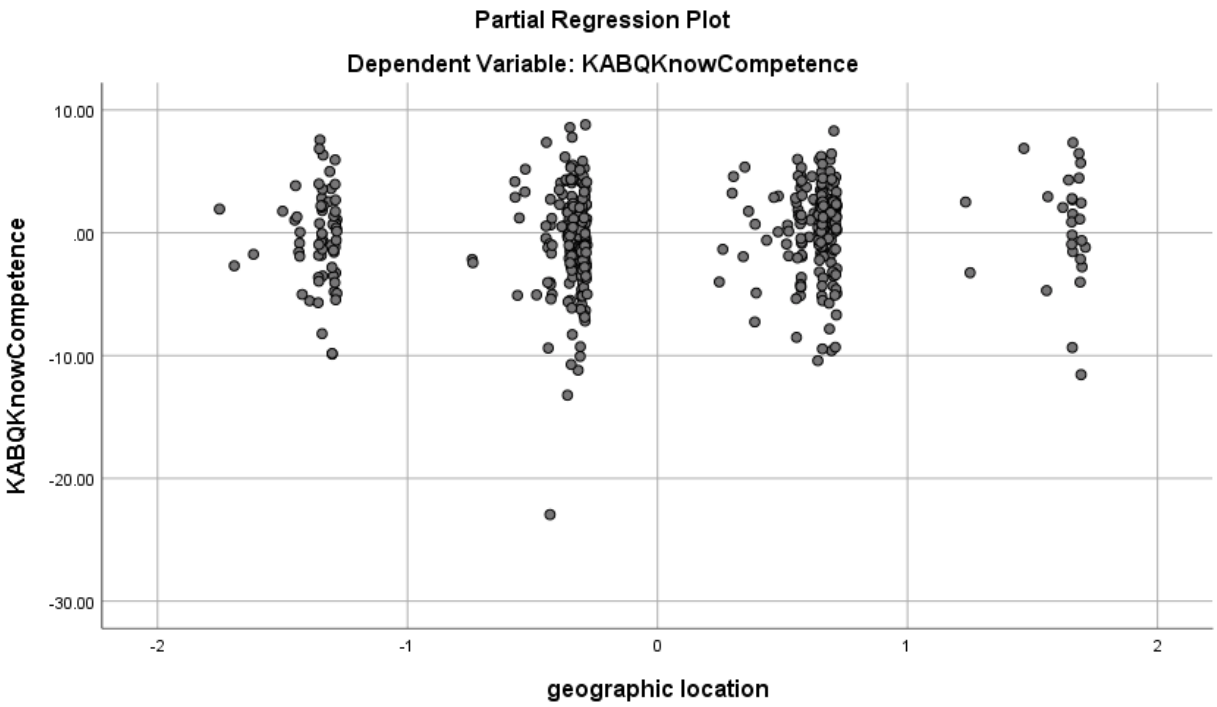
a. Dependent Variable: KABQKnowCompetence

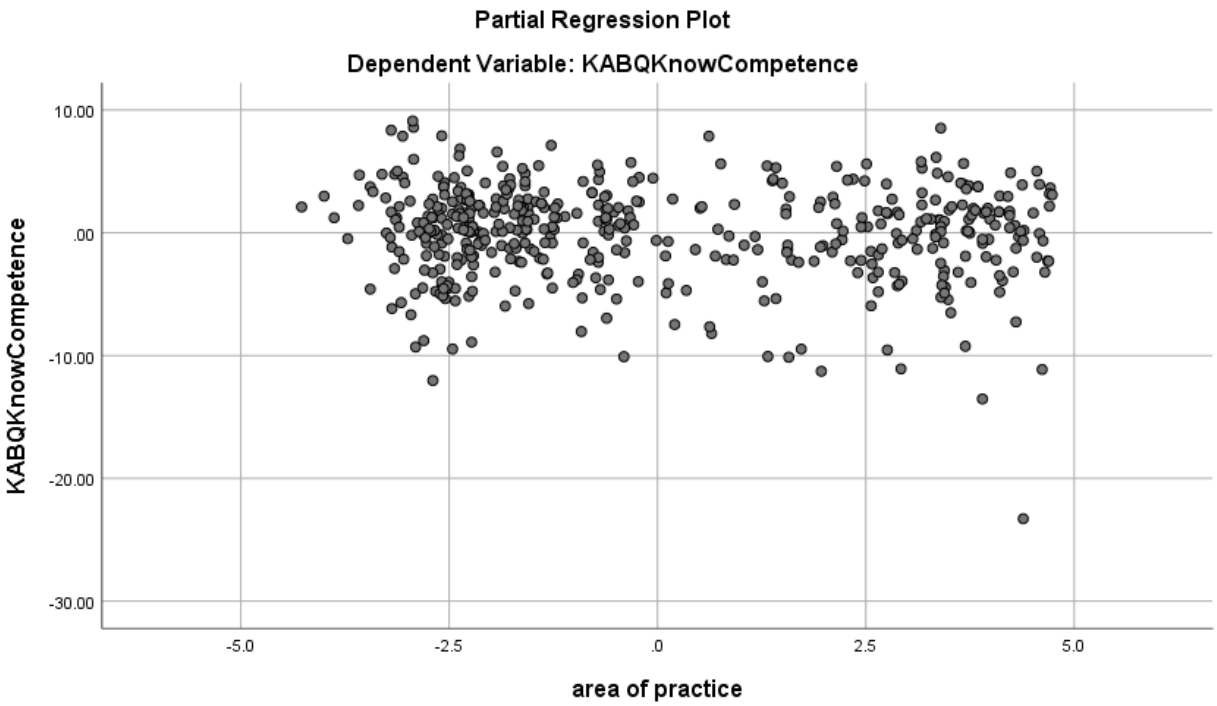

Histogram
Dependent Variable: KABQKnowCompetence
Mean = -2.28E-15
Std. Dev. = 0.995
N = 476
Frequency
100
80
60
40
20
0
-6
-4
-2
0
2
4
Regression Standardized Residual


Normal P-P Plot of Regression Standardized Residual
Dependent Variable: KABQKnowCompetence
Expected Cum Prob
Observed Cum Prob
0.0
0.2
0.4
0.6
0.8
1.0


Partial Regression Plot
Dependent Variable: KABQKnowCompetence
KABQKnowCompetence
10.00
.00
-10.00
-20.00
-30.00
-2
-1
0
1
2
highest degree - N/D


Partial Regression Plot
Dependent Variable: KABQKnowCompetence
KABQKnowCompetence
10.00
.00
-10.00
-20.00
-20
-10
0
10
20
30
40
year of highest N/D degree completion


Partial Regression Plot
Dependent Variable: KABQKnowCompetence
KABQKnowCompetence
10.00
.00
-10.00
-20.00
-30.00
-2
-1
0
1
2
geographic location


Partial Regression Plot
Dependent Variable: KABQKnowCompetence
KABQKnowCompetence
10.00
.00
-10.00
-20.00
-30.00
-5.0
-2.5
.0
2.5
5.0
area of practice

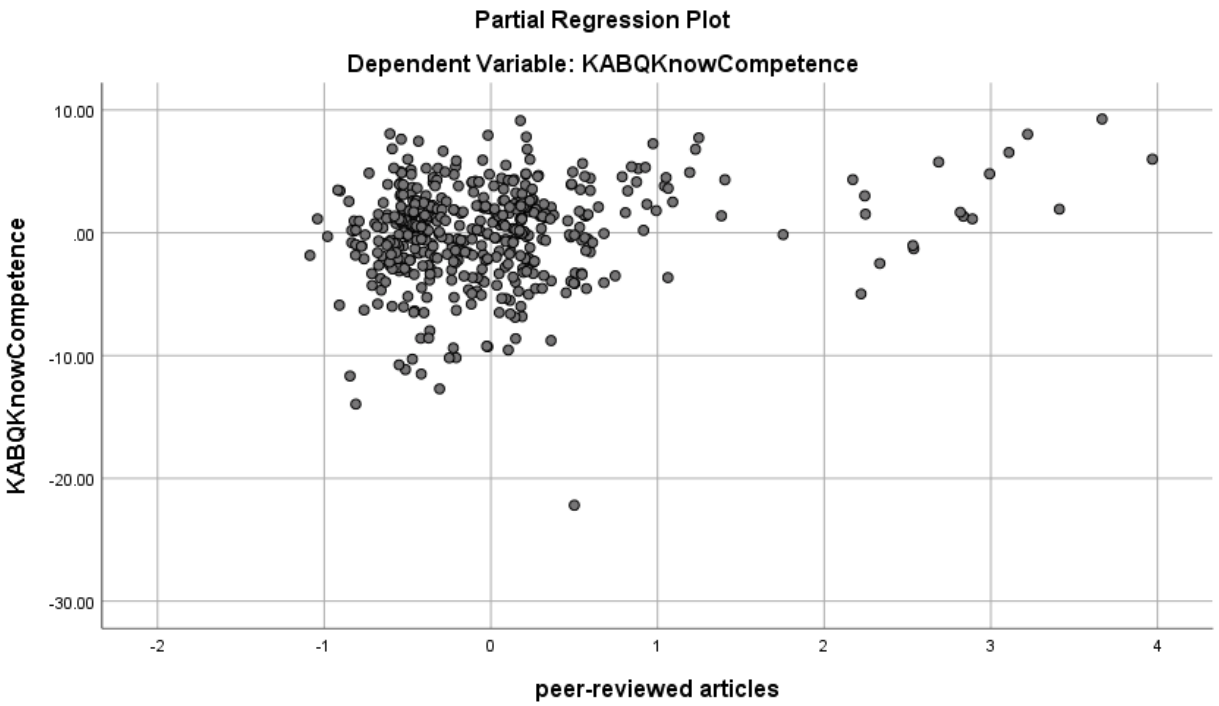


Figure 50. SPSS Output Multiple Regression KABQ Behavior Subscale

Correlations

		KABQ Behavior	years of RDN experience	highest degree - any field	highest degree - N/D	year of highest N/D degree completion	geographic location	area of practice	peer-reviewed articles	Recode11SpecCert	WorkStatusRecoded	PreceptorRecode14
	KABQBehavior	1.000	-.138	.184	.204	-.186	.018	-.121	.277	.060	-.023	.025

Pearson Correlation	years of RDN experience	-.138	1.000	-.017	-.074	.902	.003	.184	.197	.147	-.066	.137
	highest degree - any field	.184	-.017	1.000	.893	-.152	.084	-.014	.392	.029	-.033	.092
	highest degree - N/D	.204	-.074	.893	1.000	-.234	.073	-.072	.398	.062	-.067	.087
	year of highest N/D degree completion	-.186	.902	-.152	-.234	1.000	.013	.183	.117	.130	-.064	.088
	geographic location	.018	.003	.084	.073	.013	1.000	.012	.104	.035	.083	.010
	area of practice	-.121	.184	-.014	-.072	.183	.012	1.000	.072	-.137	.006	-.160
	peer-reviewed articles	.277	.197	.392	.398	.117	.104	.072	1.000	.054	.026	.014
	Recode11SpecCert	.060	.147	.029	.062	.130	.035	-.137	.054	1.000	-.001	.109
	WorkStatusRecoded	-.023	-.066	-.033	-.067	-.064	.083	.006	.026	-.001	1.000	.093
	PreceptorRecode14	.025	.137	.092	.087	.088	.010	-.160	.014	.109	.093	1.000
Sig. (1-tailed)	KABQBehavior	.	.001	.000	.000	.000	.346	.004	.000	.096	.310	.291
	years of RDN experience	.001	.	.356	.053	.000	.478	.000	.000	.001	.075	.001

	highest degree - any field	.000	.356	.	.000	.000	.033	.377	.000	.263	.233	.023
	highest degree - N/D	.000	.053	.000	.	.000	.056	.060	.000	.088	.073	.029
	year of highest N/D degree completion	.000	.000	.000	.000	.	.386	.000	.005	.002	.083	.028
	geographic location	.346	.478	.033	.056	.386	.	.398	.012	.226	.036	.415
	area of practice	.004	.000	.377	.060	.000	.398	.	.060	.001	.452	.000
	peer-reviewed articles	.000	.000	.000	.000	.005	.012	.060	.	.120	.282	.382
	Recode11SpecCert	.096	.001	.263	.088	.002	.226	.001	.120	.	.488	.008
	WorkStatusRecoded	.310	.075	.233	.073	.083	.036	.452	.282	.488	.	.022
	PreceptorRecode14	.291	.001	.023	.029	.028	.415	.000	.382	.008	.022	.
N	KABQBehavior	476	476	476	476	476	476	476	476	476	476	476
	years of RDN experience	476	476	476	476	476	476	476	476	476	476	476

	highest degree - any field	476	476	476	476	476	476	476	476	476	476	476
	highest degree - N/D	476	476	476	476	476	476	476	476	476	476	476
	year of highest N/D degree completion	476	476	476	476	476	476	476	476	476	476	476
	geographic location	476	476	476	476	476	476	476	476	476	476	476
	area of practice	476	476	476	476	476	476	476	476	476	476	476
	peer-reviewed articles	476	476	476	476	476	476	476	476	476	476	476
	Recode11SpecCert	476	476	476	476	476	476	476	476	476	476	476
	WorkStatusRecoded	476	476	476	476	476	476	476	476	476	476	476
	PreceptorRecode14	476	476	476	476	476	476	476	476	476	476	476

Variables Entered/Removed[a]

Model	Variables Entered	Variables Removed	Method

1	PreceptorRecode14, geographic location, year of highest N/D degree completion, WorkStatusRecoded, peer-reviewed articles, Recode11SpecCert, area of practice, highest degree - any field, highest degree - N/D, years of RDN experience[b]	.	Enter
2	.	years of RDN experience	Backward (criterion: Probability of F-to-remove >= .100).
3	.	geographic location	Backward (criterion: Probability of F-to-remove >= .100).

4	.	highest degree - N/D	Backward (criterion: Probability of F-to-remove >= .100).
5	.	PreceptorRecode14	Backward (criterion: Probability of F-to-remove >= .100).
6	.	highest degree - any field	Backward (criterion: Probability of F-to-remove >= .100).
7	.	WorkStatusRecoded	Backward (criterion: Probability of F-to-remove >= .100).
8	.	Recode11SpecCert	Backward (criterion: Probability of F-to-remove >= .100).

a. Dependent Variable: KABQBehavior

b. All requested variables entered.

Model Summary[i]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.378[a]	.143	.124	4.66252	
2	.378[b]	.143	.126	4.65759	
3	.377[c]	.142	.128	4.65286	
4	.377[d]	.142	.130	4.64825	
5	.377[e]	.142	.131	4.64432	
6	.376[f]	.141	.132	4.64177	
7	.373[g]	.139	.132	4.64200	
8	.369[h]	.136	.131	4.64555	1.971

a. Predictors: (Constant), PreceptorRecode14, geographic location, year of highest N/D degree completion, WorkStatusRecoded, peer-reviewed articles, Recode11SpecCert, area of practice, highest degree - any field, highest degree - N/D, years of RDN experience

b. Predictors: (Constant), PreceptorRecode14, geographic location, year of highest N/D degree completion, WorkStatusRecoded, peer-reviewed articles, Recode11SpecCert, area of practice, highest degree - any field, highest degree - N/D

c. Predictors: (Constant), PreceptorRecode14, year of highest N/D degree completion, WorkStatusRecoded, peer-reviewed articles, Recode11SpecCert, area of practice, highest degree - any field, highest degree - N/D

d. Predictors: (Constant), PreceptorRecode14, year of highest N/D degree completion, WorkStatusRecoded, peer-reviewed articles, Recode11SpecCert, area of practice, highest degree - any field

e. Predictors: (Constant), year of highest N/D degree completion, WorkStatusRecoded, peer-reviewed articles, Recode11SpecCert, area of practice, highest degree - any field

f. Predictors: (Constant), year of highest N/D degree completion, WorkStatusRecoded, peer-reviewed articles, Recode11SpecCert, area of practice

g. Predictors: (Constant), year of highest N/D degree completion, peer-reviewed articles, Recode11SpecCert, area of practice

h. Predictors: (Constant), year of highest N/D degree completion, peer-reviewed articles, area of practice

i. Dependent Variable: KABQBehavior

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	1681.389	10	168.139	7.734	.000[b]
	Residual	10108.685	465	21.739		
	Total	11790.074	475			
2	Regression	1681.051	9	186.783	8.610	.000[c]
	Residual	10109.023	466	21.693		
	Total	11790.074	475			
3	Regression	1679.926	8	209.991	9.700	.000[d]
	Residual	10110.147	467	21.649		

	Total	11790.074	475			
4	Regression	1678.344	7	239.763	11.097	.000[e]
	Residual	10111.730	468	21.606		
	Total	11790.074	475			
5	Regression	1673.864	6	278.977	12.934	.000[f]
	Residual	10116.210	469	21.570		
	Total	11790.074	475			
6	Regression	1663.460	5	332.692	15.441	.000[g]
	Residual	10126.614	470	21.546		
	Total	11790.074	475			
7	Regression	1640.868	4	410.217	19.037	.000[h]
	Residual	10149.206	471	21.548		
	Total	11790.074	475			
8	Regression	1603.778	3	534.593	24.771	.000[i]
	Residual	10186.296	472	21.581		
	Total	11790.074	475			

a. Dependent Variable: KABQBehavior

b. Predictors: (Constant), PreceptorRecode14, geographic location, year of highest N/D degree completion, WorkStatusRecoded, peer-reviewed articles, Recode11SpecCert, area of practice, highest degree - any field, highest degree - N/D, years of RDN experience

c. Predictors: (Constant), PreceptorRecode14, geographic location, year of highest N/D degree completion, WorkStatusRecoded, peer-reviewed articles, Recode11SpecCert, area of practice, highest degree - any field, highest degree - N/D

d. Predictors: (Constant), PreceptorRecode14, year of highest N/D degree completion, WorkStatusRecoded, peer-reviewed articles, Recode11SpecCert, area of practice, highest degree - any field, highest degree - N/D

e. Predictors: (Constant), PreceptorRecode14, year of highest N/D degree completion, WorkStatusRecoded, peer-reviewed articles, Recode11SpecCert, area of practice, highest degree - any field

f. Predictors: (Constant), year of highest N/D degree completion, WorkStatusRecoded, peer-reviewed articles, Recode11SpecCert, area of practice, highest degree - any field

g. Predictors: (Constant), year of highest N/D degree completion, WorkStatusRecoded, peer-reviewed articles, Recode11SpecCert, area of practice

h. Predictors: (Constant), year of highest N/D degree completion, peer-reviewed articles, Recode11SpecCert, area of practice

i. Predictors: (Constant), year of highest N/D degree completion, peer-reviewed articles, area of practice

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients			95.0% Confidence Interval for B		Correlations			Collinearity Statistics	
		B	Std. Error	Beta	t	Sig.	Lower Bound	Upper Bound	Zero-order	Partial	Part	Tolerance	VIF
1	(Constant)	16.443	2.233		7.363	.000	12.055	20.832					

	years of RDN experience	-.005	.043	-.013	-.125	.901	-.090	.079	-.138	-.006	-.005	.162	6.175
	highest degree - any field	.472	.859	.054	.550	.583	-1.216	2.160	.184	.025	.024	.194	5.145
	highest degree - N/D	-.222	.893	-.025	-.248	.804	-1.977	1.534	.204	-.011	-.011	.176	5.669
	year of highest N/D degree completion	-.081	.044	-.201	-1.853	.065	-.166	.005	-.186	-.086	-.080	.156	6.398
	geographic location	-.063	.270	-.010	-.234	.815	-.594	.468	.018	-.011	-.010	.976	1.025
	area of practice	-.175	.085	-.093	-2.054	.041	-.342	-.008	-.121	-.095	-.088	.898	1.114
	peer-reviewed articles	1.849	.303	.298	6.100	.000	1.253	2.444	.277	.272	.262	.772	1.295
	Recode11SpecCert	.319	.248	.057	1.286	.199	-.169	.807	.060	.060	.055	.937	1.067
	WorkStatusRecoded	-.686	.672	-.045	-1.020	.308	-2.007	.635	-.023	-.047	-.044	.959	1.043
	PreceptorRecode14	.128	.272	.021	.472	.637	-.406	.663	.025	.022	.020	.917	1.090
2	(Constant)	16.473	2.218		7.426	.000	12.114	20.832					
	highest degree - any field	.476	.858	.054	.555	.579	-1.209	2.161	.184	.026	.024	.195	5.139
	highest degree - N/D	-.239	.882	-.027	-.271	.786	-1.971	1.493	.204	-.013	-.012	.181	5.530
	year of highest N/D degree completion	-.086	.019	-.213	-4.480	.000	-.123	-.048	-.186	-.203	-.192	.811	1.233
	geographic location	-.061	.270	-.010	-.228	.820	-.591	.468	.018	-.011	-.010	.979	1.021
	area of practice	-.176	.085	-.094	-2.073	.039	-.342	-.009	-.121	-.096	-.089	.904	1.106
	peer-reviewed articles	1.845	.302	.298	6.120	.000	1.253	2.438	.277	.273	.263	.778	1.285

	Recode11SpecCert	.318	.248	.057	1.283	.200	-.169	.805	.060	.059	.055	.939	1.065
	WorkStatusRecoded	-.685	.672	-.045	-1.020	.308	-2.005	.634	-.023	-.047	-.044	.959	1.043
	PreceptorRecode14	.124	.270	.020	.461	.645	-.406	.655	.025	.021	.020	.930	1.075
3	(Constant)	16.382	2.180		7.514	.000	12.098	20.667					
	highest degree - any field	.470	.856	.053	.549	.583	-1.213	2.153	.184	.025	.024	.195	5.134
	highest degree - N/D	-.238	.881	-.027	-.270	.787	-1.969	1.492	.204	-.013	-.012	.181	5.530
	year of highest N/D degree completion	-.086	.019	-.214	-4.487	.000	-.123	-.048	-.186	-.203	-.192	.811	1.233
	area of practice	-.176	.085	-.094	-2.077	.038	-.342	-.009	-.121	-.096	-.089	.904	1.106
	peer-reviewed articles	1.841	.301	.297	6.125	.000	1.250	2.431	.277	.273	.262	.782	1.279
	Recode11SpecCert	.316	.247	.057	1.278	.202	-.170	.802	.060	.059	.055	.940	1.064
	WorkStatusRecoded	-.698	.669	-.046	-1.044	.297	-2.012	.616	-.023	-.048	-.045	.965	1.036
	PreceptorRecode14	.125	.270	.021	.463	.644	-.405	.655	.025	.021	.020	.930	1.075
4	(Constant)	16.284	2.147		7.583	.000	12.064	20.503					
	highest degree - any field	.269	.425	.030	.633	.527	-.565	1.103	.184	.029	.027	.791	1.265
	year of highest N/D degree completion	-.084	.018	-.210	-4.574	.000	-.121	-.048	-.186	-.207	-.196	.868	1.153
	area of practice	-.174	.084	-.093	-2.064	.040	-.339	-.008	-.121	-.095	-.088	.910	1.099
	peer-reviewed articles	1.826	.295	.294	6.182	.000	1.246	2.407	.277	.275	.265	.808	1.238

	Recode11SpecCert	.310	.246	.055	1.259	.209	-.174	.793	.060	.058	.054	.949	1.054
	WorkStatusRecoded	-.677	.664	-.044	-1.021	.308	-1.981	.627	-.023	-.047	-.044	.978	1.022
	PreceptorRecode14	.123	.269	.020	.455	.649	-.407	.652	.025	.021	.019	.931	1.074
5	(Constant)	16.415	2.126		7.722	.000	12.238	20.593					
	highest degree - any field	.292	.421	.033	.695	.488	-.535	1.120	.184	.032	.030	.803	1.246
	year of highest N/D degree completion	-.083	.018	-.207	-4.559	.000	-.119	-.047	-.186	-.206	-.195	.884	1.131
	area of practice	-.180	.083	-.096	-2.175	.030	-.343	-.017	-.121	-.100	-.093	.937	1.068
	peer-reviewed articles	1.820	.295	.293	6.173	.000	1.241	2.400	.277	.274	.264	.809	1.236
	Recode11SpecCert	.317	.245	.057	1.294	.196	-.165	.799	.060	.060	.055	.953	1.050
	WorkStatusRecoded	-.644	.659	-.042	-.977	.329	-1.938	.651	-.023	-.045	-.042	.990	1.010
6	(Constant)	16.908	2.003		8.441	.000	12.972	20.844					
	year of highest N/D degree completion	-.086	.018	-.214	-4.830	.000	-.121	-.051	-.186	-.217	-.206	.929	1.077
	area of practice	-.180	.083	-.096	-2.177	.030	-.343	-.018	-.121	-.100	-.093	.937	1.067
	peer-reviewed articles	1.906	.268	.307	7.117	.000	1.380	2.432	.277	.312	.304	.980	1.020
	Recode11SpecCert	.324	.245	.058	1.321	.187	-.158	.805	.060	.061	.056	.954	1.048
	WorkStatusRecoded	-.673	.657	-.044	-1.024	.306	-1.964	.618	-.023	-.047	-.044	.994	1.006
7	(Constant)	14.971	.659		22.722	.000	13.676	16.265					

	year of highest N/D degree completion	-.085	.018	-.211	-4.771	.000	-.120	-.050	-.186	-.215	-.204	.933	1.071
	area of practice	-.182	.083	-.097	-2.195	.029	-.345	-.019	-.121	-.101	-.094	.937	1.067
	peer-reviewed articles	1.897	.268	.306	7.087	.000	1.371	2.423	.277	.310	.303	.981	1.019
	Recode11SpecCert	.321	.245	.057	1.312	.190	-.160	.803	.060	.060	.056	.954	1.048
8	(Constant)	15.469	.539		28.722	.000	14.411	16.528					
	year of highest N/D degree completion	-.081	.018	-.202	-4.621	.000	-.116	-.047	-.186	-.208	-.198	.956	1.046
	area of practice	-.200	.082	-.107	-2.447	.015	-.361	-.039	-.121	-.112	-.105	.964	1.037
	peer-reviewed articles	1.914	.268	.309	7.153	.000	1.388	2.439	.277	.313	.306	.984	1.017

a. Dependent Variable: KABQBehavior

Collinearity Diagnostics[a]

