EXPECTANCY IN PELVIC ORGAN PROLAPSE SURGERY AND RECOVERY: FACTOR STRUCTURE AND VALIDITY

by

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A Dissertation

Submitted to the Faculty of Purdue University

In Partial Fulfillment of the Requirements for the degree of

Doctor of Philosophy

Department of Psychology

Indianapolis, Indiana

August 2019

THE PURDUE UNIVERSITY GRADUATE SCHOOL

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ACKNOWLEDGMENTS

I would like to express my deepest gratitude to my advisor and dissertation chair, Kevin Rand. He has been instrumental in the successful completion of this project and the course of my graduate training. His exceptional expertise and guidance have made it possible for me to ask challenging questions and develop exciting new insights. He has shared with me his enthusiasm for research and helped me to develop and expand my own interests for exploration. I cannot overstate the profound effect his advice and leadership has had on my development as a scientist and clinician.

I would also like to thank my committee, Adam Hirsh, Catherine Mosher, and Jane Williams. Their advice and guidance have helped me to develop this project and pushed me to develop a greater understanding of the questions I am asking and the answers I am seeking. Their time and effort through this process is deeply appreciated.

Finally, I would like to acknowledge and thank Michael Heit, Janet Carpenter, and Chen Chen. Without their generosity with their time, expertise, and resources this project would not have been possible.

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ABSTRACT

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Institution: Purdue University
Degree Received: August 2019
Title: Expectancy in Pelvic Organ Prolapse Surgery and Recovery: Factor Structure and Validity.
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Women describe pelvic organ prolapse (POP) surgery as difficult to recover from. Expectancy is related to recovery in other surgeries but has not been examined in POP. There is no established measure of surgery expectancy or utility in women with POP. This research had four aims: 1) to establish the factor structure of a new measure of POP surgery expectancy; 2) to establish predictive validity of the expectancy measure by examining its ability to predict self-rated recovery over time; 3) to establish concurrent validity of the expectancy measure; and 4) to examine the ability of utility to predict additional variance in recovery. Exploratory factor analysis revealed a three-factor solution. Factors are conceptualized as: 1) Bladder/Bowel Function; 2) Sexual Function; and 3) Physical Function. Bladder/Bowel Function correlated with optimism and self-efficacy ($r = .17$, $p = .03$ and $r = .27$, $p = .00$, respectively). Physical Function was predictive of recovery at 42 days (standardized coefficient = .25; $p < .05$). However, these factors were generally poor and inconsistent predictors of recovery. Utility did not predict additional variance in recovery. Potential explanations for the poor predictive ability of the measure are discussed. The development of a measure that amends these limitations may still be beneficial. Further, exploring and establishing the relationship between surgery expectancy, utility, and recovery may guide physician-patient discussions and lead to improved surgical outcomes.

INTRODUCTION

Over 40% of women develop some degree of pelvic organ prolapse (POP) in their lifetime, and 11.1% undergo reconstructive surgery to correct it (Hendrix et al., 2002). POP occurs when pelvic muscles and tissues weaken or fail, resulting in the descent of pelvic organs (Jelovsek, Maher, & Barber, 2007; Low & Tumbarello, 2012). These descending organs put pressure on and change the normal anatomy of the vagina (Jelovsek, Maher, & Barber, 2007; Low & Tumbarello, 2012). Women with POP report that it can limit physical function, impair quality of life (QOL), and cause psychological distress (Dhital, Otsuka, Poudel, Yasuoka, Dangal, & Jimba, 2013; Jelovsek, Maher, & Barber, 2007; Pizarro-Berdichevsky et al., 2016; Roets, 2007; Şahin & Vural, 2015). QOL and psychological distress may improve following surgery (Dhital et al., 2013; Touza, Rand, Carpenter, Chen, & Heit, 2018), but surgical correction of POP is described by patients as difficult to recover from (Muller, 2010). In a recent qualitative study, one participant commented, "This was the worse [*sic*] surgery I've ever had. I was 16 days in a rehab facility," (Muller, 2010, p. 78).

Patients who are better prepared for POP surgery (i.e., have a more accurate understanding of surgery, outcomes, and recovery prior to surgery) report greater satisfaction, greater symptom improvement, and improved QOL (Kenton, Pham, Mueller, & Brubaker, 2007). This suggests that expectancy, a goal-related cognition, may relate to post-surgical outcomes, such as recovery. Women with POP who report the achievement of subjective treatment goals (e.g., the resolution of urinary symptoms) report better outcomes in general (Hullfish, Bovbjerg, & Steers, 2007). Therefore utility, which is related to expectancy and is defined as the subjective importance of an outcome, may also be important in predicting recovery in women with POP (Atkinson, 1957; Heit, Blackwell, & Kelly, 2008; Hullfish, Bovbjerg, & Steers, 2007; Tamir et al., 2015). Currently, there is no validated measure of surgery expectancy or utility in women undergoing surgery to correct POP. Interventions targeting surgery expectancy have been shown to relate to faster recovery in various populations (Kube, Glombiewski, & Rief, 2018; Sadati, Golchini, Pazouki, Jesmi, & Pishgahroudsari, 2014). Understanding how expectancy and utility relate to recovery may be useful in guiding educational interventions and physician-patient discussions regarding surgery and recovery.

Background

The most common risk factors for POP are vaginal childbirth, older age, and increasing body mass index (BMI; Jelovsek, Maher, & Barber, 2007). POP is classified by the organs that are affected, which commonly include the uterus, vagina, bladder, colon, and rectum (Jelovsek, Maher, & Barber, 2007; Low & Tumbarello, 2012). POP typically occurs at more than one site (i.e., anterior, posterior, or apical) and several pelvic organs are usually involved (Jelovsek, Maher, & Barber, 2007).

POP is further categorized by stage. Staging systems measure the extent of organ descent (Persu, Chapple, Cauni, Gutue, & Geavlete, 2011). The most commonly used staging system is the Pelvic Organ Prolapse Quantification System (POP-Q), which describes the severity of POP on a scale from 0 to 4 (Persu et al., 2011). Higher numbers represent more advanced POP (Persu et al., 2011). Advanced POP is commonly defined as the leading edge of prolapse greater than 1 cm beyond the hymen (i.e., stage 2 or higher; Bump et al., 1996; Persu et al., 2011). This benchmark is important because POP-related symptoms often become bothersome enough to require intervention when the cervix has descended beyond the hymen (Jelovsek, Maher, & Barber, 2007; Karabulut, Ozkan, Kocak, & Alan, 2014; Özengin, Duygu, Çankaya, Uysal, & Bakar, 2017).

Women with POP report a range of physical symptoms, including a sensation of a bulge, seeing a bulge, pressure, heaviness, pain, dyspareunia, and changes in bladder/bowel function (Barber et al., 2009; Barber, Walters, & Bump, 2003; Jelovsek, Maher, & Barber, 2007). The sensation of a bulge is the only symptom consistently associated with POP (Hendrix et al., 2002). Women describe symptoms as limiting for QOL, sexual function, and physical activity (Barber et al., 2003; Hendrix et al., 2002). Women report changes in bladder/bowel function, physical function, and sexual function as the foremost reasons in seeking treatment for POP (Hendrix et al., 2002).

Treatment

Broadly, treatment for POP includes non-surgical interventions, reconstructive surgery, or obliterative surgery (Jelovsek, Maher, & Barber, 2007; Low & Tumbarello, 2012). Non-surgical interventions include pelvic floor muscle training and use of a pessary (Jelovsek, Maher, & Barber, 2007). A *pessary* is a removable medical device that provides internal support to pelvic organs (Jelovsek, Maher, & Barber, 2007). Reconstructive surgery for POP is performed either laparoscopically or transvaginally (Jelovsek, Maher, & Barber, 2007). The goal of reconstructive surgery is to restore normal anatomy by reattaching connective tissues and/or repairing damage to the vaginal wall (Jelovsek, Maher, & Barber, 2007) and is generally associated with improvements in symptom severity, sexual function, and QOL (Touza et al., 2018). Reconstructive procedures include attachment of the vaginal vault or cervix to the sacrospinous or uterosacral ligament (sacrocolpopexy and sacrohysteropexy, respectively), use of native tissues to repair the vaginal wall (anterior and posterior colporrhaphy), and insertion of absorbable or biological grafts (Freeman, 2010; Jelovsek, Maher, & Barber, 2007; Linder, Gebhart, & Occhino, 2016). Obliterative surgery involves permanent surgical closure of the vagina (Jelovsek et al., 2007; Linder et al., 2016). Hysterectomy may be performed in conjunction with reconstructive or obliterative surgery (Freeman, 2010; Jelovsek, Maher, & Barber, 2007).

Recovery from reconstructive surgery varies greatly depending on how it is defined (i.e., objective vs. subjective recovery). Typically, recovery is measured objectively by determining the extent to which vaginal anatomy has returned to normal (Barber et al., 2009; Freeman, 2010; Jelovsek, Maher, & Barber, 2007). The National Institutes of Health's (NIH) definition for recovery (i.e., "adequate anatomic support,") is prolapse above 1 cm proximal to the hymen (i.e., POP-Q stage 0 or 1; Barber et al., 2009; Bump et al., 1996). When recovery is measured in this way, recovery rates are around 55%, depending on the type of POP repaired (i.e., site and stage; Barber et al., 2009; Freeman, 2010).

Subjective recovery is defined as the extent to which a patient rates symptoms and function as returned to normal (i.e., the absence of symptoms and return to pre-illness function; Barber et al., 2009; Carpenter et al., 2017). When measured subjectively, recovery rates are between 70% and 90%, depending on the definition used (i.e., self-rating treatment as "very successful," no longer feeling a bulge, and/or feeling "much better"; Barber et al., 2009).

