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Education

2014-2018	**University of Maryland** – Baltimore, MD PhD, Social Work. Dissertation Title: *Healthcare Provider Communication with Young Adults: Patient-Centered Communication, Patient Satisfaction, Patient Trust, Social Support, Self-Care Skills, and Emotional Well-Being*
2010-2013	**Salisbury University** – Hagerstown, MD Master of Social Work
2001-2004	**Penn State University** – University Park, PA B.A.-Crime, Law and Justice; Minor-Sociology

Professional Social Work Experience

2017-present	**Cancer Support Community**, Washington, D. C. Research Fellow, Cancer Policy Institute
2014-2018	**University of Maryland**, Baltimore, MD Graduate Research Assistant, School of Social Work
2014-2015, 2017	**Sheppard Pratt Health System**, Towson, MD Mental Health Worker (2014-2015)/Study Coordinator (2017)
2013-2014	**Washington County Detention Center**, Hagerstown, MD Mental Health Professional
2012-2013	**Villa Maria of Frederick—Catholic Charities**, Frederick, MD Therapist

Clinical Licenses

2013-2017	**Licensed Graduate Social Worker (LGSW), #18935** Maryland Board of Social Work Examiners
2012-2017	**Certified Alcohol and Drug Counselor Trainee, #ADT555** Maryland Board of Professional Counselors and Therapists

Peer Reviewed Publications

Swanberg, J. E., **Nichols, H. M.**, Clouser, J. M., Check, P., Edwards, L., Bush, A. M., Padilla,

Y., & Betz, G. (2018). A systematic review of community health workers' role in occupational safety and health research. *Journal of Immigrant and Minority Health.* (In Press)

Dababnah, S., Rizo, C. F., Campion, K., **Nichols, H. M.**, & Downton, K. (2018). The relationship between children's exposure to intimate partner violence and intellectual and developmental disabilities: A systematic review of the literature. *American Journal of Intellectual and Developmental Disabilities.* (In Press)

Nichols, H. M., & Swanberg, J. E. (2018). Measuring work-life conflict among low-wage workers: Exploratory and confirmatory factor analyses. *Journal of the Society for Social Work and Research.* (In Press)

Nichols, H. M., Swanberg, J. E., & Vanderpool, R. C. (2018). Patient-provider communication: Experiences of low-wage earning breast cancer survivors in managing cancer and work. *Journal of Cancer Education* (In Press).

Vanderpool, R. C., **Nichols, H.,** Hoffler, E. F., & Swanberg, J. E. (2017). Cancer and employment issues: Perspectives from cancer patient navigators. *Journal of Cancer Education, 32*(3), 460-466.

Bires, J., Franklin, E. F., **Nichols, H. M.**, & Cagle, J. G. (2017). Advance care planning communication: Oncology patients and providers voice their perspectives. *Journal of Cancer Education*. (Epub ahead of print).

Swanberg, J. E., **Nichols, H. M.,** Ko, J., Tracy, J. K., & Vanderpool, R. C. (2017). Strategies used by working poor breast cancer survivors to manage the cancer-work interface. *Journal of Psychosocial Oncology, 35*(2), 180-201.

Edwards, L., Olsen, J., Fancher, H., & **Nichols, H. M.** (2016). Facilitating student safety in communities: Applying an international model in an urban U. S. city. *Annals of Global Health, 82*(6), 1064-1069.

Nichols, H. M., Swanberg, J. E., & Bright, C. L. (2016). How does supervisor support influence turnover intent among frontline hospital workers? The mediating role of affective commitment. *Health Care Manager, 35*(3), 266-279.

Swanberg, J. E., **Nichols, H. M.,** & Perry-Jenkins, M. (2016). Working on the frontlines in U. S. hospitals: Scheduling challenges and turnover intent among housekeepers and dietary service workers. *Journal of Hospital Administration, 5*(4), 76-86.

Manuscripts under Review

Dababnah, S., Shaia, W. E., Campion, K., & Nichols, H. M. "We had to keep pushing": Black caregivers' perspectives on autism screening and referral practices in primary care. *Intellectual and Developmental Disabilities*. (Revise & Resubmit)

Tracy, J. K., Vanderpool, R. C., Rosenblatt, P., **Nichols, H. M.**, & Swanberg, J. E. Disparities in work conditions, productivity, and employment outcomes among working poor and working non-poor cancer survivors. (Under Review)

Nichols, H. M., Swanberg, J. E., Vanderpool, R. C., & Franklin, E. Patient-provider communication and depression among cancer patients: A review of the literature. (Under Review).

Dababnah, S. Olson, E. M., & **Nichols, H. M**. Multisite pilot trial of *The Incredible Years Parent Program for Preschool Children on the Autism Spectrum*. (Under Review)

Franklin, E. F. & **Nichols, H. M.**, Charap, E., Buzzaglo, J. S., Zaleta, A. K., & House, L. Cancer patient perspectives on the Quality Adjusted Life Year as a measure of value in health care. (Under Review)

Manuscripts in Preparation
Shaia, W., **Nichols, H. M.**, Dababnah, S., & Campion, K. African American involvement in autism research
Dababnah, S., Shaia, W., **Nichols, H. M.**, & Campion, K. Stress and coping among African American caregivers of children with ASD.
Nichols, H. M., Dababnah, S., Mazefsky, C., Troen, B., Mahajan, R., Vizzoli, J., & Peura, C. Racial disparities in an inpatient sample of youth with ASD: Nonverbal IQ, problem behaviors, verbal ability, and social functioning.

Refereed Conference Presentations

*Nichols, H. M., Dababnah, S., Mazefsky, C. A., Troen, B., Mahajan, R., Peura. C., & Vezzoli, J. (July 2018). Outcome Differences in a Sample of Inpatient African-American and White Youth with Autism. In TBD (Chair), *Approaches to Support for People with ASD.* Symposium conducted at the International Association for the Scientific Study of Intellectual and Developmental Disabilities. Athens, Greece.
Nichols, H. M., & *Swanberg, J. E. (June 2016). Working on the Frontlines in U.S. Hospitals: Scheduling Challenges and Turnover Intent among Housekeepers and Dietary Service Workers. In Haley-Lock, A. (Chair), *Happy workers and productive organizations.* Symposium conducted at the 2016 Annual Work and Family Researchers Network Conference. Washington, D. C.
Vanderpool, R. C., **Nichols, H. M.,** & *Swanberg, J. E. (June 2016). How Do Women in Low-Wage Jobs Manage a Cancer Diagnosis? Examining Workplace Supports, Employee Benefits, Receipt of Cancer Care, and Mental Health and Employment Outcomes. In Yerkes, M. A. (Chair), *Work and family in relation to health and wellbeing.* Symposium conducted at the 2016 Annual Work and Family Researchers Network Conference. Washington, D. C.
*Swanberg, J. E., **Nichols, H. M.** (January 2016). Is It Time to Pull the Plug on Poor Scheduling Practices in the U.S. Hospitals? Healthcare Support Workers, Scheduling Challenges & Intent to Leave. Paper presented at the 2016 Annual Society for Social for Social Work and Research Conference. Washington, D. C.
*Swanberg, J. E., **Nichols, H. M.,** Perry-Jenkins, M., & Newkirk, K. (May 2015). Wait, was I supposed to work today? The impact of supervisor support and scheduling challenges on low-wage worker turnover in the outsourcing industry. Paper presented at the 2015 International Community Work and Family Conference. Malmö, Sweden.

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Refereed Poster Presentations

Mahajan, R., ***Nichols, H. M.**, Troen, B., & Mazefsky, C. A. (May 2018). Parent-rated anxiety symptoms in youth with ASD and their association with problem behaviors in an inpatient setting. Poster presented at the International Society for Autism Research (INSAR) Annual Meeting. Rotterdam, The Netherlands.

***Nichols, H. M.**, Dababnah, S., Mazefsky, C. A., Troen, B., Mahajan, R., & Vezzoli, J. Racial disparities in an inpatient sample of youth with ASD: problem behaviors, communication, and social functioning. Poster presented at the International Society for Autism Research (INSAR) Annual Meeting. Rotterdam, The Netherlands.

*Scheele, C., Seymour, W., Levy, L., **Nichols, H.**, Swanberg, J. E., & Tracy, J. K. (05 November 2017). Association between income and disordered gambling in an urban environment. Poster presented at the 2017 American Public Health Association Conference. Atlanta, GA.

*Seymour, W. Scheele, C., Monaghan, A., **Nichols, H.**, Levy, L., Swanberg, J. E., & Tracy, J. K. (05 November 2017). Factors related to disordered gambling behavior and employment status in the Baltimore, MD area. Poster presented at the 2017 American Public Health Association Conference. Atlanta, GA.

*Monaghan, A., Scheele, C., Seymour, W., **Nichols, H.**, Levy, L., Swanberg, J. E., & Tracy, J. K. (06 November 2017). Depression as a predictor of disordered gambling behavior. Poster presented at the 2017 American Public Health Association Conference. Atlanta, GA.

Research to Practice Applied Research Reports

Swanberg, J. E., & **Nichols, H. M.** (2015). On the Frontlines of Sodexo's Healthcare Division: The Quality of Work-Life Study – Study Brief. Sodexo USA. http://viewer.zmags.com/publication/c804e27d#/c804e27d/1

Other Publications

Tandeske, W., & **Nichols, H. M.** (2016). Workplace violence and terrorism: Best practices for a new reality. In *2016 Workplace Trends* (pp. 13-19). Sodexo USA. http://viewer.zmags.com/publication/955b8f2f#/955b8f2f/8

Nichols, H. M. (2016). Hospital room service dining: A paradigm shift with a positive impact on the entire hospital. White paper: Sodexo USA. http://viewer.zmags.com/publication/fda8b378#/fda8b378/1

Grants and Contracts

Previously Funded Research Grants

2016-2017   Graduate Research Assistant. (J. Swanberg, PI, University of Maryland). Understanding the Influence of Employment Conditions on Working Poor and Working Non-Poor Cancer Survivors' Job Productivity. (University of Maryland Research Incentive Award: ($19,754)

Grants Submitted, not funded

2017   H. Nichols, PI. Patient-Provider Communication and Depression Among Cancer Survivors. Submission to American Cancer Society. (Total Award Request: $40,000; received score of "excellent")

2015   Project Manager (J. Swanberg, PI, University of Maryland). Job Quality and Turnover for Low-Wage Workers: Can Supervisor Support Training Make the Difference? Submission to Russell Sage Foundation. (Total Award Request: $137,000)

Teaching Activities

2018-present Adjunct Faculty, Boise State Idaho, MSW Program
             Foundations of Research II (SOCWRK 531)
2017-present Adjunct Faculty, Widener University, MSW Program
             Methods of Social Work Research (SW520), Social and Economic Justice I and II (SW540/SW541)
2016-2017   Tutor, University of Maryland School of Social Work, PhD Program
             Data Analysis (SOWK805)
2016   Teaching Assistant, University of Maryland School of Social Work, MSW Program, Social Work Research Methods (SOWK670)

Academic Honors

2015   University of Maryland Baltimore School of Social Work Travel Fellowship to attend 2015 Society for Social Work Research Conference
2013   Academic Achievement Award, Salisbury University MSW Program

Professional Service

2018   Invited Panelist – Professional Development Series, Academic Writing, PhD Program, University of Maryland School of Social Work
2015-2017   Orientation Speaker – PhD Program, University of Maryland School of Social Work

Journal Reviewer
2015-2016   *Perspectives on Social Work*

Other Professional Experience

2017-present   **VTConnect**, Ashburn, VA
                    Principal Partner, VP Sales & Research Analyst
2007-2009   **Edelman Financial Services**, Fairfax, VA
                    Financial Planner
2006-2007   **Bank of America**, McLean, VA
                    Assistant Vice President of Investments, Financial Advisor
2004-2006   **Edward Jones**, Leesburg, VA
                    Financial Advisor

Other Professional Licenses

2007-present   **Accredited Asset Management Specialist (AAMS)**
                    College for Financial Planning
2005-2013   **Series 65, #4802174**
                    Financial Regulatory Authority (FINRA)
2004-2013   **Series 7 and 63, #4802174**
                    Financial Regulatory Authority (FINRA)
2007-2009   **Life & Health Insurance, Producer NPN # 8277543**
                    State of Virginia Bureau of Insurance
2004-2006   **Life & Health Insurance, Producer #99918747**
                    State of Maryland Insurance Administration

ABSTRACT

Title of Dissertation: Healthcare Provider Communication with Young Adults: Patient-Centered Communication, Patient Satisfaction, Patient Trust, Social Support, Self-Care Skills, and Emotional Well-Being

Helen M. Nichols, Doctor of Philosophy, 2018

Dissertation Directed by: Paul Sacco, Ph.D., LCSW, Associate Professor, School of Social Work, University of Maryland, Baltimore

Patient-centered communication is critical to the delivery of quality healthcare services. Although numerous health outcomes have been connected to patient-provider communication, there is limited research that has explored the processes and pathways between communication and health. Research among young adults (ages 26-39 years) is even more scarce, despite findings that health communication does vary with age. This study used data from the 2014 Health Interview National Trends Survey to (1) test a scale of seven items measuring patient-centered communication among young adults age 26 to 39 and (2) explore the relationship between patient-centered communication, patient trust, patient satisfaction, social support, self-care skills, and emotional well-being among young adults age 26 to 39. Exploratory and confirmatory factor analyses were conducted and results showed that a one-factor model of patient-centered communication among young adults fit the data well. In the final regression model, income, history of depression diagnosis, patient-centered communication, patient trust, social support, and patient self-efficacy (self-care skills) were all significantly related to emotional well-being. Post-hoc analyses showed that self-efficacy and patient trust modify the association between general health and emotional well-being. Among respondents who reported

poor overall health, increases in self-efficacy and trust in their provider are associated with corresponding improvement in their predicted emotional well-being. This is in contrast to respondents who reported excellent overall health, for whom an improvements in self-efficacy and trust did not have the same effect on predicted emotional well-being. There was a significant interaction between depression and self-efficacy, as respondents who reported being diagnosed with depression showed a stronger relationship between self-efficacy and greater predicted well-being. Post-hoc analyses also showed significant interactions between patient-centered communication, satisfaction, and social support. Respondents who reported lower levels of PCC, showed decreased predicted emotional well-being as their satisfaction and perceived social support increased. These findings suggest the need to explore the means through which communication can impact emotional well-being, specifically among young adults who are in poor health or have a history of depression. Future research should also include longitudinal studies, in order to determine causality and directionality among constructs.

Healthcare Provider Communication with Young Adults: Patient-Centered Communication, Patient Satisfaction, Patient Trust, Social Support, Self-Care Skills, and Emotional Well-Being

by
Helen M. Nichols

Dissertation submitted to the Faculty of the Graduate School of the
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2018

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This dissertation is dedicated to Dr. Donna Harrington. Through her unwavering support and understanding, Donna allowed me to grow both personally and professionally, during my time at the University of Maryland, School of Social Work. Donna was not "warm", in the traditional sense, but she was unconditionally supportive and accepting. The one word I can think of to describe her was "steady". She was calm. She was consistent. She was solid. In my last year in the PhD program, I was hurt and feeling as if I were alone in a big ocean trying to tread water; Donna threw me a life preserver. I landed somewhere safe - somewhere safe to regroup, to share ideas, to make mistakes, and to receive helpful feedback. Donna was consistently more concerned about what I needed than anything else. I know she had a lot of students she worked with (and a million other things that she was doing), but she always made me feel like I was the only student she was helping. It is truly a gift to be able to make others feel that way – Donna had that gift. She not only made me a better researcher and scholar; she made me a better person.

Donna - Thank you for all you have done for the PhD program. Thank you for allowing me to be myself, even when I was difficult. Thank you for always looking out for me, even when I was pushing you away. Thank you for being you. I think in life we can all look back and pick out people who have had a major impact on our lives. Donna was one of those people for me.

I also owe a debt of gratitude to my chair, Dr. Paul Sacco, and my committee members, Drs. Sarah Dababnah, John Cagle, Zackary Berger, and Caroline Burry. Each one of them provided valuable feedback and guidance along the way. Dr. Sacco consistently went above and beyond any reasonable expectations one could have for a dissertation chair. He was generous with his time and his expertise, he always welcomed the simplest questions, and most importantly, he could always make me laugh, even when I felt like crying. Dr. Dababnah provided expertise in the areas of both social work and public health, but she was also a wonderful source of emotional support. She was a great listener and a patient, understanding mentor. She allowed me space to discuss a range of ideas and also vent my frustrations. I feel grateful to have had the opportunity to work with her and hope to continue working together in the future. Drs. Cagle and Berger both provided expertise pertaining to patient-provider communication and healthcare. Dr. Burry took on a very important role, in her willingness to join the committee at a late date and under sad circumstances. She added expertise regarding the link between research and social work education, encouraging me to think about how my research can inform social work education, especially in preparing social work students who want to work in healthcare settings.

There is one person in the PhD program who deserves the written version of a standing ovation – Jen Canapp. Jen has been the most consistent source of support I have experienced throughout my four years in the PhD program. Actually, it started before I ever arrived, as she patiently responded to my numerous emails during the application process. Ever since I arrived on campus, she has gone out of her way to be supportive and helpful – from recommending restaurants, reminding me to fill out the millionth timesheet, watching my nephews when I brought them to class, and listening to me when I was overwhelmed and felt like I couldn't finish

this PhD program. Jen is truly the heart and soul of the UMB SSW PhD program and I can never repay her kindness. I also thank her family for their willingness to share her with me.

All of the PhD students in this program have been wonderfully supportive of my work, but there are three that were critical to my success. I am so very proud to be part of the quartet that includes Elizabeth Franklin, Susan Klumpner, Nicole Mattocks, and myself. I had no idea how close the four of us would become over the last four years and I could not have finished this program without their love, the many shared laughs, and the occasional push they provided.

Lastly, thanks to the friends who were more like family to me over the past four years. They listened when I cried, gave me ideas when I was stuck, provided constant encouragement, and told me I could do this work, even when I didn't believe in myself. Thanks to Chris Callahan, Tara Daniels, Debbie Disney, Dawn Higgins, Marti Ireland, Lauren Levy, Tracy Soffe, and Carolyn Stopford.

Thanks to my parents and my sisters, Chloe and Claire. Major thanks to my favorite nephews, Dominic and Chase, who will forever own my heart. Lastly, thanks to the cutest and most supportive yorkiepoo there ever was – Liberty!

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Chapter 1: Introduction

Patient-centered communication is communication between healthcare providers and patients that takes into account the concerns, feelings, and expectations of the patient, seeks to understand the patient in the context of his or her unique environment, and involves patients in decision-making through shared understanding (Epstein & Street, 2007). Effective patient-provider communication is a core clinical function for healthcare providers, and it is central to the delivery of quality healthcare services (Stewart, 1995). Communication between patients and their providers has been studied extensively, and numerous studies have established patient-provider communication as an essential component of satisfactory relationships with healthcare providers, as well as an important contributor to better health outcomes for patients (Levinson, Lesser, & Epstein, 2010). However, elucidating the impact of communication on various outcomes is complicated because patients and providers usually communicate across multiple encounters, both directly and indirectly (Rathert, Mittler, Bannerjee, & McDaniel, 2017; Stewart, 1995; Street et al., 2009), and communication can have a lasting effect on health outcomes long after the communication occurs (Epstein, Fiscella, Lesser, & Stange, 2010).

Despite the many outcomes linked to patient-provider communication, there is limited understanding of the various mechanisms, including specific aspects of communication and biopsychosocial factors, that undergird the relationship between patients and their healthcare providers (Street, Makoul, Arora, & Epstein, 2009). To date, little empirical evidence is available to understand the processes and fundamental pathways linking communication to health (Street et al., 2009). Furthermore, there are no known studies exploring these pathways among young adults, despite evidence that experiences of health communication vary with age (DeVoe,

Wallace, & Fryer, 2009). Therefore, there is a clear need for research regarding communication pathways among young adults, in order to determine if there are differential effects on outcomes.