				Variance Proportions										
Model	Dimension	Eigenvalue	Condition Index	(Constant)	years of RDN experience	highest degree - any field	highest degree - N/D	year of highest N/D degree completion	geographic location	area of practice	peer-reviewed articles	Recode11SpecCert	WorkStatusRecoded	PreceptorRecode14
1	1	9.263	1.000	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
	2	.649	3.779	.00	.04	.00	.00	.04	.00	.00	.00	.00	.00	.00
	3	.331	5.293	.00	.00	.00	.00	.00	.00	.63	.00	.14	.00	.01
	4	.254	6.039	.00	.01	.00	.00	.00	.01	.07	.44	.17	.00	.02

	5	.181	7.160	.00	.00	.00	.00	.00	.02	.11	.15	.63	.00	.12
	6	.118	8.847	.00	.02	.03	.04	.00	.31	.02	.23	.01	.00	.00
	7	.106	9.366	.00	.00	.01	.01	.01	.23	.05	.15	.00	.00	.59
	8	.052	13.332	.04	.07	.00	.00	.07	.41	.09	.00	.03	.07	.21
	9	.031	17.323	.01	.83	.03	.00	.81	.00	.01	.00	.00	.03	.05
	10	.011	29.275	.01	.02	.91	.87	.04	.00	.01	.00	.01	.01	.00
	11	.006	40.893	.94	.01	.02	.07	.03	.00	.01	.01	.00	.88	.00
2	1	8.565	1.000	.00		.00	.00	.00	.00	.00	.00	.00	.00	.00
	2	.413	4.556	.00		.00	.01	.46	.00	.11	.01	.00	.00	.00
	3	.321	5.169	.00		.00	.00	.11	.00	.48	.01	.19	.00	.01
	4	.241	5.966	.00		.00	.00	.11	.01	.10	.51	.10	.00	.02
	5	.179	6.910	.00		.00	.00	.05	.02	.13	.10	.66	.00	.12
	6	.112	8.748	.00		.02	.02	.04	.52	.03	.10	.00	.00	.05
	7	.104	9.062	.00		.02	.02	.14	.07	.04	.25	.00	.00	.55
	8	.049	13.193	.05		.01	.01	.01	.37	.10	.00	.03	.10	.25
	9	.011	27.957	.01		.93	.88	.03	.00	.00	.00	.01	.01	.00
	10	.006	39.176	.94		.01	.06	.04	.01	.01	.01	.00	.89	.00
3	1	7.672	1.000	.00		.00	.00	.00		.00	.00	.00	.00	.00
	2	.411	4.321	.00		.00	.01	.45		.11	.01	.00	.00	.00

	3	.321	4.892	.00		.00	.00	.11		.48	.01	.19	.00	.01
	4	.237	5.685	.00		.00	.00	.13		.13	.49	.13	.00	.02
	5	.176	6.610	.00		.00	.00	.05		.10	.14	.60	.00	.17
	6	.105	8.540	.00		.04	.04	.19		.01	.33	.00	.00	.37
	7	.062	11.103	.04		.01	.01	.01		.16	.00	.05	.07	.43
	8	.011	26.458	.01		.93	.88	.03		.00	.00	.01	.01	.00
	9	.006	36.985	.95		.01	.06	.04		.01	.01	.00	.91	.00
4	1	6.766	1.000	.00		.00		.01		.00	.00	.00	.00	.00
	2	.366	4.299	.00		.02		.47		.19	.02	.04	.00	.01
	3	.316	4.627	.00		.01		.29		.40	.02	.15	.00	.01
	4	.235	5.361	.00		.00		.08		.12	.59	.12	.00	.01
	5	.174	6.237	.00		.01		.03		.10	.09	.63	.00	.20
	6	.081	9.137	.01		.35		.08		.11	.22	.02	.01	.61
	7	.055	11.049	.03		.56		.03		.08	.06	.03	.07	.16
	8	.006	34.218	.96		.05		.02		.01	.00	.01	.92	.00
5	1	5.899	1.000	.00		.00		.01		.01	.01	.01	.00	

	2	.357	4.064	.00		.02		.56		.12	.04	.03	.00	
	3	.311	4.352	.00		.00		.21		.48	.00	.20	.00	
	4	.232	5.046	.00		.00		.09		.11	.52	.24	.00	
	5	.137	6.568	.01		.07		.04		.24	.30	.48	.01	
	6	.059	10.017	.02		.84		.07		.03	.13	.03	.05	
	7	.006	31.939	.97		.06		.02		.00	.00	.01	.94	
6	1	5.010	1.000	.00				.01		.01	.01	.01	.00	
	2	.328	3.909	.00				.27		.33	.04	.20	.00	
	3	.304	4.060	.00				.66		.27	.04	.06	.00	
	4	.230	4.669	.00				.04		.10	.75	.21	.00	
	5	.123	6.390	.02				.00		.29	.16	.52	.03	
	6	.006	28.681	.98				.01		.00	.00	.01	.97	
7	1	4.076	1.000	.01				.02		.01	.01	.01		
	2	.322	3.557	.00				.09		.44	.04	.26		
	3	.298	3.700	.01				.81		.15	.12	.01		
	4	.227	4.241	.01				.08		.13	.64	.28		

	5	.078	7.252	.98				.01		.26	.19	.43		
8	1	3.321	1.000	.01				.03		.02	.02			
	2	.299	3.335	.01				.88		.04	.18			
	3	.269	3.512	.00				.03		.71	.34			
	4	.112	5.453	.97				.07		.23	.47			

a. Dependent Variable: KABQBehavior

Excluded Variables[a]

Model		Beta In	t	Sig.	Partial Correlation	Collinearity Statistics		
						Tolerance	VIF	Minimum Tolerance
2	years of RDN experience	-.013[b]	-.125	.901	-.006	.162	6.175	.156
3	years of RDN experience	-.012[c]	-.111	.911	-.005	.162	6.154	.157
	geographic location	-.010[c]	-.228	.820	-.011	.979	1.021	.181
4	years of RDN experience	-.016[d]	-.153	.879	-.007	.167	6.003	.167
	geographic location	-.010[d]	-.227	.821	-.010	.979	1.021	.788
	highest degree - N/D	-.027[d]	-.270	.787	-.013	.181	5.530	.181
5	years of RDN experience	-.010[e]	-.096	.923	-.004	.169	5.915	.168
	geographic location	-.010[e]	-.230	.818	-.011	.979	1.021	.800
	highest degree - N/D	-.026[e]	-.256	.798	-.012	.181	5.524	.181
	PreceptorRecode14	.020[e]	.455	.649	.021	.931	1.074	.791
6	years of RDN experience	.005[f]	.054	.957	.002	.177	5.646	.177
	geographic location	-.008[f]	-.193	.847	-.009	.982	1.019	.929

	highest degree - N/D	.024[f]	.478	.633	.022	.745	1.342	.745
	PreceptorRecode14	.024[f]	.537	.592	.025	.945	1.058	.910
	highest degree - any field	.033[f]	.695	.488	.032	.803	1.246	.803
7	years of RDN experience	.009[g]	.084	.933	.004	.177	5.641	.177
	geographic location	-.012[g]	-.275	.784	-.013	.988	1.012	.933
	highest degree - N/D	.029[g]	.588	.557	.027	.754	1.326	.754
	PreceptorRecode14	.019[g]	.428	.669	.020	.955	1.047	.911
	highest degree - any field	.036[g]	.759	.448	.035	.806	1.241	.806
	WorkStatusRecoded	-.044[g]	-1.024	.306	-.047	.994	1.006	.929
8	years of RDN experience	.018[h]	.177	.860	.008	.178	5.613	.178
	geographic location	-.010[h]	-.235	.815	-.011	.989	1.011	.956
	highest degree - N/D	.034[h]	.689	.491	.032	.759	1.318	.759
	PreceptorRecode14	.023[h]	.520	.603	.024	.960	1.041	.933
	highest degree - any field	.038[h]	.805	.421	.037	.807	1.239	.807
	WorkStatusRecoded	-.043[h]	-1.012	.312	-.047	.995	1.005	.951
	Recode11SpecCert	.057[h]	1.312	.190	.060	.954	1.048	.933

a. Dependent Variable: KABQBehavior

b. Predictors in the Model: (Constant), PreceptorRecode14, geographic location, year of highest N/D degree completion, WorkStatusRecoded, peer-reviewed articles, Recode11SpecCert, area of practice, highest degree - any field, highest degree - N/D

c. Predictors in the Model: (Constant), PreceptorRecode14, year of highest N/D degree completion, WorkStatusRecoded, peer-reviewed articles, Recode11SpecCert, area of practice, highest degree - any field, highest degree - N/D

d. Predictors in the Model: (Constant), PreceptorRecode14, year of highest N/D degree completion, WorkStatusRecoded, peer-reviewed articles, Recode11SpecCert, area of practice, highest degree - any field

e. Predictors in the Model: (Constant), year of highest N/D degree completion, WorkStatusRecoded, peer-reviewed articles, Recode11SpecCert, area of practice, highest degree - any field

f. Predictors in the Model: (Constant), year of highest N/D degree completion, WorkStatusRecoded, peer-reviewed articles, Recode11SpecCert, area of practice

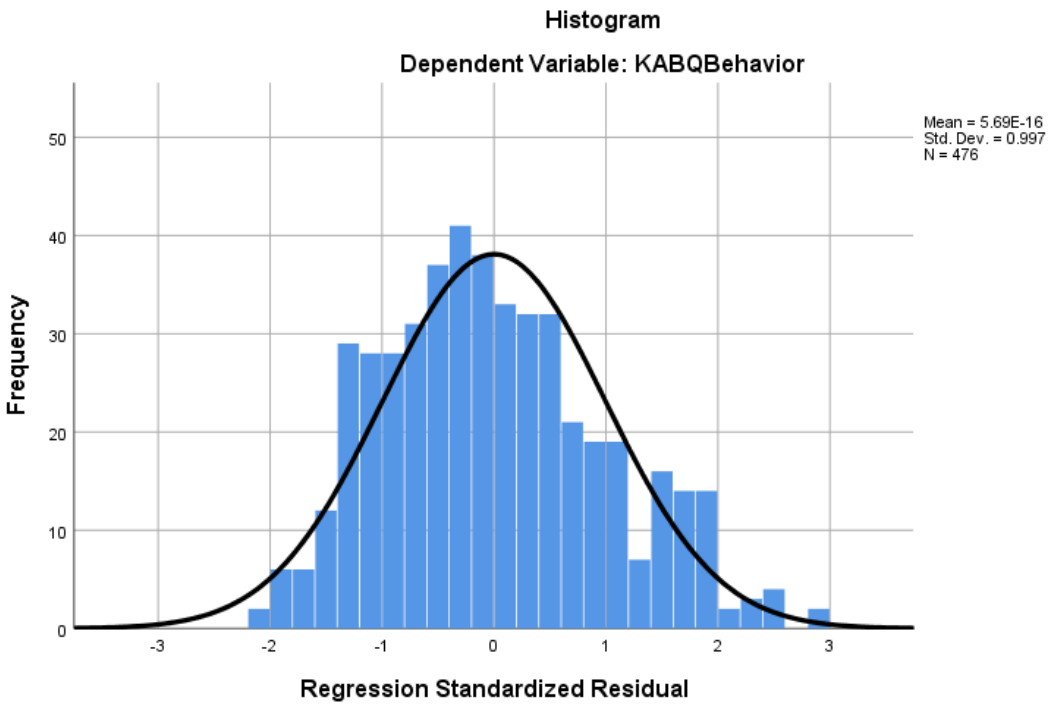
g. Predictors in the Model: (Constant), year of highest N/D degree completion, peer-reviewed articles, Recode11SpecCert, area of practice

h. Predictors in the Model: (Constant), year of highest N/D degree completion, peer-reviewed articles, area of practice

Residuals Statistics[a]

	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	11.7252	23.3885	15.9559	1.83749	476
Std. Predicted Value	-2.302	4.045	.000	1.000	476
Standard Error of Predicted Value	.241	1.112	.403	.138	476
Adjusted Predicted Value	11.7634	23.4658	15.9561	1.84319	476
Residual	-9.92934	13.06040	.00000	4.63086	476
Std. Residual	-2.137	2.811	.000	.997	476
Stud. Residual	-2.157	2.827	.000	1.001	476
Deleted Residual	-10.10838	13.20887	-.00026	4.66972	476
Stud. Deleted Residual	-2.165	2.848	.000	1.003	476
Mahal. Distance	.284	26.236	2.994	3.679	476
Cook's Distance	.000	.039	.002	.004	476
Centered Leverage Value	.001	.055	.006	.008	476

a. Dependent Variable: KABQBehavior


Histogram
Dependent Variable: KABQBehavior
Mean = 5.69E-16
Std. Dev. = 0.997
N = 476
Frequency
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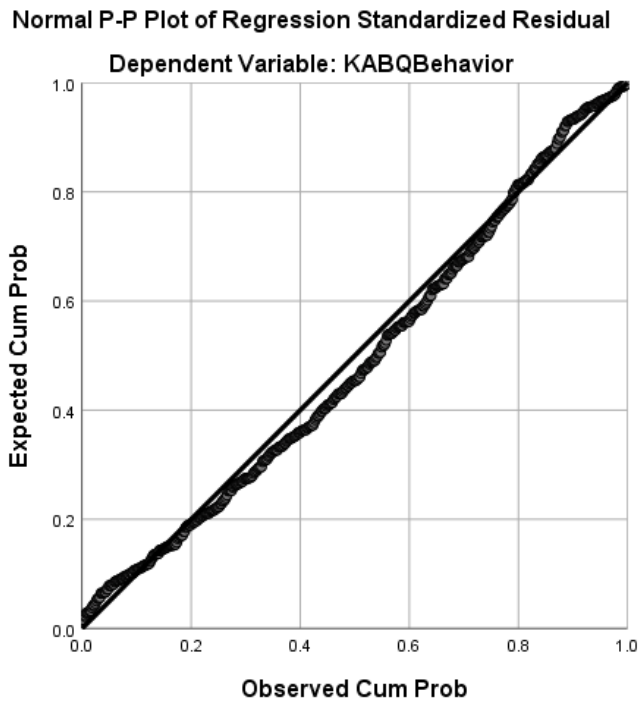
40
30
20
10
0
-3
-2
-1
0
1
2
3
Regression Standardized Residual


Normal P-P Plot of Regression Standardized Residual
Dependent Variable: KABQBehavior
Expected Cum Prob
Observed Cum Prob
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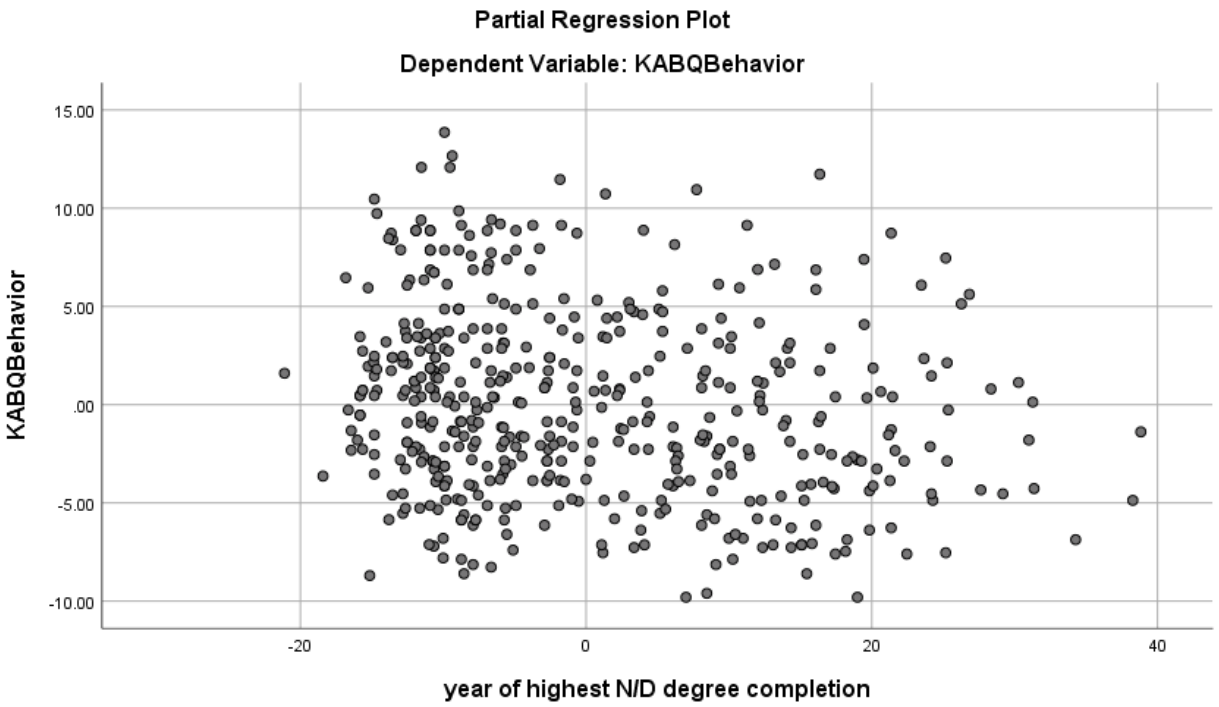
0.2
0.4
0.6
0.8
1.0


Partial Regression Plot
Dependent Variable: KABQBehavior
KABQBehavior
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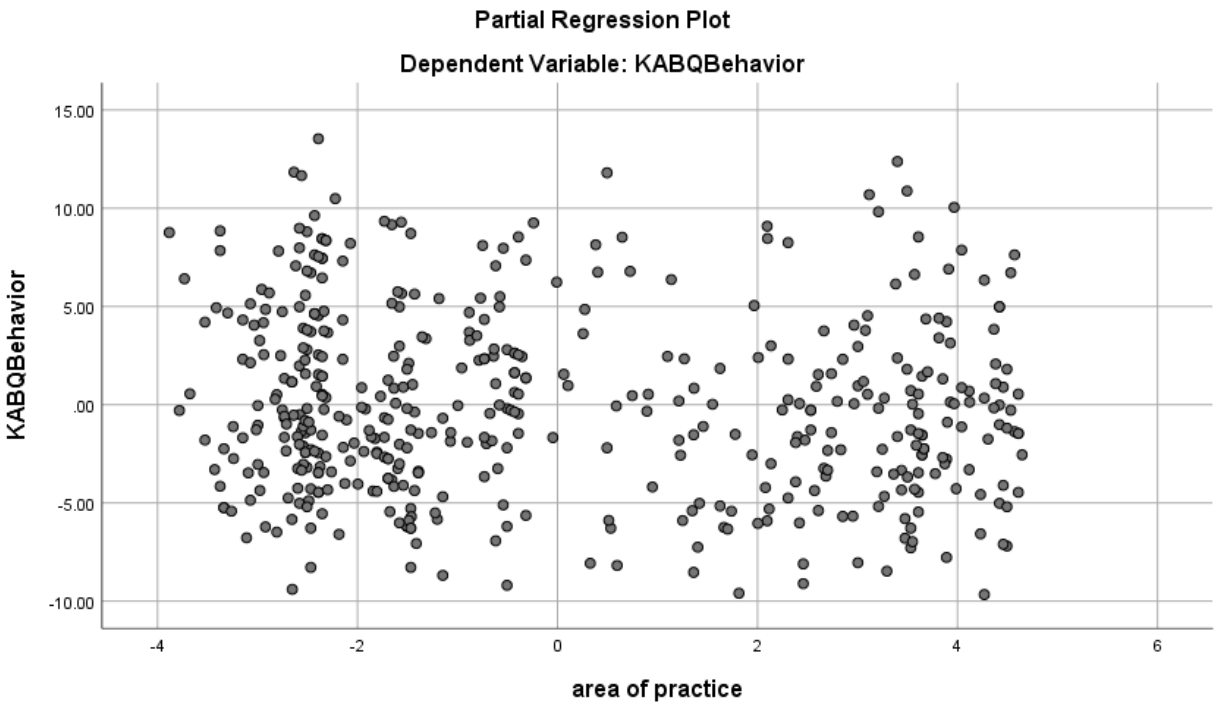
10.00
5.00
.00
-5.00
-10.00
-20
0
20
40
year of highest N/D degree completion


Partial Regression Plot
Dependent Variable: KABQBehavior
KABQBehavior
15.00
10.00
5.00
.00
-5.00
-10.00
-4
-2
0
2
4
6
area of practice

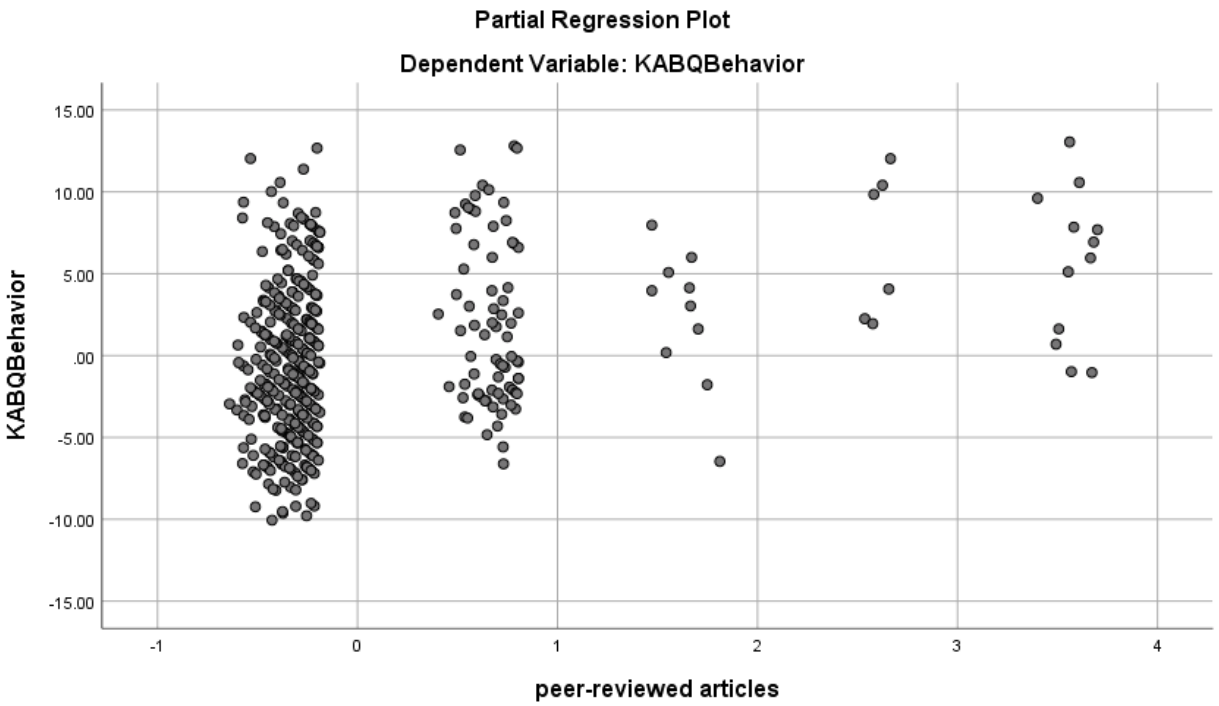


Figure 51. SPSS Output Multiple Regression KABQ Outcome/Decision/Implementation Subscale

Correlations

		KABQOutcomeImplement	years of RDN experience	highest degree - any field	highest degree - N/D	year of highest N/D degree completion	geographic location	area of practice	peer-reviewed articles	Recode11SpecCert	WorkStatusRecoded	PreceptorRecode14
Pearson Correlation	KABQOutcomeImplement	1.000	-.078	.129	.159	-.132	.063	-.106	.093	.058	.024	.059

	years of RDN experience	-.078	1.000	-.017	-.076	.901	.000	.179	.203	.150	-.067	.133
	highest degree - any field	.129	-.017	1.000	.889	-.151	.087	-.019	.378	.035	-.036	.098
	highest degree - N/D	.159	-.076	.889	1.000	-.236	.073	-.075	.385	.063	-.070	.094
	year of highest N/D degree completion	-.132	.901	-.151	-.236	1.000	.011	.178	.123	.133	-.064	.083
	geographic location	.063	.000	.087	.073	.011	1.000	.008	.109	.038	.083	.007
	area of practice	-.106	.179	-.019	-.075	.178	.008	1.000	.067	-.137	.004	-.162
	peer-reviewed articles	.093	.203	.378	.385	.123	.109	.067	1.000	.061	.022	.026
	Recode11Spec Cert	.058	.150	.035	.063	.133	.038	-.137	.061	1.000	.001	.108
	WorkStatusRecoded	.024	-.067	-.036	-.070	-.064	.083	.004	.022	.001	1.000	.093
	PreceptorRecode14	.059	.133	.098	.094	.083	.007	-.162	.026	.108	.093	1.000
Sig. (1-tailed)	KABQOutcomeImplement	.	.044	.002	.000	.002	.084	.010	.021	.102	.299	.101
	years of RDN experience	.044	.	.354	.050	.000	.498	.000	.000	.001	.072	.002
	highest degree - any field	.002	.354	.	.000	.000	.029	.337	.000	.222	.220	.016
	highest degree - N/D	.000	.050	.000	.	.000	.057	.051	.000	.085	.063	.020

	year of highest N/D degree completion	.002	.000	.000	.000	.	.407	.000	.004	.002	.081	.036
	geographic location	.084	.498	.029	.057	.407	.	.427	.009	.206	.035	.444
	area of practice	.010	.000	.337	.051	.000	.427	.	.072	.001	.469	.000
	peer-reviewed articles	.021	.000	.000	.000	.004	.009	.072	.	.091	.313	.284
	Recode11SpecCert	.102	.001	.222	.085	.002	.206	.001	.091	.	.492	.009
	WorkStatusRecoded	.299	.072	.220	.063	.081	.035	.469	.313	.492	.	.021
	PreceptorRecode14	.101	.002	.016	.020	.036	.444	.000	.284	.009	.021	.
N	KABQOutcomeImplement	475	475	475	475	475	475	475	475	475	475	475
	years of RDN experience	475	475	475	475	475	475	475	475	475	475	475
	highest degree - any field	475	475	475	475	475	475	475	475	475	475	475
	highest degree - N/D	475	475	475	475	475	475	475	475	475	475	475
	year of highest N/D degree completion	475	475	475	475	475	475	475	475	475	475	475
	geographic location	475	475	475	475	475	475	475	475	475	475	475
	area of practice	475	475	475	475	475	475	475	475	475	475	475

	peer-reviewed articles	475	475	475	475	475	475	475	475	475	475	475
	Recode11SpecCert	475	475	475	475	475	475	475	475	475	475	475
	WorkStatusRecoded	475	475	475	475	475	475	475	475	475	475	475
	PreceptorRecode14	475	475	475	475	475	475	475	475	475	475	475

Variables Entered/Removed[a]

Model	Variables Entered	Variables Removed	Method

1	PreceptorRecode14, geographic location, year of highest N/D degree completion, WorkStatusRecoded, peer-reviewed articles, Recode11SpecCert, area of practice, highest degree - any field, highest degree - N/D, years of RDN experience[b]	.	Enter
2	.	highest degree - any field	Backward (criterion: Probability of F-to-remove >= .100).
3	.	WorkStatusRecoded	Backward (criterion: Probability of F-to-remove >= .100).