Re-operation rates are between 17% and 29%, again depending on site and stage (Freeman, 2010; Muller, 2010). Factors that predict re-operation are similar to risk factors for POP. Women with higher BMI, older age, and higher stage POP prior to surgery are more likely to require re-operation (Olsen, Smith, Bergstrom, Colling, Clark, 1997; Whiteside, Weber, Meyn, Walters, 2004).

Research on surgical outcomes for POP has largely focused on QOL and sexual function, with little emphasis on psychosocial factors that affect recovery (Touza et al., 2018). While we have limited understanding of the emotional experience of women with POP, it appears that POP negatively affects women's psychological well-being in several ways. Women with POP report worse depressive symptoms (Dhital et al., 2013; Pizarro-Berdichevsky et al., 2016), worse QOL (Dhital et al., 2013; Jelovsek & Barber, 2006; Pizarro-Berdichevsky et al., 2016; Şahin & Vural, 2015), and poorer self-perceived body image than healthy women (Jelovsek & Barber, 2006; Lowenstein et al., 2009; Roets, 2007). Limited evidence suggests that psychological well-being improves following surgical correction of POP (Dhital et al., 2013), but we have poor understanding of whether other psychological factors (i.e., positive expectancy or distress) predict recovery in these women.

Expectancy

One factor that may explain some of the variability in recovery from POP is patient expectancy. *Expectancy*, in this case, refers to a subjective belief about the likelihood of an outcome, such as recovery following surgery (Carver & Scheier, 1998; Engel et al., 2004). Expectancies can be general (e.g., trait optimism) or specific (e.g., expectancy for surgical outcomes; Atkinson, 1957; Carver & Scheier, 1998; Tamir et al., 2015). Expectancies for perioperative surgical events, procedure, and likely outcomes may be important in predicting recovery. Women who rate themselves as better prepared for surgery (i.e., have a more accurate understanding of the procedure, risks, alternatives, benefits, possible complications, and post-operative care) report greater satisfaction, symptom improvement, and improvement in QOL (Kenton et al., 2007). Women who rate themselves as less prepared report worse outcomes, regardless of objective recovery (i.e., POP-Q stage of 0 or 1; Kenton et al., 2007). Surgery expectancy and preparedness include similar elements (i.e., procedure, risks, benefits, and outcomes; Kenton et al., 2007). Surgery expectancy may also predict subjective recovery in these women.

Though not yet examined in POP patients, expectancies have been established as important predictors of outcomes in other disorders (Borkan & Quirk, 1992; Engel, Hamilton, Potter, & Zautra, 2004; Maeland & Havik, 1987; Mondloch, Cole, & Frank, 2001). Expectancy about recovery and function are predictive of actual physical and social functioning following surgery (Borkan & Quirk, 1992; Engel et al., 2004; Maeland & Havik, 1987; Mondloch, Cole, & Frank, 2001). For example, positive expectancy about recovery predicts faster and more complete recovery in elderly hip fracture patients (Borkan & Quirk, 1992). Positive expectancy about surgical outcomes predicts faster recovery after total knee replacement (Engel et al., 2004). Positive expectancies for function and recovery predict faster return to work following myocardial infarction (Maeland & Havik, 1987). Also, pre-operative counseling addressing expectancy and recovery has been shown to relate to faster recovery following laparoscopic cholecystectomy (Sadati et al., 2014), cardiac surgery, gastric bypass, and gastro-intestinal surgery (Kube, Glombiewski, & Rief, 2018). Determining if expectancy predicts recovery in women undergoing surgery for POP could affect how physicians counsel patients about surgery and lead to better outcomes.

Self-Regulation Theory

Self-Regulation Theory (SRT) describes how and why expectancies may relate to and predict health outcomes (Carver & Scheier, 1998). SRT posits that all human behavior is goal-directed. Goal-related cognitions affect goal-directed behavior and goal achievement. Goal-related cognitions include variables such as specific expectancy, optimism, and self-efficacy.

The expectation of a successful outcome, as opposed to failure, affects how tenacious people are in goal pursuits (Carver & Scheier, 1998). If a person believes the likelihood of a desirable outcome, or goal achievement, is high, they are more likely to pursue a goal. For example, the decision to go through surgery may be related to the perceived likelihood (i.e., expectancy) of symptom improvement (Carver & Scheier, 1998; Kenton et al., 2007). Further, people with higher expectancy for success are more persistent in goal pursuits in the face of obstacles. For example, the expectancy that surgery will improve symptoms may affect a patient's decision to pursue surgical treatment, despite the pain and risks involved (Engel et al., 2004).

Expectancy-Value Theory

Expectancy-value theory, which fits under the umbrella of SRT, further explains why goals are pursued (Atkinson, 1957; Tamir et al., 2015). *Utility* is synonymous with value in medical literature and will be used throughout this document. Utility is defined as the subjective importance of a goal (Heit, Blackwell, & Kelly, 2008). For example, a patient may view the reduction of pain as a more important surgical outcome than the restoration of normal anatomy. Expectancy-value theory posits that goal pursuit is not only related to the expectation of success, but also to the utility of the expected outcome

(Atkinson, 1957; Tamir et al., 2015). Similar to expectancy, utility influences persistence in goal pursuits (Atkinson, 1957; Tamir et al., 2015). Goals that have high utility may be pursued even if the expectancy of success is low (Atkinson, 1957; Tamir et al., 2015).

Utility appears to be a unique predictor of goal pursuit beyond expectancy (Affleck, Tennen, Zautra, Urrows, Abeles, & Karoly, 2001; Atkinson, 1957; Tamir et al., 2015). For example, in women with fibromyalgia, the utility of health and social goals, and not expectancy, was a unique predictor of average effort and progress toward goals across all study days (i.e., on days with more pain/fatigue and days with less; Affleck et al., 2001). In contrast, the ability of expectancy to predict goal pursuit and progress was only apparent on days when fatigue was increased (Affleck et al., 2001). Additionally, women with higher positive expectancy (and not utility) were less likely to identify pain as a barrier in goal pursuit (Affleck et al., 2001).

Along with expectancy, utility may be an important predictor of surgical outcomes. Increasingly, patients' treatment goals and their subjective utility are being seen as important indicators of treatment success in women with POP (Elkadry, Kenton, FitzGerald, Shott, & Brubaker, 2003; Hullfish, Bovbjerg, & Steers, 2007). For example, goals, such as the resolution of symptoms and improved physical and sexual function, are reported by patients as more important than improvement of anatomical POP (Freeman, 2010; Hullfish et al., 2007). Also, women who report achievement of subjective treatment goals, and not objective treatment goals, are more likely to report positive surgical outcomes (i.e., resolution of symptoms; Hullfish, Bovbjerg, & Steers, 2004; Lawndy, Withagen, Kluivers, & Vierhout, 2011; Lowenstein et al., 2007). Measuring surgery expectancy alone, without also considering the effect of utility on recovery, may leave out an important piece of this puzzle. Measuring utility allows researchers to examine not just what the patient thinks will happen, but how important that outcome is to the patient.

Current Study

As there is currently no measure of surgery expectancy for women with POP, my overall goal was to develop a measure of surgery expectancy for use with this population. Also, the ability of surgery expectancy and utility to predict recovery has not been established in women with POP. Consequently, this study had four aims. The first aim was to determine the factor structure of a new measure of surgery expectancy in women undergoing surgery for POP. The second aim was to examine the predictive validity of surgery expectancy through the measure's ability to predict self-rated recovery over time. The third aim was to examine concurrent validity of surgery expectancy through correlation with measures of trait expectancy (i.e., trait optimism and general self-efficacy). The fourth aim was to examine the ability of surgery utility to predict additional variance in recovery, beyond surgery expectancy.

Aims and Hypotheses

Below is a list of the four aims of this study and specific hypotheses that were tested to address each aim.

Aim 1: Determine the factor structure of a new measure of surgery expectancy in women undergoing reconstructive surgery for POP.

Hypothesis 1: I predicted exploratory factor analysis (EFA) would reveal distinct factors related to surgery expectancy. As this is exploratory, I did not have an a priori hypothesis for factor structure.

Aim 2: Examine the predictive validity of the surgery expectancy factors by determining their ability to predict self-rated recovery over time following surgery.

Hypothesis 2: I predicted greater surgery expectancy would predict greater recovery at 7 days, 14 days, 42 days, and 90 days.

Aim 3: Examine the concurrent validity of the surgery expectancy measure by examining its correlation with measures of trait expectancy (i.e., optimism and self-efficacy).

Hypothesis 3: I predicted that greater surgery expectancy would correlate with greater optimism and self-efficacy.

Aim 4: Determine whether utility accounts for additional variance in self-rated recovery over time.

Hypothesis 4: I predicted utility would account for additional variance in recovery at 7 days, 14 days, 42 days, and 90 days, above and beyond surgery expectancy.

METHOD

This was a longitudinal, observational study of patients' surgery expectancy and the ability of surgery expectancy to predict recovery in women with POP. I examined the factor structure and validity of a new measure of surgery expectancy, as well as its ability to predict self-reported recovery over time. I also examined the ability of surgery utility to predict additional variance in recovery. This study was approved by the Institutional Review Board of Indiana University (IU).

Sample

A convenience sample of 200 patients with stage 2 or higher POP undergoing corrective surgery were recruited from IU Hospital between December 2013 and October 2016. Women were approached by their surgeon or a research nurse after their pre-operative surgical consultation visit. They were given an information sheet describing the purpose of the study, participation requirements, risks involved, potential benefits, and alternatives to participation. Interested women were asked to complete a secure, online questionnaire prior to surgery and an online measure of self-rated recovery at 7 days, 14 days, 42 days, and 90 days after surgery (plus or minus 3 days at each time point). Inclusion criteria were: 1) women with stage 2 or higher POP undergoing traditional laparoscopic sacrocolpopexy; 2) age over 18 years; 3) English speaking; 4) able to provide informed consent; 5) felt comfortable responding to web-based surveys; and 6) had a reliable internet connection at home.