Patient-provider communication can occur in many forms, through both mediated (e.g., technology such as email or by an interpreter) and interpersonal contexts, via planned and spontaneously communicated messages, and through verbal, written, or nonverbal messages (Cline, 2003). Communication with healthcare providers facilitates the transmission of information, the provision of therapeutic instruction, and enables providers to render accurate diagnoses (Bredart, Bouleuc, & Dolbeault, 2005; Duffy et al., 2004). This type of communication is a form of social support from providers that is important in the provision of preventive information and guidance for patients to better manage health conditions and decisions (Berkman & Glass, 2000). Additionally, patient-provider communication is at least partially responsible for the impressions and relationships that are developed between patients and their providers, which subsequently define the expectations, patterns, and outcomes of the therapeutic relationship going forward (Ruben, 2016; Watzlawick, Beavin, & Jackson, 1967).

Doctors often overestimate their communication abilities (Alnasser et al., 2017; Ha, Anat, & Longnecker, 2010; Tongue, Epps, & Forese, 2005). For example, in one study, 75% of surgeons thought they communicated well, but only 21% of their patients were satisfied with this communication (Ha et al., 2010), and even when doctors have rated their own communication as "excellent," their patients have reported dissatisfaction (Stewart, 1995). Consequently, patients have consistently expressed a desire for better communication with their doctors across numerous studies (Bendapudi, Berry, Frey, Parish, & Rayburn, 2006; Duffy et al., 2004; Little et al., 2001). Indeed, it has been theorized that doctors who can communicate well are better

positioned to support their patients in health-related matters, as they may be able to more effectively prevent medical crises by detecting problems earlier (Ha et al., 2010). This ability to identify problems earlier and avoid crises may minimize the need for expensive interventions (Ha et al., 2010), which could lead to lower costs of care (Clack, Allen, Cooper, & Head, 2004; DiMatteo, 1998; Ha et al., 2010).

The role that communication between patients and providers plays in overall patient health is critical. Research suggests that patient-provider communication has an impact on health that is no less powerful than that of prescribed medications; communication may even explain some of the placebo effect in clinical trials (Bogardus, Holmboe, & Jekel, 1999; Bull et al., 2002; Stewart, 1995). The goal of this study is to gain a better understanding of the relationship between patient-centered communication, patient satisfaction, patient trust, social support, self-care skills, and emotional well-being among young adults; it is important that this be done in the context of independent relationships that young adults have with their healthcare providers. Definitions of the included constructs will be provided later in this chapter.

Young adulthood is important in regard to patient-centered communication. Indeed, young adults are significantly more likely than other age groups to prefer patient-centered interactions with healthcare providers, including being treated as an equal partner in decision-making, and they were more likely to rate provider qualities such as warmth and caring as important (Krupat et al., 2000). This suggests that patient-centered communication may be more important to patients in this age group and this could subsequently influence outcomes that are related to patient-centered communication.

Young adulthood is a critical period from a public health standpoint, in terms of primary and secondary prevention of chronic disease. Primary prevention is concerned with modifying risk factors to prevent the onset of disease (Institute of Medicine, IOM, 2010) and secondary prevention refers to early detection of disease (IOM, 2010). Half of all adults in the U. S. are estimated to have at least one chronic condition (Centers for Disease Control [CDC], 2016). Up to 70% of chronic disease incidence could be avoided through prevention (CDC, 2004) and young adulthood is when these prevention strategies need to be implemented. Clinical preventative services are one form of prevention and patient-provider communication, trust, satisfaction, social support, and self-care skills all influence patient adherence, health behaviors, and/or healthcare utilization (Birkhauer et al., 2017; Ha et al., 2010; Martos-Mendez, 2015; Schoenfelder, Klewer, & Kugler, 2011, Umberson & Montez, 2010). Therefore, examining the patient-provider communication perceptions of young adult patients, and the relationship this communication has to various outcomes, may provide valuable insight into how to improve preventive health strategies in this age group.

When studying patient-provider communication with young adults, it is important to clearly define the age range that will be examined and provide rationale for the ages selected (Gieger & Castellino, 2011), given there is little consensus regarding the age range and/or terminology that defines young adulthood (Veal, Hartford, & Stewart, 2010). For this dissertation, young adulthood includes those between 26 and 39 years of age. The rationale for beginning the young adult age range for this study at 26 years is both developmental and policy-related. The period between age 18 and 25 is defined as a distinct developmental stage, referred to as emerging adulthood (Arnett, 2000). In this phase of development, emerging adults are

forming their identity and developing worldviews that will define how they approach building

their lives in young adulthood and beyond (Arnett, 2015). Over the course of emerging

adulthood, there are also important changes in relation to cognitive structures and ego

development (Cote, 2006; Tanner, 2006), as well as a period of heightened self-focus (Arnett,

2015). These developmental changes have the potential to impact how relationships are formed

with healthcare providers, as well as what emerging adults expect from such providers.

In addition, there is policy-related rationale for excluding emerging adults from this

study. The Affordable Care Act introduced legislation that allowed young adults to be covered

on their parent's health insurance plan until they turn 26 (DHH, 2010a). A recent report from

DHHS stated that 2.4 million young adults have benefited from this provision since 2013

(DHHS, 2016). Therefore, some young adults are not completely independent in choosing their

own health insurance carriers, and by extension, a pool of providers, until age 26.

Definitions

Patient-provider communication, patient-centered communication, and patient-centered

care are distinct constructs. Because there is little consensus in the literature about the respective

definitions, it is important to clearly define these constructs, as well as the variables of interest,

as they will be conceptualized in this study.

Patient-provider communication. Patient-provider communication pertains to the broad

interaction between patients and providers, wherein communication serves three main purposes:

establishment of a good interpersonal relationship, exchanging information, and making

treatment decisions (Ong, de Haes, Hoos, & Lammes, 1995).

Patient-centered communication. There are multiple accepted definitions of patient-centered communication. This study uses the definition proposed by Epstein and Street (2007), which highlights six components of patient-centered communication: fostering healing relationships, exchanging information, responding to emotions, making decisions, managing uncertainty, and enabling patient self-management.

Patient-centered care. Patient-centered care refers to medical care that is "respectful of and responsive to individual patient preferences, needs, and values, and ensuring that patient values guide all clinical decisions" (IOM, 2001, p. 6).

Patient satisfaction. Patient satisfaction is defined as the patient's overall personal evaluation of their healthcare experience (Ware, Snyder, Wright, & Davies, 1983).

Patient trust. Patient-provider trust is a specific form of interpersonal trust, grounded in a belief by the patient that the provider will act in the patient's best interest, given the vulnerable position of the patient (Thom, Hall, & Paulson, 2004).

Social support. Social support can come in the form of emotional, informational, and instrumental support (Dunkel-Schetter, Blasband, Feinstein, & Herber, 1992). According to Street et al. (2009), communication from providers is a form of support in itself and providers can also encourage patients to build and/or strengthen their personal support networks.

Self-care skills. Self-care skills from the Street et al. (2009) model are represented by self-efficacy, as it relates to healthcare. Self-efficacy refers to the level of confidence one feels in engaging in appropriate care activities to care for one's health (Lev & Owen, 1996).

Emotional well-being. In this study, emotional well-being refers to one's general affective experience; greater emotional well-being involves higher levels of positive affect (e.g.,

happiness, affection) and lower levels of negative affect (e.g., sadness, anxiety; Larsen &

Prizmic, 2008).

The Rise of Patient-Centered Care and Communication

Although the principles of patient-centered care have been in existence since ancient

Greece (Stewart et al., 2000), they have only become common, or even desirable, elements of

practice in the past two decades (Ishikawa, Hashimoto, & Kiuchi, 2013). As recently as the

1970s, doctors thought that it was inhumane to tell patients bad news regarding diagnoses such

as cancer because they believed that the bleak treatment outlook would be detrimental to patients

(Baile et al., 2000; Lee, Back, Block, & Stewart, 2002). In 2001, the Institute of Medicine (IOM)

issued the landmark report, *Crossing the Quality Chasm*, which tracked a significant shift in the

medical model – from paternalism to individualism (Ha et al., 2010). With the overarching goal

of achieving high quality care, the IOM report recommended improvements to six specific areas

of healthcare, including safety, effectiveness, timeliness, efficiency, equity, and patient-centered

care (IOM, 2001).

Patient-centered care has been linked to numerous desirable outcomes, including better

adherence to treatment, improved overall health, increased patient satisfaction (Wynia &

Matiasek, 2009), improved disease-related outcomes, and better quality of life (Kaplan,

Greenfield, & Ware, 1989; Lewin, Skea, Entwistle, Zwarenstein, & Dick, 2001). When

healthcare providers and patients can achieve a shared understanding – the foundation of patient-

centered care – patients are more actively engaged in their care with improved adherence to

medications and treatment (Arora, 2003; Kaplan et al., 1989; Lorig et al., 1999; Stewart et al.,

2000). Additionally, patient-centered care can reduce anxiety and depression and aid in building

trust and support between healthcare providers and their patients (Epstein et al., 2010), thereby increasing self-efficacy among patients (O'Hair et al., 2003) and their ability to handle adversity, while also enhancing access, understanding, and adherence to treatment (Epstein & Street, 2007; Street et al., 2009). Patient perceptions of patient-centered care are critical; studies have shown that patient perceptions have a stronger influence on outcomes than either provider perceptions or independent observations (Little et al., 2001; Oates, Weston, & Jordan, 2000).

Patient-provider communication is one of the most important components in the development of patient-centered care (Picker Institute, 2011). In fact, Epstein et al. (2010) suggest that the very foundation of patient-centered care stems from relationships defined by strong communication and trust. Communication that is patient-centered can positively influence psychosocial adjustment, patient satisfaction, treatment adherence, and overall health and well-being (Ishikawa et al., 2013; Mead & Bower, 2002; Stewart et al., 1999; Stewart et al., 2003; Zandbelt, Smets, Oort, Godfried, & de Haes, 2007).

Economic Impact of Patient-Centered Communication

Patient-centered communication has an important economic impact. Patient-centered care is associated with reduced healthcare utilization (Bertakis & Azari, 2011). Researchers have suggested that this is likely due to patient-centered communication, as medical appointments that include more patient-centered communication result in fewer diagnostic tests and reduce referrals to other providers (Bertakis, Azari, Callahan, Helms, & Robbins, 1999; Epstein et al., 2005; Oates et al., 2000). The reduction in utilization and corresponding costs may be due to the increased trust and reduced anxiety that patients experience when actively engaged in their own care with carefully listen and understand their symptoms (Fiscella et al., 2004; Oates et al.,

2000). Listening is critical to patient-centered communication; primary care patients are interrupted on average 12 seconds after they begin to speak (Rhodes, McFarland, Finch, & Johnson, 2001). Further, a study of multiple family physician practices found that doctors waited only 23 seconds before redirecting patients (Marvel, Epstein, Flowers, & Beckman, 1999). Providers who spend sufficient time listening to the concerns and questions of patients are likely to have more complete information regarding the medical issue at hand and may therefore require fewer outside consultations and/or diagnostic tests (Bertakis & Azari, 2011; Hjortdahl & Borchgrevink, 1991).

Significance of Patient-Centered Communication with Young Adults

Research focusing on patient-centered communication with young adults is important for several reasons. Young adults experience specific physical and psychological challenges and developmental stages, such as education, beginning/building careers, and planning families (Bragazzi, 2013; Epelman, 2013), that might make their healthcare communication experience unique from that of other age groups. This is especially important given that health behaviors during these years are likely to have a lasting impact on one's health (Davey, Asprey, Carter, & Campbell, 2013). However, healthcare providers are often limited in their ability to engage adolescent and young adult patients in their own healthcare, due to varying provider comfort levels and time constraints (Ozer, Urquhart, Brindis, Park, & Irwin, 2012) and this population is more likely to avoid care than middle or older age adults (Kannan & Veazie, 2015). Furthermore, age influences how patients perceive health communication, with young adults reporting fewer positive perceptions of their communication with their healthcare provider (DeVoe et al., 2009). Although, this communication has been shown to impact numerous health outcomes in other age

groups, there is a lack of research exploring whether or not these findings remain consistent among young adults. One potential health outcome to address among young adults, which is related to patient-centered communication, is emotional well-being. Previous studies have explored potential links between patient-centered communication and other factors, including emotional well-being, satisfaction, trust, social support, and self-care skills.

Emotional well-being and its connection to patient-centered communication, specifically among young adults, is important given that young adults report lower levels of happiness and greater emotional distress than older adults (Gross et al., 1997; Mroczek & Kolarz, 1998; Stone, Schwartz, Broderick, & Deaton, 2010). The U. S. Surgeon General has cited emotional well-being as a principal component of overall health and further states that "fostering emotional well-being from the earliest stages of life helps build a foundation for overall health and well-being" (DHHS, 2010b). Of the few studies that have examined the connection between patient-centered communication and emotional well-being among young adults, a positive relationship has been noted (Derksen et al., 2013; Pinto, Greenblatt, Williams, & Kaplin, 2017). Additionally, the relationship between patient-centered communication and patient satisfaction is particularly important among young adults, given that communication is strongly related to satisfaction ratings (Marley, Collier, & Meyer-Goldstein, 2004) and satisfaction is correlated with health behaviors (Schoenfelder et al., 2011). Patient satisfaction is also closely related to perceived quality of care, such that perceived quality of care has been used as a proxy for patient satisfaction (Jiang, 2017; Ye, 2014). Perceived quality of care, specifically positive perceptions of health personnel, resources, and services, and healthcare delivery and accessibility of care, is associated with increased patient satisfaction (Dansereau et al., 2015). Increased satisfaction has

also been linked to perceptions of higher overall hospital care quality from the patient perspective (Jha, Orav, Zheng, & Epstein, 2008), although it should be noted that this relationship does not reflect objective care quality (Mehta, 2015).

Along with patient satisfaction, there is also an established connection between patient-centered communication and patient trust in providers. Yet, this connection has not been explored within the young adult population, despite research finding that younger adults generally have less trust in their providers than older adults (Anderson & Dedrick, 1990) and trust in physicians is linked to improved health outcomes (e.g., symptom improvement, adherence to treatment; Kramer & Cook, 2004).

Existing research shows the importance of social support among young adults, with direct connections between greater levels of peer support and improved psychological well-being (Sheets & Mohr, 2009), as well as fewer risky health behaviors (Kristjánsson, Sigfúsdóttir, & Allegrante, 2010; Walsh et al., 2010). Additionally, social support has been shown to mediate the relationship by which psychological well-being predicts young adult health behaviors (Lai & Ma, 2016).

Self-care skills are strongly correlated with self-efficacy, defined in this context as the level of confidence one has in being able to engage in behaviors that support one's health (Lev & Owen, 1996). Greater levels of self-efficacy are linked to better self-care skills (Devarajooh & Chinna, 2017). Additionally, more confidence in being able to manage one's own health is associated with improved emotional well-being (Street & Voigt, 1997).

Relevance to Social Work

Patient-centered care is directly aligned with the goals of social work, given they share a focus on building caring relationships between patients and providers that can bridge demographic, social, and economic differences (Beach, Duggan, Cassel, & Geller, 2007; Cooper, 2009; Epstein et al., 2010; Gerteis, Edgman-Levitan, Daley, & Delbanco, 1993; Rao, Anderson, Inui, & Frankel, 2007). In order to deliver true patient-centered care, healthcare providers must know their patients as people and engage them as active participants in their own care (Epstein et al., 2010). This can help reduce health disparities, as patient-centered care, including communication that can drive trust, satisfaction, social support, and self-care, may play an important role in addressing racial, ethnic, and socioeconomic disparities in care and outcomes. For instance, research has suggested that there are lower levels of trust among African American patients, and other patients of color, in providers, hospitals, and the overall healthcare system (Boulware, Cooper, Ratner, LaViest, & Powe, 2016; King, 2003; Lillie-Blanton, Brodie, Rowland, Altman, & McIntosh, 2000). Reduced trust has been suggested as a possible contributor to the disparities seen in utilization of preventative services, care seeking, and surgical treatment (King, 2003; LaViest, Nickerson, & Bowie, 2000). Furthermore, communication disparities have been identified across multiple vulnerable populations. Compared to White patients, Hispanic patients report poorer communication with healthcare providers (Aseltine, Sabina, Barclay, & Graham, 2016); Asian-American cancer survivors report worse follow-up care communication (Palmer et al., 2014); and, Native American and Central/South American patients report greater levels of discomfort when asking their healthcare provider questions (Blendon et al., 2008). Providers have also been found to engage in less

patient-centered communication with African American patients, compared to White patients (Johnson, Roter, Powe, & Cooper, 2004).

Appropriate and desired healthcare communication varies widely across cultures (Chowdhury, 2012; Juckett, 2005). For example, in Taiwan and China, the decision whether or not to tell a patient the truth about a terminal cancer diagnosis often lies with the family, not the patient (Lai, 2006). Yet Canadians (Hébert, Hoffmaster, Glass, & Singer, 1997) and those who live in the United Kingdom (Seale, 1991) expect to be fully informed of a terminal cancer diagnosis and make their own decisions. The National Association of Social Workers Code of Ethics (2008) specifically states that social workers should maintain knowledge of their client's culture, exhibit cultural sensitivity, and recognize that strengths exist in all cultures.

Understanding patient-provider communication, and its related outcomes, requires an acknowledgment that this communication between the patient and provider is impacted by the context in which it occurs. Therefore, patient-provider communication depends, at least in part, on factors such as patient and provider characteristics (e.g., race, ethnicity; Aseltine et al., 2016; Johnson et al., 2004); the type of health care organization (e.g., managed care, outpatient); use of and exposure to media (e.g., internet, commercial marketing); political and legal issues (e.g., patient rights); economic factors (e.g., income, insurance); and, interpersonal issues (e.g., communication style, self-concept, language; Street, 2013). Social workers are specifically trained to work with clients in the context of their psychosocial environment, which brings unique strengths to the study of factors related to patient-provider communication.

Chapter 2: Conceptual Framework and Literature Review

This section begins with a brief overview of the guiding conceptual framework, accompanied by more detailed information pertaining to the constructs of interest selected for this study and their significance to the young adult patient population. This is followed by the results of a systematic review of the literature that examined the relationship between patient-provider communication and study variables, specifically among young adults 26 to 39 years of age. A review of relevant literature from other age groups is also included, to further explain the relationships between study constructs. This chapter concludes with the research aims that will guide this study.

Conceptual Framework

This study uses a conceptual framework (Street et al., 2009) that details the relationships between patient-provider communication and various outcomes (proximal, intermediate, and health outcomes). In order to improve patient-provider communication and thereby improve related health outcomes, it is vital that the mechanisms, or pathways, by which communication impacts these outcomes is fully understood. Street et al. (2009) established in their widely-cited model, as shown in Figure 1, that these pathways are both direct and indirect.

Patient-provider communication outcomes. Proximal outcomes of patient-provider communication include: understanding, satisfaction, clinician-patient agreement, trust, feeling known, patient feels involved, rapport, and motivation (Street et al., 2009). For example, providers who communicate better with patients may enhance patient trust and satisfaction, which then can directly impact health outcomes, such as emotional well-being. These proximal outcomes can also impact health outcomes via their impact on intermediate outcomes, such that

increased trust in one's provider may improve one's ability to more effectively engage in healthy

self-care behaviors, leading to improved health overall.