4	.	PreceptorRecode14	Backward (criterion: Probability of F-to-remove >= .100).
5	.	Recode11SpecCert	Backward (criterion: Probability of F-to-remove >= .100).
6	.	geographic location	Backward (criterion: Probability of F-to-remove >= .100).
7	.	years of RDN experience	Backward (criterion: Probability of F-to-remove >= .100).
8	.	peer-reviewed articles	Backward (criterion: Probability of F-to-remove >= .100).

a. Dependent Variable: KABQOutcomeImplement

b. All requested variables entered.

Model Summary[i]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.233[a]	.054	.034	2.26553	
2	.233[b]	.054	.036	2.26320	
3	.233[c]	.054	.038	2.26102	
4	.230[d]	.053	.039	2.25999	
5	.225[e]	.051	.039	2.26015	
6	.219[f]	.048	.038	2.26113	
7	.213[g]	.045	.037	2.26202	
8	.202[h]	.041	.035	2.26462	2.007

a. Predictors: (Constant), PreceptorRecode14, geographic location, year of highest N/D degree completion, WorkStatusRecoded, peer-reviewed articles, Recode11SpecCert, area of practice, highest degree - any field, highest degree - N/D, years of RDN experience

b. Predictors: (Constant), PreceptorRecode14, geographic location, year of highest N/D degree completion, WorkStatusRecoded, peer-reviewed articles, Recode11SpecCert, area of practice, highest degree - N/D, years of RDN experience

c. Predictors: (Constant), PreceptorRecode14, geographic location, year of highest N/D degree completion, peer-reviewed articles, Recode11SpecCert, area of practice, highest degree - N/D, years of RDN experience

d. Predictors: (Constant), geographic location, year of highest N/D degree completion, peer-reviewed articles, Recode11SpecCert, area of practice, highest degree - N/D, years of RDN experience

e. Predictors: (Constant), geographic location, year of highest N/D degree completion, peer-reviewed articles, area of practice, highest degree - N/D, years of RDN experience

f. Predictors: (Constant), year of highest N/D degree completion, peer-reviewed articles, area of practice, highest degree - N/D, years of RDN experience

g. Predictors: (Constant), year of highest N/D degree completion, peer-reviewed articles, area of practice, highest degree - N/D

h. Predictors: (Constant), year of highest N/D degree completion, area of practice, highest degree - N/D

i. Dependent Variable: KABQOutcomeImplement

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	137.098	10	13.710	2.671	.003[b]
	Residual	2381.534	464	5.133		
	Total	2518.632	474			
2	Regression	136.866	9	15.207	2.969	.002[c]
	Residual	2381.765	465	5.122		
	Total	2518.632	474			
3	Regression	136.346	8	17.043	3.334	.001[d]
	Residual	2382.286	466	5.112		

	Total	2518.632	474			
4	Regression	133.410	7	19.059	3.731	.001[e]
	Residual	2385.221	467	5.108		
	Total	2518.632	474			
5	Regression	127.961	6	21.327	4.175	.000[f]
	Residual	2390.671	468	5.108		
	Total	2518.632	474			
6	Regression	120.768	5	24.154	4.724	.000[g]
	Residual	2397.863	469	5.113		
	Total	2518.632	474			
7	Regression	113.776	4	28.444	5.559	.000[h]
	Residual	2404.856	470	5.117		
	Total	2518.632	474			
8	Regression	103.104	3	34.368	6.701	.000[i]
	Residual	2415.527	471	5.129		
	Total	2518.632	474			

a. Dependent Variable: KABQOutcomeImplement

b. Predictors: (Constant), PreceptorRecode14, geographic location, year of highest N/D degree completion, WorkStatusRecoded, peer-reviewed articles, Recode11SpecCert, area of practice, highest degree - any field, highest degree - N/D, years of RDN experience

c. Predictors: (Constant), PreceptorRecode14, geographic location, year of highest N/D degree completion, WorkStatusRecoded, peer-reviewed articles, Recode11SpecCert, area of practice, highest degree - N/D, years of RDN experience

d. Predictors: (Constant), PreceptorRecode14, geographic location, year of highest N/D degree completion, peer-reviewed articles, Recode11SpecCert, area of practice, highest degree - N/D, years of RDN experience

e. Predictors: (Constant), geographic location, year of highest N/D degree completion, peer-reviewed articles, Recode11SpecCert, area of practice, highest degree - N/D, years of RDN experience

f. Predictors: (Constant), geographic location, year of highest N/D degree completion, peer-reviewed articles, area of practice, highest degree - N/D, years of RDN experience

g. Predictors: (Constant), year of highest N/D degree completion, peer-reviewed articles, area of practice, highest degree - N/D, years of RDN experience

h. Predictors: (Constant), year of highest N/D degree completion, peer-reviewed articles, area of practice, highest degree - N/D

i. Predictors: (Constant), year of highest N/D degree completion, area of practice, highest degree - N/D

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B		Correlations			Collinearity Statistics	
		B	Std. Error	Beta			Lower Bound	Upper Bound	Zero-order	Partial	Part	Tolerance	VIF
1	(Constant)	14.921	1.087		13.724	.000	12.784	17.057					

	years of RDN experience	.023	.021	.121	1.080	.281	-.018	.064	-.078	.050	.049	.163	6.143
	highest degree - any field	-.087	.412	-.021	-.212	.832	-.897	.722	.129	-.010	-.010	.202	4.957
	highest degree - N/D	.387	.429	.095	.901	.368	-.457	1.230	.159	.042	.041	.183	5.478
	year of highest N/D degree completion	-.042	.021	-.224	-1.967	.050	-.083	.000	-.132	-.091	-.089	.157	6.371
	geographic location	.147	.131	.051	1.120	.263	-.111	.406	.063	.052	.051	.974	1.027
	area of practice	-.065	.041	-.075	-1.566	.118	-.146	.016	-.106	-.073	-.071	.900	1.111
	peer-reviewed articles	.185	.150	.063	1.234	.218	-.110	.479	.093	.057	.056	.781	1.280
	Recode11SpecCert	.117	.120	.045	.969	.333	-.120	.353	.058	.045	.044	.937	1.067
	WorkStatusRecoded	.108	.327	.015	.331	.741	-.534	.750	.024	.015	.015	.958	1.044
	PreceptorRecode14	.096	.133	.034	.721	.471	-.165	.356	.059	.033	.033	.918	1.089
2	(Constant)	14.922	1.086		13.739	.000	12.787	17.056					
	years of RDN experience	.023	.021	.122	1.089	.277	-.018	.064	-.078	.050	.049	.163	6.135
	highest degree - N/D	.309	.220	.076	1.402	.162	-.124	.741	.159	.065	.063	.693	1.443
	year of highest N/D degree completion	-.042	.021	-.226	-1.993	.047	-.084	-.001	-.132	-.092	-.090	.158	6.328
	geographic location	.146	.131	.051	1.115	.266	-.112	.404	.063	.052	.050	.975	1.025
	area of practice	-.065	.041	-.075	-1.589	.113	-.146	.015	-.106	-.073	-.072	.905	1.105
	peer-reviewed articles	.183	.150	.063	1.227	.221	-.110	.477	.093	.057	.055	.783	1.278

	Recode11SpecCert	.118	.120	.046	.984	.326	-.118	.354	.058	.046	.044	.941	1.063
	WorkStatusRecoded	.104	.326	.015	.319	.750	-.537	.744	.024	.015	.014	.962	1.040
	PreceptorRecode14	.095	.132	.034	.715	.475	-.166	.355	.059	.033	.032	.919	1.088
3	(Constant)	15.214	.580		26.238	.000	14.075	16.354					
	years of RDN experience	.023	.021	.121	1.088	.277	-.018	.064	-.078	.050	.049	.163	6.135
	highest degree - N/D	.300	.218	.074	1.375	.170	-.129	.729	.159	.064	.062	.703	1.422
	year of highest N/D degree completion	-.042	.021	-.228	-2.010	.045	-.084	-.001	-.132	-.093	-.091	.158	6.316
	geographic location	.150	.131	.052	1.147	.252	-.107	.407	.063	.053	.052	.982	1.018
	area of practice	-.065	.041	-.075	-1.582	.114	-.146	.016	-.106	-.073	-.071	.906	1.104
	peer-reviewed articles	.187	.149	.064	1.254	.210	-.106	.480	.093	.058	.057	.787	1.271
	Recode11SpecCert	.119	.120	.046	.988	.323	-.117	.354	.058	.046	.045	.941	1.063
	PreceptorRecode14	.100	.131	.035	.758	.449	-.159	.358	.059	.035	.034	.932	1.073
4	(Constant)	15.411	.518		29.725	.000	14.392	16.430					
	years of RDN experience	.024	.021	.131	1.184	.237	-.016	.065	-.078	.055	.053	.165	6.053
	highest degree - N/D	.312	.218	.077	1.436	.152	-.115	.740	.159	.066	.065	.707	1.414
	year of highest N/D degree completion	-.043	.021	-.232	-2.050	.041	-.084	-.002	-.132	-.094	-.092	.159	6.302
	geographic location	.150	.131	.052	1.152	.250	-.106	.407	.063	.053	.052	.982	1.018
	area of practice	-.070	.041	-.081	-1.739	.083	-.150	.009	-.106	-.080	-.078	.934	1.071

	peer-reviewed articles	.183	.149	.062	1.227	.220	-.110	.475	.093	.057	.055	.788	1.269
	Recode11SpecCert	.124	.120	.048	1.033	.302	-.112	.359	.058	.048	.047	.944	1.060
5	(Constant)	15.573	.494		31.525	.000	14.603	16.544					
	years of RDN experience	.026	.021	.137	1.238	.216	-.015	.066	-.078	.057	.056	.166	6.037
	highest degree - N/D	.326	.217	.080	1.501	.134	-.101	.753	.159	.069	.068	.710	1.409
	year of highest N/D degree completion	-.043	.021	-.229	-2.022	.044	-.084	-.001	-.132	-.093	-.091	.159	6.297
	geographic location	.155	.131	.054	1.187	.236	-.102	.411	.063	.055	.053	.984	1.017
	area of practice	-.077	.040	-.089	-1.937	.053	-.156	.001	-.106	-.089	-.087	.960	1.042
	peer-reviewed articles	.184	.149	.063	1.236	.217	-.109	.476	.093	.057	.056	.788	1.269
6	(Constant)	15.896	.413		38.519	.000	15.085	16.707					
	years of RDN experience	.024	.021	.129	1.169	.243	-.016	.065	-.078	.054	.053	.166	6.016
	highest degree - N/D	.339	.217	.083	1.561	.119	-.088	.765	.159	.072	.070	.712	1.405
	year of highest N/D degree completion	-.041	.021	-.221	-1.957	.051	-.082	.000	-.132	-.090	-.088	.159	6.276
	area of practice	-.077	.040	-.089	-1.928	.054	-.156	.001	-.106	-.089	-.087	.960	1.042
	peer-reviewed articles	.199	.148	.068	1.344	.180	-.092	.491	.093	.062	.061	.794	1.259
7	(Constant)	15.775	.400		39.463	.000	14.990	16.561					

	highest degree - N/D	.407	.209	.100	1.946	.052	-.004	.818	.159	.089	.088	.767	1.304
	year of highest N/D degree completion	-.019	.009	-.102	-2.104	.036	-.037	-.001	-.132	-.097	-.095	.871	1.148
	area of practice	-.075	.040	-.086	-1.867	.062	-.153	.004	-.106	-.086	-.084	.963	1.039
	peer-reviewed articles	.214	.148	.073	1.444	.149	-.077	.504	.093	.066	.065	.799	1.251
8	(Constant)	15.789	.400		39.464	.000	15.003	16.576					
	highest degree - N/D	.537	.189	.132	2.846	.005	.166	.908	.159	.130	.128	.943	1.060
	year of highest N/D degree completion	-.016	.009	-.086	-1.823	.069	-.033	.001	-.132	-.084	-.082	.918	1.089
	area of practice	-.071	.040	-.081	-1.771	.077	-.149	.008	-.106	-.081	-.080	.967	1.034

a. Dependent Variable: KABQOutcomeImplement

Collinearity Diagnostics[a]

				Variance Proportions										
Model	Dimension	Eigenvalue	Condition Index	(Constant)	years of RDN experience	highest degree - any field	highest degree - N/D	year of highest N/D degree completion	geographic location	area of practice	peer-reviewed articles	Recode11SpecCert	WorkStatusRecoded	PreceptorRecode14
1	1	9.267	1.000	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
	2	.648	3.782	.00	.04	.00	.00	.04	.00	.00	.00	.00	.00	.00
	3	.332	5.282	.00	.00	.00	.00	.00	.00	.64	.00	.13	.00	.01

	4	.248	6.117	.00	.01	.00	.00	.00	.01	.06	.44	.20	.00	.01
	5	.180	7.182	.00	.00	.00	.00	.00	.02	.10	.17	.61	.00	.12
	6	.119	8.816	.00	.02	.04	.04	.00	.30	.02	.23	.01	.00	.00
	7	.106	9.342	.00	.00	.01	.01	.01	.25	.05	.14	.00	.00	.58
	8	.052	13.351	.04	.08	.00	.00	.07	.42	.09	.00	.03	.07	.22
	9	.031	17.284	.01	.82	.03	.00	.81	.00	.01	.00	.00	.03	.05
	10	.011	28.797	.01	.02	.90	.87	.04	.00	.01	.00	.01	.01	.00
	11	.006	40.910	.94	.01	.02	.07	.03	.00	.01	.01	.00	.88	.00
2	1	8.362	1.000	.00	.00		.00	.00	.00	.00	.00	.00	.00	.00
	2	.611	3.700	.00	.04		.01	.04	.01	.00	.00	.00	.00	.00
	3	.332	5.018	.00	.00		.00	.00	.00	.64	.00	.14	.00	.01
	4	.239	5.913	.00	.00		.01	.00	.00	.06	.57	.16	.00	.01
	5	.178	6.853	.00	.00		.00	.00	.03	.11	.10	.65	.00	.13
	6	.109	8.741	.00	.00		.01	.01	.52	.06	.00	.00	.00	.38
	7	.082	10.122	.00	.04		.59	.00	.03	.01	.30	.01	.00	.23
	8	.052	12.707	.04	.10		.04	.08	.40	.09	.01	.03	.07	.19
	9	.029	16.923	.01	.80		.24	.84	.00	.02	.00	.00	.04	.04
	10	.006	38.700	.95	.01		.09	.02	.00	.01	.01	.00	.89	.00
3	1	7.416	1.000	.00	.00		.00	.00	.00	.00	.00	.00		.00

	2	.592	3.539	.00	.04		.01	.04	.01	.00	.01	.01		.01
	3	.332	4.726	.00	.00		.00	.00	.00	.64	.00	.14		.01
	4	.236	5.605	.00	.00		.01	.00	.00	.08	.54	.21		.01
	5	.173	6.555	.01	.00		.00	.00	.04	.08	.14	.58		.18
	6	.109	8.250	.00	.00		.01	.01	.57	.06	.00	.00		.35
	7	.082	9.533	.00	.04		.60	.00	.04	.01	.30	.01		.23
	8	.038	13.913	.21	.52		.00	.49	.23	.05	.00	.02		.07
	9	.022	18.249	.78	.38		.36	.45	.10	.08	.00	.02		.14
4	1	6.561	1.000	.00	.00		.00	.00	.00	.01	.00	.00		
	2	.579	3.367	.00	.04		.02	.04	.01	.00	.01	.01		
	3	.324	4.499	.00	.00		.00	.00	.00	.66	.00	.17		
	4	.233	5.302	.00	.00		.01	.00	.00	.07	.48	.32		
	5	.147	6.671	.02	.00		.02	.00	.25	.17	.24	.41		
	6	.090	8.545	.00	.04		.47	.01	.33	.00	.24	.02		
	7	.041	12.700	.33	.43		.02	.35	.33	.04	.01	.04		
	8	.025	16.272	.64	.48		.47	.60	.08	.04	.01	.03		

5	1	5.799	1.000	.00	.00		.00	.00	.00	.01	.00			
	2	.570	3.189	.00	.04		.02	.04	.01	.00	.02			
	3	.292	4.459	.00	.00		.01	.00	.00	.81	.10			
	4	.181	5.662	.02	.00		.00	.00	.15	.11	.64			
	5	.091	7.993	.00	.03		.43	.01	.40	.00	.21			
	6	.042	11.751	.37	.40		.05	.30	.37	.04	.02			
	7	.025	15.133	.60	.52		.49	.65	.07	.03	.01			
6	1	4.944	1.000	.00	.00		.00	.00		.01	.01			
	2	.536	3.036	.01	.04		.03	.04		.01	.03			
	3	.291	4.124	.00	.00		.02	.00		.78	.12			
	4	.147	5.797	.09	.00		.10	.00		.11	.77			
	5	.055	9.457	.38	.29		.37	.16		.07	.06			
	6	.026	13.699	.52	.67		.49	.80		.02	.00			
7	1	4.176	1.000	.00			.00	.01		.01	.01			
	2	.359	3.412	.00			.05	.58		.04	.07			
	3	.277	3.886	.00			.00	.21		.77	.08			

	4	.147	5.328	.09			.11	.01		.11	.78			
	5	.041	10.049	.90			.84	.20		.07	.06			
8	1	3.372	1.000	.01			.01	.02		.02				
	2	.334	3.177	.01			.08	.74		.00				
	3	.250	3.670	.01			.07	.06		.90				
	4	.043	8.838	.97			.85	.17		.07				

a. Dependent Variable: KABQOutcomeImplement

Excluded Variables[a]

Model		Beta In	t	Sig.	Partial Correlation	Collinearity Statistics		
						Tolerance	VIF	Minimum Tolerance
2	highest degree - any field	-.021[b]	-.212	.832	-.010	.202	4.957	.157
3	highest degree - any field	-.019[c]	-.193	.847	-.009	.202	4.939	.157
	WorkStatusRecoded	.015[c]	.319	.750	.015	.962	1.040	.158
4	highest degree - any field	-.016[d]	-.160	.873	-.007	.203	4.930	.158
	WorkStatusRecoded	.018[d]	.405	.686	.019	.975	1.026	.158
	PreceptorRecode14	.035[d]	.758	.449	.035	.932	1.073	.158
5	highest degree - any field	-.022[e]	-.217	.829	-.010	.203	4.915	.158

	WorkStatusRecoded	.019[e]	.422	.673	.020	.975	1.026	.158
	PreceptorRecode14	.038[e]	.814	.416	.038	.935	1.070	.158
	Recode11SpecCert	.048[e]	1.033	.302	.048	.944	1.060	.159
6	highest degree - any field	-.017[f]	-.170	.865	-.008	.204	4.908	.158
	WorkStatusRecoded	.024[f]	.522	.602	.024	.982	1.018	.159
	PreceptorRecode14	.038[f]	.823	.411	.038	.935	1.070	.159
	Recode11SpecCert	.050[f]	1.071	.285	.049	.945	1.059	.159
	geographic location	.054[f]	1.187	.236	.055	.984	1.017	.159
7	highest degree - any field	-.021[g]	-.213	.831	-.010	.204	4.901	.192
	WorkStatusRecoded	.024[g]	.523	.601	.024	.982	1.018	.758
	PreceptorRecode14	.044[g]	.955	.340	.044	.948	1.055	.757
	Recode11SpecCert	.052[g]	1.128	.260	.052	.947	1.056	.762
	geographic location	.051[g]	1.115	.266	.051	.987	1.013	.766
	years of RDN experience	.129[g]	1.169	.243	.054	.166	6.016	.159
8	highest degree - any field	-.014[h]	-.140	.889	-.006	.205	4.889	.197
	WorkStatusRecoded	.029[h]	.630	.529	.029	.988	1.012	.912
	PreceptorRecode14	.042[h]	.915	.361	.042	.949	1.054	.901
	Recode11SpecCert	.053[h]	1.148	.252	.053	.947	1.056	.889
	geographic location	.056[h]	1.229	.220	.057	.994	1.006	.918
	years of RDN experience	.141[h]	1.283	.200	.059	.167	5.976	.159
	peer-reviewed articles	.073[h]	1.444	.149	.066	.799	1.251	.767

a. Dependent Variable: KABQOutcomeImplement

b. Predictors in the Model: (Constant), PreceptorRecode14, geographic location, year of highest N/D degree completion, WorkStatusRecoded, peer-reviewed articles, Recode11SpecCert, area of practice, highest degree - N/D, years of RDN experience

c. Predictors in the Model: (Constant), PreceptorRecode14, geographic location, year of highest N/D degree completion, peer-reviewed articles, Recode11SpecCert, area of practice, highest degree - N/D, years of RDN experience

d. Predictors in the Model: (Constant), geographic location, year of highest N/D degree completion, peer-reviewed articles, Recode11SpecCert, area of practice, highest degree - N/D, years of RDN experience

e. Predictors in the Model: (Constant), geographic location, year of highest N/D degree completion, peer-reviewed articles, area of practice, highest degree - N/D, years of RDN experience

f. Predictors in the Model: (Constant), year of highest N/D degree completion, peer-reviewed articles, area of practice, highest degree - N/D, years of RDN experience

g. Predictors in the Model: (Constant), year of highest N/D degree completion, peer-reviewed articles, area of practice, highest degree - N/D