Expectancy Measure Development

Items on the measure of surgery expectancy were developed from a qualitative study that examined patient goals and expectations with regard to POP surgery (Lawndy et al., 2011). Participants reported concerns related to POP surgery that generally centered around fear of developing new symptoms, POP recurrence, complications during surgery, and deficits in physical and sexual function (Lawndy et al., 2011). Women reported specific concerns about: 1) deficits in bladder/ bowel function (e.g., "To become incontinent."); 2) surgery failure or recurrence (e.g., "That I will soon get [*sic*] recurrence."); 3) vaginal mesh (e.g., "I hope that no rejection of the mesh occurs."); 4) general surgical complications (e.g., "That there are complications during or after the operation."); 5) physical and sexual function (e.g., "That my vagina become narrow that sex become [*sic*] impossible."); and 6) difficulty performing daily activities (e.g., "That [*sic*] hinders me in the daily activities."; Lawndy et al., 2011, p. 1161).

Participants also reported goals relating to resolution of symptoms, physical function, sexual function, and psychological well-being (Lawndy et al., 2011). Specific goals included: 1) resolution of urinary and bowel symptoms (e.g., "That I can walk for two hours as before without having to pee 3 times."); 2) reduced treatment needs (e.g., "No need for using a pessary."); 3) reduced pain (e.g., "No more back pain."); 4) resumption of normal activities (e.g., "To do my work and sport optimally without all those problems."); 5) resumption of normal sexual function (e.g., "Sex without pain."); and 6) improved energy (e.g., "No more feeling tired."; Lawndy et al., 2011, p. 1162).

Measures

As part of the baseline questionnaire, women were asked to indicate their age, race, Hollingshead 4-factor index of socioeconomic status (SES; Hollingshead, 1975), and education level (i.e., some high school, high school graduate, some college, college graduate, or graduate degree). BMI and prolapse stage were measured by the medical team prior to surgery. Sample demographics are described in Table 1.

Expectancy and Utility

Expectancy and utility of POP surgery were measured using the Postoperative Expectation of Reconstructive Pelvic Surgery Scale (PERPS; Appendix C1). It is a self-report measure of outcome expectancy and the utility of having surgery to correct POP. The original set of PERPS items included 27 expectancy items and 27 corresponding utility items. Responses are indicated on a visual analogue slider scale from 0 to 100. For the expectancy items, the left anchor is "not at all likely," and the right anchor is "definitely likely." Negatively-worded items are reverse scored, such that higher scores indicate greater positive expectancy and utility. Each utility item is the same and is paired with an expectancy item (i.e., "How important is this belief in your decision to have surgery for pelvic organ prolapse?"). For the utility items, the left anchor is "not important," and the right anchor is "extremely important."

The PERPS structure was developed based on the Expectation from Incontinence Care Seeking Questionnaire (EICS-Q; Heit, Blackwell, & Kelly, 2008). The EICS-Q is a 12-item self-report measure of expectancy and utility in seeking care for urinary incontinence. The PERPS and the EICS-Q are both based on expectancy-value theory, which posits that the decision to pursue a goal is based on the expectancy of goal achievement and the subjective utility (value) of an outcome (Atkinson, 1957). The EICS-Q has moderate internal consistency (Cronbach's alpha= .56; Heit et al., 2008). The EICS-Q has a three-factor structure: (1) Control, (2) External Fear and Anxiety, and (3) Internal Fear and Anxiety (Heit et al., 2008).

Although the PERPS was developed based on the EICS-Q, the PERPS items do not reflect the same factors as the EICS-Q (i.e., Control, External Fear and Anxiety, and Internal Fear and Anxiety). The EICS-Q includes items that assess fears, such as stigma (i.e., "I would be labeled a hypochondriac" and "I would be told it was caused by something I had done in my past") and fears about the emotional experience of seeking care (i.e., "I would be embarrassed"). The PERPS primarily includes items related to symptoms and function (i.e., "I will empty my bladder completely"). Further, the EICS-Q assesses expectancy and utility related to seeking care for incontinence, while the PERPS assesses expectancy and utility related to having surgery to correct POP. Therefore, the PERPS was judged to be essentially different from the EICS-Q such that an EFA was warranted to determine the factor structure of the PERPS.

Self-Rated Recovery

The Postdischarge Surgical Recovery Scale 13 (PSR13) was used to measure recovery at follow-up (Appendix C2; Carpenter et al., 2017). The PSR13 is a 13-item self-report measure of recovery after surgery (i.e., "level of recovery"). Responses are indicated on a visual analogue slider scale coded 0 to 100. Left and right anchors vary by question. Higher scores indicate greater recovery. The PSR13 has been validated in women undergoing reconstructive surgery for POP and had good internal consistency in this sample (Cronbach's alpha = .91; Carpenter et al., 2017). The PSR13 has a single-factor structure representing overall recovery from POP surgery (Carpenter et al., 2017). Scores on the PSR13 correlate with a single item of perceived global surgical recovery (i.e., "If 100% recovery is back to your usual health, what percentage of recovery are you now?"), suggesting validity ($r = 0.70$, $p < .001$; Carpenter et al., 2017). The PSR13 was chosen over a single item recovery measure because self-rated recovery appears to be a more complex concept than the one item captures. For example, reporting a return to normal activity is a stronger indicator of recovery than the absence of pain (Carpenter et al., 2017).

Subjective reporting of recovery (i.e., self-rated recovery) was chosen over objective anatomical indicators of recovery. Measuring recovery subjectively may be preferable because POP stage does not consistently correlate with symptom presence or severity (Barber et al., 2009; Kenton et al., 2007). Some women with lower stage POP report more severe symptoms than women with higher stage POP (Barber, Walters, & Bump, 2003; Jelovsek, Maher, & Barber, 2007). Also, patients' expectations for surgery and recovery have been shown to relate more strongly to post-operative symptom improvement than objective cure (Kenton et al., 2007). When considering symptom improvement and changes in QOL, self-rated recovery may be a better indicator of successful treatment then objective markers (i.e., POP-Q stage; Barber et al., 2009; Kenton et al., 2007).

Concurrent Validity

Surgery expectancy is a specific expectancy and is conceptually related to more general expectancies (i.e., optimism and self-efficacy) in SRT (Carver & Scheier, 1998). *Optimism* is the general expectancy that good, as opposed to bad, outcomes will occur

(Scheier, Carver, & Bridges, 1994). *Self-efficacy* refers to beliefs about one's own ability to bring about positive outcomes (Schwarzer & Jerusalem, 1995). Although self-efficacy is traditionally thought of as a situation-specific expectancy (Bandura, 1997), general self-efficacy applies to a broad range of situations (Schwarzer & Jerusalem, 1995).

In contrast to the general stability of optimism and self-efficacy, surgery expectancy is a more labile cognition focused on the outcome of a particular goal or situation (i.e., recovery following surgery; Engelschalk, Steuer, & Dresel, 2016; Tamir, Bigman, Rhodes, Salerno, & Schreier, 2015). Both optimism (Ronaldson et al., 2014; Scheier et al., 1989) and self-efficacy (Brembo, Kapstad, Van Dulmen, & Eide, 2017; Engel et al., 2004; Hartley, Vance, Elliott, Cuckler, & Berry, 2008) are also predictive of faster recovery following surgery.

Optimism

The Life Orientation Test-Revised (LOT-R) was used to measure trait optimism (Appendix C3; Scheier et al., 1994). The LOT-R is a 10-item self-report measure of dispositional optimism (e.g., "In uncertain times, I usually expect the best."). It includes four distractor items, such that the total score is calculated from six items. Responses range from "strongly disagree" to "strongly agree" on a five-point Likert-type scale. Several items are reverse scored such that higher scores indicate greater optimism. The LOT-R showed good internal consistency in this sample (Cronbach's alpha = .83).

Self-Efficacy

The General Self-Efficacy Scale (GSE) was used to measure self-efficacy (Appendix C4; Schwarzer & Jerusalem, 1995). The GSE is a 10-item self-report measure of perceived general self-efficacy (e.g., "I can always manage to solve difficult problems if I try hard enough.”). Responses range from “not at all true” to “exactly true” on a four-point Likert-type scale, with higher scores indicating higher self-efficacy. The total score for the GSE was used to indicate level of self-efficacy (Schwarzer & Jerusalem, 1995). The GSE showed good internal consistency in this sample (Cronbach’s alpha = .89).

Data Analysis

Data were examined for missingness and normality. The quantity of missing data was examined via frequency counts. The pattern of missing data was examined using Little’s (1988) test for missing completely at random. Demographic characteristics were compared between participants who completed the study and those who were excluded. Continuous variables were compared using *t* tests and categorical variables were compared using the chi square test.

Exploratory Factor Analysis

Aim 1 of this study was to determine the factor structure of a new measure of surgery expectancy in women undergoing reconstructive surgery for POP. To determine the factor structure of the PERPS, I performed an EFA following guidelines provided by Costello and Osborne (2005). I used direct oblimin rotation, which is a method of oblique rotation. I used oblique rotation because I expected the factors to correlate (Costello & Osborne, 2005). Visual inspection of histograms and score ranges of the PERPS item distributions suggested the distributions were non-normal. I used principle axis factoring to extract the factors, as this method is considered the best approach for non-normal data (Costello & Osborne, 2005).