Figure 1

*Conceptual Framework Showing How Patient-Provider Communication Influences Health
Outcomes.*
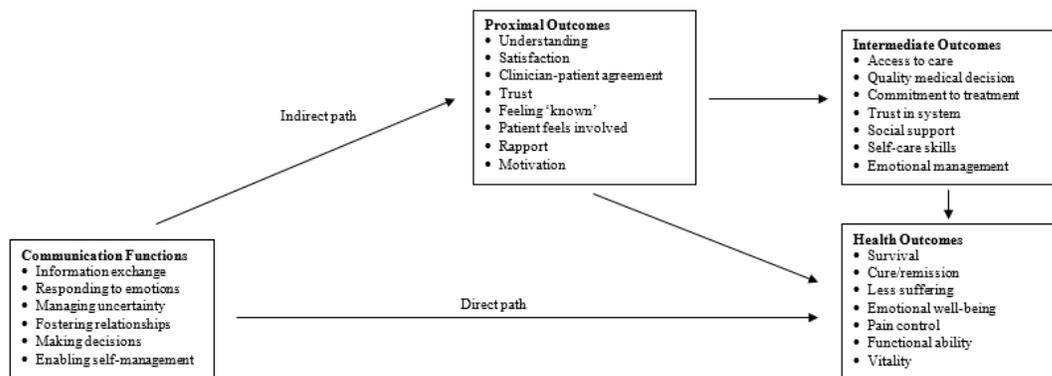
*Reprinted with permission from "How Does Communication Heal? Pathways Linking Clinician-Patient
Communication to Health Outcomes," by R. L. Street, G. Makoul, N. K. Arora, & R. M. Epstein. Journal of Patient
Education and Counseling, 74(3), 297. Copyright 2008 by Elsevier Ireland Ltd.*

Intermediate outcomes of patient-provider communication include: access to care, quality

medical decisions, commitment to treatment, trust in system, social support, self-care skills, and

emotional management (Street et al., 2009). For example, if trust positively influences a patient's

ability to manage his or her emotions, which then improves emotional well-being, the

intermediate outcome of emotional management would serve as a mediator of the relationship

between trust and emotional well-being. The ultimate health outcomes of patient-provider

communication include survival, cure/remission, less suffering, emotional well-being, pain

control, functional ability, and vitality (Street et al., 2009). These health outcomes are likely

influenced by patient-provider communication in multiple ways, through both direct and indirect pathways.

Pathways. Communication can also directly impact various health outcomes. For example, patients whose healthcare providers show more empathy experience improved psychological (emotional) well-being (Derksen, Bensing, & Lagro-Janssen, 2013; Fogarty, Curbow, Wingard, McDonnell, & Somerfield, 1999; Schofield et al., 2003). Additionally, non-verbal communication can often put patients at ease and lessen anxiety (Henricson, Ersson, Maata, Segesten, & Berglund, 2008; Knowlton & Larkin, 2006).

Although communication can clearly have a direct impact on health outcomes, more often than not, this connection is more complex and includes various indirect pathways (Street et al., 2009). These indirect pathways involve both proximal and intermediate outcomes; each of these communication outcomes can mediate the relationship between patient-provider communication and health outcomes (Street et al., 2009). The constructs of interest in this study are patient-centered communication, satisfaction, trust, social support, self-care skills, and emotional well-being, as shown below in Figure 2.

Figure 2

Conceptual Model of the Relationship between Patient-Centered Communication, Patient Satisfaction, Patient Trust in Healthcare Provider, Social Support, Self-Care Skills, and Emotional Well-Being
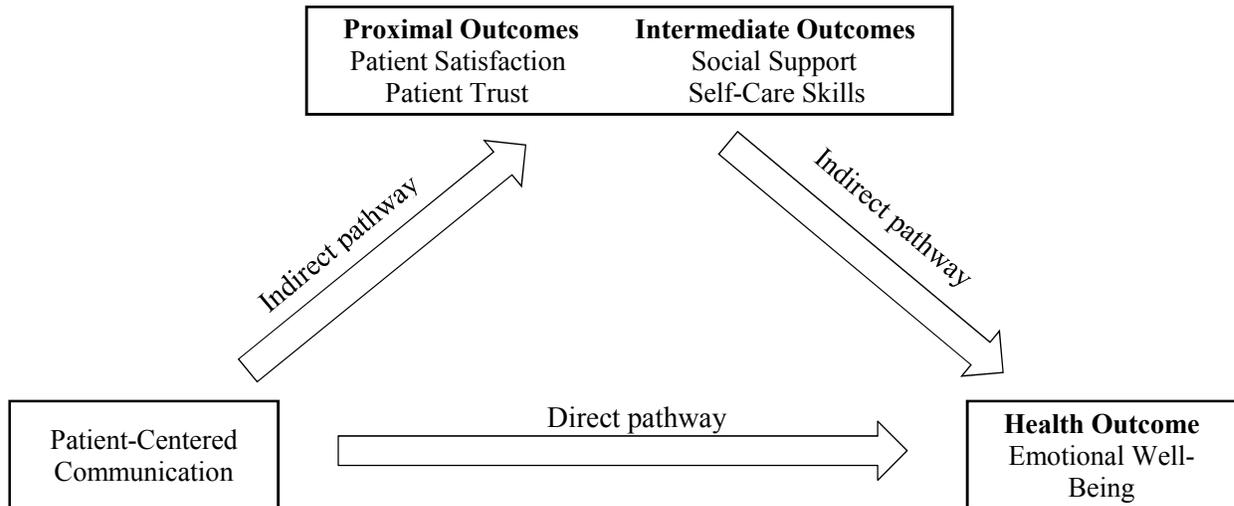
Emotional well-being. Emotional well-being was selected as the health outcome of interest in this study, due to the broad impact emotional well-being can have on one's mental and physical health, as well as the larger societal impact. Emotional well-being has long been included as an element of overall health; the World Health Organization (WHO; 1947) defined health as "a state of complete physical, mental, and social wellbeing" 70 years ago. Furthermore, the U. S. National Prevention Council (DHHS, 2010a) highlighted the importance of emotional well-being, due to its connection with overall health:

> Anxiety, mood (e.g., depression), and impulse control disorders are associated with a
>
> higher probability of risk behaviors (e.g., tobacco, alcohol, and other drug use; risky
>
> sexual behavior), intimate partner and family violence, many other chronic and acute

conditions (e.g., obesity, diabetes, cardiovascular disease, HIV/STIs), and premature

death.

Emotional well-being within the context of healthcare encounters is particularly important, as

patients often experience heightened emotions due to the serious nature of healthcare

communication and the gravity of the topics discussed with providers, as well as potential

implications of healthcare decisions (McColl-Kennedy et al., 2017). Additionally, young adults

consistently report lower levels of emotional well-being than those in middle or late adulthood

(Gross et al., 1997; Mroczek & Kolarz, 1998; Stone et al., 2010).

There is a well-established connection between emotional well-being and physical health.

Specifically, emotional distress can increase vulnerability to viral infection (Cohen, Tyrell, &

Smith, 1991) and cardiovascular disease (Marmot et al., 1991), and decrease immune response

(Brunner, 1997; Wilkinson, 2002). Additionally, many detrimental health behaviors (e.g.,

smoking, drinking, poor diet) are known coping mechanisms people use to manage emotional

distress (Cameron & Jones, 1985). Greater well-being is also related to less risky behavior

(Lyumbomirsky, King, & Diener, 2005), which is of particular importance during young

adulthood when health behaviors are still being established (DHHS, 2010b).

There are also societal benefits to be gained from a population with greater emotional

well-being (Howell et al., 2016). People who are happier have more stable and satisfying

relationships and are more likely to help others and engage in pro-social behavior (Lyubomirsky

et al., 2005). Greater well-being is also connected to improved parenting (Nelson, Kushlev, &

Lyubomirsky, 2014), with benefits to society,

Satisfaction and trust. In additional to the health outcome of emotional well-being, two proximal outcomes were selected for this study: satisfaction and trust. As medicine has shifted to the patient-centered care model, patient satisfaction has been used as an indicator of overall healthcare quality (Lemley & Marks, 2009). Research suggests that satisfaction contributes to better health outcomes because it represents a fulfillment of patient expectations and values (Alazri & Neal, 2003). Further, when patients are more satisfied, they are more likely to maintain and continue the existing relationship they have with their doctor (Alazri & Neal, 2003), which can prove critical in the management of conditions such as chronic disease. Given the connections between patient-provider communications and satisfaction, it is unsurprising that that most complaints about doctors are related to communication and not their clinical ability (Clack et al., 2004; Minhas, 2007; Tongue et al., 2005). Satisfaction

Trust between patients and providers is central to the overall patient-provider relationship (Mechanic & Meyer, 2000; Pearson & Raeke, 2000; Phillips-Salimi, Haase, & Kooken, 2011; Thom & Campbell, 1997) and this relationship provides the foundation for the delivery of patient-centered care (Murray & McCrone, 2014). Multiple studies have found patient-centered communication to be an important factor in the development of trust between patients and healthcare providers (Belcher & Jones, 2009; Murray & McCrone, 2014; Sheppard, Zambrana, & O'Malley, 2004). This is likely due to the alignment of patient-centered care principles and known factors that aid in the development of trust, such as getting to know patients as people and not simply medical "cases" (Carr, 2001; Trojan & Yonge, 1993), understanding the individual patient experience (Thom & Campbell, 1997), providing support and encouragement to patients

(Carr, 2001), listening empathetically to patient concerns (Belcher & Jones, 2009; Sheppard et al., 2004), and engaging the patient in his or her own care (Belcher & Jones, 2009).

Social support and self-care skills. Two intermediate outcomes of patient-centered communication are included in this study: social support and self-care skills. These outcomes are thought to be indirectly influenced by patient-centered communication, via the proximal outcomes mentioned previously (Street et al., 2009). Not only is the patient-provider relationship an important form of social support in itself, but providers can also communicate the importance of social support to patients, thereby encouraging patients to build and/or strengthen their own support networks. Social support and self-care skills important to emotional well-being, in terms of how this relationship may be associated with patient-centered communication, but these two constructs also have independent roles in their importance to well-being. Strong social connections can positively influence health behaviors (Umberson & Montez, 2010), including increasing physical activity (Ayotte, Margrett, & Patrick, 2010; Spanier & Allison, 2001), quitting smoking (Lawhon, Humfleet, Hall, Reus, & Monoz, 2009), and making improved dietary choices (Silverman, Hecht, & McMillin, 2002). Furthermore, greater levels of social support have been shown to reduce psychological distress when stressful and/or traumatic events occur (Lin, Ye, & Ensel, 1999; Simeon, Greenberg, Nelson, Schmeider, & Hollander, 2005) and to help psychological adjustment to ongoing stressful conditions, such as chronic disease management (Holahan, Moos, Holahan, & Brennan, 1997; Pennix et al., 1998; Turner-Cobb et al., 2002). Social support is also closely related to self-efficacy, as those who report greater levels of social support also report that they have more confidence in their ability to make positive changes in their health behaviors (Homish & Leonard, 2005). For example, those with greater

20

levels of social support were more likely to report higher levels of self-efficacy that aided them in quitting smoking (Wagner, Burg, & Sirois, 2004).

Literature Review

This literature review summarizes the findings of studies that examined the relationship between patient-provider communication and the emotional well-being of young adult patients, as this health outcome presented in the Street et al. (2009) model is the outcome of interest in this study. However, it is also important to review the literature related to the proximal and intermediate outcomes of patient-provider communication that have been selected for inclusion in this study – patient satisfaction, patient trust in healthcare providers, social support related to health, and self-care skills. As such, subsequent searches identified literature pertaining to the proximal and intermediate outcomes of patient-provider communication, satisfaction, trust, social support, and self-care skills.

Search strategy. The literature search was conducted electronically and included multiple databases, to ensure that as many relevant research studies would be included. The following databases were searched: PsycInfo**,** PubMed, CINAHL, Social Work Abstracts, and SocINDEX with Full Text. The following combination of key words and subject headings/terms includes all final terms that were used to search each database: "patient-provider communication" OR "doctor-patient communication" OR "physician-patient communication" OR "clinician-patient communication" OR "physician-patient interaction" OR "patient-provider interaction" OR "physician-patient relations" OR "health care provider communication" OR "patient-centered communication" **AND** "emotional well-being" OR "emotional distress" OR "psychological well-being" OR "psychological distress" OR "anxiety" OR "depression" OR

"mental health" OR "trust" OR "satisfaction" **AND** "young adult" OR "early adult*". This search was conducted in January 2018.

Inclusion and exclusion criteria. For studies to be included in this review they had to meet the following criteria: 1) electronically available from the University of Maryland, Baltimore Health Sciences and Human Services Library (HS/HSL), 2) published in a peer-reviewed journal, 3) published in the English language, 4) primary research study, 5) included in their abstract a mention of young/early adult population, reported a mean/median age +/- 5 years of the target age range of 26-39, or isolated young adults as a separate group for comparative analyses, 6) included some form of patient-provider communication as a variable, and 7) included some form of trust, satisfaction, social support, or self-care skills/self-efficacy, or emotional well-being as a variable.

Search results. A summary of the studies reviewed in this section can be found in Appendix A. The initial search resulted in 1,482 articles; after removing 845 duplicates, the titles and abstracts of the remaining 637 articles were screened based on the stated selection criteria. This resulted in the full-text review of 22 articles for potential inclusion in this review and 17 were subsequently excluded because they did not meet the previously stated inclusion criteria. The final review included five articles.

Overall, there were no identified studies that examined the direct link between patient-provider communication and emotional well-being in young adults, but the studies in this review did address the connection between patient-provider communication, satisfaction, trust, and depressive symptoms among young adults. The five included studies reflect the lack of established research on patient-provider communication with young adults; three of the five

studies used exploratory, qualitative methodology (Asp, Bratt, & Bramhagen, 2015; Balfe et al., 2013; Davey et al., 2013) and the two remaining studies were cross-sectional and utilized quantitative analyses (Alden, Merz, & Akashi, 2012; Pinto et al., 2017). Given the exploratory nature and primary reliance on cross-sectional data, it should be noted that the reviewed studies do not necessarily present causal relationships between variables of interest. All studies were published between 2012 and 2017, suggesting that this is an emerging, underexplored area of research.

Relevant Study Findings

Various components of patient-provider communication were addressed in the included studies. Notably, only one study addressed the impact of patient-provider communication on emotional well-being; Pinto and colleagues (2017) examined the direct and indirect relationships between patient-provider communication and depressive symptoms. Results showed that patient-provider communication had an indirect effect on depressive symptoms among young adults (mean age = 22 years), such that this communication had a direct effect on patient activation, which they defined as patient motivation to engage in self-care behaviors, and patient activation directly affected depressive symptoms (Pinto et al., 2017).

Three of the included studies specifically discussed the need young adult patients expressed for complete and thorough information regarding their healthcare (Alden et al., 2012; Asp et al., 2015; Davey et al., 2013). These studies found that young adults felt they were often not provided complete information on the services their providers offered, which led to frustration when they sought healthcare services elsewhere that they later realized could have been delivered by their primary care provider (Davey et al., 2013). Additionally, young adults

want detailed information from their providers regarding the transition from pediatric to adult care, so that they know what to expect (Asp et al., 2015). Access to complete information is integral to young adults in health-related decision-making (Alden et al., 2012) and this information also reduces the uncertainty that can prevent them from engaging in appropriate self-care (Asp et al., 2015). Greater information provision on the part of providers was related to increased satisfaction with care (Alden et al., 2012). When young adults felt they were given insufficient information, they reported a reduced trust in providers (Asp et al., 2015). The importance of communication in developing trust is critical, as trust was also noted as a key factor in choosing a provider among young adults (Davey et al., 2013). Communication with young adults is also important regarding self-care skills, as they learn to manage their own care, gain a better understanding of the overall healthcare system, and become familiar with their rights as patients (Davey et al., 2013).

Three studies discussed the importance of supportive communication from providers. Alden and colleagues (2012) looked specifically at communication around healthcare decision-making and whether doctors engaged in communication that was informative and supportive with their young adult patients, and how this impacted patient evaluation of services. Young adults rated their healthcare higher when patients perceived that providers took the time to explain all relevant information, attended to their needs and values, and allowed the patient to make the final decision, all of which are elements of patient-centered communication (Alden et al., 2012.). The young adults interviewed by Balfe and colleagues (2013) reported greater satisfaction when they believed their providers were supportive, and decreased satisfaction when providers did not spend enough time with them. Similarly, the young adults interviewed by

Davey and colleagues (2013) reported good communication with providers when the provider was sympathetic and gave the patients sufficient time to talk and explain their situation and needs. Young adults who reported positive relationships and good communication with their providers were more likely to take provider advice seriously and act upon it themselves (Balfe et al., 2013), leading to better self-care skills. Balfe and colleagues also (2013) found that young adults with chronic conditions specifically desired, and sought to create, peer emotional and social support networks to help alleviate condition-related psychosocial distress.

This desire for supportive communication highlights the importance of patient-centered communication among young adult patients. Despite the small number of studies reviewed, there was consistency in the findings regarding the connection between greater levels of patient-centered communication and increased satisfaction, trust, social support, self-care skills, and emotional well-being among young adults.

Limitations of the reviewed literature. The findings from these studies have several limitations. First, although the sample sizes were medium to large for qualitative studies (16 to 35), the samples were not representative of the larger population, which may limit the generalizability of findings to all young adults. Second, only two of the reviewed studies took place in the U. S., with one study comparing U. S. young adults to a sample of young adults in Japan (Alden et al., 2013) and the second looking at a small sample in Ohio (Pinto et al., 2017). The other studies took place in Sweden (Asp et al., 2015), Ireland (Balfe et al., 2013), and the United Kingdom (Davey et al., 2013). It is difficult to compare healthcare experiences internationally due to the vast differences across healthcare systems. Third, none of the included studies looked at the exact age group of interest. The age range across all five studies was 18 to

30 years of age and three of the studies did not include anyone over age 25 (Davey et al., 2013; Pinto et al., 2017) or age 24 (Asp et al., 2015). The absence of respondents between ages 30 and 39 may limit the applicability of findings to the current study. In conclusion, the included studies were very limited in terms of race/ethnicity, limiting the generalizability of findings and highlighting a need for studies among more racially and ethnically diverse groups of young adults.

Related Literature

Despite the limited literature on the relationship between patient-provider communication, satisfaction, trust, social support, self-care skills, and emotional well-being of young adult patients, there are important findings within other populations that provide insight for this study. These are summarized in the following section and grouped according to their relationship to patient-provider communication, as shown in the Street et al. (2009) model.

Emotional well-being. Communication was shown to have direct effects on emotional health outcomes among patients in a recent systematic review of empathy in medical consultations with general practitioners (Derksen et al., 2013). The inclusion criteria for the review conducted by Derksen and colleagues (2013) were as follows: published between 1995 and 2001 in English, original empirical study of general practice medicine, included a measure of patient experience, and, included outcome measures that assessed general practitioner empathy (Derksen et al., 2013). This resulted in a total of seven articles that were reviewed (Derksen et al., 2013). Specifically, Derksen and colleagues (2013) found that communication that is warm and empathic decreased patient anxiety levels and reduced distress among patients. They also reported a relationship between provider communication that showed genuine interest in the

patient, as well as empathy, and increased psychological, or emotional, well-being of the patient (Derksen et al., 2013). Study authors did not examine, nor even report on, the age of the patients in the included studies and did not calculate effect sizes (Derksen et al., 2013).

Other studies of patient-provider communication and emotional well-being have reported similar findings. Communication that reduces uncertainty among women with breast cancer has been found to improve emotional well-being (Clayton, Hishel, & Belyea, 2006) and higher quality communication between providers and men with prostate cancer is associated with better emotional well-being (Ernstmann, Weissbach, Herden, Winter, & Ansmann, 2016). Among patients with type 2 diabetes, better quality patient-provider communication has been linked to improved emotional well-being (Polonsky et al., 2017). In a recent study of patients with diabetes and depression, higher levels of depression were associated with low trust in the provider and less involvement in shared decision-making (Bauer et al., 2014).

Satisfaction and trust. In a study of patient-centered care in general practice offices, communication and partnership with one's doctor and a positive approach (definitive answers about diagnosis and treatment and interest in the impact on the patient's life) were found to be significant predictors of patient satisfaction (Little et al., 2001). Physician empathy, as expressed in patient-centered communication, has been found to be related to patient satisfaction in studies in settings such an oncology (Neumann et al., 2007), general practice (Mercer, Cawston, & Bikker, 2007) and hospital outpatient clinics (Kim, Kaplowitz, & Johnston, 2004). Furthermore, a very recent study (Jiang, 2017) using a nationally representative sample of adults (mean age = 55.1 years) in the U. S. found that communication that was more patient-centered was directly related to improved emotional well-being, with age as a significant predictor in the structural

equation model. Jiang (2017) also found that this relationship was partially mediated by patient satisfaction and emotion management, such that adding satisfaction and emotion management to the analytical model reduced the direct effect of patient-centered communication on emotional well-being.