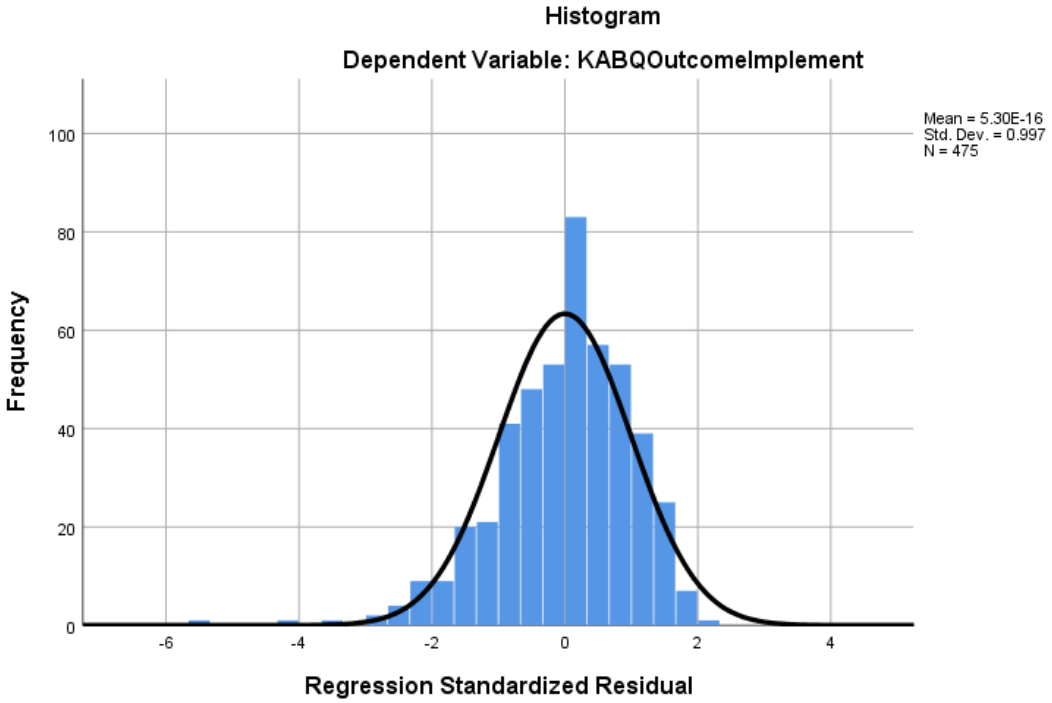
h. Predictors in the Model: (Constant), year of highest N/D degree completion, area of practice, highest degree - N/D

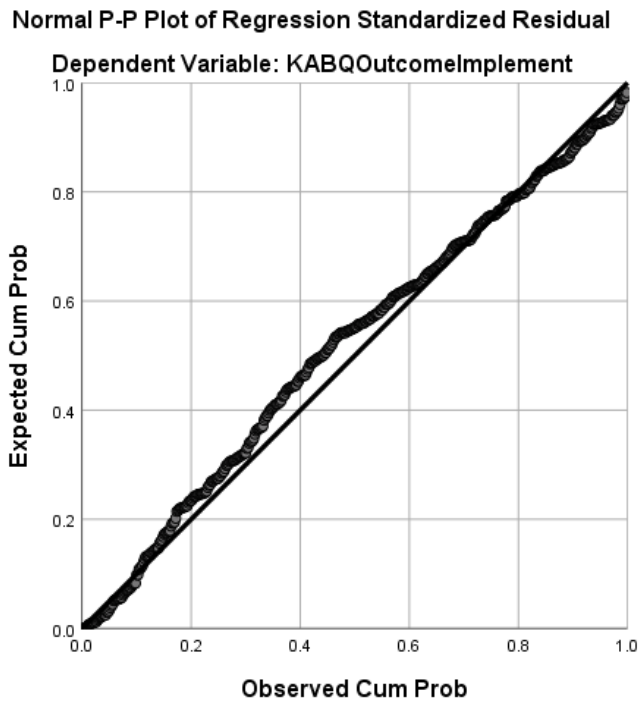
Residuals Statistics[a]

	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	14.9631	17.3149	16.1158	.46639	475
Std. Predicted Value	-2.471	2.571	.000	1.000	475
Standard Error of Predicted Value	.128	.460	.203	.044	475
Adjusted Predicted Value	14.9199	17.3205	16.1154	.46688	475
Residual	-12.57008	4.73339	.00000	2.25744	475
Std. Residual	-5.551	2.090	.000	.997	475
Stud. Residual	-5.580	2.101	.000	1.001	475
Deleted Residual	-12.70196	4.78214	.00038	2.27772	475

Stud. Deleted Residual	-5.768	2.109	-.001	1.006	475
Mahal. Distance	.526	18.552	2.994	1.895	475
Cook's Distance	.000	.082	.002	.005	475
Centered Leverage Value	.001	.039	.006	.004	475

a. Dependent Variable: KABQOutcomeImplement




Normal P-P Plot of Regression Standardized Residual
Dependent Variable: KABQOutcomeImplement
Expected Cum Prob
Observed Cum Prob
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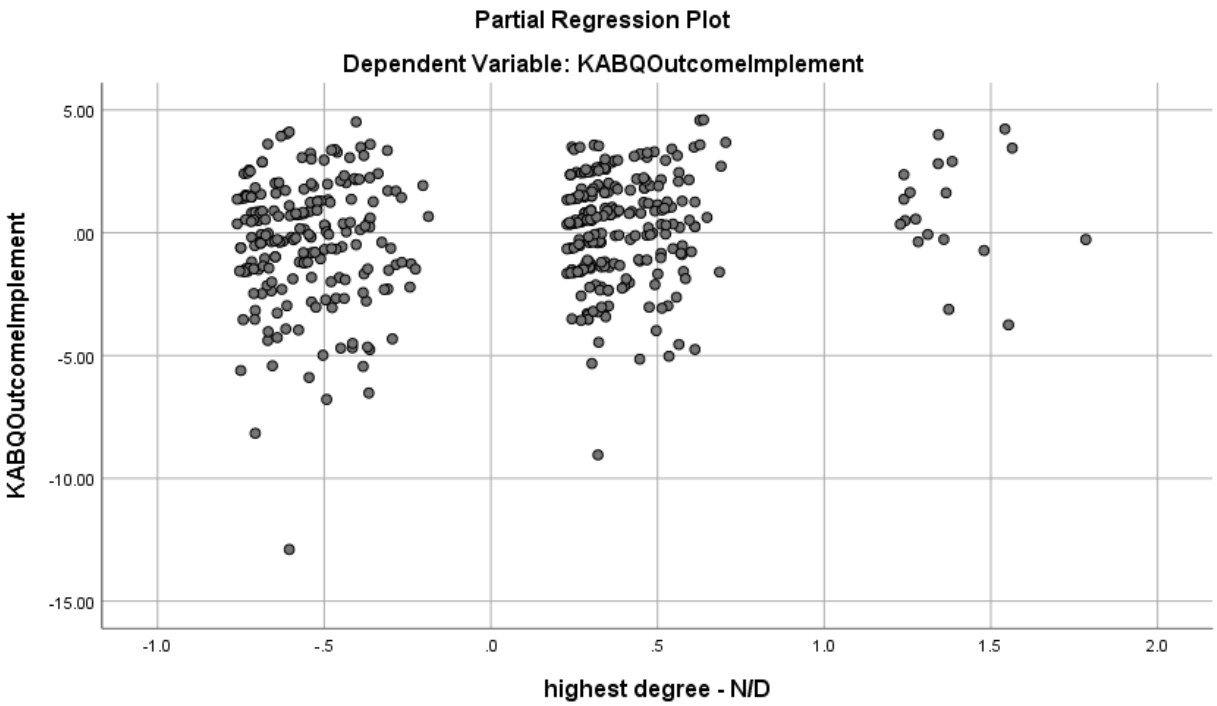
0.2
0.4
0.6
0.8
1.0


Partial Regression Plot
Dependent Variable: KABQOutcomeImplement
KABQOutcomeImplement
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-5.00
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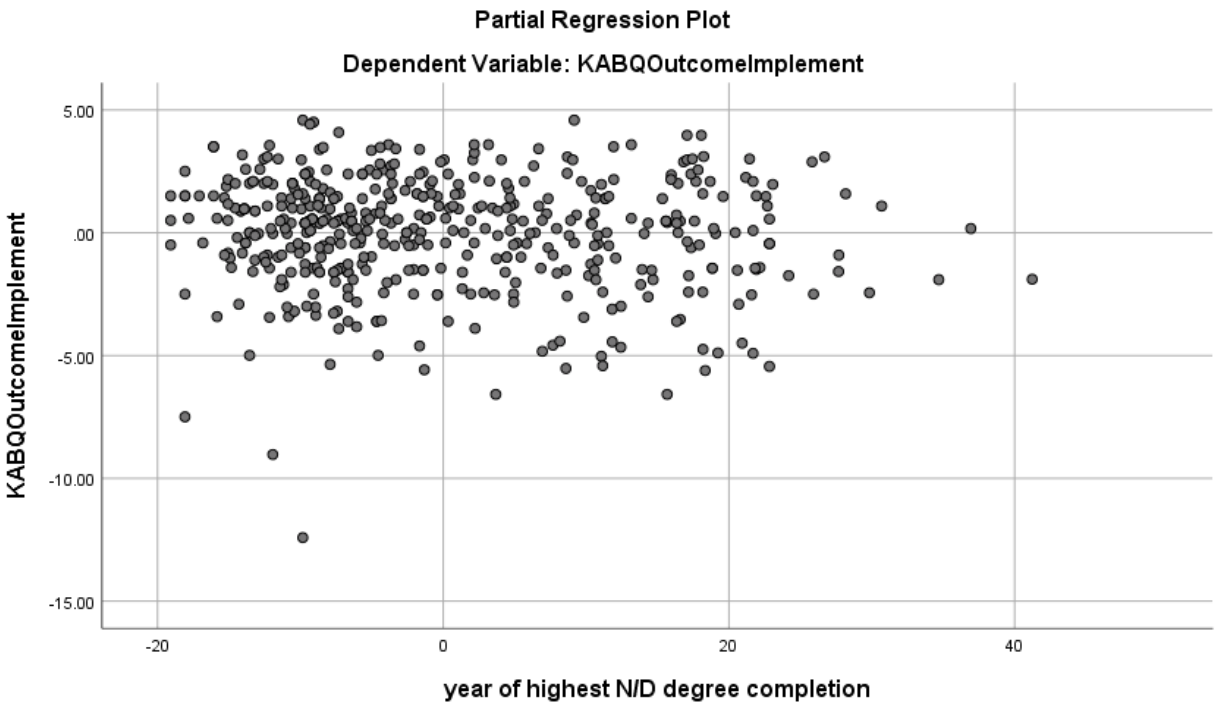
1.5
2.0
highest degree - N/D


Partial Regression Plot
Dependent Variable: KABQOutcomeImplement
KABQOutcomeImplement
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20
40
year of highest N/D degree completion

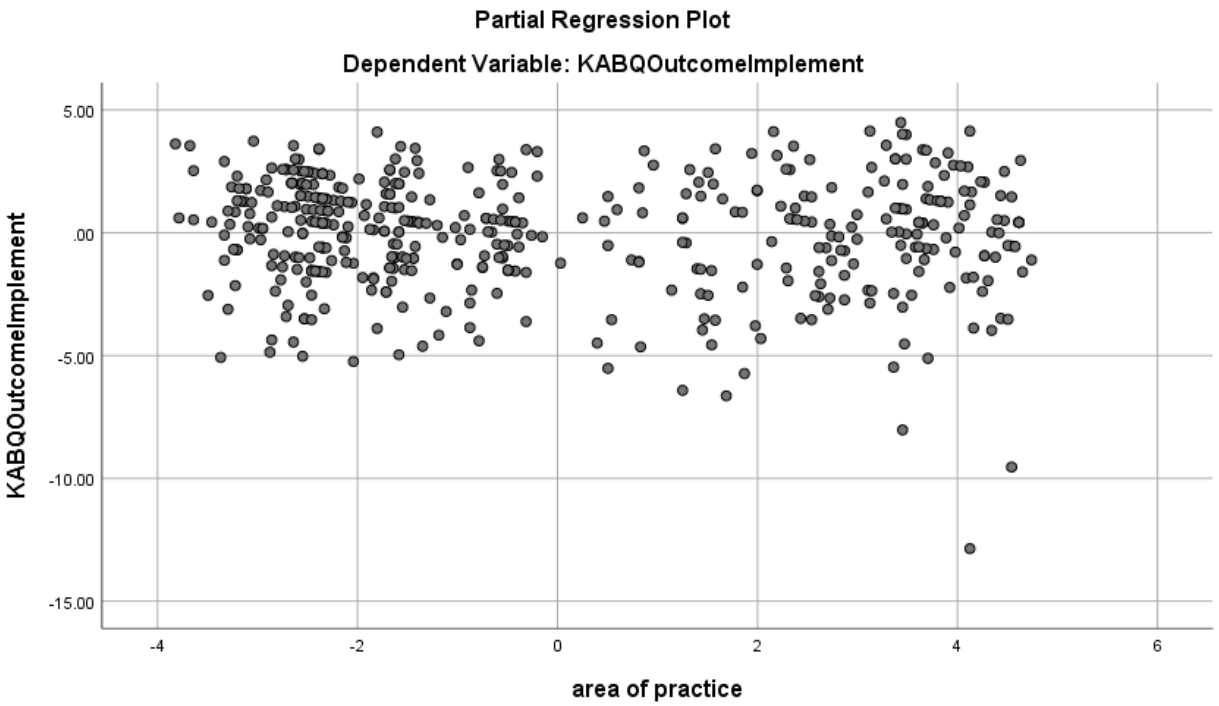


Figure 52. SPSS Output Multiple Regression KABQ Attitude Subscale

Correlations

	KABQAttitude	years of RDN experience	highest degree - any field	highest degree - N/D	year of highest N/D degree completion	geographic location	area of practice	peer-reviewed articles	Recode11SpecCert	WorkStatusRecoded	PreceptorRecode14
KABQAttitude	1.000	-.250	.213	.234	-.297	.073	-.077	.161	.058	-.021	.022

Pearson Correlation	years of RDN experience	-.250	1.000	-.019	-.077	.901	.000	.179	.195	.150	-.067	.134
	highest degree - any field	.213	-.019	1.000	.890	-.154	.084	-.017	.390	.032	-.033	.090
	highest degree - N/D	.234	-.077	.890	1.000	-.238	.070	-.072	.398	.059	-.068	.086
	year of highest N/D degree completion	-.297	.901	-.154	-.238	1.000	.011	.177	.114	.134	-.065	.084
	geographic location	.073	.000	.084	.070	.011	1.000	.008	.102	.038	.083	.008
	area of practice	-.077	.179	-.017	-.072	.177	.008	1.000	.070	-.138	.004	-.163
	peer-reviewed articles	.161	.195	.390	.398	.114	.102	.070	1.000	.054	.025	.012
	Recode11SpecCert	.058	.150	.032	.059	.134	.038	-.138	.054	1.000	.000	.110
	WorkStatusRecoded	-.021	-.067	-.033	-.068	-.065	.083	.004	.025	.000	1.000	.092
	PreceptorRecode14	.022	.134	.090	.086	.084	.008	-.163	.012	.110	.092	1.000
Sig. (1-tailed)	KABQAttitude	.	.000	.000	.000	.000	.055	.047	.000	.105	.321	.320
	years of RDN experience	.000	.	.341	.047	.000	.499	.000	.000	.001	.072	.002
	highest degree - any field	.000	.341	.	.000	.000	.033	.354	.000	.244	.233	.024
	highest degree - N/D	.000	.047	.000	.	.000	.064	.058	.000	.098	.069	.031

	year of highest N/D degree completion	.000	.000	.000	.000	.	.401	.000	.006	.002	.080	.033
	geographic location	.055	.499	.033	.064	.401	.	.430	.013	.202	.036	.433
	area of practice	.047	.000	.354	.058	.000	.430	.	.064	.001	.467	.000
	peer-reviewed articles	.000	.000	.000	.000	.006	.013	.064	.	.122	.290	.396
	Recode11SpecCert	.105	.001	.244	.098	.002	.202	.001	.122	.	.497	.008
	WorkStatusRecoded	.321	.072	.233	.069	.080	.036	.467	.290	.497	.	.023
	PreceptorRecode14	.320	.002	.024	.031	.033	.433	.000	.396	.008	.023	.
N	KABQAttitude	476	476	476	476	476	476	476	476	476	476	476
	years of RDN experience	476	476	476	476	476	476	476	476	476	476	476
	highest degree - any field	476	476	476	476	476	476	476	476	476	476	476
	highest degree - N/D	476	476	476	476	476	476	476	476	476	476	476
	year of highest N/D degree completion	476	476	476	476	476	476	476	476	476	476	476
	geographic location	476	476	476	476	476	476	476	476	476	476	476
	area of practice	476	476	476	476	476	476	476	476	476	476	476

	peer-reviewed articles	476	476	476	476	476	476	476	476	476	476	476
	Recode11SpecCert	476	476	476	476	476	476	476	476	476	476	476
	WorkStatusRecoded	476	476	476	476	476	476	476	476	476	476	476
	PreceptorRecode14	476	476	476	476	476	476	476	476	476	476	476

Variables Entered/Removed[a]

Model	Variables Entered	Variables Removed	Method

1	PreceptorRecode14, geographic location, year of highest N/D degree completion, WorkStatusRecoded, peer-reviewed articles, Recode11SpecCert, area of practice, highest degree - any field, highest degree - N/D, years of RDN experience[b]	.	Enter
2	.	highest degree - N/D	Backward (criterion: Probability of F-to-remove >= .100).
3	.	area of practice	Backward (criterion: Probability of F-to-remove >= .100).

4	.	years of RDN experience	Backward (criterion: Probability of F-to-remove >= .100).
5	.	PreceptorRecode14	Backward (criterion: Probability of F-to-remove >= .100).
6	.	WorkStatusRecoded	Backward (criterion: Probability of F-to-remove >= .100).
7	.	geographic location	Backward (criterion: Probability of F-to-remove >= .100).

a. Dependent Variable: KABQAttitude

b. All requested variables entered.

Model Summary[h]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.388[a]	.151	.132	10.12718	

2	.388[b]	.151	.134	10.11632	
3	.388[c]	.150	.136	10.10624	
4	.387[d]	.150	.137	10.10026	
5	.385[e]	.149	.138	10.09571	
6	.383[f]	.146	.137	10.09766	
7	.379[g]	.144	.137	10.10146	2.012

a. Predictors: (Constant), PreceptorRecode14, geographic location, year of highest N/D degree completion, WorkStatusRecoded, peer-reviewed articles, Recode11SpecCert, area of practice, highest degree - any field, highest degree - N/D, years of RDN experience

b. Predictors: (Constant), PreceptorRecode14, geographic location, year of highest N/D degree completion, WorkStatusRecoded, peer-reviewed articles, Recode11SpecCert, area of practice, highest degree - any field, years of RDN experience

c. Predictors: (Constant), PreceptorRecode14, geographic location, year of highest N/D degree completion, WorkStatusRecoded, peer-reviewed articles, Recode11SpecCert, highest degree - any field, years of RDN experience

d. Predictors: (Constant), PreceptorRecode14, geographic location, year of highest N/D degree completion, WorkStatusRecoded, peer-reviewed articles, Recode11SpecCert, highest degree - any field

e. Predictors: (Constant), geographic location, year of highest N/D degree completion, WorkStatusRecoded, peer-reviewed articles, Recode11SpecCert, highest degree - any field

f. Predictors: (Constant), geographic location, year of highest N/D degree completion, peer-reviewed articles, Recode11SpecCert, highest degree - any field

g. Predictors: (Constant), year of highest N/D degree completion, peer-reviewed articles, Recode11SpecCert, highest degree - any field

h. Dependent Variable: KABQAttitude

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	8450.326	10	845.033	8.239	.000[b]
	Residual	47690.313	465	102.560		
	Total	56140.639	475			
2	Regression	8450.195	9	938.911	9.174	.000[c]
	Residual	47690.444	466	102.340		
	Total	56140.639	475			
3	Regression	8443.072	8	1055.384	10.333	.000[d]
	Residual	47697.567	467	102.136		
	Total	56140.639	475			
4	Regression	8397.535	7	1199.648	11.760	.000[e]
	Residual	47743.104	468	102.015		
	Total	56140.639	475			
5	Regression	8338.557	6	1389.759	13.635	.000[f]
	Residual	47802.082	469	101.923		

	Total	56140.639	475			
6	Regression	8218.167	5	1643.633	16.120	.000[g]
	Residual	47922.472	470	101.963		
	Total	56140.639	475			
7	Regression	8080.062	4	2020.015	19.796	.000[h]
	Residual	48060.577	471	102.039		
	Total	56140.639	475			

a. Dependent Variable: KABQAttitude

b. Predictors: (Constant), PreceptorRecode14, geographic location, year of highest N/D degree completion, WorkStatusRecoded, peer-reviewed articles, Recode11SpecCert, area of practice, highest degree - any field, highest degree - N/D, years of RDN experience

c. Predictors: (Constant), PreceptorRecode14, geographic location, year of highest N/D degree completion, WorkStatusRecoded, peer-reviewed articles, Recode11SpecCert, area of practice, highest degree - any field, years of RDN experience

d. Predictors: (Constant), PreceptorRecode14, geographic location, year of highest N/D degree completion, WorkStatusRecoded, peer-reviewed articles, Recode11SpecCert, highest degree - any field, years of RDN experience

e. Predictors: (Constant), PreceptorRecode14, geographic location, year of highest N/D degree completion, WorkStatusRecoded, peer-reviewed articles, Recode11SpecCert, highest degree - any field

f. Predictors: (Constant), geographic location, year of highest N/D degree completion, WorkStatusRecoded, peer-reviewed articles, Recode11SpecCert, highest degree - any field

g. Predictors: (Constant), geographic location, year of highest N/D degree completion, peer-reviewed articles, Recode11SpecCert, highest degree - any field

h. Predictors: (Constant), year of highest N/D degree completion, peer-reviewed articles, Recode11SpecCert, highest degree - any field

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients			95.0% Confidence Interval for B		Correlations			Collinearity Statistics	
		B	Std. Error	Beta	t	Sig.	Lower Bound	Upper Bound	Zero-order	Partial	Part	Tolerance	VIF
1	(Constant)	79.089	4.859		16.277	.000	69.541	88.637					
	years of RDN experience	-.060	.093	-.068	-.644	.520	-.243	.123	-.250	-.030	-.028	.163	6.142
	highest degree - any field	1.867	1.842	.097	1.013	.311	-1.754	5.487	.213	.047	.043	.199	5.016
	highest degree - N/D	.069	1.919	.004	.036	.972	-3.702	3.839	.234	.002	.002	.180	5.548
	year of highest N/D degree completion	-.223	.095	-.254	-2.350	.019	-.409	-.036	-.297	-.108	-.100	.157	6.376
	geographic location	.714	.587	.053	1.216	.224	-.439	1.868	.073	.056	.052	.976	1.025
	area of practice	-.048	.185	-.012	-.259	.795	-.411	.315	-.077	-.012	-.011	.900	1.112
	peer-reviewed articles	2.116	.658	.156	3.215	.001	.823	3.410	.161	.147	.137	.773	1.294

	Recode11SpecCert	1.007	.538	.083	1.872	.062	-.050	2.064	.058	.086	.080	.937	1.067
	WorkStatusRecoded	-1.681	1.461	-.050	-1.151	.250	-4.551	1.189	-.021	-.053	-.049	.958	1.044
	PreceptorRecode14	.454	.592	.034	.767	.443	-.709	1.617	.022	.036	.033	.918	1.090
2	(Constant)	79.121	4.770		16.588	.000	69.748	88.494					
	years of RDN experience	-.060	.092	-.068	-.647	.518	-.240	.121	-.250	-.030	-.028	.167	5.984
	highest degree - any field	1.923	.944	.100	2.037	.042	.068	3.779	.213	.094	.087	.758	1.320
	year of highest N/D degree completion	-.223	.091	-.255	-2.443	.015	-.403	-.044	-.297	-.112	-.104	.168	5.955
	geographic location	.714	.586	.053	1.218	.224	-.438	1.866	.073	.056	.052	.976	1.025
	area of practice	-.049	.184	-.012	-.264	.792	-.410	.313	-.077	-.012	-.011	.907	1.103
	peer-reviewed articles	2.120	.648	.157	3.269	.001	.846	3.394	.161	.150	.140	.795	1.258
	Recode11SpecCert	1.008	.536	.083	1.882	.060	-.044	2.061	.058	.087	.080	.943	1.060
	WorkStatusRecoded	-1.687	1.449	-.050	-1.164	.245	-4.535	1.161	-.021	-.054	-.050	.971	1.030
	PreceptorRecode14	.454	.591	.034	.769	.443	-.707	1.616	.022	.036	.033	.918	1.090
3	(Constant)	78.923	4.706		16.772	.000	69.676	88.169					

	years of RDN experience	-.061	.092	-.069	-.668	.505	-.241	.119	-.250	-.031	-.028	.168	5.955
	highest degree - any field	1.923	.943	.100	2.039	.042	.070	3.776	.213	.094	.087	.758	1.320
	year of highest N/D degree completion	-.224	.091	-.255	-2.454	.014	-.404	-.045	-.297	-.113	-.105	.168	5.950
	geographic location	.713	.586	.053	1.217	.224	-.438	1.864	.073	.056	.052	.976	1.025
	peer-reviewed articles	2.114	.647	.156	3.265	.001	.842	3.386	.161	.149	.139	.796	1.257
	Recode11SpecCert	1.031	.529	.085	1.950	.052	-.008	2.069	.058	.090	.083	.967	1.034
	WorkStatusRecoded	-1.701	1.447	-.051	-1.175	.241	-4.544	1.143	-.021	-.054	-.050	.972	1.029
	PreceptorRecode14	.482	.581	.036	.830	.407	-.660	1.624	.022	.038	.035	.948	1.055
4	(Constant)	79.142	4.691		16.870	.000	69.923	88.361					
	highest degree - any field	1.796	.923	.093	1.945	.052	-.018	3.610	.213	.090	.083	.790	1.266
	year of highest N/D degree completion	-.279	.039	-.318	-7.109	.000	-.356	-.202	-.297	-.312	-.303	.908	1.101
	geographic location	.736	.584	.054	1.259	.209	-.413	1.884	.073	.058	.054	.979	1.021
	peer-reviewed articles	2.061	.642	.152	3.210	.001	.799	3.323	.161	.147	.137	.808	1.238