To determine which items should be retained and which items should be removed, I considered the strength of the relationship between each item and factor, indicated by item loadings (Beavers, Lounsbury, Richards, Huck, Skolits, & Esquivel, 2013; Costello & Osborne, 2005). Item loadings below .40 are considered weak, loadings between .40 and .70 are considered moderate, and loadings above .70 are considered strong (Costello & Osborne, 2005). As a rule, an item loading below .32 indicates that there is not enough commonality to justify its retention (Beavers et al., 2013; Costello & Osborne, 2005). Additionally, an item that loads onto more than one factor above .32 is “crossloading” and should be removed (Beavers et al., 2013; Costello & Osborne, 2005). With these rules in mind, I considered items that loaded onto more than one factor above .32 or on all factors below .32 to have poor psychometric properties. I removed these sequentially and re-ran the EFA. After this iterative process of item removal and re-running the EFA, the final PERPS scale included 8 expectancy items and 8 utility items.

I considered Eigenvalues and the scree plot to determine the number of factors that should be retained from the EFA (Costello & Osborne, 2005). Simply put, Eigenvalues are a representation of variance in the correlation matrix, such that a higher value indicates greater variance (i.e., a more meaningful factor; Bentler, & Yuan, 1996). Generally, factors with Eigenvalues over 1.0 are retained (Costello & Osborne, 2005). However, this method can result in extracting too many factors, and it is suggested that the scree plot should also be considered in determining the number of factors (Costello & Osborne, 2005). The scree plot is a graph of the Eigenvalues in descending order of magnitude against factor number (Bentler, & Yuan, 1996). The point at which the plot begins to level out indicates the number of meaningful factors, beyond random error (Bentler, & Yuan, 1996; Costello & Osborne, 2005).

Costello and Osborne (2005) suggest testing models with one less and one more than the number of factors suggested by the EFA. In other words, if the scree plot and Eigenvalues suggest a three-factor solution, two-, three-, and four-factor solutions should be considered. The model with the best properties (i.e., factor loadings and theoretical soundness) should be retained (Costello & Osborne, 2005). For the PERPS, a three-factor solution was suggested by the scree plot and Eigenvalues. Therefore, I tested two-, three-, and four-factor solutions. I examined the internal consistency of the final set of items by calculating Cronbach's alpha.

Structural Regression Models

Aim 2 of this study was to examine the predictive validity of the surgery expectancy by examining its ability to predict self-rated recovery. To examine the ability of the PERPS to predict recovery over time, I ran a series of latent-variable path analyses (Kline, 2005). The three PERPS factors were set as predictors of self-rated recovery at four-time points. I created an asymptotic covariance matrix of the estimated polychoric correlations, rather than analyzing the raw data. Because there is no established data imputation method for this technique, missing data were deleted listwise.[1] Polychoric correlations are appropriate for ordinal data for which the assumption of normality in the underlying the data is violated (Jin & Yang-Wallentin, 2017; Jöreskog, 1994). This

[1] The structural models were also tested using maximum likelihood estimation and full information maximum likelihood imputation for missing data. While model fit was good, the factors were not better predictors using this method. Using the asymptotic correlation matrix and weighted least squares is a fairly conservative approach indicated for non-normal data (Jin & Yang-Wallentin, 2017; Jöreskog, 1994). Models created using the asymptotic correlation matrix and weighted least squares were retained and are commented on in this research.

method is suggested as robust against data that are highly skewed (Jin & Yang-Wallentin, 2017). The asymptotic covariance matrix uses weighted least squares to estimate the parameters of the model. I specified the model such that PERPS factors were allowed to freely covary, as I had no a priori hypothesis of causal relationships between the factors. To test the ability of the PERPS factors to predict recovery, I specified directional paths from the PERPS factors to recovery.

I created separate path models for each recovery time point (i.e., individual models were created for the 7-day, 14-day, 42-day, and 90-day recovery time points). I ran each path model twice, first with only the three PERPS factors as predictors, and a second time with optimism and self-efficacy included in the model. In the path models, I specified the PERPS factors, optimism, and self-efficacy to freely covary, as I had no a priori hypothesis that there were causal relationships among these constructs. I also specified directional paths from optimism and self-efficacy to recovery.

I examined model fit with the following fit indices: 1) the chi-square statistic; 2) the Akaike Information Criterion (AIC; Akaike, 1987); 3) the standardized root mean square residual (SRMR; Bentler, 1995); 4) the root mean of approximate error (RMSEA; Steiger & Lind, 1980); 5) the comparative fit index (CFI; Bentler, 1990); and 6) the non-normed fit index (NNFI; Bollen, 1989), as suggested by Hu and Bentler (1999). Acceptable model fit was indicated by a non-significant ($p > .05$) chi-square statistic. The AIC is used to compare non-nested models and the lower AIC value is considered the better model (Lin & Dayton, 1997). For the other indices, acceptable model fit was defined as: (1) SRMR < .08; (2) RMSEA < .06; (3) CFI > .95; and (4) NNFI > .95 (Hu & Bentler, 1999; Kline, 2011).

Supplemental Expectancy Analysis

I conducted additional analyses to further examine the relationship between surgery expectancy and recovery. I ran a series of hierarchical linear regressions with the PERPS factors predicting recovery. I ran a separate regression for each recovery time point. I set missing values to be excluded pairwise. I entered all PERPS factors in step one of the analyses. I examined the standardized regression coefficient and significance value to determine the relationships between each factor and recovery. For these analyses, PERPS factors were coded such that higher scores indicate greater positive expectancy.

Concurrent Validity

Aim 3 of this study was to examine the concurrent validity of the surgery expectancy measure by examining its correlations with measures of general expectancy. I examined concurrent validity by correlating the PERPS with measures optimism and self-efficacy. I ran bivariate Pearson correlations to examine these relationships. I examined the significance of each relationship and the strength of the correlations. For this analysis, I coded PERPS factors such that higher scores indicate greater positive expectancy.

Utility Analysis

Finally, the Aim 4 of this study was to determine whether surgical utility accounted for additional variance in self-rated recovery beyond surgery expectancy. The utility score is calculated by summing the products of each expectation/utility item pair and dividing by the total number of items. I examined the ability of utility to predict additional variance in recovery above and beyond the PERPS factors through a series of hierarchical linear regressions. For these analyses, PERPS factors were coded such that higher scores indicate greater positive expectancy. I entered the three PERPS factors in step one and the overall utility score in step two of the regression. I set missing values to be excluded pairwise. I ran separate regressions for each recovery time point. The change in R^2 from step one to step two indicates the amount of variance in the outcome variable accounted for by the step two variable, above and beyond the step one variable. Therefore, I examined the change in R^2 to determine if utility accounted for any additional variance in recovery.

Supplemental Utility Analysis

I conducted additional analyses because I was concerned that the way utility was calculated prevented me from examining utility as a unique predictor of recovery. My aim was to determine if utility predicted recovery above and beyond surgery expectancy. Through multiplying utility scores with expectancy scores an interaction term was created, rather than a discrete utility value. I ran an additional series of hierarchical linear regressions with the untransformed utility score predicting recovery. I ran a separate regression for each recovery time point. I set missing values to be excluded pairwise. I entered all PERPS factors in step one of the analyses and the untransformed utility score in step two. I examined the change in R^2 to determine if utility accounted for any additional variance in recovery. For these analyses, utility was coded such that higher scores indicate greater utility.

RESULTS

One-hundred and seventy-one participants completed the baseline survey (see Table 1 for participant demographics). Of the 200 enrolled participants, 29 were lost to follow-up for the following reasons: 1) 14 did not complete the baseline survey; 2) 4 did not have surgery; 3) 2 did not undergo traditional laparoscopic sacrocolpopexy; 4) 4 completed the recovery measure at greater than 3 days past the required time-point; and 5) 5 did not receive the recovery measure due to researcher error. Of these 171 participants, 149 (87.13%) completed the recovery measure at the 7 days, 156 (91.23%) at 14 days, 155 (90.64%) at 42 days, and 134 (78.36%) at 90 days.

There were no significant differences between participants who completed the study and those who were lost to follow-up with respect to age, SES, or POP-Q stage. Participants who were excluded had significantly higher BMI than those who completed the study (29.97 vs. 28.09 kg/m2, $p = 0.029$).

Missingness and Normality

For the PERPS, 8.19% (n = 14) of participants had missing data. Of these, four participants were missing the entire scale and were removed from the analysis. For the LOT-R, 4.09% (n = 7) of participants had missing data. Two participants were missing the entire scale, and these participants were removed from analyses. One participant was missing most of the scale (66.67% missing). This participant was removed from the analysis, as using a prorated mean derived from less than half the items on a scale may introduce bias into analyses (Graham, 2009). The remaining four participants were missing one item on the LOT-R. The missing items for these participants were imputed using the mean score on the scale for each participant. For the GSE, 9.36% (n = 16) of participants had missing data. Of these, two participants were missing the entire scale and were removed from analyses. The remaining 14 participants were missing one item on the GSE. The missing value was imputed using the mean score on the scale for each participant. To determine the pattern of missing data, I performed Little's (1988) test for missing completely at random and found no evidence for a significant pattern of missing data (Chi-square = 2685.42, df = 2625, $p = .20$).

Next, the data were examined for normality. I examined the distributions of total scores for the LOT-R, GSE, and PSR13. The LOT-R was slightly negatively skewed (-0.33) and platykurtic (-0.19). The GSE was also negatively skewed (-0.24) but leptokurtic (0.29). The skew of PSR13 scores ranged from -1.09 to 0.19 and kurtosis ranged from -0.86 to 0.52. These skew and kurtosis values are well within acceptable limits according to Kline (2005), who suggests that skew within the absolute value of 3.0 and kurtosis within the absolute value of 10.0 are acceptable. Normality was also assessed visually via histogram and data appeared to approximate normality. See Table 2 for means and standard deviations.