Poor patient-provider communication has been linked to decreased patient trust (Lynn-McHale & Deatrick, 2000), and trust is important for healing relationships between patients and providers (van Servellen, 2008). Trust in one's healthcare provider is associated with an increased sense of overall safety, security, and general well-being (Hall et al., 2002), and patients who trust their providers are likely to seek healthcare earlier and therefore experience more positive outcomes (van Servellen, 2008). A recent meta-analysis of 47 studies found that patients who reported greater trust in their medical professional experienced increased quality of life, better health behaviors, fewer symptoms, and increased satisfaction with their treatment (Birkhauer et al., 2017). Stratified analyses from this review showed a large association between trust and patient satisfaction and small associations between trust and health-related quality of life and outcomes related to patient symptoms (Birkhauer et al., 2017). Interestingly, there was strong association between trust and subjective health outcomes, but the relationship between trust and objective health outcomes was non-significant (Birkhauer et al., 2017). Although, study authors note that the cross-sectional design of the majority of included studies could have prevented the detection of objective health changes, as trust may have more of a time-delayed impact on such outcomes (Birkhauer et al., 2017). Birkhauer and colleagues (2017) did not consider the age of patients in the included studies.

The vast majority of studies addressing factors that promote patient trust in healthcare providers since the introduction of patient-centered care as a key quality indicator (IOM, 2001) have been focused on patients with certain diseases, such as cancer (Gordon, Street, Sharf, Kelly, & Souchek, 2006), diabetes (Nannenga et al., 2009), HIV/AIDS (Carr, 2001; Cunningham, Sohler, Korin, Gao, & Anastos, 2007), cardiac disease (Kayaniyil et al., 2009; Meyer, Ward, & Jiwa, 2012), and rheumatic disease (Berrios-Rivera et al., 2006; Freburger, Callahan, Currey, & Anderson, 2003). Although trust is central to the patient-provider relationship and has been linked to patient-centered communication, there is an identified gap in the literature regarding studies that address promoting and maintaining trust among young adult patients (Murray & McCrone, 2014).

Social support and self-efficacy. Those with strong social support networks feel more connected to others and are better able to share the burden that often comes with facing difficult health situations, such as a cancer diagnosis (Arora, Finney Rutton, Gustafson, Moser, & Hawkins, 2007). Healthcare providers can aid patients, in terms of social support, both directly through their interactions with patients, and indirectly by connecting patients with outside support and resources (Epstein & Street, 2007; Street, 2013). Providers who communicate social support, via more therapeutic communication, are better able to help patients manage negative emotions (Bradford, Roedl, Christopher, & Farrell, 2012) and cope with illness (Dunkel-Schetter, 1984), as social support is known to buffer the impact of negative life events (Alloway & Bebbington, 1987). Indeed, social support from healthcare providers may help patients see the provider as a partner in addressing their healthcare needs, thereby enhancing the therapeutic relationship (Bradford et al., 2012). Social support is a key factor in improving health outcomes,

as poor support is associated with more negative outcomes. For example, a lack of social support was associated with reduced self-care in diabetic patients (Gleeson-Kreig, Bernal, & Woolley, 2002; Wen, Shepherd, & Parchman, 2004).

Better communication with one's provider has been linked to improved patient activation (Allen et al., 2015; Balfe et al., 2013). Patient activation, or patient motivation to engage in self-care (Chen, Mortensen, & Bloodworth, 2014), is a necessary precondition to engaging in actual self-care behaviors (Kelly, Zyzanski, & Alemagno, 1991). Improved self-care is a powerful predictor of better health outcomes across various populations. For example, when diabetic patients engage in better self-care, there is a corresponding reduction in mortality (Laxy et al., 2014) and an improvement in quality of life (Shrivastava, Shrivastava, & Ramasamy, 2013). Insufficient self-care is thought to contribute to poor outcomes among those with heart failure (Lainščak et al., 2007) and self-care was found to have a direct effect on overall well-being among mental health professionals (Coster & Schwebel, 1997). Communication that specifically outlines desired self-care behaviors is also important to health outcomes. For example, detailed recommendations to patients regarding self-care behaviors from providers is connected to increased treatment adherence, better patient satisfaction, and improved health outcomes among patients with diabetes (Aikens, Bingham, & Piette, 2005; Bundesmann & Kaplowitz, 2011; Piette, Schillinger, Potter, & Heisler, 2003)

Patient-centered communication measurement. Researchers have noted a lack of clarity in defining what constitutes patient-centered communication and how to measure it (Epstein et al., 2005). Existing patient-centered communication measures have been validated, but they vary widely in the questions asked of respondents, limiting their comparability across

studies (Epstein et al., 2005). Additionally, many existing measures lack a guiding theoretical or conceptual framework (Arora, 2003). There is a need for measurement research in this content area that incorporates a well-developed conceptual or theoretical model, provides a clear justification for why certain items were included and others were excluded, and includes validation across different populations (Epstein et al., 2005). A recent systematic review evaluated studies that had a primary aim of testing the psychometric properties of a measure of patient-provider communication (Zill et al., 2014). There was little consistency across studies, as 20 different measures of patient-provider communication were identified, and methodological quality varied widely (Zill et al., 2014). Further, none of these studies targeted young adults (Zill et al., 2014). Therefore, there is a need to validate the measurement of patient-centered communication within young adult populations.

Gaps in the Literature

None of the aforementioned studies specifically looked at patients in young adulthood. Although age was often included as a control variable in study analyses, the absence of analyses within specific age groups may have obscured age-specific associations between patient-centered communication and related outcomes. Within the few studies that examined patient-centered communication, patient satisfaction, patient trust, social support, self-care, and emotional well-being among young adults, it follows that there is a dearth of research on how communication might impact satisfaction, trust, social support, and/or self-care, and how any of these constructs relate to emotional well-being in this population. The absence of studies that have validated patient-centered communication measures with young adults may further limit the applicability of findings within this population. However, research conducted with other patient groups has

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found a direct relationship between improved communication with providers and the outcomes of interest in this study. There is now a need to explore if these relationships are consistent within the young adult population. The validity of measurement instruments used with this population are critical in accomplishing this goal.

Research Aims

Previous research has explored some relationships between patient-provider communication, patient satisfaction, patient trust, social support, and self-care, yet research that examines emotional well-being as an outcome is very limited. Additionally, very few studies have attempted to illuminate how all of these constructs relate to one another and no known research has examined more than a few of these connections among young adults.

Given the rise of chronic conditions diagnosed in the U. S. population and the known contributory factors – namely, health behaviors – it is crucial that prevention begins in young adulthood. Furthermore, there are a number of other contributory factors, aside from individual health behaviors that are known to contribute to chronic disease, including the social determinants of health (Cockerham, 2016; Link & Phelan, 2013; Phelan, Link, & Tehranifar, 2010) – contextual factors that can impact risk, functioning, health, and overall well-being (CDC, 2018). Providers can play an important role in prevention by exploring these contextual factors through patient-centered communication. The cornerstone of prevention, improved emotional well-being, and overall health among young adult patients may lie in the patient-provider relationship. This relationship is built upon communication between providers and their young adult patients and this study aims to contribute to the knowledge in this area by addressing the following research aims:

Aim 1: To test an existing scale measuring patient-centered communication among young adults age 26 to 39.

Aim 2: To explore the relationship between patient-centered communication, patient trust, patient satisfaction, social support, self-care skills, and emotional well-being among young adults age 26 to 39.

Chapter 3: Method

The proposed study was conducted using secondary data analyses. This chapter provides

an overview of the secondary data that was used, as well as a description of methodology that

applies to the study as a whole. The specific data analysis strategy for each aim is outlined

separately.

Data Source

This study uses data from the Health Interview National Survey (HINTS), a nationally

representative survey conducted by the National Cancer Institute (NCI) every few years since

2003 (NCI, 2014). This study utilizes data specifically from Cycle 4 of HINTS (known as

HINTS 4). Cycle 4 collected data from August to November 2014 (Westat, 2015). This study

was classified as nonhuman subjects research by the University of Maryland, Institutional

Review Board (IRB) in May 2017 because all data are de-identified and the dataset is publicly

available. The IRB determination letter is in Appendix B.

Sample. Sample selection for HINTS 4 was completed in two stages (Westat, 2015).

First, a stratified sample of addresses was selected from a database used by Marketing Services

Group containing all non-vacant residential addresses in the United States, including post office

boxes, throwbacks[1], and seasonal addresses (Westat, 2015). An over-sampling approach was also

used to target hard-to-reach populations. This was done by grouping addresses into three specific

sampling strata that included addresses in (1) areas with high concentrations of minority

populations, (2) areas with low concentrations of minority populations, and (3) counties

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[1] Throwbacks are street addresses for which mail is redirected to a specified post office box by the United States
Postal Service.

comprising Central Appalachia regardless of minority population (Westat, 2015). An equal

probability sample of addresses was selected from each stratum, resulting in a total of 14,000

addresses selected for HINTS 4 (Westat, 2015). In the second stage, one adult was selected

within each sampled household using the "Next Birthday Method," in which a question was

included on the survey instrument to select the adult in the household having the next birthday

(Westat, 2015).

Data collection. The survey was conducted via mail with a $2 prepaid monetary

incentive included with each survey to encourage responses (Westat, 2015). All selected

households received the first mailing and a reminder postcard; non-responding households

received up to three subsequent mailings (Westat, 2015). Households flagged as potentially

Spanish-speaking due to addresses in locations that are linguistically isolated per the U.S.

Census, Hispanic surname match, and respondent requests for Spanish materials received survey

materials in both English and Spanish (Westat, 2015). The overall response rate for HINTS 4

was 34.4%, as calculated by Westat (2015) according to the Response Rate 2 [RR2] formula

used by the American Association of Public Opinion Research (AAPOR). The RR2 response rate

calculation includes surveys that are partially complete (AAPOR, 2015).

Data weighting. Full-sample weights were developed by Westat (2015) for all

respondents, to account for oversampling and nonresponse, such that estimations are reflective of

the total population, as if the sampling strategy had been completely random. The weights for

HINTS 4 data included a sampling/probability weight, and a set of 50 replicate weights which

were also developed for each sampled adult using the delete one jackknife (JK1) method. These

weights are used for standard error computation for estimates generated by HINTS data (Westat,

2015). The HINTS Data Manager at the National Institutes of Health recommended calculating the Coefficient of Variation (CV) for each of the significant predictors in the weighted regression models to determine if the use of weights was appropriate for the small subsample used in this study. The recommended cutoff point for determining if a CV is problematic is 30%, as CVs which are less than or equal to 30% are considered reliable (National Research Council, 2015). This provided a ratio of the standard error to the point estimate and was calculated as follows: CV = [standard error/estimate] x 100 (Hernandez-Vizer & Starsinic, 2013). Of the five significant predictors in the final regression model, four of them had CVs greater than 30% (see Appendix C). Therefore, sample weights were deemed inappropriate for use with the subsample analyzed in this study and all analyses were completed using unweighted data.

Dissertation Sample

The sample in this study is limited to surveyed adults between the ages of 26 and 39 years who also reported visiting a healthcare provider in the past 12 months. Only respondents who indicated they had visited a healthcare provider at least once in the 12 months preceding survey administration were asked questions pertaining to communication, satisfaction, trust, social support, and self-efficacy.

Missing data. Nine cases were deleted prior to analysis due to missing all items for the scales measuring patient-centered communication (primary construct of interest) and/or emotional well-being (primary outcome of interest). The remaining missing data for each variable of interest, shown in Appendix D, were minimal. As such, missing data were imputed using Mplus for Aim 1 (Asparouhov & Muthén, 2010), and listwise deletion was used to address Aim 2.

Measures

Variables in this study included patient-centered communication, patient satisfaction, patient trust, social support, self-care skills, and emotional well-being, along with relevant control variables.

Patient centered-communication. Patient-centered communication was assessed with seven items that asked respondents about their communication with all doctors, nurses, or other health professionals seen in the 12 months preceding survey administration (see Appendix E). Responses were scored on a 4-point Likert scale (1 = *Always* to 4 = *Never*). Responses were reverse scored and the sum score of the seven items was averaged (Jiang, 2017), such that higher scores indicated greater frequency of communication (1 = *Never* to 4 = *Always*). Individual items were used for Aim 1 and the results from Aim 1 analyses were used to create the scoring procedures used for Aim 2 analyses. The details of each analysis are provided after the measures section.

Patient satisfaction. Patient satisfaction was assessed with a single item that measured perceived care quality. Similar to other studies, perceived care quality was used as a proxy for patient satisfaction in the proposed study (Jiang, 2017; Ye, 2014). Respondents were asked, "Overall, how would you rate the quality of health care you received in the past 12 months?" Responses were scored on a 5-point Likert scale (1 = *Excellent* to 5 = *Poor*). This was reverse coded, such that higher scores equated to greater levels of satisfaction (1 = *Poor* to 5 = *Excellent*).

Patient trust. Patient trust was also assessed with a single item. Respondents were asked, "In the past 12 months, how often did you feel you could rely on your doctors, nurses, or other

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health care professionals to take care of your health care needs?" Responses were scored on a 5-point Likert scale (1 = *Always* to 5 = *Never*). This was reverse coded, such that higher scores equated to greater levels of trust (1 = *Never* to 5 = *Always*).

    Social support. Social support was measured with three items that assessed perceived social support. Respondents were asked the following questions: (1) "Is there anyone you can count on to provide you with emotional support when you need it – such as talking over problems or helping you make difficult decisions?"; (2) "Do you have friends or family members that you talk to about your health?" and (3) "If you needed help with your daily chores, is there someone who can help you?". Responses were dichotomous (1 = *Yes*; 0 = *No*). All three items were summed to create a total score reflecting overall social support, ranging from 0 to 3.

    Self-care skills. Self-care skills were assessed with a single item that measured self-efficacy. Respondents were asked, "Overall, how confident are you about your ability to take good care of your health?" Responses were scored on a 5-point Likert scale (1 = *Completely confident* to 5 = *Not confident at all*). This was reverse coded, such that higher scores equate to greater levels of trust (1 = *Not confident at all* to 5 = *Completely confident*).

    Emotional well-being. Emotional well-being was assessed using the Patient Health Questionnaire for Depression and Anxiety (PHQ-4), which combines two two-item brief screeners for depression and anxiety (Kroenke, Spitzer, Williams, & Lowe, 2009). Respondents were asked how often they had been bothered by the following problems in the two weeks preceding survey administration: (1) Little interest or pleasure in doing things; (2) Feeling down, depressed, or hopeless; (3) Feeling nervous, anxious, or on edge; (4) Not being able to stop or control worrying. Responses were scored on a 4-point Likert scale (1 = *Nearly every day* to 4 =

Not at all). The four items were summed to calculate total emotional well-being scores for each respondent, ranging from 0 to 16, such that higher scores indicated increased levels of emotional well-being. The PHQ-4 has excellent reliability, with Cronbach's alpha scores ranging from 0.86 to 0.89 (Kroenke et al., 2001).

Demographic characteristics. Demographic variables included age, gender, race, ethnicity, marital status, education, income, and geographic region.

Age. Age in years at the time of survey administration was calculated by Westat from respondent date of birth. This was used as a continuous variable in study analyses.

Gender. The HINTS coded gender as 1 = *Male* and 2 = *Female*. This was recoded for this study as 1 = *Male* and 0 = *Female*.

Race. The HINTS asked respondents "What is your race? One or more categories may be selected." The response options for this question in HINTS included the following: 1= *White*; 2= *Black or African American*; 3 = *American Indian or Alaska Native*; 4 = *Asian Indian*; 5 = *Chinese*; 6 = *Filipino*; 7 = *Japanese*; 8 = *Korean*; 9 = *Vietnamese*; 10 = *Other Asian*; 11 = *Native Hawaiian*; 12 = *Guamanian or Chamorro*; 13 = *Samoan*; and 14 = *Other Pacific Islander*. This variable was recoded due to small sample sizes of non-White respondents (1 = *White*; 0 = *Non-White*). Respondents who did not answer this item in HINTS (*n* = 24) were included in analyses with the creation of a new variable for missingness on race data (1 = *Race was missing*; 0 = *Race was not missing*).

Ethnicity. Hispanic ethnicity was determined in HINTS by asking respondents, "Are you of Hispanic, Latino/a, or Spanish origin? One or more categories may be selected." Response categories in HINTS included the following: 1 = *No, I am not of Hispanic, Latino/a, or Spanish*

origin; 2 = *Yes, Mexican, Mexican American, Chicano/a*; 3 = *Yes, Puerto Rican*; 4 = *Yes, Cuban*; and 5 = *Yes, another Hispanic, Latino/a, or Spanish origin*. This variable was recoded for analyses in this study, such that 1 = *Hispanic* and 0 = *Non-Hispanic*.

Marital status. Marital status was determined in HINTS by asking respondents, "What is your marital status?" Responses were coded into six categories (1 = *Married*; 2 = *Living as married*; 3 = *Divorced*; 4 = *Widowed*; 5 = *Separated*; 6 = *Single, never been married*). This was recoded into a dichotomous variable for analyses in this study (1 = *Married/partnered (responses 1, 2, and 5)*; 0 = *Not married/partnered (responses 3, 4, and 6)*). Using a more conservative approach, respondents who were separated were included with those who were married, as the protective effects on health and well-being (Carr & Springer, 2010) associated with marriage may still exist in these relationships.

Education. The HINTS asked about respondent education level in terms of the highest completed level of school: "What is the highest grade or level of schooling you completed?" This was coded as 1 = *Less than 8 years*, 2 = *8 through 11 years*, 3 = *12 years or completed high school*, 4 = *Post high school training other than college (vocational or technical)*, 5 = *Some college*, 6 = *College graduate*, and 7 = *Postgraduate*. This was used as a continuous variable in study analyses.

Income. Annual household income was coded as 1 = *$0 to $9,999*, 2 = *$10,000 to $14,999*, 3 = *$15,000 to $19,999*, 4 = *$20,000 to $34,999*, 5 = *$35,000 to $49,999*, 6 = *$50,000 to $74,999*, 7 = *$75,000 to $99,999*, 8 = *$100,000 to $199,999*, and 9 = *$200,000 or more*. An imputed version of this variable created by HINTS was used as a continuous variable in study analyses.

Geographic region. Geographic region was based on the four census regions, as determined by the U. S. Census Bureau. Region 1 is the Northeast (CT, ME, MA, NH, RI, VT, NJ, NY, PA). Region 2 is the Midwest (IL, IN, MI, OH, WI, IA, KS, MN, MO, NE, ND, and SD). Region 3 is the South (DE, DC, FL, GA, MD, NC, SC, VA, WV, AL, KY, MS, TN, AR, LA, OK, and TX). Region 4 is the West (AZ, CO, ID, MT, NV, NM, UT, WY, AK, CA, HI, OR, and WA). Geographic region was coded as follows: 1 = *Northeast*, 2 = *Midwest*, 3 = *South*, and 4 = *West*.

Health characteristics. Health variables included the following: health insurance coverage, regular healthcare provider, depression diagnosis, and general health status.

Health insurance coverage. Health insurance coverage was determined by asking respondents, "Do you have any kind of healthcare coverage, including health insurance, prepaid plans such as HMOs, or government plans such as Medicare?" This was coded as 1 = *Yes* and 2 = *No* in the HINTS dataset. For this study, this was recoded as 1 = *Yes* and 0 = *No*.

Regular healthcare provider. Regular healthcare provider was determined by asking respondents, "Not including psychiatrists and other mental health professionals, is there a particular doctor, nurse, or other health professional that you see most often?" This was coded as 1 = *yes* and 2 = *no* in the HINTS dataset. For this study, this was recoded as 1 = *Yes* and 0 = *No*.