	Recode11SpecCert	1.014	.528	.083	1.922	.055	-.023	2.051	.058	.088	.082	.969	1.032
	WorkStatusRecoded	-1.678	1.446	-.050	-1.161	.246	-4.520	1.163	-.021	-.054	-.049	.973	1.028
	PreceptorRecode14	.439	.577	.033	.760	.447	-.695	1.573	.022	.035	.032	.960	1.042
5	(Constant)	79.548	4.659		17.076	.000	70.394	88.703					
	highest degree - any field	1.879	.916	.098	2.051	.041	.078	3.680	.213	.094	.087	.801	1.249
	year of highest N/D degree completion	-.276	.039	-.315	-7.072	.000	-.353	-.199	-.297	-.310	-.301	.917	1.090
	geographic location	.731	.584	.054	1.251	.212	-.417	1.879	.073	.058	.053	.979	1.021
	peer-reviewed articles	2.036	.641	.150	3.175	.002	.776	3.295	.161	.145	.135	.810	1.235
	Recode11SpecCert	1.053	.525	.086	2.005	.046	.021	2.085	.058	.092	.085	.978	1.022
	WorkStatusRecoded	-1.562	1.437	-.047	-1.087	.278	-4.386	1.262	-.021	-.050	-.046	.984	1.017
6	(Constant)	75.061	2.158		34.775	.000	70.820	79.303					
	highest degree - any field	1.947	.914	.101	2.129	.034	.150	3.744	.213	.098	.091	.805	1.243
	year of highest N/D degree completion	-.273	.039	-.311	-7.005	.000	-.349	-.196	-.297	-.307	-.299	.924	1.083

	geographic location	.678	.582	.050	1.164	.245	-.466	1.822	.073	.054	.050	.986	1.014
	peer-reviewed articles	2.000	.640	.148	3.124	.002	.742	3.259	.161	.143	.133	.812	1.231
	Recode11SpecCert	1.048	.525	.086	1.996	.047	.016	2.080	.058	.092	.085	.978	1.022
7	(Constant)	76.465	1.790		42.708	.000	72.947	79.984					
	highest degree - any field	1.998	.914	.104	2.187	.029	.203	3.794	.213	.100	.093	.806	1.240
	year of highest N/D degree completion	-.272	.039	-.310	-6.995	.000	-.349	-.196	-.297	-.307	-.298	.924	1.083
	peer-reviewed articles	2.054	.639	.152	3.214	.001	.798	3.309	.161	.147	.137	.816	1.225
	Recode11SpecCert	1.067	.525	.088	2.033	.043	.036	2.099	.058	.093	.087	.979	1.021

a. Dependent Variable: KABQAttitude

Collinearity Diagnostics[a]

Model	Dimension	Eigenvalue	Condition Index	Variance Proportions										
				(Constant)	years of RDN experience	highest degree - any field	highest degree - N/D	year of highest N/D degree completion	geographic location	area of practice	peer-reviewed articles	Recode11SpecCert	WorkStatusRecoded	PreceptorRecode14

1	1	9.260	1.000	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
	2	.649	3.777	.00	.04	.00	.00	.04	.00	.00	.00	.00	.00	.00
	3	.332	5.282	.00	.00	.00	.00	.00	.00	.63	.00	.14	.00	.01
	4	.255	6.032	.00	.01	.00	.00	.00	.01	.07	.45	.17	.00	.02
	5	.180	7.164	.00	.00	.00	.00	.00	.02	.10	.15	.64	.00	.12
	6	.119	8.839	.00	.02	.03	.04	.00	.31	.02	.23	.01	.00	.00
	7	.106	9.351	.00	.00	.01	.01	.01	.23	.05	.15	.00	.00	.59
	8	.052	13.347	.04	.08	.00	.00	.07	.41	.09	.00	.03	.07	.21
	9	.031	17.285	.01	.82	.03	.00	.81	.00	.01	.00	.00	.03	.05
	10	.011	28.875	.01	.02	.90	.87	.04	.00	.01	.00	.01	.01	.00
	11	.006	40.931	.94	.01	.02	.07	.03	.00	.01	.01	.00	.88	.00
2	1	8.371	1.000	.00	.00	.00		.00	.00	.00	.00	.00	.00	.00
	2	.600	3.735	.00	.04	.01		.04	.01	.00	.01	.00	.00	.00
	3	.331	5.026	.00	.00	.00		.00	.00	.62	.00	.15	.00	.01
	4	.244	5.857	.00	.00	.01		.00	.00	.08	.61	.13	.00	.01
	5	.179	6.832	.00	.00	.00		.00	.03	.12	.10	.67	.00	.13
	6	.109	8.768	.00	.00	.01		.01	.51	.06	.01	.00	.00	.41
	7	.078	10.364	.00	.03	.65		.00	.08	.02	.27	.00	.00	.22
	8	.051	12.802	.04	.11	.07		.10	.36	.08	.01	.03	.07	.16
	9	.031	16.470	.01	.81	.20		.83	.00	.01	.00	.00	.03	.05

	10	.006	38.203	.95	.00	.05		.01	.00	.01	.00	.01	.89	.00
3	1	7.671	1.000	.00	.00	.00		.00	.00		.00	.00	.00	.00
	2	.600	3.576	.00	.04	.01		.04	.01		.01	.00	.00	.00
	3	.252	5.515	.00	.00	.01		.00	.00		.48	.32	.00	.02
	4	.192	6.323	.00	.00	.00		.00	.04		.22	.66	.00	.07
	5	.114	8.200	.00	.00	.00		.01	.38		.01	.00	.00	.55
	6	.079	9.849	.00	.02	.59		.00	.15		.26	.00	.00	.21
	7	.054	11.866	.04	.10	.13		.07	.42		.02	.01	.07	.11
	8	.031	15.691	.01	.83	.20		.87	.00		.00	.00	.03	.03
	9	.006	36.459	.95	.00	.05		.01	.00		.00	.01	.90	.00
4	1	6.959	1.000	.00		.00		.00	.00		.00	.00	.00	.00
	2	.355	4.429	.00		.02		.83	.01		.02	.00	.00	.00
	3	.249	5.288	.00		.01		.03	.00		.48	.32	.00	.02
	4	.192	6.023	.00		.00		.01	.04		.22	.66	.00	.07
	5	.113	7.838	.00		.00		.00	.39		.02	.00	.00	.57
	6	.077	9.525	.00		.59		.06	.25		.22	.00	.00	.21

	7	.050	11.769	.04		.33		.04	.31		.03	.01	.09	.12
	8	.006	34.692	.95		.05		.03	.01		.00	.00	.91	.00
5	1	6.080	1.000	.00		.00		.01	.00		.00	.01	.00	
	2	.353	4.147	.00		.02		.82	.01		.02	.00	.00	
	3	.243	4.998	.00		.00		.04	.00		.41	.46	.00	
	4	.180	5.810	.00		.00		.01	.10		.35	.50	.01	
	5	.084	8.501	.00		.39		.02	.60		.14	.01	.00	
	6	.053	10.670	.03		.53		.07	.28		.08	.02	.07	
	7	.006	32.423	.96		.05		.03	.01		.00	.01	.92	
6	1	5.127	1.000	.00		.00		.01	.00		.01	.01		
	2	.349	3.832	.00		.02		.81	.01		.04	.00		
	3	.242	4.605	.00		.00		.05	.00		.35	.54		
	4	.166	5.551	.02		.01		.00	.18		.40	.40		
	5	.083	7.857	.01		.50		.03	.48		.18	.01		
	6	.033	12.430	.96		.45		.10	.32		.02	.05		
7	1	4.242	1.000	.00		.00		.01			.01	.01		

	2	.342	3.520	.00		.03		.79			.06	.00		
	3	.241	4.196	.00		.00		.05			.31	.59		
	4	.133	5.657	.10		.16		.00			.58	.34		
	5	.042	10.068	.89		.81		.14			.04	.06		

a. Dependent Variable: KABQAttitude

Excluded Variables[a]

Model		Beta In	t	Sig.	Partial Correlation	Collinearity Statistics		
						Tolerance	VIF	Minimum Tolerance
2	highest degree - N/D	.004[b]	.036	.972	.002	.180	5.548	.157
3	highest degree - N/D	.006[c]	.059	.953	.003	.182	5.506	.157
	area of practice	-.012[c]	-.264	.792	-.012	.907	1.103	.167
4	highest degree - N/D	-.004[d]	-.045	.964	-.002	.186	5.375	.186
	area of practice	-.014[d]	-.310	.757	-.014	.911	1.098	.789
	years of RDN experience	-.069[d]	-.668	.505	-.031	.168	5.955	.168
5	highest degree - N/D	-.001[e]	-.009	.992	.000	.186	5.363	.186
	area of practice	-.019[e]	-.436	.663	-.020	.939	1.065	.801
	years of RDN experience	-.060[e]	-.579	.563	-.027	.170	5.880	.169
	PreceptorRecode14	.033[e]	.760	.447	.035	.960	1.042	.790
6	highest degree - N/D	.011[f]	.115	.909	.005	.189	5.292	.189
	area of practice	-.020[f]	-.452	.652	-.021	.939	1.065	.805

	years of RDN experience	-.059[f]	-.567	.571	-.026	.170	5.880	.169
	PreceptorRecode14	.028[f]	.641	.522	.030	.971	1.030	.795
	WorkStatusRecoded	-.047[f]	-1.087	.278	-.050	.984	1.017	.801
7	highest degree - N/D	.009[g]	.090	.929	.004	.189	5.290	.189
	area of practice	-.020[g]	-.443	.658	-.020	.939	1.065	.806
	years of RDN experience	-.066[g]	-.636	.525	-.029	.171	5.858	.169
	PreceptorRecode14	.028[g]	.638	.524	.029	.971	1.030	.796
	WorkStatusRecoded	-.042[g]	-.985	.325	-.045	.991	1.009	.803
	geographic location	.050[g]	1.164	.245	.054	.986	1.014	.805

a. Dependent Variable: KABQAttitude

b. Predictors in the Model: (Constant), PreceptorRecode14, geographic location, year of highest N/D degree completion, WorkStatusRecoded, peer-reviewed articles, Recode11SpecCert, area of practice, highest degree - any field, years of RDN experience

c. Predictors in the Model: (Constant), PreceptorRecode14, geographic location, year of highest N/D degree completion, WorkStatusRecoded, peer-reviewed articles, Recode11SpecCert, highest degree - any field, years of RDN experience

d. Predictors in the Model: (Constant), PreceptorRecode14, geographic location, year of highest N/D degree completion, WorkStatusRecoded, peer-reviewed articles, Recode11SpecCert, highest degree - any field

e. Predictors in the Model: (Constant), geographic location, year of highest N/D degree completion, WorkStatusRecoded, peer-reviewed articles, Recode11SpecCert, highest degree - any field

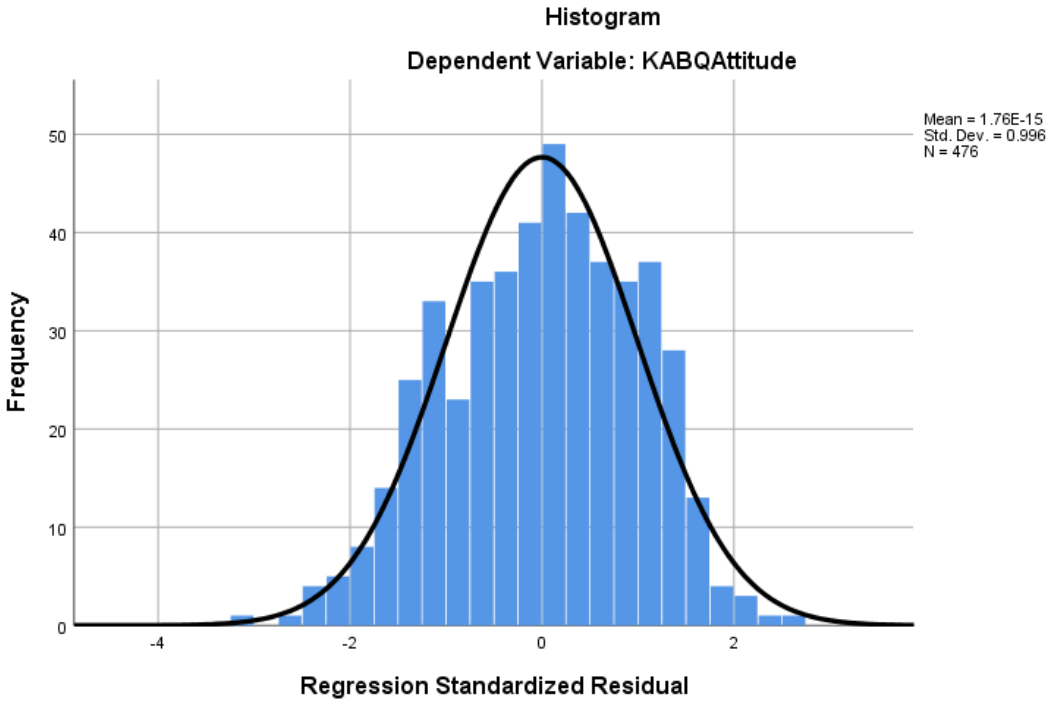
f. Predictors in the Model: (Constant), geographic location, year of highest N/D degree completion, peer-reviewed articles, Recode11SpecCert, highest degree - any field

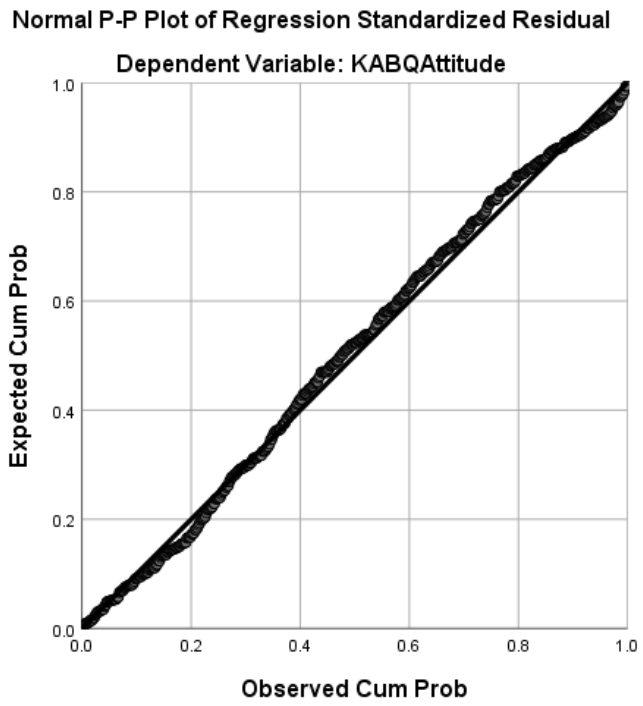
g. Predictors in the Model: (Constant), year of highest N/D degree completion, peer-reviewed articles, Recode11SpecCert, highest degree - any field

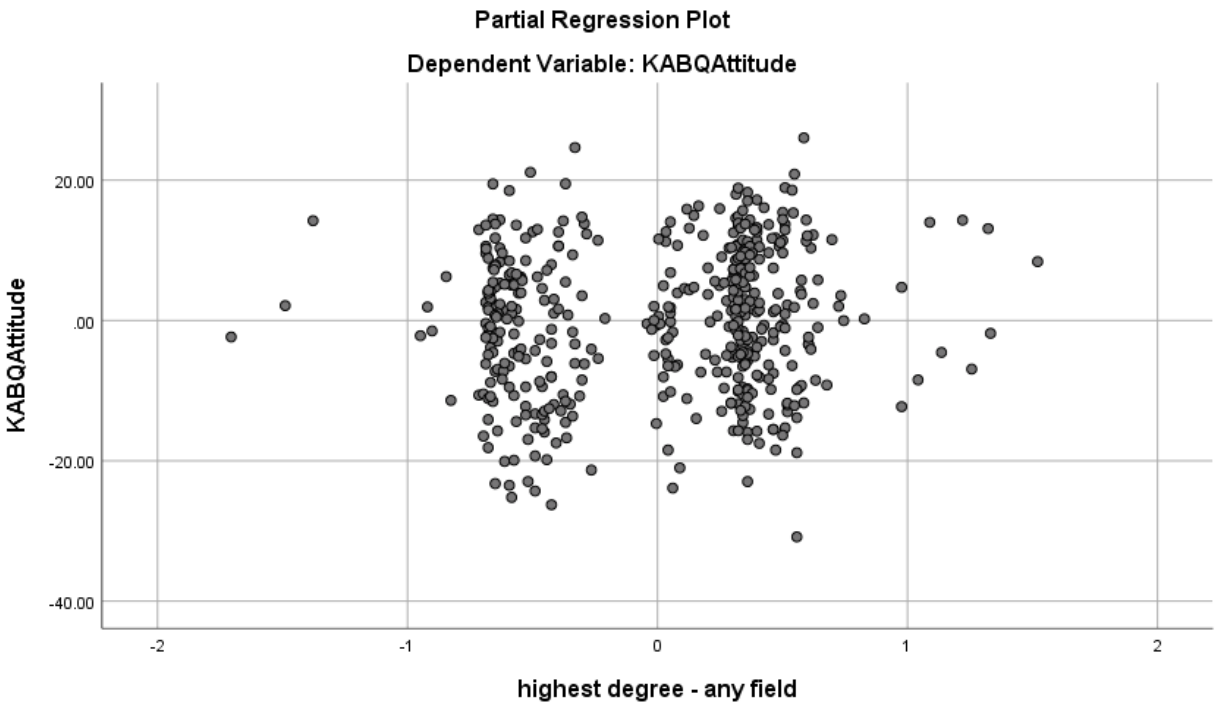
Residuals Statistics[a]

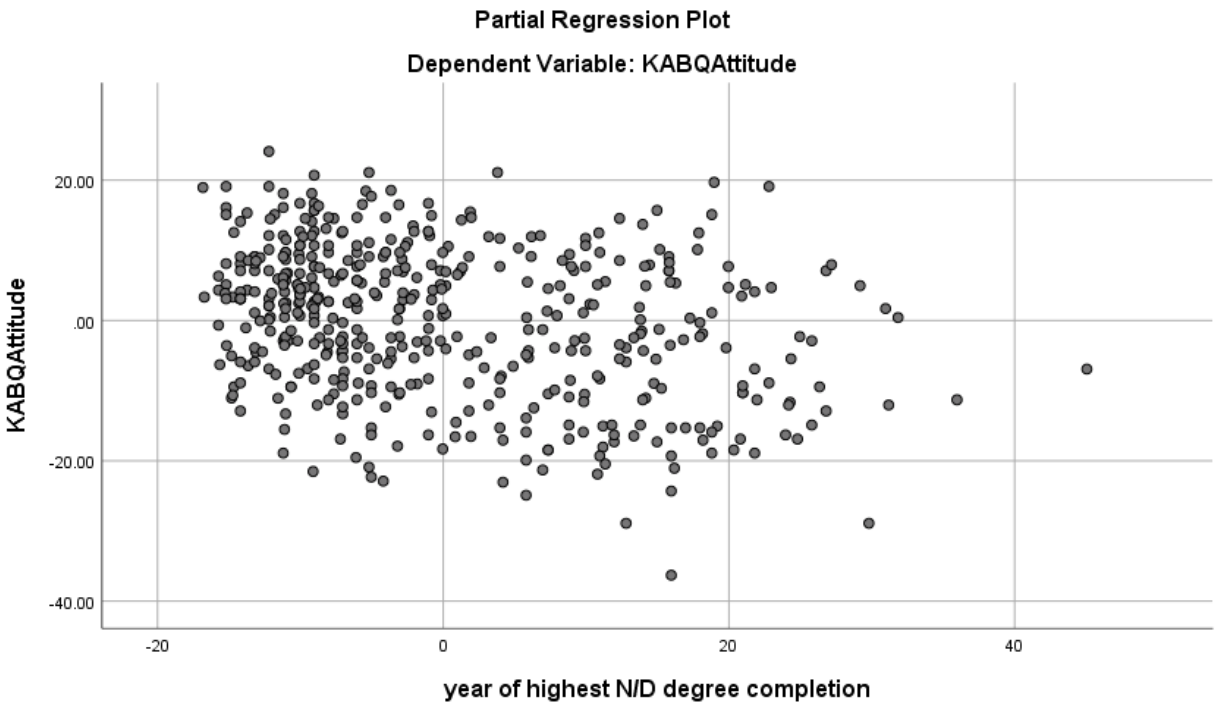
	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	68.7816	92.7071	79.9160	4.12440	476
Std. Predicted Value	-2.700	3.101	.000	1.000	476
Standard Error of Predicted Value	.671	2.741	.987	.314	476
Adjusted Predicted Value	69.1851	93.1290	79.9160	4.13603	476
Residual	-31.95586	25.31152	.00000	10.05884	476
Std. Residual	-3.163	2.506	.000	.996	476
Stud. Residual	-3.177	2.523	.000	1.001	476
Deleted Residual	-32.23031	25.65981	-.00002	10.15965	476
Stud. Deleted Residual	-3.208	2.537	.000	1.002	476
Mahal. Distance	1.100	33.988	3.992	4.195	476
Cook's Distance	.000	.028	.002	.003	476
Centered Leverage Value	.002	.072	.008	.009	476

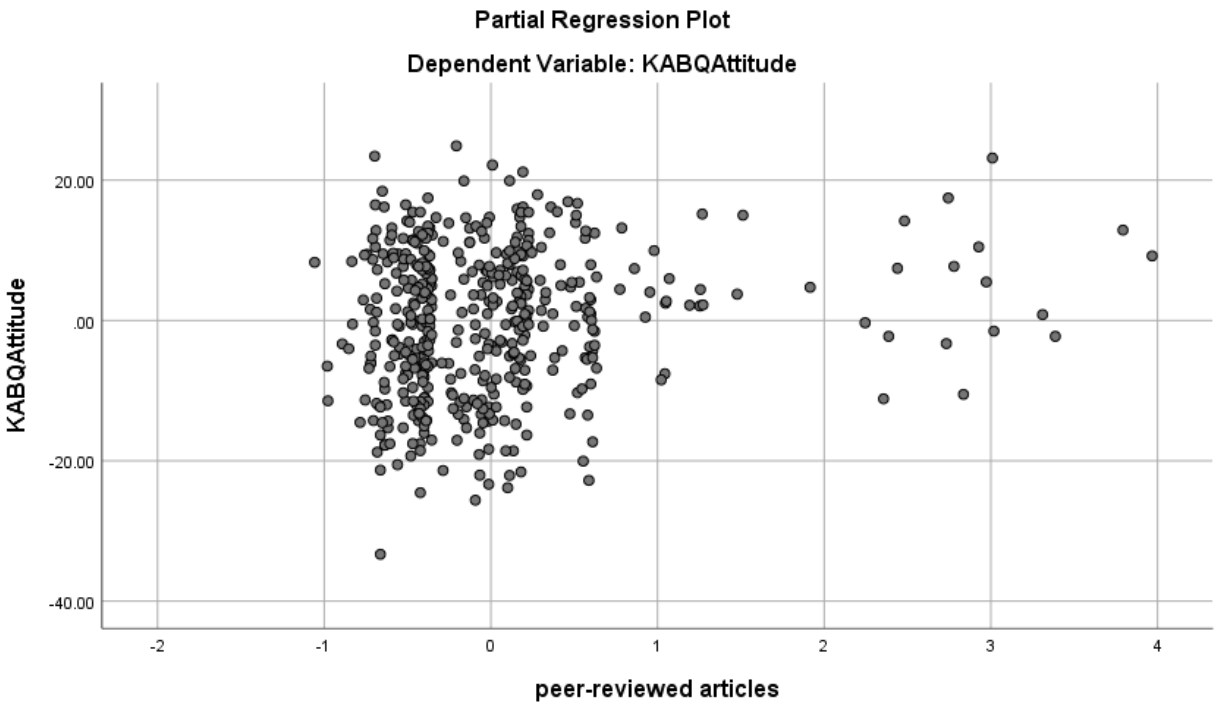
a. Dependent Variable: KABQAttitude


Histogram
Dependent Variable: KABQAttitude
Mean = 1.76E-15
Std. Dev. = 0.996
N = 476
Frequency
50
40
30
20
10
0
-4
-2
0
2
Regression Standardized Residual