PERPS items were examined individually for normality. For the original set of expectancy items, skew ranged from -2.94 to 0.59, with 24 of 27 items negatively skewed. Kurtosis ranged from -1.78 to 9.18, with 17 of 27 items leptokurtic. For the final set of eight expectancy items, skew ranged from -2.64 to 0.59 and kurtosis ranged from -0.93 to 6.58. These skew and kurtosis values are within acceptable limits (Kline, 2005). For the original set of utility items, skew ranged from -4.03 to -0.39 and kurtosis ranged from -1.32 to 17.31. However, the skew and kurtosis ranges for the final set of eight utility items (-1.72 to -0.39 and -1.32 to 2.45, respectively) were within acceptable limits, and therefore I did not transform any utility items for normality. Cronbach's alpha for the final set of eight expectancy items was .62.

Despite skew and kurtosis being within acceptable limits for the PERPS expectancy items (Kline, 2005), item distributions appeared non-normal when I examined them visually via histogram. I noted two response patterns. For some items, responses loaded almost entirely to one end of the distribution and indicated a tendency to report strong positive expectancy (see Figure 1). For other items, responses loaded on each end of the distribution, which created a bimodal distribution (see Figure 2). I comment on the implications of the participants' tendency to exclusively report positive expectancy and high utility on all items in the discussion.

The bimodal distributions occurred exclusively in negatively-worded items that indicated desired outcomes, (e.g., "I won't feel or see a bulge or tissue protruding from my vagina"). These bimodal distributions did not occur in positively-worded items that indicated an undesired outcome (e.g., "Bowel leakage will be a problem"). I believe that these distributions reflect participants having difficulty understanding how to respond. For these negatively-worded items, participants had to comprehend the meaning of the item and choose between the negatively-worded left anchor (i.e., "Not at all likely") and the positively-worded right anchor (i.e., "Definitely likely"). This resulted in a double negative, which may have created confusion. For example, to indicate positive expectancy on the item, "When going out, I won't need to wear pads," a participant would need to respond on the "Definitely likely" end of the response scale.

Research suggests that negatively-worded items are more difficult to understand and respond to (van Sonderen, Sanderman, & Coyne, 2013) and that negatively-worded items tend to create method effects attributed to a response style unrelated to the measured construct (Tomás, Oliver, Galiana, Sancho, & Lila, 2013; Warr, Barter, & Brownbridge, 1983). Because the responses to these items likely did not reflect accurate responding, I removed all negatively-worded items from analyses (see Appendix C5 for a list of removed items).

Factor Structure

Aim 1 of this study was to determine the factor structure of a new measure of surgery expectancy in women undergoing reconstructive surgery for POP. I conducted an EFA in SPSS (Version 24), using direct oblimin rotation and principle axis factoring. Based on Costello and Osborne's (2005) guidelines, I removed items that loaded below .32 on all factors or that loaded onto more than one factor above .32 in the pattern matrix. Using these criteria in an iterative process of item removal and EFA, I arrived at final set of eight items with a three-factor solution (see Table 3). The strengths of factor loadings ranged from weak but acceptable (.38) to strong (.73; Beavers et al., 2013; Costello & Osborne, 2005). Both the scree plot (see Figure 3) and Eigenvalues (see Table 4) indicated a three-factor solution. The three-factor solution accounted for 59.24% of variance. The three factors demonstrated acceptable discriminant validity, with correlations lower than 0.85, which suggests the factors are distinct from each other and supports a three-factor solution (Kline, 2005).

I also examined two- and four-factor solutions, as suggested by Costello and Osborne (2005). Using the final set of 8 items, I designated the EFA to extract two and four factors. The two-factor solution had poor factor loadings for two items (i.e., loadings below .32 on both factors; see Table 5) and accounted for less variance (44.82%). The four-factor solution produced acceptable factor loadings (i.e., no cross loadings and loadings above .32; see Table 6). However, the factor loadings were weaker in general and the solution made less theoretical sense compared to the three-factor model. With the four-factor model, items that measured bladder function were broken up onto separate factors. Therefore, I retained the three-factor solution.

The factors are named: 1) Urinary/Bowel Function; 2) Sexual Function; and 3) Physical Function (see Table 3). The Urinary/Bowel Function factor included four items: 1) “I will be able to walk for two hours without having to urinate three times;” 2) “I will empty my bladder completely,” 3) “Urine leakage will be a problem;” and 4) “Bowel leakage will be a problem.” This factor measures expectancy for urinary and bowel symptoms following surgery. The Sexual Function factor included two items: 1) “My vagina will be narrowed, making sex a problem;” and 2) “Loss of sensation during sex will be a problem.” This factor measures expectancy related to changes in sexual function following surgery. The Physical Function factor also included two items: 1) “I will have lifting restrictions;” and 2) “My recovery will take longer than 6 weeks.” This factor measures expectancy for physical function/ability following surgery.

I assessed fit for the three-factor model through confirmatory factor analysis in LISREL (see Figure 4; Joreskog & Sorbom, 2015). The three-factor model showed good fit on several indices: (1) the minimum fit function chi-square was not significant (chi-square = 9.04, df = 17, p = .94); (2) the SRMR (Bentler, 2007) was .03, therefore below the cutoff value of .06; (3) the RMSEA (Steiger & Lind, 1980) was .00 (90% confidence interval = .00 to .02); (4) the CFI (Bentler, 1990) was 1.00; and (5) the NNFI (Bollen, 1989) was 1.10 (see Table 7 for fit indices).

Predictive Validity

Aim 2 of this study was to establish predictive validity of the expectancy measure by examining its ability to predict self-rated recovery over time. I used latent-variable path analysis to examine the ability of the PERPS factors to predict self-rated recovery

Seven-Day Time Point.

I first tested models that included only the three PERPS factors as predictors. I then tested models that also included optimism and self-efficacy as predictors. I first tested a model with the three PERPS factors predicting recovery at 7 days post-surgery (see Figure 5 and Table 8). The model showed good fit to the data (Chi-square = 28.34, df = 22, $p = .17$; AIC = 74.34; SRMR = .05; RMSEA = .04, 90% CI = .00 to .08; CFI = 0.96; and NNFI = 0.93). However, none of the PERPS factors were significant predictors of recovery at this time point ($p > .05$).

I then tested a model with the three PERPS factors, optimism, and self-efficacy predicting recovery at 7 days post-surgery (see Figure 6 and Table 9). Evidence for model fit was poor (Chi-square = 51.09, df = 32, $p = .02$; AIC = 119.09; SRMR = .06; RMSEA = .06, 90% CI = .03 to .09; CFI = 0.91; and NNFI = 0.85). Poor model fit prevented me from interpreting the predictive ability of the expectancy measures. Modification indices did not suggest any structural changes to improve fit.

Fourteen-Day Time Point

The third model I tested included the three PERPS factors as predictors of recovery at 14 days post-surgery (see Figure 7 and Table 10). Evidence for model fit was poor (Chi-square = 39.51, df = 22, p = .01; AIC = 85.51; SRMR = .06; RMSEA = .07, 90% CI = .03 to .10; CFI = 0.90; and NNFI = 0.84). This, again, prevented me from interpreting the predictive validity of the PERPS factors. Modification indices did not suggest any structural changes to improve model fit.

When optimism and self-efficacy were included, evidence for model fit was again poor at this time point (Chi-square = 63.62, df = 32, p = .00; AIC = 131.62; SRMR = .06; RMSEA = .08, 90% CI = .05 to .10; CFI = 0.87; and NNFI = 0.78; see Figure 8 and Table 11). Again, I was unable to interpret this model due to poor fit and modification indices did not suggest any changes.

Forty-Two-Day Time Point

The next model I tested included the three PERPS factors predicting recovery at 42 days post-surgery (Figure 9 and Table 12). Evidence for model fit was good (Chi-square = 13.23, df = 22, p = .93; AIC = 59.23; SRMR = .04; RMSEA = .00, 90% CI = .00 to .02; CFI = 1.00; and NNFI = 1.10). Physical Function was a significant predictor of 42-day recovery (standardized coefficient = .25; $p < .05$). Bladder/Bowel Function and Sexual Function were not significant predictors of recovery ($p > .05$).

When optimism and self-efficacy were included, evidence for model fit was again good (Chi-square = 36.30, df = 32, p = .28; AIC = 104.30; SRMR = .05; RMSEA = .03, 90% CI = .00 to .07; CFI = 0.98; and NNFI = 0.96; see Figure 10 and Table 13). Physical Function was again a significant predictor of 42-day recovery (standardized coefficient =

.24; $p < .05$). Bladder/Bowel Function, Sexual Function, optimism, and self-efficacy were not significant predictors of 42-day recovery ($p > .05$).

Ninety-Day Time Point

The model would not converge when only the three PERPS factors were included as predictors of recovery at 90 days post-surgery. When optimism and self-efficacy were included in the model, it converged and evidence for model fit was good (Chi-square = 33.83, df = 32, $p = .38$; AIC = 101.83; SRMR = .05; RMSEA = .02, 90% CI = .00 to .06; CFI = 0.99; and NNFI = 0.98; see Figure 11 and Table 14). However, none of the PERPS factors, optimism, or self-efficacy were significant predictors at this time point ($p > .05$).

Taken together, these results suggest that the PERPS factors were generally inconsistent and poor predictors of recovery over time. None of the PERPS factors predicted recovery at 7 days or 90 days. Poor model fit prevented me from interpreting the models for recovery at 14 days. Physical Function predicted recovery at 42 days. Neither optimism nor self-efficacy predicted recovery at any time point.