General health status. In the HINTS dataset, general health status was determined using the question, "In general, would you say your health is…" and this was coded in five categories: 1 = *Excellent*, 2 = *Very good*, 3 = *Good*, 4 = *Fair*, and 5 = *Poor*. This was reverse-coded and used as a continuous variable in study analyses, such that higher scores indicated better overall health.

Depression diagnosis. HINTS respondents were asked if they had ever been diagnosed with depression. This was coded as 1 = *Yes* and 2 = *No* in the HINTS dataset. For this study, this was recoded as 1 = *Yes* and 0 = *No*.

Data Cleaning and Preliminary Analyses

All data cleaning, data screening, and preliminary analyses were conducted using Stata 14 (StataCorp, 2015). Normality statistics and correlations for all variables of interest were evaluated. The assumption of normality was checked using histograms, and measures of skewness, and kurtosis. Skewness and kurtosis were not problematic, as their values were less than 3 and 10, respectively (Kline, 2015). Multicollinearity was also not problematic, as determined by bivariate correlations that were less than, or only slightly above the recommended threshold of .70 (Dormann et al., 2013) and/or a variance inflation factors of less than 4; see Appendix F.

Descriptive and bivariate analyses. Sample demographics and descriptive statistics for all variables of interest were calculated prior to the multivariate analyses. Internal consistency was assessed using Cronbach's α for the PHQ-4. Independent samples *t*-tests and Pearson's correlations were used to examine demographic and health-related differences related to the outcome of interest, emotional well-being.

Aim 1 Data Analysis Plan

The first aim of this study was to test an existing scale measuring patient-centered communication among young adults. This measure has not yet been tested with young adults and the communication items in this study cover all the functions of patient-centered communication reflected in the conceptual model (Street et al., 2009), as shown in Table 1:

Table 1

Mapping of Study Items to the Components of Patient-Centered Communication

Individual Patient-Centered Communication Items	Patient-Centered Communication Function
Give you the chance to ask all health-related questions you had?	Information exchange
Give the attention you needed to your feelings and emotions?	Responding to emotions
Involve you in decisions about your health care as much as you wanted?	Making decisions
Make sure you understood the things you needed to do to take care of your health?	Enabling self-management
Explain things in a way you could understand?	Information exchange
Spend enough time with you?	Fostering relationships
Help you deal with feelings of uncertainty about your health or health care?	Managing uncertainty

This aim was addressed in two parts: (1) conducting an exploratory factor analysis (EFA) to identify the best-fitting factor structure for patient-centered communication, followed by (2) a confirmatory factor analysis (CFA) to test the factor structure generated from the EFA. Exploratory and confirmatory factor analyses were conducted using Mplus, Version 8 (Muthén & Muthén, 2007).

Sample

Sample size adequacy. A Monte Carlo study was conducted to determine adequacy of the sample size for the CFA. Power analysis assumptions included the following estimates: two factors, factor loadings of .80, residual variances of 0.36, and a factor correlation of 0.25 (Muthen & Muthen, 2002). Three criteria were evaluated, as recommended by Muthen & Muthen (2002), including parameter and standard error biases of less than 10%, standard error bias for the parameter assessing power is less than 5%, and coverage is .91 to .98 for all variables. Parameter biases ranged from .1 to .3%, standard error biases ranged from .2% to

2.2%, and coverage ranged from .94 to .95. All criteria were met using the proposed sample of 215 respondents, indicating sufficient power for the proposed analyses.

Subsamples. Respondents were randomly divided using statistical software (Subsample 1 and Subsample 2) into approximately equal subsamples for all analyses for Aim 1. Independent samples *t*-tests were used to assess subsample mean differences for all continuous sample characteristics (age, income, education), patient-centered communication, patient satisfaction, patient trust, and emotional well-being. Chi-square tests were used to assess differences between subsamples regarding demographic characteristics (gender, race, and ethnicity) and health-related variables (health insurance, regular healthcare provider, general health status, and depression diagnosis).

Data screening. Prior to conducting analyses, data were screened to ensure that they met assumptions requiring (1) sufficient sample size, (2) continuous measurement level, and (3) multivariate normality across indicators (Harrington, 2009). The WLSMV estimator was used, as it provided the best option for the ordered categorical data for PCC items (Brown, 2015; Kline, 2015).

Measurement properties. For both the EFA and CFA, additional measurement properties were calculated and reported, including: mean scores, skew, distribution, ceiling/floor effects, and inter-item reliability.

Model fit. Multiple fit indices were evaluated to determine model fit, beginning with the chi-square (χ^2) absolute measure of fit, which is statistically non-significant when model fit is good (Byrne, 2013). Additional indices used to determine model fit included those that calculate relative fit by comparing the current model to the baseline model, such as the comparative fit

index (CFI) and the Tucker-Lewis index (TLI), which both indicate that a model fits the data well when values are greater than or equal to .95 (Hu & Bentler, 1999). Lastly, indices that calculate absolute fit, such as the standardized root mean square residual (SRMR) and the root mean square error of approximation (RMSEA) were examined. RMSEA values that are less than or equal to .06 (Hu & Bentler, 1999) and SRMR values less than or equal to .06 indicate models that fit the data well (Byrne, 2013).

Exploratory factor analysis. An exploratory factor analysis was conducted first because the included items, although previously used as a one-factor measure (Jiang, 2017), have not been tested. Prior to conducting the EFA with Subsample 1, factorability assumptions were tested, including the Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy and Bartlett's test of sphericity. KMO should be larger than .5 and the Bartlett's test of sphericity should be significant for the data to be suitable for factor analysis (Field, 2013). The EFA was conducted using an oblique (Geomin) rotation because it relaxes the assumption that factors are completely independent of one another and allows factors to correlate (Osborne, 2015). This approach is particularly appropriate in the social sciences where factors are rarely completely unrelated (Costello & Osborne, 2005). Item and factor retention were based on (1) factor eigenvalues greater than 1.0 (Kaiser, 1960), (2) scree plot analysis (Cattell, 1966), and (3) factor loadings greater than .32 (Tabachnick & Fidell, 2001). The EFA allowed up to 3 factors and the best fitting model, in terms of fit indices and conceptual meaning was then tested in the subsequent CFA.

Confirmatory factor analysis. The CFA tested the validity of the factor structure(s) identified in the EFA using Subsample 2. Model respecification was addressed using the steps

outlined by Kline (2015). Normalized residuals were reviewed to detect any areas of localized strain, as indicated by values greater than 1.96 ($p < .05$) (Harrington, 2009). Any modification indices for models greater than 10 were reviewed for data-driven changes to improve model fit (Kline, 2015). However, data driven changes were only made if they were parsimonious, consistent with the conceptual framework guiding the study, and created meaningful change (Kline, 2015).

Aim 2 Data Analysis Plan

The second aim of this study was to explore the relationship between patient-centered communication, patient trust, patient satisfaction, social support, self-care skills, and emotional well-being among young adults age 26 to 39. All analyses for Aim 2 were conducted using Stata 14.

Sample size adequacy. An a priori power analysis was conducted using G*Power to determine the sample size necessary to perform the planned analyses. For an ordinary least squares regression analysis with up to 13 predictors, a minimum power (β) level of .95, an alpha (α) level of .05, and a medium effect size (f) of .15, the minimum sample size is 189. This analysis indicated that there was sufficient power to detect effects with the proposed sample for this study.

Multivariate analyses. Hierarchical linear regression analyses were conducted to explore the relationship between independent variables (patient-centered communication, patient satisfaction, patient trust, social support, and self-care skills) and the dependent variable (emotional well-being). It should be noted that this approach is based on the one-factor solution resulting from Aim 1. A hierarchical model was used to determine how R^2 changes as different

groups of variables are added to the model (Cohen, Cohen, West, & Aiken, 2013). Post-hoc

analyses were conducted to test for interactions between general health status, depression,

patient-centered communication, and variables of interest (satisfaction, trust, social support, self-

care skills). Table 2 shows the steps in which variables were entered in the model:

Table 2

Variables Entered in Each Step of the Hierarchical Linear Regression Model

Step	Variables	Measurement Level
1	Demographic Variables	
	Age	Continuous
	Gender (Male = 1)	Dichotomous
	Race (White = 1)	Dichotomous
	Race (Missing = 1)	Dichotomous
	Ethnicity (Hispanic = 1)	Dichotomous
	Marital status (Married/partnered = 1)	Dichotomous
	Education	Continuous
	Income	Continuous
	Midwest region (Yes = 1)	Dichotomous
	South region (Yes = 1)	Dichotomous
	West region (Yes = 1)	Dichotomous
2	Health-Related Variables	
	Health insurance coverage (Has coverage = 1)	Dichotomous
	Regular healthcare provider (Has provider = 1)	Dichotomous
	General health status	Continuous
	Depression diagnosis (Yes = 1)	Dichotomous
3	Patient-Centered Communication	Continuous
4	Patient Satisfaction (*Patient-Perceived Quality of Care*)	Continuous
5	Patient Trust	Continuous
6	Social Support	Continuous
7	Self-Care Skills (*Self-efficacy*)	Continuous

Chapter 4: Results

This chapter presents the results from the secondary data analysis of the 2014 HINTS dataset, including descriptive analyses, EFA and CFA results (Aim 1), and hierarchical linear regression results (Aim 2).

Descriptive Analyses

Demographic characteristics. The majority of respondents were female (74%) and the average age was 33 years ($SD = 3.9$). Approximately 70% of the sample identified as White, 19% as Black/African American, 5% as Asian, and the remaining 6% identified as other racial groups. Almost 18% of respondents indicated Hispanic ethnicity. The majority (62%) of the sample was married/partnered and 62% reported receiving at least a Bachelor's degree. Annual household income levels included: 0 to $19,999 (16%); $20,000 to $49,999 (28%), $50,000 to $99,999 (33%); and $100,000 or more (23%). This sample was primarily drawn from the Southern U. S. (49%), with 25% of respondents located in the West, 17% in the Midwest, and 15% in the Northeast.

Health-related characteristics. Most respondents reported that they have health insurance (87%) and 62% had a regular healthcare provider. Just over 57% of respondents rated their overall health as excellent or very good, 32% rated their health as good, and 11% rated their health as fair or poor. It should be noted that demographic and health-related characteristics reported above represent the sample that was included in these analyses, as patient-centered communication questions were only asked of respondents who had seen a provider in the year preceding survey administration. Comparison analyses of respondents between the ages of 26 and 39 who were included and those were who excluded from these analyses are shown in Table

Table 3. There were multiple significant differences between young adults who were included and excluded from study analyses. Young adults in this study were more likely to be female ($p <$ .001), White ($p =$ .038), and Non-Hispanic ($p =$ .017). They also reported higher levels of education ($p =$ .001), were more likely to have health insurance ($p <$ .001) and a regular healthcare provider ($p <$ .001), and more likely to report a history of depression ($p =$ .004).

Table 3

Bivariate Comparisons of Respondents Age 26 to 39 Included and Excluded from Final Sample (N = 560)

Variable	Excluded from Sample (*n* = 138) % (*n*)	Included in Sample (*n* = 422) % (*n*)	χ^2	*p*-value
Gender			23.96	< .001
Male	48.2 (65)	25.7 (108)		
Female	51.8 (70)	74.3 (312)		
Race			4.29	.038
White	60.1 (83)	69.7 (294)		
Non-White	39.9 (55)	30.0 (128)		
Hispanic Ethnicity			5.74	.017
Hispanic	27.3 (36)	17.7 (74)		
Non-Hispanic	72.7 (96)	82.3 (344)		
Marital Status			0.87	.351
Married/Partnered	57.3 (79)	61.7 (258)		
Not Married	42.7 (59)	38.3 (160)		
Educational Attainment			14.10	.001
HS or less	24.8 (34)	13.1 (55)		
Some college/vocational	29.2 (40)	25.0 (105)		
College graduate or more	46.0 (63)	61.9 (260)		
Has Health Insurance			34.48	< .001
Yes	65.0 (89)	87.3 (364)		
No	35.0 (48)	12.7 (53)		
Has a Regular Healthcare Provider			58.21	< .001
Yes	24.8 (34)	62.3 (261)		
No	75.2 (103)	37.7 (158)		
History of Depression Diagnosis			8.22	.004
Yes	14.8 (19)	27.3 (114)		
No	85.2 (109)	72.7 (304)		
	Mean (*SD*)	Mean (*SD*)	*t*	*p*-value
Age (in years)	32.85 (3.92)	32.97 (3.88)	-0.33	.746

Note. SD = standard deviation, *N*'s range due to occasional missing data.

Demographic and health-related characteristics, as well as key study variable descriptives are shown below in Table 4. The majority of the sample was female (74%), White (70%), and the average age was 33 years. This sample of young adults were highly educated, with 62% reporting they had graduated from college. Additionally, 87% had health insurance and 62% had a regular healthcare provider.

Table 4 Continued to top of page 51

Sample Demographics: Young Adult Sample from HINTS, Cycle 4, 2014 (N = 422)

Variable	% (*N*)
Gender	
Male	25.7 (108)
Female	74.3 (312)
Race	
White	69.7 (294)
Black	19.0 (80)
Other	11.3 (48)
Hispanic Ethnicity	
Hispanic	17.7 (74)
Not Hispanic	82.3 (344)
Marital Status	
Married/Partnered	61.7 (258)
Not Married	38.3 (160)
Educational Attainment	
HS or less	13.1 (55)
Some college/vocational	25.0 (105)
College graduate or more	61.9 (260)
Census Region	
Northeast	14.9 (63)
Midwest	17.3 (73)
South	42.7 (180)
West	25.1 (106)
Has Been Diagnosed with Depression	
Yes	27.3 (114)
No	72.7 (304)
Has Health Insurance	
Yes	87.3 (364)
No	12.7 (53)
Has a Regular Healthcare Provider	
Yes	62.3 (261)
No	37.7 (158)
	Mean (*SD)*
Age (in years)	32.97 (3.88)
Patient-centered communication	22.80 (4.97)
Satisfaction (perceived quality of care)	3.90 (0.99)

Trust in provider	3.23 (0.76)		
Social support	2.58 (0.75)		
Self-care skills (self-efficacy)	3.94 (0.82)		
Emotional well-being	13.62 (3.04)		

Note. M = mean; *SD* = standard deviation

Bivariate Analyses

There were significant relationships between emotional well-being and multiple demographic and health-related characteristics in this sample, as shown in Table 5. Young adults who were female, Hispanic, not married or partnered, had been diagnosed with depression in the past, and did not have health insurance had significantly lower emotional well-being. Greater levels of education, higher income, and better general health were significantly related to improved emotional well-being.

Relationship between Sample Characteristics and Emotional Well-Being (N = 422)

Variable	Emotional Well-Being M (SD)	t	p-value
Gender		**2.25**	**.025**
Male	14.19 (2.36)		
Female	13.42 (3.23)		
Race		1.05	.296
White	13.76 (2.94)		
Non-White	13.39 (3.25)		
Hispanic Ethnicity		-2.03	.043
Hispanic	12.99 (3.33)		
Not Hispanic	13.77 (2.95)		
Marital Status		**3.61**	**< .001**
Married/Partnered	14.05 (2.96)		
Not Married	12.96 (3.06)		
Has Been Diagnosed with Depression		**-9.35**	**< .001**
Yes	11.55 (3.45)		
No	14.40 (2.48)		
Has Health Insurance		**2.67**	**.008**
Yes	13.75 (2.91)		
No	12.57 (3.72)		
Has a Regular Healthcare Provider		1.51	.133
Yes	13.78 (2.97)		
No	13.32 (3.15)		
		r	p-value
Age (in years)	n/a	-.02	.633
Education level	n/a	.21	**< .001**

Income	n/a		.37	**< .001**
General health	n/a		.34	**< .001**

Note. M = mean; *SD* = standard deviation

Aim 1: To test an existing scale measuring patient-centered communication among young adults age 26 to 39.

    Sample characteristics. Two random subsamples were created prior to addressing Aim 1. No significant differences were found between Subsample 1 and 2, regarding demographic or health-related characteristics, as shown in Table 6. There were also no significant differences between the subsamples on the seven patient-centered communication variables.

Sample Characteristics and Differences between Subsamples (N = 422)

	Young Adults Age 26 to 39			
	Subsample 1 (*n* = 211)	Subsample 2 (*n* = 211)		
Variable	% (*n*)	% (*n*)	χ^2	*p*-value
Gender			**0.53**	.467
Male	24.2 (51)	27.3 (57)		
Female	75.8 (160)	72.7 (152)		
Race			**0.31**	.579
White	75.1 (145)	72.7 (149)		
Non-White	24.9 (48)	27.3 (56)		
Hispanic Ethnicity			**0.04**	.833
Hispanic	18.1 (38)	17.3 (36)		
Not Hispanic	81.9 (172)	82.7 (172)		
Marital Status			**0.86**	.353
Married/Partnered	59.5 (125)	63.9 (133)		
Not Married	40.5 (85)	36.1 (75)		
Educational Attainment			**1.02**	.602
HS or less	13.8 (29)	12.4 (26)		
Some college/vocational	26.7 (56)	23.3 (49)		
College graduate or more	59.5 (125)	64.3 (135)		
Census Region			**1.77**	.623
Northeast	14.2 (30)	15.6 (33)		
Midwest	18.0 (38)	16.6 (35)		
South	40.3 (85)	45.0 (95)		
West	27.5 (58)	22.7 (48)		
Has Been Diagnosed with Depression				

Yes											
No											
Has Health Insurance									**0.15**		.700
Yes	86.7 (182)		87.9 (182)								
No	13.3 (28)		12.1 (25)								
Has a Regular Healthcare Provider									**0.20**		.659
Yes	63.3 (133)		61.2 (128)								
No	36.7 (77)		38.8 (81)								
	Mean (*SD)*		Mean (*SD)*						*t*		*p*-value
Age (in years)	33.07 (3.97)		32.87 (3.79)						0.53		.598

Data screening. Table 7 shows the normality statistics and correlations for all seven patient-centered communication items. All other missing data were addressed using the WLSMV estimator in Mplus (Asparouhov & Muthen, 2010), using model-based imputation when conducting analyses.

Table 7

Variable Descriptives and Correlations for Subsamples 1 and 2 (N = 422)

Item	M	SD	Skewness	Kurtosis	Q1	Q2	Q3	Q4	Q5	Q6	Q7
Subsample 1 (*n* = 211)											
Q1	3.34	0.87	-1.03	-0.05	-						
Q2	3.08	0.87	-0.61	-0.72	0.73	-					
Q3	3.22	0.85	-0.83	-0.13	0.76	0.79	-				
Q4	3.38	0.77	-1.03	0.39	0.66	0.72	0.71	-			
Q5	3.50	0.70	-1.33	1.59	0.64	0.62	0.70	0.73	-		
Q6	3.09	0.92	-0.70	-0.75	0.64	0.72	0.69	0.61	0.69	-	
Q7	3.04	0.92	-0.61	-0.74	0.65	0.75	0.66	0.69	0.56	0.73	-
Subsample 2 (*n* = 211)											
Q1	3.44	0.74	-1.05	0.11	-						
Q2	3.11	0.90	-0.66	-0.50	0.62	-					
Q3	3.36	0.76	-0.90	-0.01	0.61	0.60	-				
Q4	3.46	0.72	-1.10	0.37	0.60	0.54	0.74	-			
Q5	3.55	0.65	-1.23	0.80	0.49	0.46	0.62	0.76	-		
Q6	3.16	0.90	-0.76	-0.40	0.64	0.67	0.66	0.62	0.59	-	
Q7	3.04	0.97	-0.66	-0.63	0.53	0.74	0.66	0.62	0.56	0.70	-

Note. M = mean; *SD* = standard deviation; All correlations are significant at *p* < 0.001 unless otherwise indicated.

Exploratory Factor Analysis

The significant result from Bartlett's test of sphericity (χ^2 (21) = 1199.30, $p < .001$), and a

KMO value of .89, both indicated that the data were appropriate for EFA analysis (Field, 2013).