Normal P-P Plot of Regression Standardized Residual
Dependent Variable: KABQAttitude
Expected Cum Prob
Observed Cum Prob
0.0
0.2
0.4
0.6
0.8
1.0


Partial Regression Plot
Dependent Variable: KABQAttitude
KABQAttitude
20.00
.00
-20.00
-40.00
-2
-1
0
1
2
highest degree - any field


Partial Regression Plot
Dependent Variable: KABQAttitude
KABQAttitude
20.00
.00
-20.00
-40.00
-20
0
20
40
year of highest N/D degree completion


Partial Regression Plot
Dependent Variable: KABQAttitude
KABQAttitude
20.00
.00
-20.00
-40.00
-2
-1
0
1
2
3
4
peer-reviewed articles

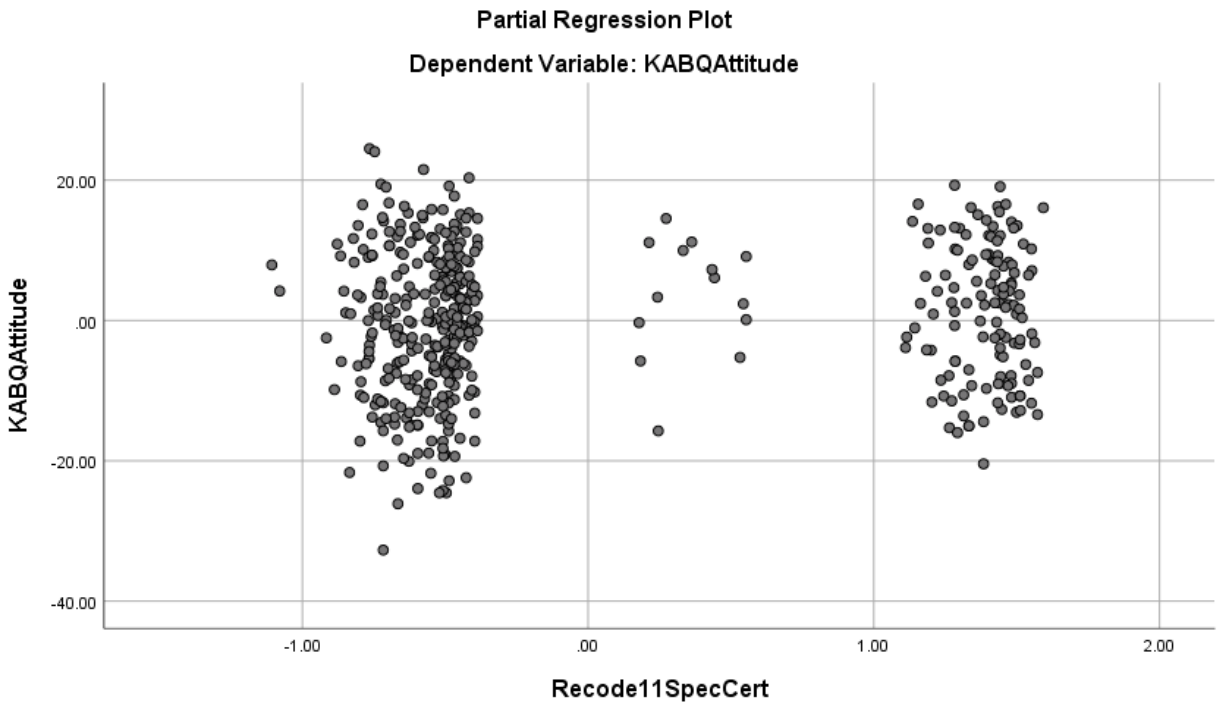


Figure 53. SPSS Output Multiple Regression EPBQ Subscale

Correlations

	EBPQKnowledge Competence	years of RDN experience	highest degree - any field	highest degree - N/D	year of highest N/D degree completion	geographic location	area of practice	peer-reviewed articles	Recode11SpecCert	WorkStatusRecoded	PreceptorRecode14

Pearson Correlation	EBPQKnowledgeCompetence	1.000	-.131	.291	.293	-.193	.039	-.044	.279	.038	-.018	.085
	years of RDN experience	-.131	1.000	-.020	-.079	.902	.001	.181	.195	.147	-.068	.133
	highest degree - any field	.291	-.020	1.000	.890	-.157	.085	-.016	.391	.028	-.034	.090
	highest degree - N/D	.293	-.079	.890	1.000	-.243	.071	-.071	.398	.055	-.069	.085
	year of highest N/D degree completion	-.193	.902	-.157	-.243	1.000	.014	.181	.113	.126	-.067	.082
	geographic location	.039	.001	.085	.071	.014	1.000	.007	.103	.042	.084	.009
	area of practice	-.044	.181	-.016	-.071	.181	.007	1.000	.070	-.135	.005	-.163
	peer-reviewed articles	.279	.195	.391	.398	.113	.103	.070	1.000	.053	.025	.010
	Recode11SpecCert	.038	.147	.028	.055	.126	.042	-.135	.053	1.000	-.002	.108
	WorkStatusRecoded	-.018	-.068	-.034	-.069	-.067	.084	.005	.025	-.002	1.000	.091
	PreceptorRecode14	.085	.133	.090	.085	.082	.009	-.163	.010	.108	.091	1.000
Sig. (1-tailed)	EBPQKnowledgeCompetence	.	.002	.000	.000	.000	.196	.172	.000	.204	.345	.032
	years of RDN experience	.002	.	.330	.043	.000	.490	.000	.000	.001	.069	.002
	highest degree - any field	.000	.330	.	.000	.000	.032	.364	.000	.271	.227	.026

	highest degree - N/D	.000	.043	.000	.	.000	.061	.062	.000	.117	.066	.033
	year of highest N/D degree completion	.000	.000	.000	.000	.	.381	.000	.007	.003	.073	.038
	geographic location	.196	.490	.032	.061	.381	.	.439	.013	.183	.035	.426
	area of practice	.172	.000	.364	.062	.000	.439	.	.065	.002	.460	.000
	peer-reviewed articles	.000	.000	.000	.000	.007	.013	.065	.	.127	.292	.412
	Recode11SpecCert	.204	.001	.271	.117	.003	.183	.002	.127	.	.482	.009
	WorkStatusRecoded	.345	.069	.227	.066	.073	.035	.460	.292	.482	.	.023
	PreceptorRecode14	.032	.002	.026	.033	.038	.426	.000	.412	.009	.023	.
N	EBPQKnowledgeCompetence	474	474	474	474	474	474	474	474	474	474	474
	years of RDN experience	474	474	474	474	474	474	474	474	474	474	474
	highest degree - any field	474	474	474	474	474	474	474	474	474	474	474
	highest degree - N/D	474	474	474	474	474	474	474	474	474	474	474
	year of highest N/D degree completion	474	474	474	474	474	474	474	474	474	474	474

	geographic location	474	474	474	474	474	474	474	474	474	474	474
	area of practice	474	474	474	474	474	474	474	474	474	474	474
	peer-reviewed articles	474	474	474	474	474	474	474	474	474	474	474
	Recode11SpecCert	474	474	474	474	474	474	474	474	474	474	474
	WorkStatusRecoded	474	474	474	474	474	474	474	474	474	474	474
	PreceptorRecode14	474	474	474	474	474	474	474	474	474	474	474

Variables Entered/Removed[a]

Model	Variables Entered	Variables Removed	Method

1	PreceptorRecode14, geographic location, year of highest N/D degree completion, WorkStatusRecoded, peer-reviewed articles, Recode11SpecCert, area of practice, highest degree - any field, highest degree - N/D, years of RDN experience[b]	.	Enter
2	.	area of practice	Backward (criterion: Probability of F-to-remove >= .100).
3	.	geographic location	Backward (criterion: Probability of F-to-remove >= .100).

4	.	highest degree - N/D	Backward (criterion: Probability of F-to-remove >= .100).
5	.	years of RDN experience	Backward (criterion: Probability of F-to-remove >= .100).
6	.	Recode11SpecCert	Backward (criterion: Probability of F-to-remove >= .100).
7	.	WorkStatusRecoded	Backward (criterion: Probability of F-to-remove >= .100).

a. Dependent Variable: EBPQKnowledgeCompetence

b. All requested variables entered.

Model Summary[h]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.403[a]	.162	.144	10.37641	

2	.403[b]	.162	.146	10.36522	
3	.403[c]	.162	.148	10.35422	
4	.403[d]	.162	.150	10.34327	
5	.403[e]	.162	.151	10.33315	
6	.401[f]	.161	.152	10.33093	
7	.399[g]	.159	.152	10.33003	1.979

a. Predictors: (Constant), PreceptorRecode14, geographic location, year of highest N/D degree completion, WorkStatusRecoded, peer-reviewed articles, Recode11SpecCert, area of practice, highest degree - any field, highest degree - N/D, years of RDN experience

b. Predictors: (Constant), PreceptorRecode14, geographic location, year of highest N/D degree completion, WorkStatusRecoded, peer-reviewed articles, Recode11SpecCert, highest degree - any field, highest degree - N/D, years of RDN experience

c. Predictors: (Constant), PreceptorRecode14, year of highest N/D degree completion, WorkStatusRecoded, peer-reviewed articles, Recode11SpecCert, highest degree - any field, highest degree - N/D, years of RDN experience

d. Predictors: (Constant), PreceptorRecode14, year of highest N/D degree completion, WorkStatusRecoded, peer-reviewed articles, Recode11SpecCert, highest degree - any field, years of RDN experience

e. Predictors: (Constant), PreceptorRecode14, year of highest N/D degree completion, WorkStatusRecoded, peer-reviewed articles, Recode11SpecCert, highest degree - any field

f. Predictors: (Constant), PreceptorRecode14, year of highest N/D degree completion, WorkStatusRecoded, peer-reviewed articles, highest degree - any field

g. Predictors: (Constant), PreceptorRecode14, year of highest N/D degree completion, peer-reviewed articles, highest degree - any field

h. Dependent Variable: EBPQKnowledgeCompetence

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	9655.950	10	965.595	8.968	.000[b]
	Residual	49851.149	463	107.670		
	Total	59507.099	473			
2	Regression	9655.940	9	1072.882	9.986	.000[c]
	Residual	49851.159	464	107.438		
	Total	59507.099	473			
3	Regression	9654.530	8	1206.816	11.257	.000[d]
	Residual	49852.569	465	107.210		
	Total	59507.099	473			
4	Regression	9652.950	7	1378.993	12.890	.000[e]
	Residual	49854.149	466	106.983		
	Total	59507.099	473			
5	Regression	9643.667	6	1607.278	15.053	.000[f]
	Residual	49863.432	467	106.774		

	Total	59507.099	473			
6	Regression	9558.389	5	1911.678	17.912	.000[g]
	Residual	49948.710	468	106.728		
	Total	59507.099	473			
7	Regression	9460.369	4	2365.092	22.164	.000[h]
	Residual	50046.730	469	106.709		
	Total	59507.099	473			

a. Dependent Variable: EBPQKnowledgeCompetence

b. Predictors: (Constant), PreceptorRecode14, geographic location, year of highest N/D degree completion, WorkStatusRecoded, peer-reviewed articles, Recode11SpecCert, area of practice, highest degree - any field, highest degree - N/D, years of RDN experience

c. Predictors: (Constant), PreceptorRecode14, geographic location, year of highest N/D degree completion, WorkStatusRecoded, peer-reviewed articles, Recode11SpecCert, highest degree - any field, highest degree - N/D, years of RDN experience

d. Predictors: (Constant), PreceptorRecode14, year of highest N/D degree completion, WorkStatusRecoded, peer-reviewed articles, Recode11SpecCert, highest degree - any field, highest degree - N/D, years of RDN experience

e. Predictors: (Constant), PreceptorRecode14, year of highest N/D degree completion, WorkStatusRecoded, peer-reviewed articles, Recode11SpecCert, highest degree - any field, years of RDN experience

f. Predictors: (Constant), PreceptorRecode14, year of highest N/D degree completion, WorkStatusRecoded, peer-reviewed articles, Recode11SpecCert, highest degree - any field

g. Predictors: (Constant), PreceptorRecode14, year of highest N/D degree completion, WorkStatusRecoded, peer-reviewed articles, highest degree - any field

h. Predictors: (Constant), PreceptorRecode14, year of highest N/D degree completion, peer-reviewed articles, highest degree - any field

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B		Correlations			Collinearity Statistics	
		B	Std. Error	Beta			Lower Bound	Upper Bound	Zero-order	Partial	Part	Tolerance	VIF
1	(Constant)	74.858	4.991		14.998	.000	65.050	84.666					
	years of RDN experience	-.025	.097	-.028	-.261	.794	-.215	.165	-.131	-.012	-.011	.159	6.274
	highest degree - any field	3.306	1.888	.167	1.751	.081	-.404	7.017	.291	.081	.074	.200	5.010
	highest degree - N/D	-.239	1.970	-.012	-.122	.903	-4.111	3.632	.293	-.006	-.005	.180	5.559
	year of highest N/D degree completion	-.169	.099	-.186	-1.717	.087	-.363	.024	-.193	-.080	-.073	.153	6.520
	geographic location	.069	.602	.005	.115	.909	-1.114	1.252	.039	.005	.005	.974	1.026
	area of practice	-.002	.189	.000	-.009	.993	-.374	.371	-.044	.000	.000	.900	1.111
	peer-reviewed articles	3.390	.675	.243	5.020	.000	2.063	4.717	.279	.227	.214	.772	1.295
	Recode11SpecCert	.496	.553	.039	.895	.371	-.592	1.583	.038	.042	.038	.940	1.063
	WorkStatusRecoded	-1.456	1.498	-.042	-.972	.331	-4.399	1.487	-.018	-.045	-.041	.957	1.045

	PreceptorRecode14	1.188	.607	.087	1.956	.051	-.006	2.381	.085	.091	.083	.917	1.090
2	(Constant)	74.850	4.914		15.232	.000	65.193	84.507					
	years of RDN experience	-.025	.096	-.028	-.263	.793	-.215	.164	-.131	-.012	-.011	.160	6.233
	highest degree - any field	3.305	1.881	.167	1.758	.079	-.390	7.001	.291	.081	.075	.201	4.981
	highest degree - N/D	-.238	1.961	-.012	-.121	.903	-4.091	3.615	.293	-.006	-.005	.181	5.518
	year of highest N/D degree completion	-.169	.098	-.186	-1.719	.086	-.363	.024	-.193	-.080	-.073	.153	6.519
	geographic location	.069	.601	.005	.115	.909	-1.113	1.251	.039	.005	.005	.974	1.026
	peer-reviewed articles	3.390	.674	.243	5.031	.000	2.066	4.714	.279	.227	.214	.774	1.292
	Recode11SpecCert	.496	.547	.039	.907	.365	-.578	1.571	.038	.042	.039	.961	1.041
	WorkStatusRecoded	-1.456	1.496	-.042	-.974	.331	-4.395	1.483	-.018	-.045	-.041	.958	1.044
	PreceptorRecode14	1.189	.597	.087	1.991	.047	.015	2.362	.085	.092	.085	.947	1.056
3	(Constant)	74.947	4.835		15.500	.000	65.445	84.449					
	years of RDN experience	-.026	.096	-.029	-.271	.787	-.215	.163	-.131	-.013	-.011	.161	6.208
	highest degree - any field	3.313	1.877	.167	1.764	.078	-.377	7.002	.291	.082	.075	.201	4.975
	highest degree - N/D	-.238	1.958	-.012	-.121	.903	-4.086	3.611	.293	-.006	-.005	.181	5.518

	year of highest N/D degree completion	-.168	.098	-.186	-1.717	.087	-.361	.024	-.193	-.079	-.073	.154	6.494
	peer-reviewed articles	3.395	.671	.243	5.057	.000	2.076	4.715	.279	.228	.215	.778	1.285
	Recode11SpecCert	.499	.546	.040	.914	.361	-.574	1.571	.038	.042	.039	.962	1.039
	WorkStatusRecoded	-1.442	1.489	-.042	-.969	.333	-4.368	1.484	-.018	-.045	-.041	.965	1.037
	PreceptorRecode14	1.188	.596	.087	1.993	.047	.016	2.360	.085	.092	.085	.947	1.056
4	(Constant)	74.841	4.751		15.752	.000	65.505	84.178					
	years of RDN experience	-.028	.095	-.031	-.295	.768	-.214	.158	-.131	-.014	-.012	.165	6.047
	highest degree - any field	3.117	.966	.157	3.228	.001	1.219	5.015	.291	.148	.137	.758	1.320
	year of highest N/D degree completion	-.165	.095	-.182	-1.749	.081	-.351	.020	-.193	-.081	-.074	.166	6.038
	peer-reviewed articles	3.382	.662	.242	5.110	.000	2.082	4.683	.279	.230	.217	.799	1.251
	Recode11SpecCert	.493	.543	.039	.907	.365	-.575	1.560	.038	.042	.038	.970	1.031
	WorkStatusRecoded	-1.420	1.477	-.041	-.962	.337	-4.322	1.481	-.018	-.045	-.041	.979	1.022
	PreceptorRecode14	1.186	.596	.087	1.992	.047	.016	2.357	.085	.092	.084	.948	1.055
5	(Constant)	74.967	4.727		15.858	.000	65.678	84.257					
	highest degree - any field	3.059	.945	.154	3.239	.001	1.203	4.916	.291	.148	.137	.791	1.265

	year of highest N/D degree completion	-.190	.040	-.210	-4.726	.000	-.270	-.111	-.193	-.214	-.200	.909	1.100
	peer-reviewed articles	3.359	.656	.241	5.117	.000	2.069	4.648	.279	.230	.217	.811	1.233
	Recode11SpecCert	.484	.542	.038	.894	.372	-.581	1.549	.038	.041	.038	.972	1.028
	WorkStatusRecoded	-1.409	1.475	-.041	-.956	.340	-4.307	1.488	-.018	-.044	-.040	.979	1.021
	PreceptorRecode14	1.166	.591	.085	1.973	.049	.005	2.327	.085	.091	.084	.961	1.041
6	(Constant)	75.511	4.687		16.111	.000	66.301	84.722					
	highest degree - any field	3.080	.944	.155	3.262	.001	1.225	4.935	.291	.149	.138	.791	1.264
	year of highest N/D degree completion	-.186	.040	-.205	-4.654	.000	-.265	-.108	-.193	-.210	-.197	.921	1.086
	peer-reviewed articles	3.373	.656	.242	5.142	.000	2.084	4.662	.279	.231	.218	.811	1.232
	WorkStatusRecoded	-1.413	1.474	-.041	-.958	.338	-4.310	1.484	-.018	-.044	-.041	.979	1.021
	PreceptorRecode14	1.216	.588	.089	2.068	.039	.061	2.372	.085	.095	.088	.969	1.031
7	(Constant)	71.450	2.001		35.707	.000	67.518	75.382					
	highest degree - any field	3.150	.941	.159	3.347	.001	1.301	5.000	.291	.153	.142	.796	1.256
	year of highest N/D degree completion	-.183	.040	-.201	-4.585	.000	-.261	-.104	-.193	-.207	-.194	.929	1.076

	peer-reviewed articles	3.334	.655	.239	5.093	.000	2.048	4.621	.279	.229	.216	.815	1.228
	PreceptorRecode14	1.157	.585	.085	1.978	.049	.008	2.305	.085	.091	.084	.980	1.020

a. Dependent Variable: EBPQKnowledgeCompetence

Collinearity Diagnostics[a]

				Variance Proportions										
Model	Dimension	Eigenvalue	Condition Index	(Constant)	years of RDN experience	highest degree - any field	highest degree - N/D	year of highest N/D degree completion	geographic location	area of practice	peer-reviewed articles	Recode11SpecCert	WorkStatusRecoded	PreceptorRecode14
1	1	9.255	1.000	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
	2	.653	3.764	.00	.04	.00	.00	.04	.00	.00	.00	.00	.00	.00
	3	.331	5.289	.00	.00	.00	.00	.00	.00	.63	.00	.14	.00	.01
	4	.256	6.015	.00	.01	.00	.00	.00	.01	.07	.44	.17	.00	.02
	5	.181	7.142	.00	.00	.00	.00	.00	.02	.10	.15	.63	.00	.12
	6	.119	8.833	.00	.02	.03	.04	.00	.31	.02	.23	.01	.00	.00
	7	.106	9.339	.00	.00	.01	.01	.01	.23	.05	.16	.00	.00	.58
	8	.052	13.321	.04	.07	.00	.00	.07	.42	.09	.00	.03	.07	.21
	9	.030	17.427	.01	.82	.03	.00	.81	.00	.01	.00	.01	.03	.05
	10	.011	28.808	.01	.02	.90	.87	.05	.00	.00	.00	.01	.01	.00
	11	.006	40.922	.94	.01	.02	.07	.03	.00	.01	.01	.00	.88	.00
2	1	8.559	1.000	.00	.00	.00	.00	.00	.00		.00	.00	.00	.00

	2	.652	3.624	.00	.04	.00	.00	.04	.00		.00	.00	.00	.00
	3	.262	5.714	.00	.00	.00	.00	.00	.00		.37	.32	.00	.02
	4	.192	6.669	.00	.00	.00	.00	.00	.03		.23	.64	.00	.07
	5	.121	8.394	.00	.02	.03	.03	.00	.36		.14	.00	.00	.07
	6	.109	8.843	.00	.00	.02	.02	.00	.07		.25	.00	.00	.63
	7	.056	12.312	.04	.06	.00	.00	.04	.52		.00	.01	.06	.17
	8	.031	16.680	.01	.84	.03	.00	.84	.00		.00	.00	.03	.04
	9	.011	27.639	.01	.02	.90	.87	.05	.00		.00	.01	.01	.00
	10	.006	39.162	.94	.01	.01	.07	.03	.00		.01	.00	.89	.00
3	1	7.677	1.000	.00	.00	.00	.00	.00			.00	.00	.00	.00
	2	.640	3.464	.00	.04	.00	.00	.04			.01	.00	.00	.00
	3	.260	5.430	.00	.00	.00	.00	.00			.34	.38	.00	.02
	4	.186	6.428	.00	.00	.00	.00	.00			.28	.57	.00	.12
	5	.111	8.302	.00	.02	.04	.04	.00			.36	.01	.00	.35
	6	.079	9.882	.03	.05	.01	.01	.03			.00	.03	.04	.47
	7	.031	15.795	.01	.85	.03	.00	.85			.00	.00	.03	.04

	8	.011	26.176	.01	.02	.91	.87	.05			.00	.01	.01	.00
	9	.006	37.013	.95	.01	.01	.07	.04			.01	.00	.91	.00
4	1	6.788	1.000	.00	.00	.00		.00			.00	.00	.00	.00
	2	.582	3.414	.00	.04	.01		.04			.01	.01	.00	.01
	3	.253	5.182	.00	.00	.01		.00			.46	.34	.00	.02
	4	.185	6.064	.00	.00	.01		.00			.22	.62	.00	.13
	5	.089	8.715	.01	.00	.17		.01			.19	.01	.01	.76
	6	.067	10.087	.02	.11	.54		.06			.11	.01	.03	.04
	7	.031	14.883	.01	.84	.20		.88			.00	.00	.03	.04
	8	.006	34.204	.96	.00	.06		.02			.00	.01	.92	.00
5	1	6.061	1.000	.00		.00		.01			.00	.01	.00	.00
	2	.352	4.152	.00		.02		.83			.02	.00	.00	.00
	3	.249	4.929	.00		.01		.03			.46	.35	.00	.02
	4	.185	5.730	.00		.01		.00			.22	.62	.00	.14
	5	.089	8.236	.01		.18		.02			.20	.01	.01	.77
	6	.059	10.174	.03		.73		.08			.09	.01	.05	.07

	7	.006	32.273	.96		.05		.03			.00	.01	.93	.00
6	1	5.273	1.000	.00		.00		.01			.01		.00	.00
	2	.352	3.873	.00		.02		.83			.02		.00	.00
	3	.221	4.883	.00		.00		.01			.68		.00	.11
	4	.090	7.665	.01		.17		.02			.19		.01	.81
	5	.059	9.446	.02		.75		.09			.09		.05	.07
	6	.006	30.019	.97		.06		.03			.00		.94	.00
7	1	4.321	1.000	.00		.00		.01			.01			.01
	2	.347	3.530	.00		.03		.81			.04			.00
	3	.209	4.550	.02		.00		.02			.64			.18
	4	.085	7.125	.04		.38		.03			.29			.61
	5	.039	10.560	.94		.59		.11			.01			.20

a. Dependent Variable: EBPQKnowledgeCompetence

Excluded Variables[a]

Model		Beta In	t	Sig.	Partial Correlation	Collinearity Statistics		
						Tolerance	VIF	Minimum Tolerance