Supplemental Expectancy Analysis

Poor model fit prevented me from interpreting the predictive ability of the surgery expectancy in several SEM analyses. I ran a series of hierarchical linear regressions to further examine the relationship between the surgery expectancy and recovery. Regression analysis also did not indicate the PERPS factors as significant predictors of recovery at any time point. The Physical Function factor approached significance in predicting recovery at 7 days ($\beta = .149$, $p = .06$; see Table 15). None of the PERPS factors predicted recovery at 14 days, 42 days, or 90 days (see Tables 16 to 18).

Concurrent Validity

Aim 3 of this study was to establish concurrent validity of the expectancy measure. First, I present both the estimated correlations between factors found in Figure 4 and bivariate Pearson correlations, respectively (see Table 19 for bivariate correlations). Sexual Function correlated with Bladder/Bowel Function (standardized coefficient = .47, $p < .05$; r = .27, $p = .01$), but not with Physical Function (standardized coefficient = .18, $p > .05$; r = .15, $p = .06$). Physical Function correlated with Bladder/Bowel Function (standardized coefficient = .52, $p < .05$; r = .22, $p = .01$).

Concurrent validity was less clear. I present both the range of correlations found in Figures 6, 7, 10, and 11, as well as bivariate Pearson correlations, respectively (see Table 19). Optimism correlated with Bladder/Bowel Function (standardized coefficient = .30 to .70, $p < .05$; r = .17, $p = .03$) but did not with Sexual Function (standardized coefficient = .18 to .12, $p > .05$; r = .13, $p = .09$) or Physical Function (standardized coefficient = -.07 to .01, $p > .05$; r = .07, $p = .38$). Self-efficacy also correlated with Bladder/Bowel Function (standardized coefficient = -.80 to -.60, $p < .05$; r = .27, $p = .01$) but not with Sexual Function (standardized coefficient = -.02 to .01; $p > .05$; r = .04, $p = .66$) or Physical Function (standardized coefficient = .06 to .08, $p > .05$; r = .11, $p = .17$).

Utility Analysis

The fourth aim of this study was to determine the ability of utility (value) to predict additional variance in recovery, above and beyond expectancy. I calculated the utility score by adding together the product of each expectancy and utility item pair and dividing by the total number of items (i.e., eight expectancy items and eight utility items makes 16 total items). The mean utility score for the eight expectancy items was 2763.53

(1094.75). The skew was -0.24 and the kurtosis was -0.54. I ran a series of hierarchical linear regressions to test whether utility accounted for any additional variance in recovery. I added the three PERPS factors in step one of the regression and the utility score in step two.

Utility accounted for only a negligible amount of additional variance in recovery at each time point ($p > .05$; see Tables 20 to 23). None of the PERPS factors or utility predicted recovery at any time point in these analyses. This also suggests that utility was a poor predictor of recovery in this sample.

Supplemental Utility Analysis

I ran an additional series of hierarchical linear regressions to examine the relationship between untransformed utility and recovery. The PERPS factors were entered in step one and the untransformed utility score was entered in step two. These regression analyses did not indicate untransformed utility as a predictor of recovery at any time point. Untransformed utility also accounted for only a negligible amount of additional variance in recovery, beyond expectancy ($p > .05$; see Tables 24 to 27).

DISCUSSION

To review, this study had four aims: 1) to establish the factor structure of a new measure of surgery expectancy in women with POP; 2) to establish the predictive validity of the expectancy measure by examining its ability to predict self-rated recovery over time; 3) to establish the concurrent validity of the expectancy measure; and 4) to examine the ability of utility to predict additional variance in recovery. The three factors identified by EFA were: 1) Physical Function; 2) Sexual Function; 3) and Bladder/Bowel Function.

Physical Function comprised two items that describe negative outcomes, including activity restrictions (i.e., “I will have lifting restrictions”) and recovery (i.e., “My recovery time will take longer than 6 weeks”). Sexual Function comprised two items that describe negative outcomes, including changes in anatomy (i.e., “My vagina will be narrowed making sex a problem”) and sensation (i.e., “Loss of sensation during sex will be a problem”). Bladder/Bowel Function comprised four items. Two items describe positive outcomes, including reduced frequency of urination (i.e. “I will be able to walk for two hours without having to urinate 3 times”) and resolution of urinary retention symptoms (i.e., “I will empty my bladder completely”). The other two items describe negative outcomes, both relating to incontinence (i.e., “Urine leakage will be a problem” and “Bowel leakage will be a problem”). Factor loadings ranged from weak but acceptable (.38) to strong (.73), and the factors showed good discriminant validity, suggesting the factors represent distinct constructs and supporting a three-factor solution (Beavers et al., 2013; Costello & Osborne, 2005).

These three factors make theoretical sense when considering the literature on POP. Other measures of symptoms in women with POP also focus on interference with physical function, changes in bladder/bowel function, and changes in sexual function (Barber, Kuchibhatla, Pieper, & Bump, 2001; Barber, Walters, & Bump, 2005; Bradshaw, Hiller, Farkas, Radley, & Radley, 2006; Digesu, Khullar, Cardozo, Robinson, & Salvatore, 2005; Rogers, Coates, Kammerer-Doak, Khalsa, & Qualls, 2003; Rogers, Kammerer-Doak, Villarreal, Coates, & Qualls, 2001). However, despite this consistency, the three factors were generally poor predictors of self-rated recovery in this sample. Physical Function predicted self-rated recovery at 42 days, but none of the factors were significant predictors of recovery at 7, 14, or 90 days. I will discuss several possible reasons for these results.

Specificity of Items

One possible explanation for the poor predictive power of the PERPS factors is the specificity of the items on the measure. The items on the PERPS were developed from a qualitative research study and reflect individual participants' descriptions of symptoms (Lawndy et al., 2011). For example, the Sexual Function item "My vagina will be narrowed making sex a problem" was developed from the comment of an individual study participant describing her concerns about sexual function following surgery (i.e., "That my vagina become narrow that sex become [*sic*] impossible"; Lawndy et al., 2011, p. 1161). This strategy may have resulted in items that were too specific to individual experiences for them to be relevant to a broader population of POP surgery patients. Sexual, physical, and bladder/bowel function are often reported by patients and typically studied in relation to POP, but the only symptom consistently associated with POP is feeling or seeing a bulge in the vagina (Barber et al., 2009; Barber et al., 2003; Jelovsek, Maher, & Barber, 2007).

While research suggests that specific expectancy measures are better predictors of health outcomes than general positive expectancies (Engel et al., 2004), the items included on the PERPS refer to distinct experiences that may not have been relevant to all women with POP (e.g., "I will be able to walk for two hours and not have to urinate three times"). As a point of comparison, a measure of expectancy for knee replacement surgery showed good predictive ability for recovery, beyond general positive expectancies (Engel et al., 2004). It included items that were broad (e.g., "How would you rate your chances of significant improvement in your condition following surgery?") and not specific to one type of symptom or sign of recovery (e.g., "I will be able to play basketball after knee surgery;" Engel et al., 2004). More general questions regarding expectations about surgery and recovery may more accurately capture expectations shared by most women undergoing surgery for POP.

Negative Wording

The negative wording of several items on the PERPS seemed to confuse participants and resulted in nine items being dropped from the EFA. The distribution of these items was bimodal with responses clustered on both ends of the scale (see Figure 2). Participants likely had difficulty understanding how to answer these items in order to indicate positive expectancy. The response scale wording created a double negative for these items, likely creating confusion beyond just the negative item wording. To illustrate, the item "When going out, I won't need to wear pads" is worded such that responding "extremely likely" indicates the expectation that pads will not be needed. However, participants may have been confused by the item and response scale wording such that they thought that responding "not at all likely" would indicate positive expectancy. This idea is further supported by the distributions of all the positively-worded items, which revealed almost exclusive strong positive expectancy (see Figure 1).

Further, Lance and Vandenberg (2015) suggest that the mix of positively-worded items with negatively-worded items introduces additional method variance and random error, such that the psychometric properties of the scale are adversely affected (e.g., Cronbach's alpha). Also, negatively-worded items tend to share variance such that they load onto the same factor, regardless of conceptual content, reflecting a bias in responding unrelated to the construct of interest (Lance & Vandenberg, 2015). For these and the previously mentioned reasons, I chose to omit these items from the EFA.

The removed items included two items that may have been meaningful for most women with POP. One item related to general surgery expectancy (i.e., "The surgery will not help"). The other item related to feeling or seeing a bulge (i.e., "I won't feel or see a bulge or tissue protruding from my vagina"), which is the only symptom consistently associated with POP (Barber et al., 2009; Barber et al., 2003; Jelovsek, Maher, & Barber, 2007). Had these items been positively worded, it may have facilitated the participants' interpretation, and resulted in strong indicators of surgery expectancy.

Power Concerns

Next, as noted above, PERPS item distributions reflected a tendency to report strong positive expectancy across the sample. On most items, greater than 70% of the sample rated the likelihood of success at or above 90% (see Figure 1 for an example distribution). This pattern of responding resulted in restriction of range, likely limiting the ability to detect true relationships throughout the analyses (Kline, 2005). It is also unclear if the high positive expectancy reported across the sample reflects expectancy for symptom improvement or the absence of the symptoms before surgery. For example, some participants may have rated their likelihood for positive outcomes for bowel function as high because they already had good bowel function. Others may have expected the surgery to correct their existing bowel symptoms and reported a high likelihood for positive outcome based on this expectancy.