As presented in Table 8, the one-factor model resulted in adequate model fit (TLI = .99, CFI =

.99), although the significant χ^2 goodness-of-fit test (χ^2 (14) = 54.64, $p < .000$) and RMSEA

value of 0.12 were not ideal. The one-factor model was further supported by the eigenvalues of

5.1 for the first factor and 0.5 for the second factor and an assessment of the scree plot; both

showed all seven items loading on one factor. Further, all factor loadings for the one-factor

model were significant at $p < .05$ in the expected direction, ranging from .77 to .93.

Table 8

EFA One-Factor Model Fit and Loadings Using Geomin Rotation and WLSMV Estimator (N = 211)

Variable	Factor Loading
Q1: Give you the chance to ask all health-related questions	**.767***
Q2: Gave the attention you needed to your feelings and emotions	**.934***
Q3: Involve you in decisions about your health care	**.914***
Q4: Make sure you understood things to take care of your health	**.901***
Q5: Explain things in a way you could understand	**.890***
Q6: Spend enough time with you	**.880***
Q7: Help you deal with feelings of uncertainty	**.879***
Model Fit Indices	
χ^2	54.64
p - value	< .000
df	14
CFI	.991
TLI	.987
RMSEA	.117
RMSEA 90% CI	[.086, .151]

Note. Factor loadings > .40 are indicated in boldface and were retained for that factor. All items are reported post rotation. Percent variance refers to the bolded factor loading. % var. = percent variance explained, CFI = Confirmatory Fit Index; TLI = Tucker-Lewis Fit Index; RMSEA = root mean square error of approximation. *$p < .05$

Confirmatory Factor Analysis

One-factor model. The initial one-factor model (Model 1) did not have an ideal fit. The determination that fit was not ideal was due to the significant χ^2 goodness-of-fit test (χ^2 (14) = 79.81, $p < .000$) and the RMSEA value of 0.15. However, all indicators in the one-factor model loaded significantly ($p < .001$) in the expected direction, ranging from .83 to .90 (see Figure 3) and the alpha reliability coefficient for the seven patient-centered communication items of .94 indicated strong internal consistency and reliability (Kline, 2015).

Figure 3

Standardized One-Factor CFA Model of PCC with Three Error Covariances (N = 211)
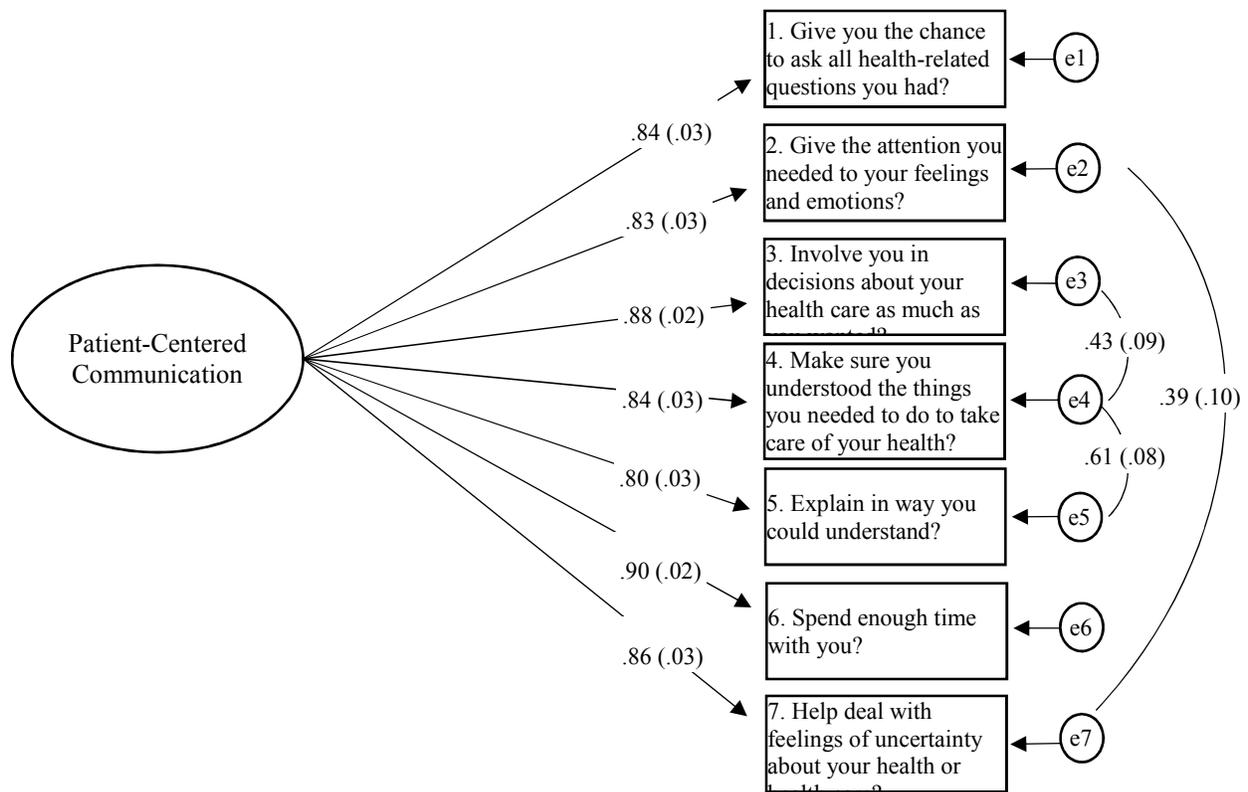
Note. Standardized coefficients for each item are followed by standard error in parentheses. All coefficients and latent factor correlations are significant at $p < 0.001$.

Model respecification. Three error covariances were allowed in the final model and these were added one at a time, to determine their differential effect, as shown above in Table 9. These respecifications were made by first reviewing modification indexes greater than 10 (Kline, 2015) and subsequently ensuring that any changes were parsimonious and consistent with the conceptual framework guiding this study (Kline, 2015; Street et al., 2009).

Table 9

Model-Fit Indices for One-Factor Model of PCC (N = 211)

Model Fit Indices	Model 1: Without Covariances	Model 2: One Covariance	Model 3: Two Covariances	Model 4: Three Covariances
χ^2	79.81	53.84	37.77	22.66
p - value	< .001	< .001	< .001	.020
df	14	13	12	11
χ^2 difference test	--	17.13	10.39	12.50
p - value	--	< .001	.001	< .001
CFI	.985	.991	.994	.997
TLI	.978	.985	.990	.995
RMSEA	.149	.122	.101	.071
RMSEA 90% CI	[.118, .182]	[.089, .157]	[.066, .138]	[.027, .112]

Note. CFI = Confirmatory Fit Index; TLI = Tucker-Lewis Fit Index; RMSEA = root mean square error of approximation.

In Model 1, the largest modification index (MI; 33.1) suggested allowing the errors between items 4 and 5 to covary. Item 4 does not clearly address one facet of PCC, as it asks respondents if their provider (1) made sure they understood, and (2) the things to do to take care of their own health. This touches on both self-efficacy (intermediate outcome) and understanding (proximal outcome), in the Street et al. (2009) model of PCC functions. Item 5 pertains to whether or not the provider explained things in general, in a way that the patient could understand. Items 4 and 5 are conceptually related, in that they both address the communication

function of information exchange (Street et al., 2009). Given that this error covariance was consistent with the conceptual model, it was added.

The overall fit of Model 2, with the item 4 and item 5 error covariance added, was also problematic, as evidenced by the significant χ^2 goodness-of-fit test (χ^2 (13) = 53.84, p < .000) and the RMSEA value of 0.12. In Model 2, the largest MI (22.3) indicated allowing for the errors to covary between items 2 and 7. Item 2 asks if providers attended to patient feelings and emotions and item 7 asks if providers helped respondents to deal with feelings of uncertainty. Both of these items address the communication function of responding to emotion (Street et al., 2009) and the error covariance was added to the model.

The subsequent model, Model 3, with two error covariances added, still did not have ideal fit, as evidenced by the significant χ^2 goodness-of-fit test (χ^2 (12) = 37.77, p < .000) and the RMSEA value of 0.10. The largest MI in this model was 18.6 and suggested allowing the errors for items 3 and 4 to covary. As stated in the previous paragraph, item 4 asks about self-efficacy and understanding, and item 3 asks about involving respondents in decisions about their own care. Both items address the communication function of enabling self-management (Street et al., 2009) and the error covariance was added to the model. The final model (Model 4) shows an improved fit (χ^2 (11) = 22.66, p = .02), CFI = .997, TLI = .995, RMSEA = .07). The improved fit is adequate and there were no modification indices greater than 10 indicated, so this model was not further respecified. Therefore, the data show that a one-factor model of PCC fits the data well and this measure will be used to address Aim 2.

Aim 2: To explore the relationship between patient-centered communication, patient trust, patient satisfaction, social support, self-efficacy, and emotional well-being among young adults age 26 to 39.

Hierarchical linear regression was used to determine the relationship between patient-centered communication, patient trust, patient satisfaction, social support, self-efficacy, and emotional well-being. A series of seven models were analyzed, in order to determine the differential relationship between each variable and/or set of variables and the outcome of emotional well-being.

Bivariate Analyses

As shown in Table 10, bivariate correlations were examined for all variables of interest. All variables were significantly related to each other. Communication that is more patient-centered is associated with increased patient satisfaction, increased patient trust, greater social support, better self-efficacy, and higher levels of emotional well-being.

Table 10

Bivariate Correlations for Primary Variables of Interest

Variables	PCC	Patient Satisfaction	Patient Trust	Social Support	Self-efficacy	Emotional Well-Being
PCC	-	-	-	-	-	-
Patient Satisfaction	.692 $p < .000$	-	-	-	-	-
Patient Trust	.614 $p < .000$	.719 $p < .000$	-	-	-	-
Social Support	.293 $p < .000$	.282 $p < .000$	.217 $p = .002$	-	-	-
Self-Care Self-Efficacy	.285 $p < .000$	.308 $p < .000$	.270 $p < .000$	.142 $p = .004$	-	-
Emotional Well-Being	.138 $p = .005$	.255 $p < .000$	.257 $p < .000$	.312 $p < .000$	.293 $p < .000$	-

Note. PCC = patient-centered communication

Hierarchical Linear Regression Models

  Demographic characteristics (Model 1). Model 1 analyzed the relationship between demographic characteristics and emotional well-being and results from Models 1 through 4 are presented in Table 11. The overall model fit was statistically significant (R^2 =.15, Adjusted R^2 =.13, F (11, 397) = 6.48, $p < .001$). Income (β = .30, b = .43, $p < .001$) was significantly related to emotional well-being among young adults, such that higher income was associated with greater emotional well-being.

  Health-related characteristics (Model 2). In Model 2, health-related characteristics were added. The overall model fit was statistically significant (R^2 =.34, Adjusted R^2 =.32, F (15, 382) = 13.30, $p < .001$) and there was a significant improvement in R^2 ($p < .001$). Income remained a significant demographic predictor (β = .25, b = .35, $p < .001$). Having a regular healthcare provider, (β = .09, b = .55, $p = .044$), general self-reported health status (β = .19, b = .64, $p < .001$), and a diagnosis of depression (β = -.38, b = -2.58, $p < .001$) were significantly related to emotional well-being. Those respondents who did indicate that they have a regular healthcare provider also had increased emotional well-being. Greater levels of household income and increased self-reported health were both associated with increased emotional well-being. A history of a depression diagnosis was associated with decreased emotional well-being.

  Patient-centered communication (PCC; Model 3). In Model 3, the measure of PCC was added, and the overall model fit was significant, (R^2 =.34, Adjusted R^2 =.32, F (16, 381) = 12.50, $p < .001$), but model fit did not significantly improve from Model 2 with the addition of PCC. Patient-centered communication was not related to emotional well-being among young adults. Income (β = .25, b = .35, $p < .001$), general health status (β = .18, b = .62, $p < .001$), and

depression diagnosis (β = -.38, b = -2.56, p < .001) were all significantly associated with emotional well-being. Greater levels of household income and increased self-reported health were both associated with increased emotional well-being. A history of a depression diagnosis was associated with decreased emotional well-being.

Patient satisfaction (Model 4). In Model 4, the proxy for patient satisfaction, patient-perceived quality of care, was added to the model. The overall model fit was statistically significant (R^2 =.35, Adjusted R^2 =.32, F (17, 379) = 12.09, p < .001) and the change in R^2 was also a significant improvement over Model 3 (p = .034). Income (β = .23, b = .33, p < .001), general health status (β = .17, b = .57, p < .001), and depression diagnosis (β = -.37, b = -2.54, p < .001) all remained significant and all three variables went in the same direction as seen in Model 3. Patient satisfaction was also significantly related to emotional well-being (β = .13, b = .41, p = .034), such that increased patient satisfaction was related to increased emotional well-being.

Table 11

Hierarchical Linear Regression Predicting Emotional Well-Being Models 1-4 (N = 422)

	Model 1				Model 2				Model 3				Model 4			
	β	b	t	p	β	b	t	p	β	b	t	p	β	b	t	p
Demographic																
Age	-.071	-.06	-1.46	.154	-.062	-.048	-1.39	.167	-.057	-.04	-1.28	.203	-.060	.05	-1.34	.182
Gender (Male=1)	.087	.61	1.85	.065	.051	.358	1.20	.232	.054	.38	1.26	.208	.055	.39	1.30	.195
Race (White=1)	-.051	-.34	-.96	.338	.030	.199	.60	.551	.031	.20	.61	.539	.022	.15	.44	.661
Race (Missing=1)	-.002	-.04	-.05	.961	.036	.483	.71	.478	.036	.48	.71	.480	.028	.37	.55	.583
Hispanic (Yes=1)	-.041	-.33	-.76	.445	-.057	-.463	-1.17	.243	-.056	-.45	-1.15	.251	-.042	-.34	-.85	.394
Married/partnered (Yes=1)	.082	.51	1.61	.108	.050	.315	1.10	.272	.048	.30	1.04	.298	.052	.32	1.13	.260
Education	.081	.18	1.58	.114	-.031	-.070	-.64	.523	-.030	-.07	-.61	.540	-.038	-.08	-.77	.445
Income	**.304**	**.41**	**5.45**	**.000**	**.247**	**.354**	**4.75**	**.000**	**.246**	**.35**	**4.72**	**.000**	**.231**	**.33**	**4.42**	**.000**
Midwest Region	.040	.31	.63	.532	.049	.386	.84	.399	.047	.37	.80	.423	.048	.38	.83	.409
South Region	.006	.04	.09	.927	.038	.235	.60	.548	.038	.24	.60	.548	.037	.23	.59	.559
West Region	-.034	-.24	-.51	.611	-.033	-.235	-.55	.583	-.030	-.21	-.49	.626	-.035	-.25	-.58	.565
Health-Related																
Has insurance (Yes=1)					.021	.194	.45	.650	.022	.20	.47	.638	.024	.22	.52	.604
Has regular provider (Yes=1)					**.088**	**.549**	**2.02**	**.044**	.080	.50	1.81	.071	.060	.38	1.34	.183
General health					**.189**	**.636**	**4.03**	**.000**	**.185**	**.62**	**3.90**	**.000**	**.169**	**.57**	**3.52**	**.000**
Depression diagnosis (Yes=1)					**-.380**	**-2.58**	**-8.47**	**.000**	**-.376**	**-2.56**	**-8.33**	**.000**	**-.373**	**-2.54**	**-8.29**	**.000**
PCC									.036	.15	.81	.420	-.047	-.20	-.79	.428
Patient Satisfaction													**.134**	**.41**	**2.13**	**.034**
Patient Trust																
Social Support																
Self-efficacy																
N	409				398				398				397			
F	(11, 397) = 6.48				(15, 382) = 13.30				(16, 381) = 12.50				(17, 379) = 12.09			
p	< .001				< .001				< .001				< .001			
R^2	.152				.343				.344				.352			
ΔR^2	--				.186				.001				.008			
ΔR^2 p - value	--				< .001				.420				.034			
Adjusted R^2	.129				.317				.317				.323			

Patient trust (Model 5). In Model 5, patient trust was added to the model and results

from Models 5 through 7 are shown in Table 12. The overall model fit was statistically

significant (R^2 =.36, Adjusted R^2 =.33, F (18, 377) = 11.87, $p < .001$) and the change in R^2

showed significant improvement over Model 4 ($p = .011$). Income ($\beta = .22$, b = .32, $p < .001$),

general health status (β = .17, b = .57, p < .001), and depression diagnosis (β = -.37, b = -2.54, p < .001) all remained significant. Greater levels of household income and increased self-reported health were both associated with increased emotional well-being. A history of a depression diagnosis was associated with decreased emotional well-being. Patient trust was significant (β = .16, b = .63, p = .011), as increased trust was associated with increased emotional well-being. Given that the proxy for patient satisfaction, patient perceived quality of care, became non-significant when patient trust was added to the model, trust may be serving as a mediator, or positive confounder, of the relationship between satisfaction and emotional well-being. However, post-hoc analyses showed that the interaction between satisfaction and patient trust was not significant.

Social support (Model 6). In Model 6, the measure of social support was added to the model. The overall model fit was statistically significant (R^2 =.39, Adjusted R^2 =.36, F (19, 376) = 12.72 p < .001) and the change in R^2 showed significant improvement in model fit (p < .001). Income (β = .20, b = .29, p < .001), general health status (β = .17, b = .57, p < .001), and depression diagnosis (β = -.36, b = -2.43, p < .001) all remained significant. Greater levels of household income and increased self-reported health were both associated with increased emotional well-being. A history of a depression diagnosis was associated with decreased emotional well-being. PCC was significantly related to emotional wellbeing (β = -.12, b = -.53, p = .042), such that increased PCC was related to decreased emotional well-being. Patient trust in provider (β = .16, b = .64, p = .008) and social support (β = .19, b = .78, p < .001) were significantly related to emotional well-being, such that increased patient trust and greater social support were related to increased emotional well-being. Given that patient trust became

significant when social support was added to the model, that there may be an interaction between these two concepts, in terms of emotional well-being. However, post-hoc analyses showed that the interaction between social support and patient trust was not significant.

Self-care skills (Model 7). In Model 7, the proxy for self-care skills, self-efficacy, was added to the model. The overall model fit was statistically significant ($R^2 = .39$, Adjusted $R^2 = .36$, $F (20, 373) = 11.94$ $p < .001$) and the change in R^2 showed significant improvement in model fit ($p = .024$). Income ($\beta = .20$, b = .29, $p < .001$), depression diagnosis ($\beta = -.35$, b = -2.39, $p < .001$), patient trust ($\beta = .16$, b = .62, $p = .010$), and social support ($\beta = .19$, b = .75, $p < .001$) all remained significant. Higher levels of patient-centered communication were still significantly related to decreased emotional well-being ($\beta = -.13$, b = -.58, $p = .029$). Self-efficacy was significantly related to emotional well-being ($\beta = .13$, b = .46, $p = .024$), such that increased self-efficacy was related to increased emotional well-being.

The changes in PCC across models indicate possible interactions between PCC and the other variables of interest in this study. In Model 3, the coefficient for PCC was positive, but it changed to negative when satisfaction was added in Model 4 and remained negative in all subsequent models. Therefore, satisfaction, trust, social support, and self-efficacy may be acting as suppressor variables in the relationship between PCC and emotional well-being.