2	area of practice	.000[b]	-.009	.993	.000	.900	1.111	.153
3	area of practice	.000[c]	-.009	.993	.000	.900	1.111	.154
	geographic location	.005[c]	.115	.909	.005	.974	1.026	.153
4	area of practice	.000[d]	.002	.998	.000	.907	1.103	.165
	geographic location	.005[d]	.115	.909	.005	.974	1.026	.165
	highest degree - N/D	-.012[d]	-.121	.903	-.006	.181	5.518	.154
5	area of practice	-.001[e]	-.018	.986	-.001	.911	1.098	.790
	geographic location	.006[e]	.133	.894	.006	.978	1.022	.788
	highest degree - N/D	-.016[e]	-.167	.867	-.008	.186	5.374	.186
	years of RDN experience	-.031[e]	-.295	.768	-.014	.165	6.047	.165
6	area of practice	-.007[f]	-.151	.880	-.007	.932	1.073	.791
	geographic location	.007[f]	.164	.869	.008	.980	1.021	.789
	highest degree - N/D	-.008[f]	-.083	.934	-.004	.188	5.327	.188
	years of RDN experience	-.026[f]	-.246	.806	-.011	.166	6.029	.166
	Recode11SpecCert	.038[f]	.894	.372	.041	.972	1.028	.791
7	area of practice	-.008[g]	-.184	.854	-.009	.933	1.072	.796
	geographic location	.003[g]	.082	.935	.004	.987	1.013	.794
	highest degree - N/D	.003[g]	.034	.973	.002	.191	5.248	.191
	years of RDN experience	-.023[g]	-.222	.825	-.010	.166	6.026	.166
	Recode11SpecCert	.038[g]	.896	.371	.041	.972	1.028	.795
	WorkStatusRecoded	-.041[g]	-.958	.338	-.044	.979	1.021	.791

a. Dependent Variable: EBPQKnowledgeCompetence

b. Predictors in the Model: (Constant), PreceptorRecode14, geographic location, year of highest N/D degree completion, WorkStatusRecoded, peer-reviewed articles, Recode11SpecCert, highest degree - any field, highest degree - N/D, years of RDN experience

c. Predictors in the Model: (Constant), PreceptorRecode14, year of highest N/D degree completion, WorkStatusRecoded, peer-reviewed articles, Recode11SpecCert, highest degree - any field, highest degree - N/D, years of RDN experience

d. Predictors in the Model: (Constant), PreceptorRecode14, year of highest N/D degree completion, WorkStatusRecoded, peer-reviewed articles, Recode11SpecCert, highest degree - any field, years of RDN experience

e. Predictors in the Model: (Constant), PreceptorRecode14, year of highest N/D degree completion, WorkStatusRecoded, peer-reviewed articles, Recode11SpecCert, highest degree - any field

f. Predictors in the Model: (Constant), PreceptorRecode14, year of highest N/D degree completion, WorkStatusRecoded, peer-reviewed articles, highest degree - any field

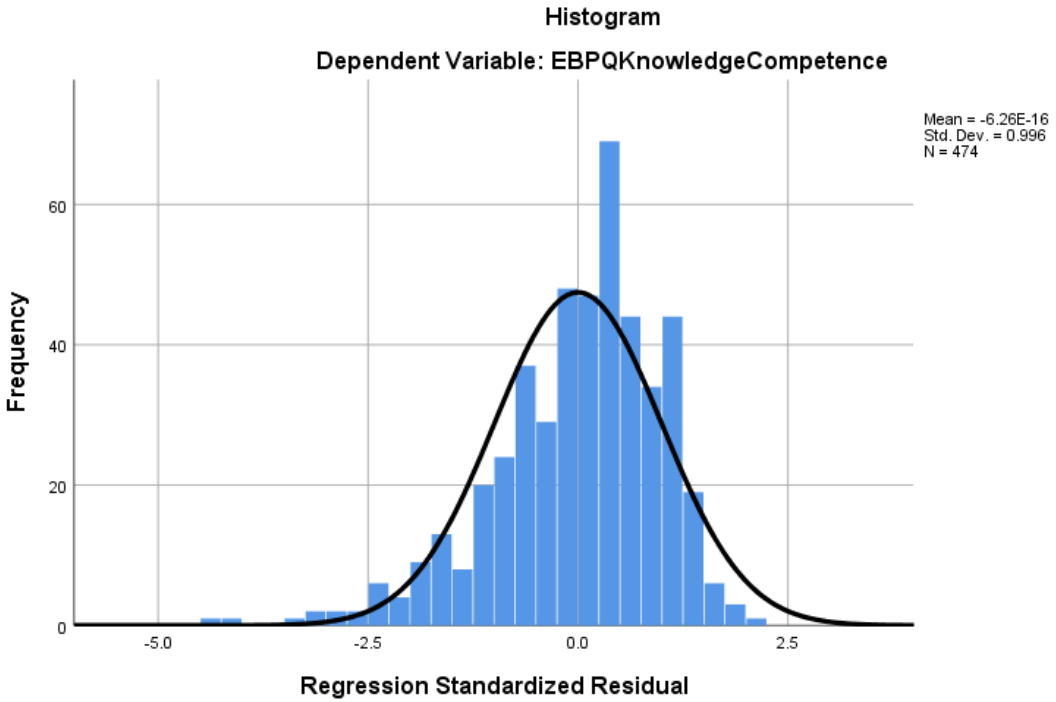
g. Predictors in the Model: (Constant), PreceptorRecode14, year of highest N/D degree completion, peer-reviewed articles, highest degree - any field

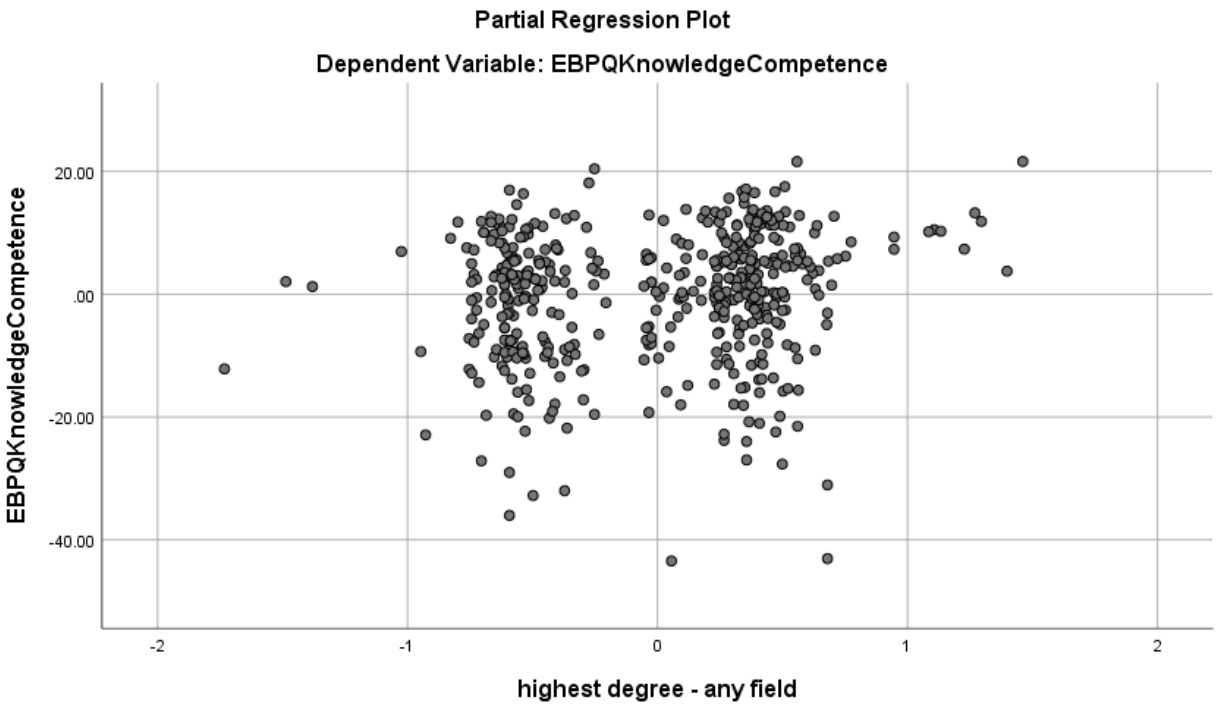
Residuals Statistics[a]

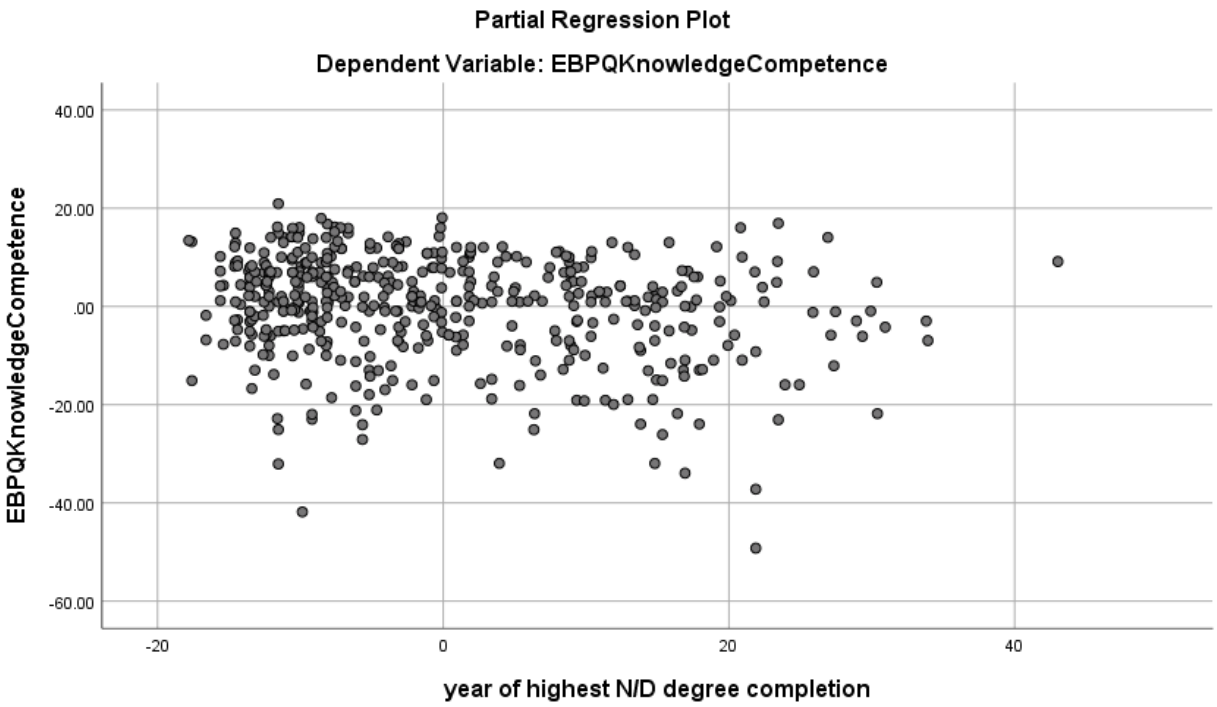
	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	70.7449	100.3092	80.7574	4.47222	474
Std. Predicted Value	-2.239	4.372	.000	1.000	474
Standard Error of Predicted Value	.640	2.792	1.015	.310	474
Adjusted Predicted Value	70.7619	101.3406	80.7574	4.48232	474
Residual	-45.21043	21.21879	.00000	10.28625	474
Std. Residual	-4.377	2.054	.000	.996	474
Stud. Residual	-4.411	2.072	.000	1.001	474
Deleted Residual	-45.92884	21.58169	.00000	10.38891	474
Stud. Deleted Residual	-4.501	2.079	-.001	1.004	474
Mahal. Distance	.820	33.555	3.992	4.097	474

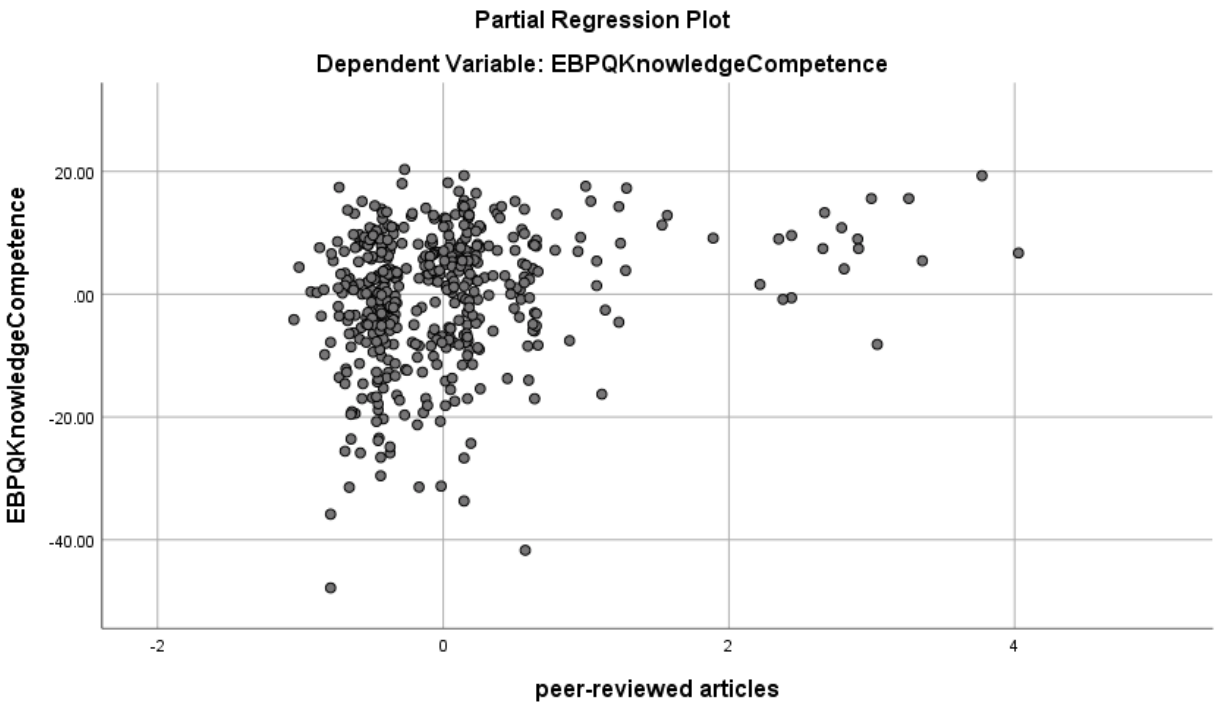
Cook's Distance	.000	.062	.002	.005	474
Centered Leverage Value	.002	.071	.008	.009	474

a. Dependent Variable: EBPQKnowledgeCompetence




Partial Regression Plot
Dependent Variable: EBPQKnowledgeCompetence
EBPQKnowledgeCompetence
20.00
.00
-20.00
-40.00
-2
-1
0
1
2
highest degree - any field


Partial Regression Plot
Dependent Variable: EBPQKnowledgeCompetence
EBPQKnowledgeCompetence
40.00
20.00
.00
-20.00
-40.00
-60.00
-20
0
20
40
year of highest N/D degree completion


Partial Regression Plot
Dependent Variable: EBPQKnowledgeCompetence
EBPQKnowledgeCompetence
20.00
.00
-20.00
-40.00
-2
0
2
4
peer-reviewed articles

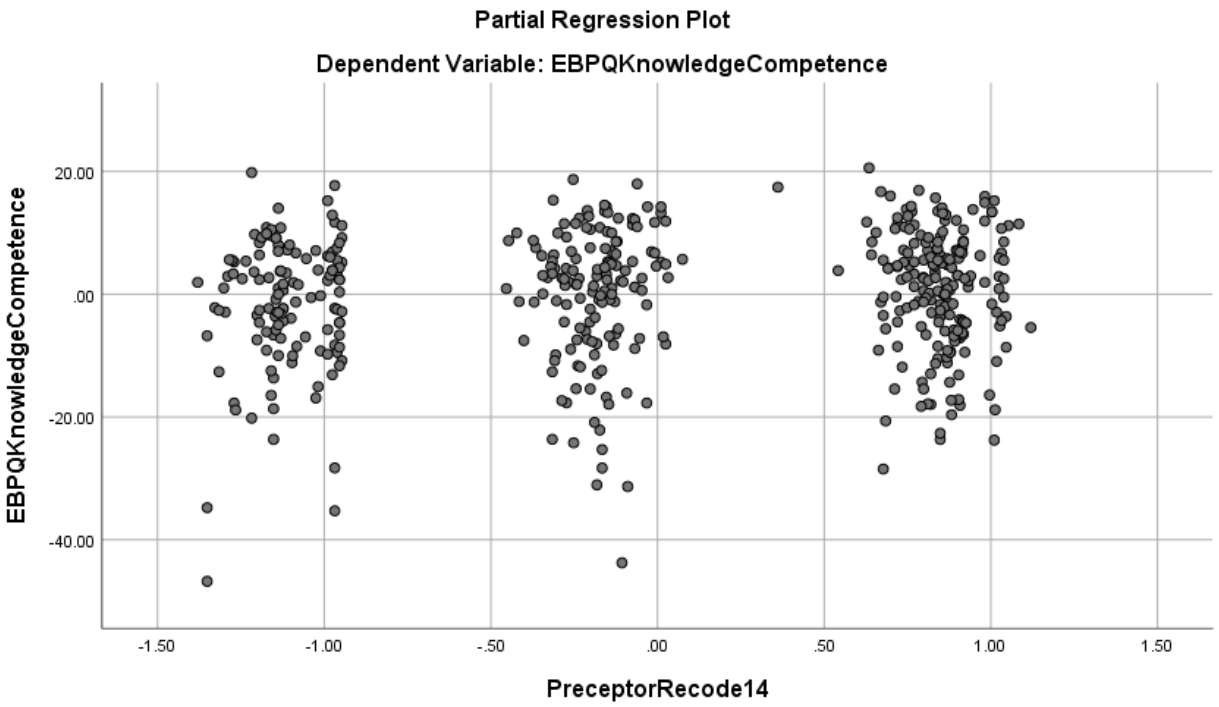

Partial Regression Plot
Dependent Variable: EBPQKnowledgeCompetence
EBPQKnowledgeCompetence
20.00
.00
-20.00
-40.00
-1.50
-1.00
-.50
.00
.50
1.00
1.50
PreceptorRecode14

Figure 54. Ordinal Regression SPSS Outputs for Item #19 (i.e., I am confident in my ability to use EBP)

Coefficients[a]

Model		Collinearity Statistics	
		Tolerance	VIF
1	years of RDN experience	.162	6.174
	highest degree - any field	.199	5.016
	highest degree - N/D	.180	5.542
	year of highest N/D degree completion	.156	6.401
	geographic location	.975	1.025
	area of practice	.899	1.113
	peer-reviewed articles	.772	1.295
	Recode11SpecCert	.938	1.066
	WorkStatusRecoded	.958	1.044
	PreceptorRecode14	.918	1.090

a. Dependent Variable: Q19

Test of Parallel Lines[a]

Model	-2 Log Likelihood	Chi-Square	df	Sig.
Null Hypothesis	875.448			
General	771.903[b]	103.545[c]	125	.919

The null hypothesis states that the location parameters (slope coefficients) are the same across response categories.

a. Link function: Logit.

b. The log-likelihood value cannot be further increased after maximum number of step-halving.

c. The Chi-Square statistic is computed based on the log-likelihood value of the last iteration of the general model. Validity of the test is uncertain.

Goodness-of-Fit

	Chi-Square	df	Sig.
Pearson	2901.105	2795	.079
Deviance	869.903	2795	1.000

Link function: Logit.

Model Fitting Information

Model	-2 Log Likelihood	Chi-Square	df	Sig.
Intercept Only	919.113			
Final	875.448	43.665	25	.012

Link function: Logit.

Parameter Estimates

				95% Wald Confidence Interval		Hypothesis Test				95% Wald Confidence Interval for Exp(B)	
Parameter		B	Std. Error	Lower	Upper	Wald Chi-Square	df	Sig.	Exp(B)	Lower	Upper
Threshold	[Q19=7.00]	1.928	.9622	.042	3.814	4.015	1	.045	6.876	1.043	45.331

	[Q19=6.00]	3.906	.9760	1.993	5.819	16.019	1	.000	49.723	7.341	336.800
	[Q19=5.00]	5.024	.9987	3.067	6.982	25.307	1	.000	152.034	21.471	1076.554
	[Q19=4.00]	5.553	1.0210	3.552	7.554	29.581	1	.000	257.995	34.878	1908.412
	[Q19=3.00]	5.674	1.0278	3.659	7.688	30.473	1	.000	291.154	38.836	2182.792
	[Q19=2.00]	6.379	1.0873	4.248	8.510	34.418	1	.000	589.384	69.961	4965.242
[highest degree - any field=1]		20.965	22357.2637	-43798.467	43840.396	.000	1	.999	1272877397.883	.000	.[a]
[highest degree - any field=2]		20.959	22357.2637	-43798.472	43840.391	.000	1	.999	1266312426.667	.000	.[a]
[highest degree - any field=3]		0[b]	.	.	.	.	.	.	1	.	.
[highest degree - N/D=1]		-19.501	22357.2637	-43838.933	43799.930	.000	1	.999	3.394E-9	.000	.[a]
[highest degree - N/D=2]		-19.730	22357.2637	-43839.162	43799.701	.000	1	.999	2.699E-9	.000	.[a]
[highest degree - N/D=3]		0[b]	.	.	.	.	.	.	1	.	.
[geographic location=1]		-.214	.4614	-1.118	.691	.215	1	.643	.808	.327	1.995
[geographic location=2]		-.277	.4136	-1.088	.534	.449	1	.503	.758	.337	1.705
[geographic location=3]		-.608	.4225	-1.436	.220	2.073	1	.150	.544	.238	1.246
[geographic location=4]		0[b]	.	.	.	.	.	.	1	.	.
[area of practice=1]		-.078	.3407	-.746	.589	.053	1	.818	.925	.474	1.803
[area of practice=2]		.275	.3227	-.357	.908	.729	1	.393	1.317	.700	2.479
[area of practice=3]		.374	.3512	-.314	1.063	1.135	1	.287	1.454	.730	2.894
[area of practice=4]		-.469	.6650	-1.773	.834	.498	1	.480	.625	.170	2.302
[area of practice=5]		1.018	.5149	.008	2.027	3.906	1	.048	2.766	1.008	7.589
[area of practice=6]		.185	.4509	-.698	1.069	.169	1	.681	1.204	.497	2.912
[area of practice=7]		.632	.3726	-.098	1.363	2.879	1	.090	1.882	.907	3.906
[area of practice=8]		0[b]	.	.	.	.	.	.	1	.	.

[peer-reviewed articles=1]	-.112	.8701	-1.818	1.593	.017	1	.897	.894	.162	4.920
[peer-reviewed articles=2]	-.344	.8744	-2.058	1.370	.154	1	.694	.709	.128	3.936
[peer-reviewed articles=3]	.180	1.0452	-1.869	2.228	.030	1	.863	1.197	.154	9.284
[peer-reviewed articles=4]	.811	1.1015	-1.348	2.969	.541	1	.462	2.249	.260	19.481
[peer-reviewed articles=5]	0[b]	.	.	.	.	.	.	1	.	.
[Recode11SpecCert=1.00]	.046	.2306	-.406	.498	.040	1	.842	1.047	.666	1.645
[Recode11SpecCert=2.00]	-1.078	.7282	-2.505	.349	2.192	1	.139	.340	.082	1.418
[Recode11SpecCert=3.00]	0[b]	.	.	.	.	.	.	1	.	.
[WorkStatusRecoded=2.00]	-.043	.3017	-.634	.548	.020	1	.887	.958	.530	1.731
[WorkStatusRecoded=3.00]	0[b]	.	.	.	.	.	.	1	.	.
[PreceptorRecode14=1.00]	.463	.2571	-.041	.967	3.240	1	.072	1.589	.960	2.629
[PreceptorRecode14=2.00]	.324	.2494	-.165	.813	1.684	1	.194	1.382	.848	2.254
[PreceptorRecode14=3.00]	0[b]	.	.	.	.	.	.	1	.	.
years of RDN experience	-.018	.0211	-.059	.023	.723	1	.395	.982	.942	1.024
year of highest N/D degree completion	.031	.0215	-.011	.073	2.106	1	.147	1.032	.989	1.076
(Scale)	1[c]									

Dependent Variable: Q19

Model: (Threshold), highest degree - any field, highest degree - N/D, geographic location, area of practice, peer-reviewed articles, Recode11SpecCert, WorkStatusRecoded, PreceptorRecode14, years of RDN experience, year of highest N/D degree completion

a. Set to system missing due to overflow

b. Set to zero because this parameter is redundant.

c. Fixed at the displayed value.

Figure 55. Ordinal Regression SPSS Outputs for Item #20.1 (i.e., Using EBP increases the likelihood that the proposed nutrition therapy recommendation is effective)

Model Fitting Information

Model	-2 Log Likelihood	Chi-Square	df	Sig.
Intercept Only	883.103			
Final	847.177	35.926	25	.073

Link function: Logit.