Sample size may have also affected my ability to accurately determine factor structure. Subject-to-item ratio refers to the number of participants compared to the number of items on the original questionnaire. The subject-to-item ratio for this study was approximately 9 to 1, with 171 participants and 18 expectancy items after removal.[2] There is some disagreement in the literature about what minimum ratio is acceptable, but it is generally agreed that a larger ratio allows for more accurate estimation of factor structure (Beavers et al., 2013; Costello & Osborne, 2005). A subject-to-item ratio of 10 to 1 is typically considered acceptable for EFA (Costello & Osborne, 2005). However, Costello and Osborne (2005) suggest that a subject to item ratio of 20 to 1 or greater is needed to accurately determine factor structure. They suggest that at a ratio of 10 to 1, the factor structure produced by EFA is only accurate approximately 60% of the time. This suggests that the three-factor solution produced by this EFA may be inaccurate and that performing an EFA with a larger sample size may produce a different solution. Essentially, due to the low subject-to-item ratio, I may have been underpowered to detect true factor loading values and eliminated items that should have been retained. This too may have resulted in a final set of items that does not accurately reflect the construct.

[2] The original scale included 27 expectancy items. Nine negatively-worded items were removed before the EFA was conducted, such that the total number of items used to calculate the subject-to-item ratio was 18.

Limited sample size and range restriction also likely affected SEM results (Wolf, Harrington, Clark, & Miller, 2013). Again, the distributions for individual expectancy items were non-normal. Principle axis factoring is the preferred method for analyzing non-normal data in EFA (Costello & Osborne, 2005). However, to my knowledge, there is no established method for dealing with highly non-normal continuous data in SEM. I decided to approach the SEM using an asymptotic covariance matrix to estimate the polychoric correlations between indicators. This method is suggested for ordinal data and is robust in situations where the underlying distribution of the ordinal data is non-normal and skewed (Jin & Yang-Wallentin, 2017). Analyses based on ordinal distribution assumptions (i.e., non-parametric analyses) are less powerful and less able to detect associations between indicators (Siegel, & Castellan, Jr., 1988). This may have resulted in increased likelihood of making a Type II error (i.e., missing relationships that truly exist).

There is also some disagreement on minimal sample size requirements needed to assess model fit in SEM (Wolf et al., 2013). Wolf and colleagues (2013) suggest that determining minimum sample size requirements is a function of the number of factors (with a greater number requiring a larger sample), the number of indicators per factor (with a greater number requiring a smaller sample), the strengths of factor loadings (with greater magnitude requiring a smaller sample), and the strength of correlations between factors (with greater magnitude requiring a smaller sample). The magnitude of regressive paths also seems to affect minimum sample size requirements, with small direct effects and less variance explained necessitating a larger sample and with large direct effects combined with a large sample potentially introducing bias (Wolf et al., 2013). Finally, missing data also necessitates a larger sample (Wolf et al., 2013).

The models developed in this study are problematic on several fronts, including fewer than three indicators for two of the factors, weak factor loadings, weak factor correlations, and small direct effects on the dependent variable. In addition to poor model fit in several analyses, indicator factor loadings were weak to moderate in most cases (Kline, 2005). Indicator factor loadings were below .5 and even below .3 in several models (see Figures 4 through 11). This calls into question the convergent validity of these indicators and suggests that they are not strong indicators of the factors (Kline, 2005). Also, Physical Function and Sexual Function each only had two indicators. Wolf and colleagues (2013) suggest that each factor should have a minimum of three indicators. An insufficient number of indicators can result in a model being empirically underidentified, can result in nonconvergence, and can result in specification errors in other parts of the model (Kline, 2005; Wolf et al., 2013).

The number of subjects included in the SEM analyses was further reduced by using listwise deletion in creating the asymptotic correlation matrix. Unfortunately, there is no established method for dealing with missing data with this method. This likely resulted in further reduced ability to detect signal (Kline, 2005). I also tested the models using maximum likelihood estimation and full information maximum likelihood imputation for missing data (Kline, 2005). These models did not indicate the expectancy factors as better predictors of recovery, and because this method relies on the assumption of normality in the data, I decided to retain the models using polychoric correlations (Jin & Yang-Wallentin, 2017; Kline, 2005). Wolf and colleagues (2013) also suggest that missing data necessitates larger sample sizes to accurately assess model fit. A sample size of 171 may have been inadequate to accurately assess how well the models fit the data.

There are several elements that may have contributed to poor model fit. Poor model fit may reflect inaccurate factor structure (Kline, 2005). For example, weak indicator loadings may signify that an indicator should actually load onto a different factor or that the total number of factors is inaccurate (Kline, 2005). The non-normal distributions of the expectancy items also may have contributed to poor model fit. With non-normal data, the chi-square statistic tends to increase and is more likely to be significant (Kline, 2005). This also affects other fit indices based on chi-square, such as NNFI, CFI, and AIC. Also, RMSEA and NNFI are sensitive to sample size and the relatively small sample in this study may have contributed to these indexes indicating poor fit (Kline, 2005). Finally, high covariance between indicators and/or factors may also contribute to poor model fit (Kline, 2005). This too may indicate that the factor structure is inaccurate and that indicators belong to different factors or that factors/indicators do not truly measure the construct of interest (Kline, 2005).

Poor model fit prevented me from interpreting the relationship between expectancy and recovery in several models. I ran supplementary regression analyses to further examine the relationship between the PERPS factors and recovery (see Tables 15 through 18). PERPS factors were not predictive of recovery at any time point in these regression analyses. The Physical Function factor approached significance in predicting recovery at 7 days but was not a significant predictor at any other time point.

Concurrent Validity

Only Bladder/Bowel Function correlated with other measures of positive expectancy. One reason for this may be that the Physical and Sexual Function factors comprised only two items each. Wolf and colleagues (2013) suggest a factor with fewer than three indicators is poorly indicated. Costello and Osborne (2005) are more conservative and suggest that a factor with fewer than five items is poorly indicated and may signify separate factors should be combined into one. I tested a two-factor solution, but the factor loadings were generally worse, and the solution made less theoretical sense. Therefore, I decided to retain the three-factor solution despite the low number of items. The limited number of items on the Physical and Sexual Function factors may have resulted in less variance and factors with poor psychometric properties, and thus less ability to detect meaningful relationships between these variables (Costello & Osborne, 2005). The Bladder/Bowel Function factor also only comprised four items. As noted earlier, the limited sample size in this study may have increased my likelihood of committing Type II errors, which may have resulted in the removal of items from the EFA that were actually strong indicators of each factor (Wolf et al., 2013). Future research should focus greater effort in developing factors with at least three items or recruiting sample sizes that allow for factors with less robust psychometric properties.

The fact that Bladder/Bowel Function correlated with optimism and self-efficacy while Physical and Sexual Function did not may also be explained by this issue with variance and poor psychometric properties resulting from too few indicators. Because the Bladder/Bowel Function factor has more indicators, its relationship with optimism and self-efficacy may simply have required less power to detect (Costello & Osborne, 2005; Kline, 2005).

Utility Analysis

While the subjective utility of treatment outcomes has been shown to relate to recovery in other surgeries (Hullfish, Bovbjerg, & Steers, 2004; Lawndy et al., 2011; Lowenstein et al., 2007), in this sample utility did not account for additional variance in recovery above and beyond expectancy. This is not unexpected, given the poor predictive ability of the PERPS factors themselves. Also, women in this sample reported, almost exclusively, high utility, similar to the expectancy item distributions. This restriction of range may have affected the ability to detect true relationships between utility and recovery (Kline, 2005), as it may have for the PERPS factors.

Recovery Measure

Another explanation for the weak and inconsistent associations between PERPS factors and recovery may be the trajectory of recovery over time (see Figure 12). Recovery scores increased significantly from 7-days to 42-days ($p < .05$). The largest increase in recovery was between 14 days and 42 days ($p < .05$), but there was no significant difference between 42-day and 90-day recovery. At 7 days less than 1% of participants rated themselves as recovered (i.e., PSR13 score over 90). At 90 days, approximately 38% of the sample rated themselves as recovered. It may be that at 7 days post-surgery the majority of women were simply not recovered enough for expectancy to predict self-rated recovery. Similarly, at 90 days post-surgery the majority of women may be recovered enough that expectancy does not have a meaningful relationship with self-rated recovery.

Further, the authors of the recovery measure suggest that specific symptoms (i.e., pain, fatigue, and bowel function) are worse indicators of recovery than global recovery (i.e., items 4 and 13) and activity level (i.e., items 5, 11, and 12; Appendix C2; Carpenter et al., 2017). This again may reflect the inability of the PERPS items to capture more global concerns related to surgery and recovery in POP, due to their focus on specific symptoms. Essentially, the PERPS may simply be missing items that correspond to areas of function that are important to most women undergoing surgery to correct POP.

Surgery Expectancy as a Predictor of Recovery

In other surgeries, more general expectancy measures have been shown to predict outcomes after surgery. For example, in recovery from total knee replacement, questions regarding general expectancies for the surgery were shown to predict recovery (Engel et al., 2004). Items included general questions about the surgery (e.g., "How would you rate your chances of significant improvement in your condition following surgery?") and QOL (e.g., "What change do you expect in your overall quality of life as a result of the surgery?"; Engel et al., 2004, p. 115). A study of expectancy in breast cancer patients awaiting surgery also used more general items (e.g., "After surgery, how much pain do you think you will feel?") and found that pre-surgical expectancies were predictive of symptoms following surgery (Montgomery & Bovbjerg, 2004, p. 383). Also, in a sample of women undergoing elective laparoscopic surgeries, general pre-surgical expectancy for pain, discomfort, and weakness predicted both physical (i.e., pain and discomfort) and psychological (i.e., anxious, depressed, and irritable mood) outcomes following surgery

(Jamison, Parris, & Maxson, 1987). Using more general items to measure surgery expectancy for POP may result in a measure that is better able to predict outcomes in these women as well.