Table 12

Hierarchical Linear Regression Predicting Emotional Well-Being Models 5-7 (N = 422)

|	Model 5				Model 6				Model 7			
	β	b	t	p	β	b	t	p	β	b	t	p
Demographic												
Age	-.057	-.04	-1.28	.200	-.042	-.03	-.97	.333	-.035	-.03	-.81	.420
Gender (Male=1)	.056	.39	1.32	.188	.051	.36	1.22	.223	.055	.39	1.32	.186
Race (White=1)	.020	.14	.41	.684	.017	.11	.35	.727	.031	.21	.63	.527
Race (Missing=1)	.029	.39	.57	.568	.038	.50	3.76	.451	.063	.84	1.25	.212
Hispanic (Yes=1)	-.042	-.34	-.87	.387	-.039	-.32	-.82	.412	-.039	-.31	-.82	.414
Married/partnered (Yes=1)	.057	.36	1.25	.213	.028	.17	.61	.544	.024	.15	.54	.593
Education	-.038	-.09	-.79	.433	-.039	-.09	-.81	.419	-.027	-.06	-.57	.571
Income	**.223**	**.32**	**4.28**	**.000**	**.202**	**.29**	**3.93**	**.000**	**.201**	**.29**	**3.90**	**.000**
Midwest Region	.035	.28	.61	.545	.031	.25	.55	.581	.025	.20	.44	.660
South Region	.030	.18	.48	.634	.021	.13	.34	.734	.013	.08	.21	.831
West Region	-.040	-.28	-.66	.508	-.037	-.26	-.63	.529	-.046	-.32	-.77	.445
Health-Related												
Has insurance (Yes=1)	.027	.24	.58	.565	.007	.06	.15	.883	.010	.09	.22	.823
Has regular provider (Yes=1)	.055	.34	1.22	.221	.033	.21	.75	.456	.038	.24	.86	.392
General health	**.170**	**.57**	**3.56**	**.000**	**.171**	**.57**	**3.65**	**.000**	.088	.30	1.51	.124
Depression diagnosis (Yes=1)	**-.372**	**-2.54**	**-8.32**	**.000**	**-.356**	**-2.43**	**-8.10**	**.000**	**-.353**	**-2.39**	**-8.01**	**.000**
PCC	-.086	-.38	-1.42	.157	**-.123**	**-.53**	**-2.04**	**.042**	**-.134**	**-.58**	**-2.20**	**.029**
Patient Satisfaction	.049	.15	.70	.485	.037	.11	.54	.590	.023	.07	.32	.746
Patient Trust	**.159**	**.63**	**2.57**	**.011**	**.161**	**.64**	**2.66**	**.008**	**.158**	**.62**	**2.57**	**.010**
Social Support					**.192**	**.78**	**4.27**	**.000**	**.186**	**.75**	**4.09**	**.000**
Self-efficacy									**.125**	**.46**	**2.26**	**.024**
N	396				396				394			
F	(18, 377) = 11.87				(19, 376) = 12.72				(20, 373) = 11.94			
p	< .001				< .001				< .001			
R²	.362				.391				.390			
ΔR²	.011				.030				.008			
ΔR² p - value	.011				< .001				.024			
Adjusted R²	.331				.361				.358			

Post-Hoc Analyses

The interaction between general health and self-efficacy was significant (β = -.03, b = -.30, p = .040), as shown in Figure 4. For respondents who reported poor overall health, as their self-efficacy improves, there is corresponding improvement in their predicted emotional well-being. This is in contrast to respondents who reported excellent overall health, for whom an improvement in self-efficacy did not have the same effect on predicted emotional well-being.

Figure 4

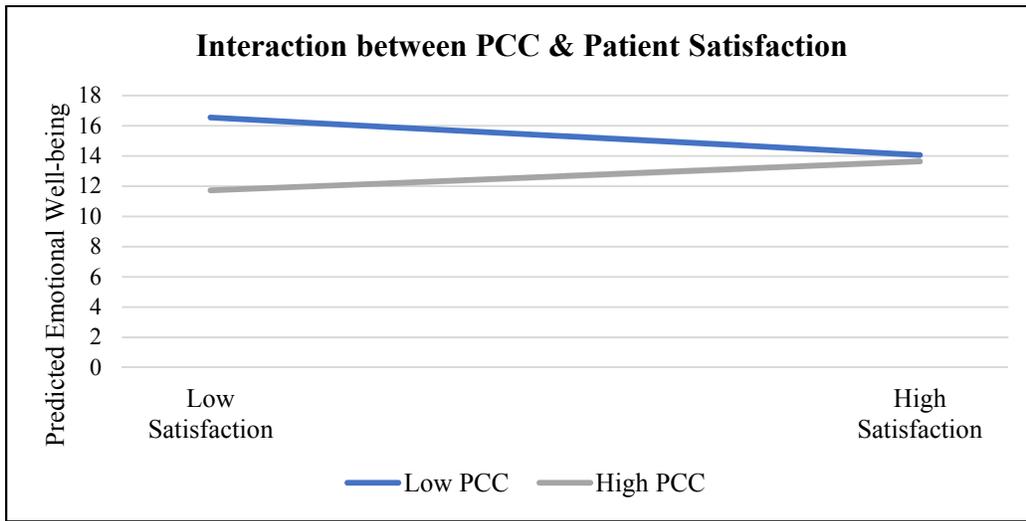**Interaction between General Health & Self-efficacy**
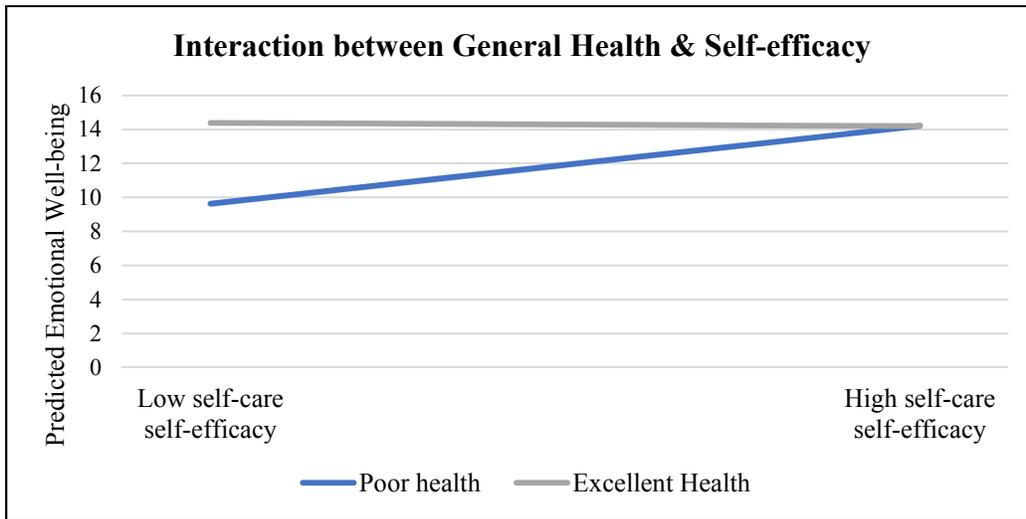
The interaction between patient trust and general health was significant ($\beta = -.18$, $b = -.52$, $p = .003$), as shown in Figure 5. For respondents who reported poor overall health status, as their trust in their healthcare provider improves, there is corresponding improvement in their predicted emotional well-being. In comparison, respondents who reported excellent overall health did not have the same improvement in predicted emotional well-being.

Figure 5

Interaction between General Health & Patient Trust
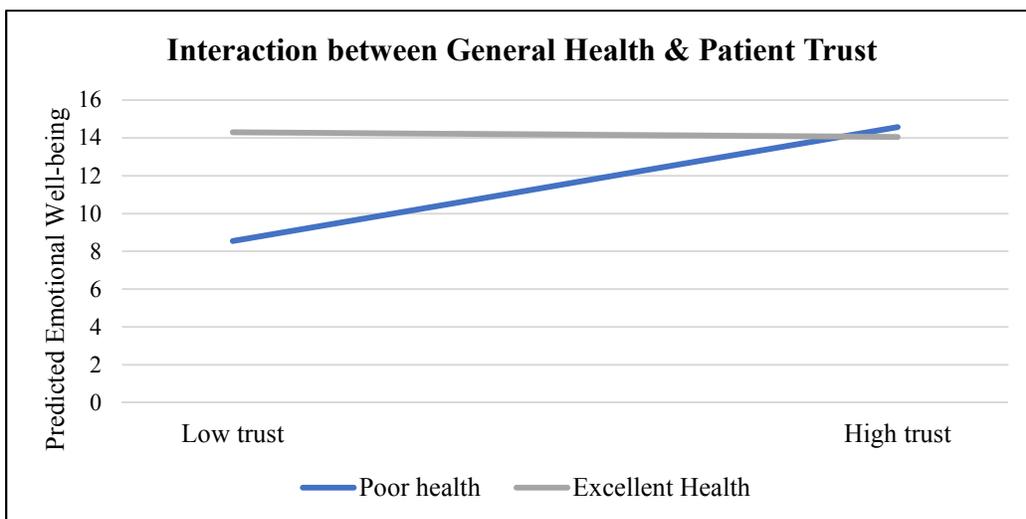
The interaction between depression and self-efficacy was significant ($\beta = 1.38$, b = .72, p = .034), as shown in Figure 6. Among respondents who reported being diagnosed with depression, there was a stronger relationship between improvement in self-efficacy and greater predicted well-being, compared to respondents who had not been diagnosed with depression at some point in their lives.

Figure 6
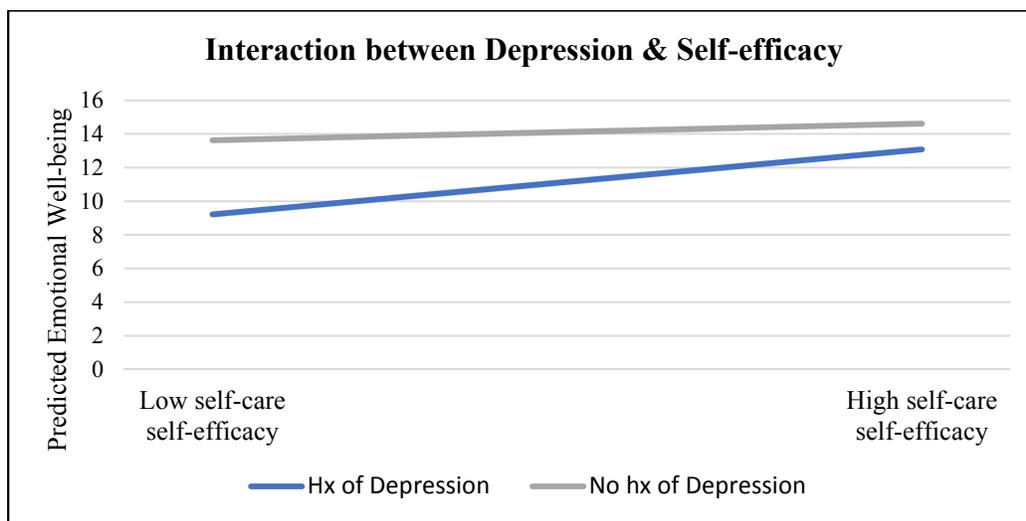
The interaction between PCC and patient satisfaction, or perceived care quality, was significant ($\beta = .70$, b = .37, p = .030), as shown in Figure 7. For respondents who experienced lower levels of PCC, their predicted emotional well-being decreased as their satisfaction (or perceived quality of care) increased. In contrast, respondents who reported higher levels of PCC showed improved predicted emotional well-being, as their satisfaction increased.

Figure 7

Interaction between PCC & Patient Satisfaction

Predicted Emotional Well-being (y-axis: 0, 2, 4, 6, 8, 10, 12, 14, 16, 18)

X-axis: Low Satisfaction — High Satisfaction

Legend: Low PCC — High PCC

Finally, the interaction between PCC and social support, was significant ($\beta = .88$, $b = .47$, $p = .026$), as shown in Figure 8. For respondents who experienced lower levels of PCC, their predicted emotional well-being decreased minimally as their perceived social support increased. In contrast, respondents who reported higher levels of PCC showed improved predicted emotional well-being, as their perceived social support increased.

Figure 8

Interaction between PCC & Social Support

Predicted Emotional Well-being (y-axis: 0, 2, 4, 6, 8, 10, 12, 14, 16, 18)

X-axis: Low social support — High social support

Legend: Low PCC — High PCC
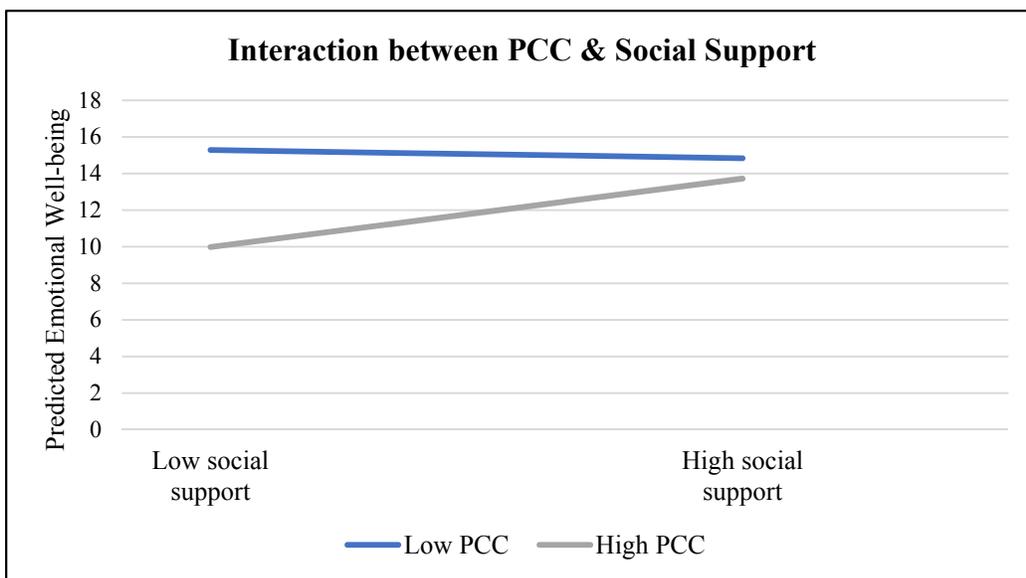
Chapter 5: Discussion

This chapter summarizes study findings, as they relate to the study aims: (1) to test an existing scale measuring patient-centered communication, and (2) to explore the relationship between patient-centered communication, patient trust, patient satisfaction, social support, and self-efficacy, and emotional well-being among young adults between the ages of 26 and 39. Study limitations and strengths are presented, followed by the implications for social work practice, policy, and research.

A Brief Measure of PCC

The first aim of this study was to evaluate a 7-item measure of PCC and to determine its applicability among a sample of young adults. The results of these analyses showed that this single factor measure of PCC is appropriate for use within the young adult population. Lengthier PCC measures have been developed (Salt, Crofford, Studts, Lightfoot, & Hall, 2013) and PCC has been included as a subscale of other measures (Bieber, Muller, Nicolai, Hartmann, & Eich, 2010; Safran et al., 1998). However, the validation of a brief measure for use with young adults can inform future studies using this measure of PCC in a young adult population. In order to improve PCC, we must be able to accurately measure it, especially within different populations.

Main Effects

The final regression model showed that income, depression diagnosis, PCC, patient trust, social support, and self-efficacy were all significantly related to emotional well-being among young adults.

Patient trust. Patient trust was found to be positively associated with emotional well-being among young adults. This is consistent with studies among other patient groups that have

found patients who perceive that they will receive good healthcare have greater emotional well-being (Salkeld, Solomon, Short, & Butow, 2004; Thorne, Hislop, Kuo, & Armstrong, 2006).

Social support. The finding that social support was significantly related to emotional well-being among young adults was consistent with previous research among other populations (Arora et al., 2007). Additionally, social support is often most critical to health when people are feeling stressed or unable to cope (Lucas, Alexander, Firestone, & Lebreton, 2008), making the connection to emotional well-being unsurprising.

Self-efficacy. This study's finding that enhanced self-efficacy is associated with greater emotional well-being among young adults is also consistent with the literature. Self-efficacy involves how confident one feels in their ability to engage in activities to care for one's own health (Lev & Owen, 1996). Greater levels of patient self-efficacy are associated with improved emotional well-being (Hochausen et al., 2008; Magklara & Morrison, 2016).

Patient-centered communication. In the final two regression models, PCC was found to be significantly related to emotional well-being among young adults, but not in expected direction. This study showed that increased PCC was related to decreased emotional well-being. It should be noted that the relationship between PCC and emotional well-being was initially positive, but changed direction in Model 4, when patient satisfaction was added to the model. This change from a positive to negative relationship as variables were added to the model might indicate that subsequent variables of interest act as suppressors of the relationship between PCC and emotional well-being. Additionally, although distributions were deemed to be non-problematic, the sample generally reported high PCC scores – 28% of young adults had an average score of 4 on the PCC scale, which is the highest possible score. Very few respondents

(< 10%) reported a mean score of less than 2 on the PCC scale. This may have resulted in a ceiling effect, whereby the relationship between PCC and emotional well-being was no longer measurable.

It is also important to remember that communication with patients can be impacted by patient-level differences, which may be reflected by the constructs in this model. For example, it might be harder for providers to engage depressed patients, or these patients may be more likely to view communication through a negative lens and therefore rate providers lower in terms of patient-centeredness. Previous research has found that that depressive symptoms negatively affect patient-provider communication quality (Swenson, Rose, Vittinghoff, Stewart, & Schillinger, 2008). This same phenomenon could also occur with patients who are in poorer health. There are also qualities in this study that may naturally align themselves with better PCC. Patients who have better social skills may be more likely to have a strong support network and, easily communicate and engage with providers. Patients who have better self-care skills and are more confident in taking care of their health may also be more likely to have confidence in other areas of life, such as building support networks and interacting with providers in a medical setting.

Interactions

General health status. Post-hoc analyses showed multiple interaction effects in this study. First, the strength of the relationship between self-efficacy and emotional well-being, as well as the relationship between patient trust and emotional well-being, were both influenced by overall health status. Regarding self-efficacy, those respondents who reported poor health status had predicted emotional well-being scores that increased, as their self-efficacy improved. This

same pattern was not evident among respondents who reported excellent health status. Patient trust was subject the same pattern as self-efficacy, in relation to general health and predicted emotional well-being. Those respondents who reported poor health status had predicted emotional well-being scores that increased, as their trust in their healthcare provider improved. This same pattern was not evident among respondents who reported excellent health status. However, those with excellent health had much higher predicted emotional well-being scores, even when self-efficacy and trust were low, so there was not much room for improvement in emotional well-being. These interactions may be an artifact of a ceiling effect. Ultimately, self-efficacy and trust were both important to predicted emotional well-being among young adults who reported poor health, which suggests these may be important areas of exploration with a subsample of young adults who are not in good health. The meaning of these constructs may also differ depending on ones' health and how often one may be receiving care, as those in poor health, or with chronic conditions, may see healthcare providers on a more frequent basis.

Depression. Further, the relationship between self-efficacy and emotional well-being was influenced by whether or not respondents had a history of a depression diagnosis. Among respondents who did report a history of a depression diagnosis, predicted emotional well-being scores showed greater improvement, as their self-efficacy improved, compared to respondents who did not report a history of depression. The respondents without a depression history had much higher predicted emotional well-being initially (mean = 13.6, highest score possible is 16), even when their self-efficacy was low. Therefore, this interaction may also be the result of a ceiling effect, as those who had not been diagnosed with depression and had low self-efficacy, did not have much room for their predicted emotional well-being scores to improve, as self-

efficacy improved. This finding could indicate that there is a need to explore ways to improve self-efficacy, particularly among young adults who have a history of depression, as they might not be receiving services or recommendations to strengthen their confidence in caring for their health, thereby improving their emotional well-being.

Patient-centered communication. Post-hoc analyses also found that the strength of the relationship between PCC and emotional well-being is influenced by both social support and patient satisfaction. Predicted well-being of respondents who reported greater PCC improved as their social support improved, however predicted well-being did not improve in relation to increased social support for respondents who reported low PCC. This might mean that when patients perceive that communication is not patient-centered, social support does not impact the relationship communication and emotional well-being. There may also be person-centered differences among young adults, such that those who are more social, not only tend to have stronger social support, but also tend to communicate better and are therefore easier to engage by providers. Also, the respondents who reported low PCC had higher initial predicted emotional well-being scores than those who reported high levels of PCC, so the interaction may be the result of a ceiling effect. The significant interaction between PCC and social support is consistent with research that has been conducted with other populations, which suggests that healthcare providers may be a primary source of social support for some patients (Gao et al., 2013) and communication is a mechanism by which support is provided and/or expressed to patients.