Goodness-of-Fit

	Chi-Square	df	Sig.
Pearson	2233.871	2789	1.000
Deviance	843.018	2789	1.000

Link function: Logit.

Test of Parallel Lines[a]

Model	-2 Log Likelihood	Chi-Square	df	Sig.
Null Hypothesis	847.177			
General	779.674[b]	67.503[c]	125	1.000

The null hypothesis states that the location parameters (slope coefficients) are the same across response categories.

a. Link function: Logit.

b. The log-likelihood value cannot be further increased after maximum number of step-halving.

c. The Chi-Square statistic is computed based on the log-likelihood value of the last iteration of the general model. Validity of the test is uncertain.

Omnibus Test[a]

Likelihood Ratio Chi-Square	df	Sig.
35.926	25	.073

Dependent Variable: Q20.1 RECODE

Model: (Threshold), highest degree - any field, highest degree - N/D, geographic location, area of practice, peer-reviewed articles, Recode11SpecCert, WorkStatusRecoded, PreceptorRecode14, years of RDN experience, year of highest N/D degree completion

a. Compares the fitted model against the thresholds-only model.

Figure 56. Ordinal Regression SPSS Outputs for Item #23 (i.e., Time spent reading the latest research evidence)

Omnibus Test[a]

Likelihood Ratio Chi-Square	df	Sig.
84.506	25	.000

Dependent Variable: Time spent reading research

Model: (Threshold), highest degree - any field, highest degree - N/D, geographic location, area of practice, peer-reviewed articles, Recode11SpecCert, WorkStatusRecoded, PreceptorRecode14, years of RDN experience, year of highest N/D degree completion

a. Compares the fitted model against the thresholds-only model.

Tests of Model Effects

Source	Type III Wald Chi-Square	df	Sig.
highest degree - any field	.709	2	.702
highest degree - N/D	.021	2	.990
geographic location	.572	3	.903
area of practice	8.334	7	.304
peer-reviewed articles	24.015	4	.000
Recode11SpecCert	7.479	2	.024
WorkStatusRecoded	.002	1	.967
PreceptorRecode14	.783	2	.676
years of RDN experience	.774	1	.379
year of highest N/D degree completion	2.657	1	.103

Dependent Variable: Time spent reading research

Model: (Threshold), highest degree - any field, highest degree - N/D, geographic location, area of practice, peer-reviewed articles, Recode11SpecCert, WorkStatusRecoded, PreceptorRecode14, years of RDN experience, year of highest N/D degree completion

Test of Parallel Lines[a]

Model	-2 Log Likelihood	Chi-Square	df	Sig.
Null Hypothesis	1554.539			
General	1453.221[b]	101.318[c]	100	.444

The null hypothesis states that the location parameters (slope coefficients) are the same across response categories.

a. Link function: Logit.

b. The log-likelihood value cannot be further increased after maximum number of step-halving.

c. The Chi-Square statistic is computed based on the log-likelihood value of the last iteration of the general model. Validity of the test is uncertain.

Goodness-of-Fit

	Chi-Square	df	Sig.
Pearson	2349.899	2320	.327
Deviance	1548.994	2320	1.000

Link function: Logit.

Parameter Estimates

Parameter		B	Std. Error	95% Wald Confidence Interval Lower	95% Wald Confidence Interval Upper	Hypothesis Test Wald Chi-Square	df	Sig.	Exp(B)	95% Wald Confidence Interval for Exp(B) Lower	95% Wald Confidence Interval for Exp(B) Upper
Threshold	[Time spent reading research=1]	-5.498	.8540	-7.172	-3.824	41.438	1	.000	.004	.001	.022
	[Time spent reading research=2]	-3.933	.8445	-5.588	-2.278	21.692	1	.000	.020	.004	.102
	[Time spent reading research=3]	-3.203	.8405	-4.851	-1.556	14.523	1	.000	.041	.008	.211
	[Time spent reading research=4]	-2.383	.8353	-4.021	-.746	8.141	1	.004	.092	.018	.474
	[Time spent reading research=5]	-1.366	.8282	-2.990	.257	2.722	1	.099	.255	.050	1.293
[highest degree - any field=1]		-.779	1.1415	-3.016	1.458	.466	1	.495	.459	.049	4.298
[highest degree - any field=2]		-.545	1.1180	-2.736	1.647	.237	1	.626	.580	.065	5.189
[highest degree - any field=3]		0[a]	.	.	.	.	.	.	1	.	.
[highest degree - N/D=1]		.155	1.2395	-2.274	2.585	.016	1	.900	1.168	.103	13.259
[highest degree - N/D=2]		.170	1.2061	-2.194	2.534	.020	1	.888	1.186	.112	12.606
[highest degree - N/D=3]		0[a]	.	.	.	.	.	.	1	.	.
[geographic location=1]		-.077	.4214	-.903	.749	.033	1	.855	.926	.405	2.115
[geographic location=2]		.065	.3803	-.681	.810	.029	1	.864	1.067	.506	2.249
[geographic location=3]		-.065	.3852	-.820	.690	.028	1	.867	.937	.441	1.994
[geographic location=4]		0[a]	.	.	.	.	.	.	1	.	.
[area of practice=1]		-.352	.2822	-.905	.201	1.558	1	.212	.703	.404	1.222

[area of practice=2]	-.214	.2817	-.766	.338	.578	1	.447	.807	.465	1.402
[area of practice=3]	.197	.3035	-.398	.792	.420	1	.517	1.217	.671	2.207
[area of practice=4]	.529	.5336	-.516	1.575	.984	1	.321	1.698	.597	4.832
[area of practice=5]	-.048	.4488	-.928	.831	.012	1	.914	.953	.395	2.296
[area of practice=6]	-.659	.3947	-1.433	.114	2.789	1	.095	.517	.239	1.121
[area of practice=7]	-.245	.3356	-.902	.413	.531	1	.466	.783	.406	1.511
[area of practice=8]	0[a]	.	.	.	.	.	.	1	.	.
[peer-reviewed articles=1]	-2.905	.7331	-4.342	-1.468	15.705	1	.000	.055	.013	.230
[peer-reviewed articles=2]	-2.235	.7250	-3.656	-.814	9.499	1	.002	.107	.026	.443
[peer-reviewed articles=3]	-1.795	.8634	-3.487	-.103	4.322	1	.038	.166	.031	.902
[peer-reviewed articles=4]	-.689	1.0101	-2.669	1.291	.465	1	.495	.502	.069	3.636
[peer-reviewed articles=5]	0[a]	.	.	.	.	.	.	1	.	.
[Recode11SpecCert=1.00]	-.307	.1972	-.694	.079	2.429	1	.119	.735	.500	1.082
[Recode11SpecCert=2.00]	.932	.5220	-.091	1.955	3.190	1	.074	2.540	.913	7.067
[Recode11SpecCert=3.00]	0[a]	.	.	.	.	.	.	1	.	.
[WorkStatusRecoded=2.00]	-.011	.2613	-.523	.501	.002	1	.967	.989	.593	1.651
[WorkStatusRecoded=3.00]	0[a]	.	.	.	.	.	.	1	.	.
[PreceptorRecode14=1.00]	-.149	.2232	-.587	.288	.448	1	.503	.861	.556	1.334
[PreceptorRecode14=2.00]	-.171	.2161	-.595	.252	.627	1	.428	.843	.552	1.287
[PreceptorRecode14=3.00]	0[a]	.	.	.	.	.	.	1	.	.
years of RDN experience	.015	.0170	-.018	.048	.774	1	.379	1.015	.982	1.049
year of highest N/D degree completion	-.028	.0174	-.062	.006	2.657	1	.103	.972	.940	1.006
(Scale)	1[b]									

Dependent Variable: Time spent reading research

Model: (Threshold), highest degree - any field, highest degree - N/D, geographic location, area of practice, peer-reviewed articles, Recode11SpecCert, WorkStatusRecoded, PreceptorRecode14, years of RDN experience, year of highest N/D degree completion

a. Set to zero because this parameter is redundant.

b. Fixed at the displayed value.

Figure 57. Ordinal Regression SPSS Outputs for Item #27.6 (i.e., EBP should be an integral part of nutrition and dietetic practice)

Test of Parallel Lines[a]

Model	-2 Log Likelihood	Chi-Square	df	Sig.
Null Hypothesis	957.963			
General	872.176[b]	85.787[c]	125	.997

The null hypothesis states that the location parameters (slope coefficients) are the same across response categories.

a. Link function: Logit.

b. The log-likelihood value cannot be further increased after maximum number of step-halving.

c. The Chi-Square statistic is computed based on the log-likelihood value of the last iteration of the general model. Validity of the test is uncertain.

Goodness-of-Fit

	Chi-Square	df	Sig.
Pearson	2823.015	2795	.351
Deviance	952.418	2795	1.000

Link function: Logit.

Model Fitting Information

Model	-2 Log Likelihood	Chi-Square	df	Sig.
Intercept Only	1018.559			
Final	957.963	60.596	25	.000

Link function: Logit.

Omnibus Test[a]

Likelihood Ratio Chi-Square	df	Sig.
60.596	25	.000

Dependent Variable: Q27.6 RECODE

Model: (Threshold), highest degree - any field, highest degree - N/D, geographic location, area of practice, peer-reviewed articles, Recode11SpecCert, WorkStatusRecoded, PreceptorRecode14, years of RDN experience, year of highest N/D degree completion

a. Compares the fitted model against the thresholds-only model.

Tests of Model Effects

Source	Type III Wald Chi-Square	df	Sig.

highest degree - any field	.469	2	.791
highest degree - N/D	.174	2	.917
geographic location	3.251	3	.355
area of practice	4.840	7	.679
peer-reviewed articles	7.434	4	.115
Recode11SpecCert	2.439	2	.295
WorkStatusRecoded	4.505	1	.034
PreceptorRecode14	.207	2	.902
years of RDN experience	.215	1	.643
year of highest N/D degree completion	4.056	1	.044

Dependent Variable: Q27.6 RECODE

Model: (Threshold), highest degree - any field, highest degree - N/D, geographic location, area of practice, peer-reviewed articles, Recode11SpecCert, WorkStatusRecoded, PreceptorRecode14, years of RDN experience, year of highest N/D degree completion

Parameter Estimates

				95% Wald Confidence Interval		Hypothesis Test				95% Wald Confidence Interval for Exp(B)	
Parameter		B	Std. Error	Lower	Upper	Wald Chi-Square	df	Sig.	Exp(B)	Lower	Upper
Threshold	[Q27.6 RECODE=7.00]	3.613	1.2890	1.087	6.140	7.859	1	.005	37.095	2.966	463.989
	[Q27.6 RECODE=6.00]	5.279	1.2989	2.733	7.825	16.516	1	.000	196.161	15.380	2501.913

	[Q27.6 RECODE=5.00]	6.804	1.3173	4.222	9.386	26.680	1	.000	901.608	68.194	11920.394
	[Q27.6 RECODE=4.00]	8.139	1.3727	5.449	10.829	35.156	1	.000	3425.202	232.413	50479.156
	[Q27.6 RECODE=3.00]	8.655	1.4211	5.870	11.441	37.095	1	.000	5740.464	354.249	93022.036
	[Q27.6 RECODE=2.00]	9.063	1.4793	6.164	11.963	37.538	1	.000	8633.363	475.339	156803.960
[highest degree - any field=1]		.943	1.5243	-2.044	3.931	.383	1	.536	2.568	.129	50.948
[highest degree - any field=2]		.799	1.5210	-2.182	3.780	.276	1	.599	2.223	.113	43.818
[highest degree - any field=3]		0[a]	.	.	.	.	.	.	1	.	.
[highest degree - N/D=1]		-.279	1.6989	-3.608	3.051	.027	1	.870	.757	.027	21.140
[highest degree - N/D=2]		-.418	1.6862	-3.723	2.887	.062	1	.804	.658	.024	17.931
[highest degree - N/D=3]		0[a]	.	.	.	.	.	.	1	.	.
[geographic location=1]		-.247	.4653	-1.159	.665	.281	1	.596	.781	.314	1.945
[geographic location=2]		.143	.4142	-.669	.954	.118	1	.731	1.153	.512	2.597
[geographic location=3]		-.196	.4218	-1.023	.630	.216	1	.642	.822	.360	1.879
[geographic location=4]		0[a]	.	.	.	.	.	.	1	.	.
[area of practice=1]		-.039	.3224	-.671	.593	.015	1	.903	.962	.511	1.809
[area of practice=2]		.063	.3148	-.554	.680	.040	1	.842	1.065	.574	1.974
[area of practice=3]		.466	.3373	-.195	1.127	1.907	1	.167	1.593	.823	3.086
[area of practice=4]		.347	.6034	-.835	1.530	.331	1	.565	1.415	.434	4.618
[area of practice=5]		.288	.5502	-.790	1.367	.274	1	.600	1.334	.454	3.922
[area of practice=6]		.577	.4197	-.245	1.400	1.892	1	.169	1.781	.782	4.055
[area of practice=7]		.214	.3679	-.507	.935	.337	1	.561	1.238	.602	2.547
[area of practice=8]		0[a]	.	.	.	.	.	.	1	.	.
[peer-reviewed articles=1]		2.400	1.2091	.030	4.769	3.939	1	.047	11.019	1.030	117.856

[peer-reviewed articles=2]	1.784	1.2030	-.574	4.142	2.199	1	.138	5.952	.563	62.898
[peer-reviewed articles=3]	1.607	1.3559	-1.050	4.265	1.405	1	.236	4.990	.350	71.165
[peer-reviewed articles=4]	1.887	1.4432	-.942	4.715	1.709	1	.191	6.598	.390	111.662
[peer-reviewed articles=5]	0[a]	.	.	.	.	.	.	1	.	.
[Recode11SpecCert=1.00]	.162	.2230	-.275	.599	.528	1	.468	1.176	.760	1.820
[Recode11SpecCert=2.00]	-.760	.6496	-2.033	.513	1.369	1	.242	.468	.131	1.670
[Recode11SpecCert=3.00]	0[a]	.	.	.	.	.	.	1	.	.
[WorkStatusRecoded=2.00]	-.671	.3160	-1.290	-.051	4.505	1	.034	.511	.275	.950
[WorkStatusRecoded=3.00]	0[a]	.	.	.	.	.	.	1	.	.
[PreceptorRecode14=1.00]	-.087	.2523	-.581	.408	.119	1	.731	.917	.559	1.503
[PreceptorRecode14=2.00]	.034	.2379	-.432	.501	.021	1	.885	1.035	.649	1.650
[PreceptorRecode14=3.00]	0[a]	.	.	.	.	.	.	1	.	.
years of RDN experience	-.009	.0203	-.049	.030	.215	1	.643	.991	.952	1.031
year of highest N/D degree completion	.042	.0207	.001	.082	4.056	1	.044	1.042	1.001	1.086
(Scale)	1[b]									

Dependent Variable: Q27.6 RECODE

Model: (Threshold), highest degree - any field, highest degree - N/D, geographic location, area of practice, peer-reviewed articles, Recode11SpecCert, WorkStatusRecoded, PreceptorRecode14, years of RDN experience, year of highest N/D degree completion

a. Set to zero because this parameter is redundant.

b. Fixed at the displayed value.

Appendix N **Pearson's Correlation Coefficient SPSS Outputs (self-assessed knowledge correlated to objective knowledge)**

Figure 58. Scatterplot of Objective and Subjective Knowledge to Assess for Assumptions of Linearity and Outliers

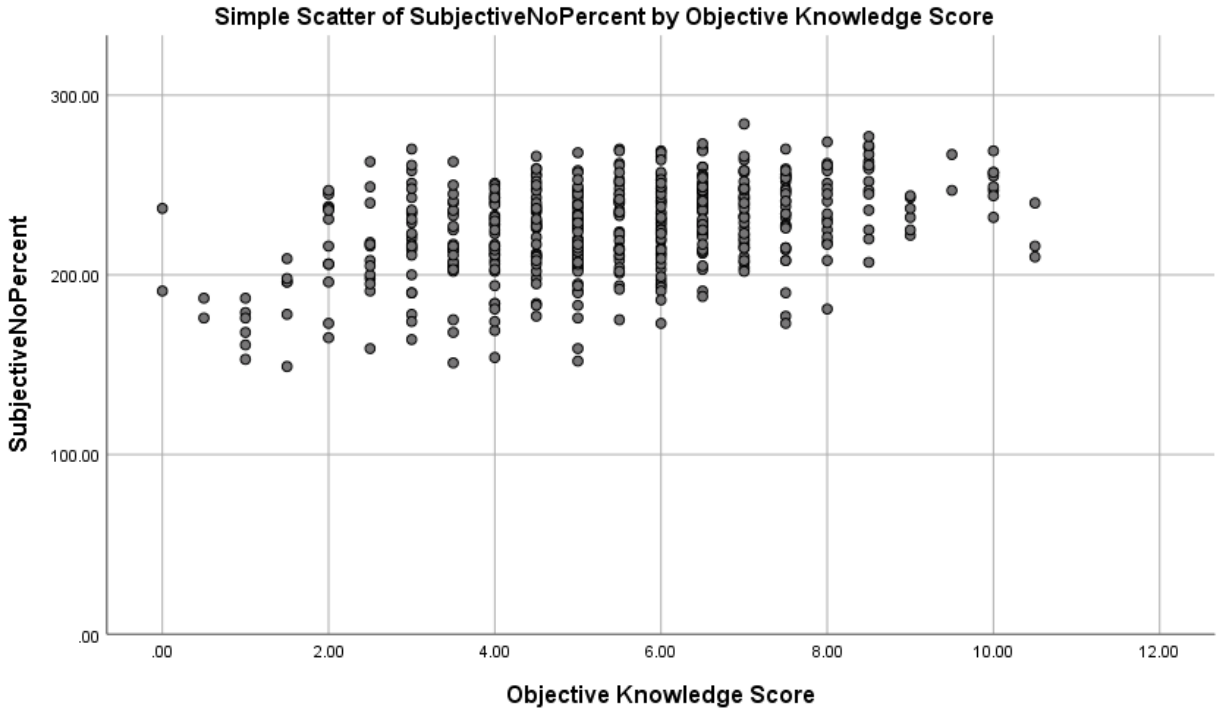
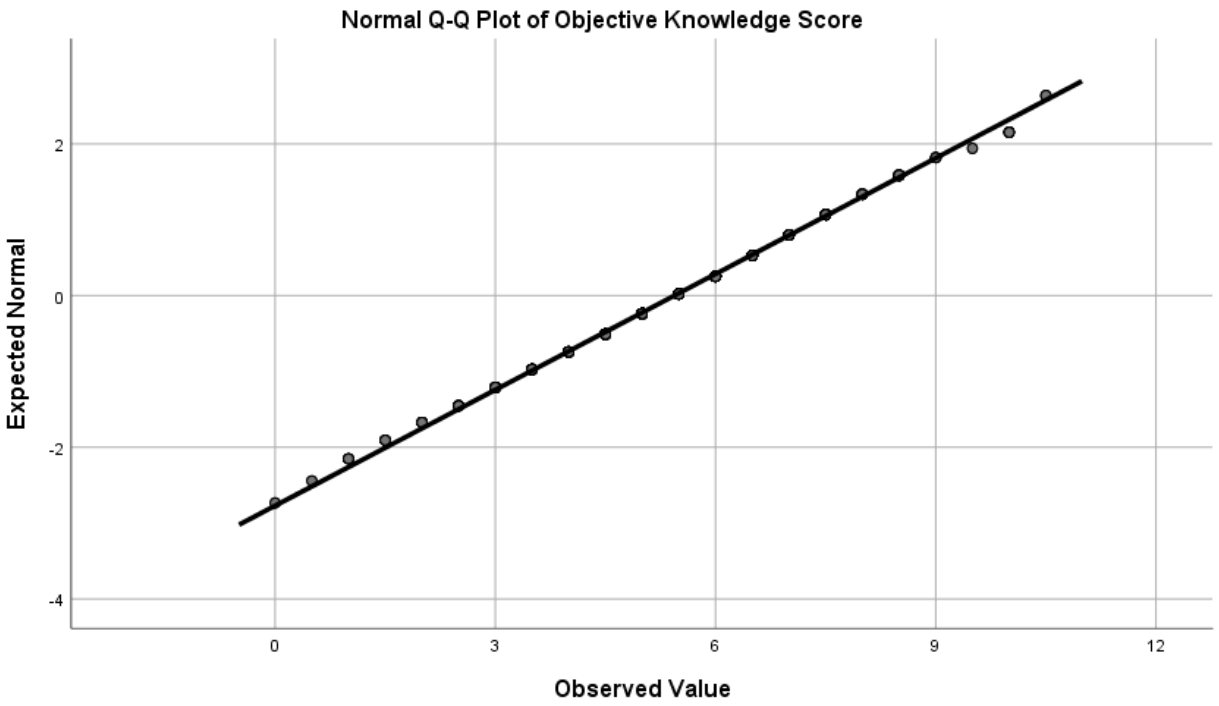
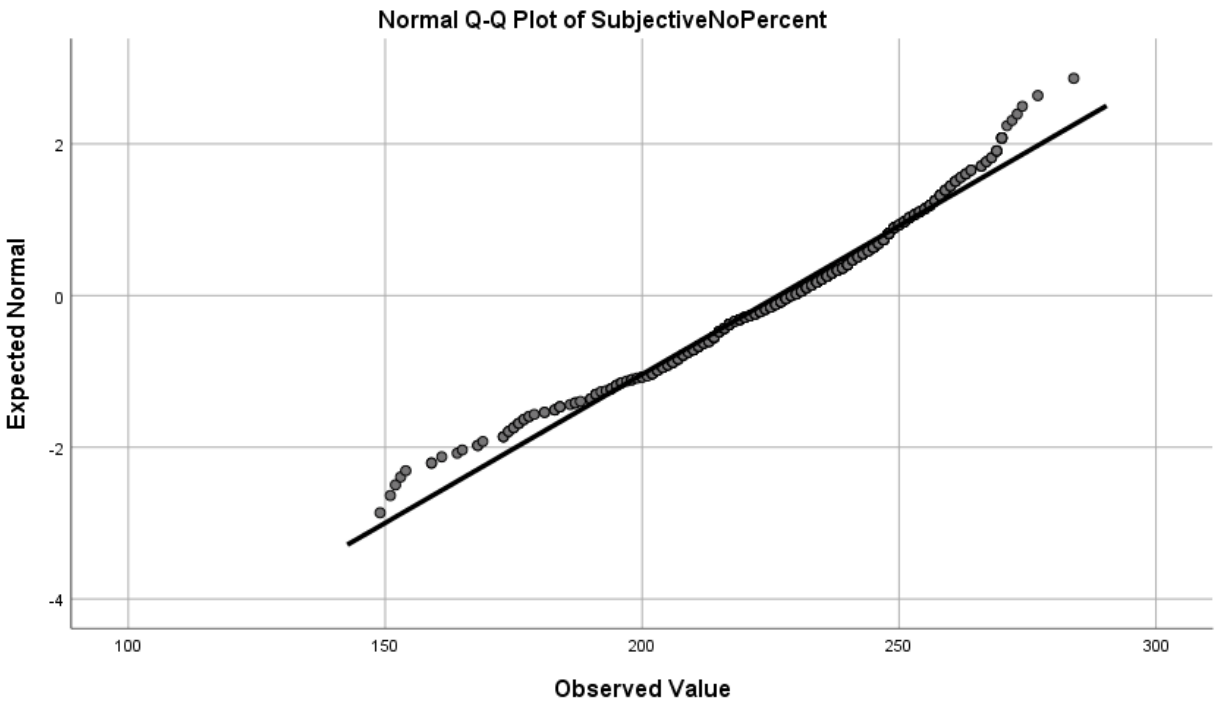


Figure 59. SPSS Outputs to Assess for Normal Distribution & Pearson's Correlation Coefficient - Subjective & Objective Knowledge Correlation


Normal Q-Q Plot of Objective Knowledge Score
Expected Normal
2
0
-2
-4
0
3
6
9
12
Observed Value



Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation	Skewness		Kurtosis	
	Statistic	Statistic	Statistic	Statistic	Statistic	Statistic	Std. Error	Statistic	Std. Error
SubjectiveNoPercent	477	149.00	284.00	226.5115	25.52702	-.534	.112	.045	.223

Objective Knowledge Score	482	.00	10.50	5.4284	1.97452	-.069	.111	-.079	.222
Valid N (listwise)	477								

Correlations

		SubjectiveNoPercent	Objective Knowledge Score
SubjectiveNoPercent	Pearson Correlation	1	.410**
	Sig. (2-tailed)		.000
	N	477	477
Objective Knowledge Score	Pearson Correlation	.410**	1
	Sig. (2-tailed)	.000	
	N	477	482

**. Correlation is significant at the 0.01 level (2-tailed).

Correlations

		Objective Knowledge Score	EBPQ
Objective Knowledge Score	Pearson Correlation	1	.353**
	Sig. (2-tailed)		.000
	N	482	481
EBPQ	Pearson Correlation	.353**	1
	Sig. (2-tailed)	.000	
	N	481	481

**. Correlation is significant at the 0.01 level (2-tailed).