The interaction between PCC and patient satisfaction was also significant in terms of emotional well-being. Predicted well-being of respondents who reported greater initial PCC improved as their satisfaction, or perceived care quality, improved; however, predicted well-

being did not improve in relation to increased satisfaction for respondents who reported low PCC. In fact, predicted emotional well-being decreased for those who reported low PCC, as their satisfaction increased. This could mean that satisfaction impacts emotional well-being in a counterintuitive manner when patients perceive that PCC is lacking. For example, when communication is poor, yet satisfaction is higher, emotional well-being might decrease because patients are becoming more satisfied with their care, but one aspect – communication – remains poor. This may result in a larger disconnect between what they expect regarding communication, due to increased overall satisfaction with the care they are receiving, resulting in decreased emotional well-being. The degree to which communication is patient-centered may also be considered by some to be a component of overall satisfaction with the healthcare experience. This study was only able to assess one component of satisfaction – perceived care quality – and other satisfaction components are unmeasured. It is also possible that this interaction is the result of a ceiling effect, as those who reported low PCC had higher predicted emotional well-being scores, even when their overall satisfaction was also low. These indirect effects shown by both satisfaction and social support are also consistent with the conceptual framework developed by Street and colleagues, which presented patient satisfaction and social support as two possible intermediate outcomes (2009).

The findings related to social support and satisfaction are important for several reasons. First, they indicate that even for young adults who already report high levels of PCC, improving satisfaction and social support are key to improving emotional well-being. This indicates that focusing solely on enhancing patient-centered communication would be shortsighted, without

creating improvements in other areas, such as social support and overall satisfaction with one's healthcare.

Limitations and Strengths

There are certain limitations which are important to consider when interpreting the findings generated by this study. First, the patient-centered communication responses are all subject to patient perceptions about healthcare interactions over a one-year period and were not independently evaluated. This is subject to recall bias. However, perceived communication is more likely to influence outcomes than observed communication (Beckett, Elliott, Richardson, & Mangione-Smith, 2009). In this study, emotional well-being is defined as one's general affective experience; greater emotional well-being involves higher levels of positive affect and lower levels of negative affect (Larsen & Prizmic, 2008). Due to limitations of the secondary data, described further below, this study was only able to address one component of overall emotional well-being, represented by PHQ-4: a composite indicator that assesses anxiety and depression symptomology. This could also be referred to as the presence of increased negative affect, which is a core component of emotional well-being, as stated above. It is possible that a large proportion of the variance in PHQ-4 scores resulted from the depression diagnosis variable that was included in the regression model or other important variables were not included. Ultimately, there are many factors that affect emotional well-being and PCC that may play a smaller role than some of these other factors.

An additional limitation of this study is the unknown time lag between when the communication occurred between providers and when the PHQ-4 items were asked. For example, patients may have been reporting on communication with providers that occurred 10

months ago and then answering questions about the presence or absence of depressive/anxiety symptomology within the previous two weeks. The communication may no longer have an effect on depressive and anxiety symptomology at that point in time. This study was also unable to identify the content of the conversations between providers and patients. This is an important limitation, because in cases where bad news may have been relayed to patients, lower emotional well-being may be an expected outcome, versus a counterintuitive finding. Therefore, the time lag issue and content discussed between patients and providers should be included in future studies.

This study is limited by the use of perceived care quality as a proxy measure for patient satisfaction. Although perceived care quality has been used to represent patient satisfaction in previous research (Jiang, 2017; Ye, 2014), it does not capture the entirety of the patient satisfaction construct, which includes other aspects of the patient experience. It is possible that using patient-perceived quality of care as a proxy for patient satisfaction is problematic within a young adult population. Interviews with young adult patients conducted by Balfe and colleagues (2013) found that they were unsure about what quality of care they should expect and/or were entitled to receive and proposed that this "meant that young adults could accept suboptimal services without being aware that the care was suboptimal" (p. 464). It follows that young adults could inadvertently rate the quality of care incorrectly. Young adults have also reported being satisfied with their healthcare service, while simultaneously reporting problematic healthcare encounters (Balfe et al, 2013). For example, young adults in Ireland were still likely to rate their providers highly when they believed that their poor experience was the result of governmental or organizational deficits, and not the fault of the provider (Balfe et al., 2013). These findings

suggest that perceived quality of care among young adults may be more related to the quality of the relationship with ones' provider than objective care quality. Social support was also measured as a function of patient perception. However, the quality of perceived social support is more important than actual social support received, when predicting health behavior(s) (Haber, Cohen., Lucas, & Baltes, 2007).

It is likely that the variables in this study influence each other in a bidirectional manner or that certain characteristics are more likely to predict the quality of patient-provider communication. The lack of longitudinal data precludes this study from identifying causal relationships. It should also be noted that the sample of young adults analyzed for this study differed significantly on multiple sociodemographic characteristics, when compared with the young adults that were excluded from analyses. As shown in Appendix G, the young adults included in study analyses were more likely to be female, White, non-Hispanic, have health insurance, have a regular healthcare provider, have a history of depression, and have higher levels of education. This was due to the HINTS survey skip pattern, as only respondents who reported that they had seen a provider in the last year were asked questions pertaining to communication. Therefore, those respondents who had regular providers and health insurance were overrepresented in this sample. Additionally, the respondents in this study were likely not exposed to certain social determinants of health (e.g., poverty, unemployment, community violence) that could have resulted in different findings.

The use of secondary data also introduces certain measurement limitations: satisfaction, trust, and self-efficacy were all assessed with single-item measures which may not have captured the full range of each construct. The data did not provide any information regarding which type

of healthcare provider patients were referencing with their responses. The missing information regarding the healthcare provider introduces a potentially confounding variable that cannot be accounted for in the model. For instance, nurse practitioners may spend more time with patients and therefore deliver more patient-centered communication.

Despite these limitations, this study has many strengths. First, this study makes an important contribution in establishing the validity of a brief 7-item measure of patient-centered communication among young adults. This study also contributes to the extant literature by addressing patient-centered communication, satisfaction, trust, and emotional well-being among young adults. The ultimate goal in studying the relationships between these constructs is to improve young adult health behaviors and outcomes, but a clear understanding of how patient-centered communication is related to satisfaction, trust, and emotional well-being is a necessary and valuable preliminary step. This study's findings regarding the importance of communication, trust in one's healthcare provider, social support, and self-efficacy among young adults provides foundational information that can be used in future research.

Implications for Social Work Practice

This study can help inform social work practice in multiple ways. The concept of patient-centered care is closely aligned with the person-in-environment framework which defines the social work profession. The literature review did not identify any studies addressing patient-centered communication that pertained to social work, which is a major oversight considering that one-third (33%) of all social workers employed in the U. S. are in workplaces in which they are almost certain to encounter both patients and healthcare providers on a regular basis, including ambulatory healthcare facilities, hospitals, and nursing and residential care facilities

(Bureau of Labor Statistics [BLS], 2014). Furthermore, social workers have the ability to influence other constructs presented in this study, which were found to be related to emotional well-being. For example, improved social support was significantly associated with greater emotional well-being among young adults. This is an area where social workers can not only directly provide this support to young adults, but they can also connect patients to resources and help them to develop multiple avenues of support related to their health. Greater self-efficacy was also associated with improved emotional well-being. Social workers have an opportunity to empower patients to take control of their own health and helping them to become confident in making healthcare decisions. This can be accomplished through encouraging and facilitating patient participation in healthcare decision-making, connecting patients with resources, and by providing health-related education. Finally, social workers can play a role in helping clients to more effectively navigate relationships with their healthcare providers, by facilitating communication trainings in healthcare settings to both patients and providers.

Implications for Social Work Education

The findings of this study also have implications for social work education. An important component of social work education is to teach students how to intervene with, or on the behalf of, clients (Council on Social Work Education [CSWE], 2015). This may include negotiation, mediation, and/or advocacy and it is expected that students will learn how to engage in interdisciplinary teams for the benefit of clients (CSWE, 2015). Given that 33% of social workers are employed in healthcare settings (BLS, 2014), an understanding of healthcare organizations and the needs of patients and providers, could be an important area for social work educators to address with students who are interested in working in these settings. Social work

students have an opportunity to learn about the importance of communication between patients and providers and how to aid in this process, where applicable. The principles of PCC are also easily translated to social work. It is important for social workers to also communicate in a client-centered manner that is attentive to client needs – often referred to as meeting the client where he/she is, in social work practice. The tenets of PCC may therefore be directly translated to communication skills training among social work students.

Implications for Social Work Policy

There have been calls for the development of a national policy that would advance and support patient-centered care, of which PCC is a core component (Epstein et al., 2010). The Joint Commission on Accreditation of Healthcare Organizations (JCAHO) has developed PCC standards for hospitals, primarily aimed at addressing health equity issues (JCAHO, 2017). Although hospital standards are helpful, there have not been any standards developed for care in other settings which are specific to PCC. Creating clinical guidelines for providers might encourage the delivery of communication that is more patient-centered.

Directions for Future Social Work Research

This study provides important implications for future research. Longitudinal studies are needed to further explore both the direct and indirect relationships between PCC and emotional well-being. The ability to determine directionality and causality is an important next step. Within a longitudinal study, a full structural equation model that incorporates all constructs from the conceptual model (Street et al., 2009) would be useful in determining if these constructs are related in the hypothesized manner among young adults. A better understanding of the mechanisms by which PCC impacts emotional well-being may allow for the design of

interventions that target improved PCC and/or other constructs in the Street et al. (2009) model. Additional research could explore these constructs among young adults who were not well-represented in this study, such as those without a regular care provider and/or those who are uninsured. There is also a need for research among more diverse groups of young adults, in regard to race, ethnicity, and socioeconomic status, as the relationships may differ in more vulnerable populations.

Research that differentiates between healthcare provider roles (e.g., doctor, nurse practitioner, nurse) is also important, as different types of providers may communicate differently due to factors such as training and organizational constraints. Along with examining different provider roles, research is needed that can explore PCC in different settings with varying contextual factors. For example, it is possible that when seeing a primary care provider in an outpatient setting, more time is spent with the patient and communication is improved, in comparison to seeing a surgical specialist in the hospital. There is a need for research that examines the individual functions of PCC as they relate to emotional well-being among young adults. Certain individual functions (i.e., responding to emotions) may be more relevant than others in relation to emotional well-being. Studies that explore how technology-mediated patient-provider communication, such as telehealth consultations, may differentially impact health outcomes are needed. This type of communication is becoming more common in healthcare and it is critical to understand the potential implications it holds for patient-provider relationships.

Conclusion

Communication between young adults and their healthcare providers is a key factor in the overall healthcare experience, which ultimately impacts numerous health behaviors and

outcomes. It is important to accurately measure patient-centered communication among young

adult populations and to understand how this communication impacts not only emotional well-

being, but also other health outcomes. Engaging young adults in their healthcare as early as

possible bodes well for better long-term health outcomes and a healthier population overall. This

engagement hinges on the patient-provider relationship, of which communication is the

foundation.

Appendix A

Studies Included in Literature Review

Author (Year)	Type of Study	Population	Patient-Provider Communication	Relevant Outcome(s)
Alden et al. (2012)	Cross-sectional	$N = 708$ Young adults age 18-30, who attended a university in the US ($n = 345$) or Japan ($n = 363$).	The focus of this study was communication pertaining to shared decision-making.	**Satisfaction** – Physician decision-making style had significant main effects on how patients evaluated their providers. Both US and Japanese respondent evaluations were highest when physicians used an autonomous style of decision-making, which occurs when the provider explains all the information, while also attending to patient needs and values, and the patient makes the final decision.
Asp et al. (2015)	Qualitative	$N = 16$ Young adults age 19-24, with congenital health disease, living in Sweden.	When discussing their transfer from pediatric to adult care, respondents noted that they wanted complete information about the transition to be communicated by their providers. They also reported a need to be involved in their care and for their providers to treat them as adults once they transitioned to adult care.	**Trust** – Some respondents reported reduce trust in their provider(s) due to a lack of information provided about the transfer to adult care.
Balfe et al. (2013)	Qualitative	$N = 35$ Young adults age 23-30, diagnosed with Type 1 diabetes, living in Ireland.	There were mixed findings pertaining to health service communication outside of appointments; some reported good communication with providers, while others said their providers were difficult to reach and lacked in follow-up.	**Satisfaction** – About two-thirds of respondents reported not being satisfied with their diabetes healthcare professional, due to frustration with very short appointment times and being handed off to younger, more junior doctors. However, most young adults were satisfied with the Irish healthcare system overall. Those who established supportive relationships reported being satisfied with their diabetes care provider.
Davey et al. (2013)	Qualitative	$N = 20$ Young adults age 18-25, living in the UK.	Communication difficulties were highlighted as a major theme that emerged from this study. Some patients expressed a barrier in understanding due to the vocabulary used by the doctor; they also reported that there was a lack of communication regarding the services offered by their doctor. Respondents stated that they had good communication experiences when providers listened to them, were sympathetic, and gave them ample time and opportunity to explain themselves.	**Trust** – This was an important factor to respondents, in choosing a primary care provider. Respondents stated that when they were not able to see their regular provider, they felt there was a breakdown of trust in the relationship.
Pinto et al. (2017)	Cross-sectional	$N = 60$ Young adults aged 18-25, in Northeast Ohio	This study used the Street et al. (2009) model for PPC and utilized a measure that captured multiple PPC functions, such as information exchange, fostering relationships, making decisions, and responding to emotions.	**Emotional Well-Being** – This was operationalized as depressive symptoms. Quality of PPC was found to indirectly impact depressive symptoms, via patient activation (patient motivation to engage in self-care behaviors).

Appendix B

University of Maryland, Baltimore IRB Determination Letter, HP-00075080

University of Maryland, Baltimore
Institutional Review Board
Phone: (410) 706-5037
Fax: (410) 706-4189
Email: hrpo@umaryland.edu

NOT HUMAN RESEARCH DETERMINATION

Date: May 11, 2017

To: Paul Sacco
RE: HP-00075080
Name: Patient-Centered Communication Outcomes among Young Adults

This letter is to acknowledge that the UMB IRB reviewed the information provided and has determined that the submission does not require IRB review. This determination has been made with the understanding that the proposed project does not involve a systematic investigation designed to develop or contribute to generalizable knowledge OR a human participant (see definitions below).

This determination applies only to the activities described in the IRB submission and does not apply should any changes be made. If changes are made and there are questions about whether these activities are human subject research in which the organization is engaged, please submit a new request to the IRB for a determination.

Definitions –

Human Research: Any activity that either:
- Is "Research" as defined by DHHS and involves "Human Subjects" as defined by DHHS ("DHHS Human Research"); or
- Is "Research" as defined by FDA and involves "Human Subjects" as defined by FDA ("FDA Human Research").

Research as Defined by DHHS: A systematic investigation, including research development, testing and evaluation, designed to develop or contribute to generalizable knowledge.

Research as Defined by FDA: Any experiment that involves a test article and one or more human subjects, and that meets any one of the following:
- Must meet the requirements for prior submission to the Food and Drug Administration under section 505(i) of the Federal Food, Drug, and Cosmetic Act meaning any use of a drug other than the use of an approved drug in the course of medical practice;
- Must meet the requirements for prior submission to the Food and Drug Administration under section 520(g) of the Federal Food, Drug, and Cosmetic Act meaning any activity that evaluates the safety or effectiveness of a device; OR
- Any activity the results of which are intended to be later submitted to, or held for inspection by, the Food and Drug Administration as part of an application for a research or marketing permit.

Human Subject as Defined by DHHS: A living individual about whom an investigator (whether professional or student) conducting research obtains (1) data through Intervention or Interaction with the individual, or (2) information that is both Private Information and Identifiable Information. For the purpose of this definition:

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Appendix C

Final Regression Model Showing Weighted Results and Coefficients of Variation

Hierarchical Linear Regression Analyses Predicting Emotional Well-Being (N = 422)

	Model 7			
	b	t	*p*	Coefficient of Variation (%)
Demographic				
Age	-.074	-1.56	.125	64.12
Gender (Male=1)	**.715**	**2.33**	**.024**	**43.01**
Race (White=1)	.048	.09	.927	1084.52
Race (Missing=1)	.677	.91	.368	110.02
Hispanic (Yes=1)	-.261	-.69	.491	143.95
Married/partnered (Yes=1)	.473	1.31	.198	76.58
Education	-.225	-1.60	.116	62.43
Income	**.218**	**2.62**	**.012**	**38.14**
Midwest Region	.008	.02	.988	6666.47
South Region	.186	.43	.672	235.06
West Region	-.690	-1.29	.202	77.34
Health-Related				
Has insurance (Yes=1)	.297	.54	.591	184.94
Has regular provider (Yes=1)	.416	1.31	.195	76.08
General health	**.795**	**2.86**	**.006**	**34.96**
Depression diagnosis (Yes=1)	**-2.70**	**-5.29**	**.000**	**18.90**
PCC	-.371	-1.24	.219	80.40
Patient Satisfaction	.294	1.14	.261	87.95
Patient Trust	.361	.88	.384	113.73
Social Support	**.563**	**2.60**	**.012**	**38.51**
Self-efficacy	.062	.27	.787	367.68
N	394			
F	12.43			
p	< .000			
*R*²	.486			

Appendix D

Summary of Missing Data for Variables of Interest

Missing Data in the Original HINTS 4, Cycle 4 Dataset (N = 422)

Study variable	Missing % (*n*)
Demographics	
Age	0.0 (0)
Gender	0.5 (2)
Race	5.7 (24)
Hispanic ethnicity	1.0 (4)
Marital status	1.0 (4)
Education level	0.5 (2)
Household income	0.2 (2)
Geographic region	0.0 (0)
Health-Related	
Has health insurance	1.2 (5)
Has a regular provider	0.7 (3)
Has received a depression diagnosis in the past	0.7 (3)
General health status	0.5 (2)
Patient-Centered Communication	
Chance to ask all health-related questions you had	0.2 (1)
Gave the attention you needed to your feelings and emotions	0.7 (3)
Involved you in decisions about your health care	0.5 (2)
Made sure you understood how to take care of your health	0.5 (2)
Explained things in a way you could understand	0.2 (1)
Spent enough time with you	0.2 (1)
Helped you deal with feelings of uncertainly about health	0.5 (2)
Patient Satisfaction	0.2 (1)
Patient Trust	0.2 (1)
Social Support	
emotional support	0.7 (3)
friends/family support	0.2 (1)
chores support	0.2 (1)
Self-Care Skills (*self-efficacy)*	0.5 (2)
Emotional Well-Being	
Little interest or pleasure in doing things	0.2 (1)
Feeling down, depressed, or hopeless	0.5 (2)
Feeling nervous, anxious, or on edge	0.5 (2)
Not being able to stop or control worrying	1.0 (4)

Appendix E

Patient-Centered Communication Items from HINTS 2014, Cycle 4

The following questions are about your communication with all doctors, nurses, or other health professionals you saw during the past 12 months.

How often did they do each of the following?

1. Give you the chance to ask all health-related questions you had?

2. Give the attention you needed to your feelings and emotions?

3. Involve you in decisions about your health care as much as you wanted?

4. Make sure you understood the things you needed to do to take care of your health?

5. Explain things in a way you could understand?

6. Spend enough time with you?

7. Help you deal with feelings of uncertainty about your health or health care?

All responses were rated on a 4-point Likert scale (1 = *always*, 2 = *usually*, 3 = *sometimes*, 4 = *never*).

Appendix F

Variance Inflation Factors

Variance Inflation Factors (VIF) for Variable in Final Regression Model (N = 422)

Variable	VIF
Demographic	
Age	1.17
Gender (Male=1)	1.07
Race (White=1)	1.47
Race (Missing=1)	1.55
Hispanic (Yes=1)	1.38
Married/partnered (Yes=1)	1.27
Education	1.44
Income	1.62
Midwest Region	1.99
South Region	2.39
West Region	2.17
Health-Related	
Has insurance (Yes=1)	1.31
Has regular provider (Yes=1)	1.21
General health	2.01
Depression diagnosis (Yes=1)	1.19
PCC	2.27
Patient Satisfaction	3.01
Patient Trust	2.31
Social Support	1.26
Self-efficacy	1.88
Mean VIF	1.70

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