This tendency to report positive expectancy and utility may also be explained by the tendency for health populations to report strong positive expectancy for treatment outcomes in general (Hoffman & Del Mar, 2015). A recent systematic review examined patient estimations of benefits and risks across several healthcare populations, including cardiac, cancer, and surgical patients (Hoffman & Del Mar, 2015). Overall, patients tend to overestimate the benefits and underestimate the risks of treatment and screening. Surgical patients in particular tend to overestimate the benefits of treatment[3]. POP patients may also have unrealistic expectations of the benefit of surgery.

Despite these methodological issues, the EFA did produce a factor structure that makes theoretical sense, generally showed good model fit, and demonstrated good discriminant validity between factors (Kline, 2005). Kline (2005) suggests that good discriminant validity points to clear distinction between factors when correlations are below 0.85. Here it suggests that expectancies about bladder/bowel function, sexual function, and physical function are somewhat distinct from one another (Kline, 2005). It also supports a three factor solution over a one, two, or four factor solution (Kline, 2005).

Previous research has emphasized the importance of symptoms related to bladder/bowel function, physical limitations, and changes in sexual function for women with POP (Hendrix et al., 2002; Touza et al., 2018). These are commonly-measured variables in POP, and the results of this study reaffirm that these symptom domains are relevant to women undergoing surgery for POP. These topics may be important targets

[3] Orthopedic, eye, cardiac, renal, and bariatric surgery patients were included in this review.

for doctor-patient discussions or expectancy-focused interventions administered prior to surgery. Further, this study and previous research (Carpenter et al., 2017; Engel et al., 2004) suggest that assessing general surgery expectancy and activity would strengthen the PERPS and may prove to be better predictors of recovery in women with POP than assessing expectancy for more specific symptoms.

Limitations

There are several limitations in this research that may have contributed to the lack of significant results. I have addressed these in greater detail above. The negative wording of several items appeared to cause confusion among respondents and were removed from the EFA. This resulted in the removal of items that measured more general surgery expectancy and symptoms that are consistently associated with POP (i.e., feeling/seeing a bulge; Barber et al., 2009; Barber et al., 2003; Jelovsek, Maher, & Barber, 2007). Had these items been worded differently, they may have been good indicators of surgery expectancy in this population. Also, the inclusion of both positively and negatively-worded items in the expectancy measure may have resulted in method effects that do not reflect the construct of interest (Lance & Vandenberg, 2015).

The items included in the PERPS may have assessed symptoms that were too specific to be meaningful to the general population of POP surgery patients. Other measures of surgery expectancy focus on more general ratings of function and recovery (Engel et al., 2004). Research that examines recovery in women with POP suggests that global measures of recovery and activity are better indicators of recovery than specific symptoms (Carpenter et al., 2017). The specificity of the items on the PERPS may have resulted in a measure that does not capture the generalizable aspects of surgery expectancy and recovery in this population.

Further, responses on the PERPS items indicated a strong tendency to report positive expectancy in this sample. This resulted in restriction of range and skewed distributions. It is unclear if this extreme responding is the result of the absence of the symptoms assessed or the optimistic expectation that the symptoms would improve with surgery. Health populations in general seem to be prone to overestimating the benefit of treatment (e.g., surgery, cancer screening, cancer treatment, cardiovascular disease, medication use, and fetal/maternal medicine; Hoffman & Del Mar, 2015). A recent review noted that the majority of patients undergoing cardiovascular surgery, orthopedic surgery, optic surgery, renal transplant, and gastric bypass overestimated the benefits of surgery and underestimated the risks (Hoffman & Del Mar, 2015). This may explain the almost exclusive positive expectancy endorsed by women with POP.

Women's positive expectancy for POP surgical outcomes may reflect the general optimistic bias well documented in health populations, or it may be related to methodological influences related to demand characteristics. For example, patients may have been motivated to give the right answer, particularly because their surgeon was conducting the study (Klassen, Homstra, & Aderson, 1975). Participants may have reported positive expectancy for surgery because they were motivated to please their surgeon and not because they truly expected positive outcomes.

Sample size and power were also limitations in this study. The low subject-to-item ratio may have resulted in extracting an incorrect number of factors, erroneous removal of strong indicators of expectancy, and misclassification of items to factors

(Costello & Osborne, 2005). Consequently, this may have affected the ability of the extracted factors to predict recovery. Also, according to Costello and Osborne (2005) and Kline (2005), I had an insufficient number of indicators for each factor. Especially in small sample sizes, this can affect ability to accurately assess model fit and interpret relationships in SEM (Wolf et al., 2013). An insufficient number of indicators can result in a model being underidentified or prevent it from converging (Kline, 2005; Wolf et al., 2013). Having too few indicators for a factor can result in an indicator "borrowing" covariance from the rest of the model, which effectively spreads the specification error to other parts of the model (Kline, 2005). This may have affected my ability to detect real relationships in the models.

Another potential limitation of the present study is that I used polychoric correlations when creating SEM models. I used polychoric correlations as this method is robust for non-normal data (Jin & Yang-Wallentin, 2017). There is no established method for handling missing data using this analytic strategy, and therefore cases with missing values were deleted listwise. This further reduced sample size and may have resulted in diminished power to detect signal (Kline, 2005). Also, this method is indicated for ordinal data for which the underlying assumption of normality is violated and data are skewed. Non-parametric statistics are known to be more conservative and have lower power to detect signal (Siegel, & Castellan, Jr., 1988).

Another concern that may limit the generalizability of the results is the racial/ethnic makeup of the sample, which was 94.7% white. Epidemiologic studies suggest that white and Hispanic women develop prolapse at a higher rate than other groups (Hendrix et al., 2002). This combined with the racial/ethnic makeup of Indiana, which is predominantly white (U.S. Census Bureau, 2018), may have resulted in a sample that does not accurately represent the broader population of women with POP.

Future Directions

Because the PERPS factors were generally poor predictors of self-rated recovery in this sample, it may be beneficial to develop a new set of items to test the ability of surgery expectancy to predict outcomes in this population. The PERPS factors did align with literature and items related to physical, sexual, and bladder/bowel function may still be important areas to consider when measuring surgery expectancy in women with POP (Barber et al., 2009; Barber, Walters, & Bump, 2003; Hendrix et al., 2002; Jelovsek, Maher, & Barber, 2007). It may be beneficial to develop items that assess these as general areas of functioning without being overly specific. As previous measures of general surgery expectancy have been predictive of recovery in other surgeries, such as knee replacement (Engel et al., 2004) and heart transplant surgery (Leedham, Meyerowitz, Muirhead, & Frist, 1995), a more general measure of surgery expectancy in this population is worth developing. Also, developing items that are worded more clearly (i.e., using positively-worded items exclusively) may result in a measure with better psychometric properties and predictive ability.

The mechanisms behind the connection between positive expectancy and health outcomes should also be explored. It is suggested that patients with greater positive expectancy are more likely to adhere to treatment recommendations, such as physical activity, and that this behavior may mediate the relationship between expectancy and recovery (Engel et al., 2004). The fact that overall recovery in women with POP is related to activity after surgery supports this idea (Carpenter et al., 2017). This assertion should be examined, as it may provide a target for intervention in this population and further develop our understanding of SRT.

While there are several methodological limitations with this research, it does provide a basis for future research in this population. The evidence for the predictive ability of positive expectancies in health outcomes is strong (Borkan & Quirk, 1992; Engel et al., 2004; Leedham, Meyerowitz, Muirhead, & Frist, 1995; Maeland & Havik, 1987; Mondloch, Cole, & Frank, 2001) and suggests that developing a measure of surgery expectancy for use in this populations is important. Women describe surgery to correct POP as particularly difficult to recover from (Muller, 2010) and it has a reoperation rate of approximately 17% (Freeman, 2010). Therefore, it is important to develop interventions to enhance and improve recovery in these women. Understanding how and if surgery expectancy predicts recovery in POP may be an important step, as pre-surgical interventions targeting expectancy have been shown to improve recovery in other surgeries (Kube, Glombiewski, & Rief, 2018; Lowenstein et al., 2007; Sadati et al., 2014). For example, women who had pre-surgical counseling about the healthcare team's procedure before, during, and after surgery, as well as their own role in self-care, recovered faster and reported less discomfort following laparoscopic cholecystectomy (Sadati et al., 2014). Further developing our understanding of factors that affect recovery

TABLES

Table 1: Participant Demographics and Characteristics

Demographic/Characteristic	N = 171
Age (mean, SD)	63.3 (9.2)
Body Mass Index (mean, SD)	28.1 (4.2)
SES score (mean, SD)	41.9 (11.7)
Prolapse stage (n, %)	
2	162 (94.8)
3	8 (4.7)
Missing	1 (0.6)
Race (n, %)	
Non-Hispanic white	162 (94.7)
Non-Hispanic black	6 (3.5)
Hispanic/other	2 (1.2)
Missing	1 (0.6)
Marital status (n, %)	
Never married	2 (1.2)
Married	122 (71.3)
Separated/divorced	26 (15.2)
Widowed	18 (10.5)
Missing	3 (1.8)
Education (n, %)	
Some high school	5 (2.9)
High school graduate	63 (36.8)
Some college	40 (23.4)
College graduate	39 (22.8)
Graduate degree	22 (12.9)
Missing	2 (1.2)

Table 1: Continued

Previous pelvic/abdominal surgeries (n, %)	
0	25 (14.6)
1	44 (25.7)
2	45 (26.3)
3+	37 (21.6)
Missing	20 (11.7)

Table 2: Means and Validity of Measures

Measure	Mean	SD	Cronbach's alpha
LOT-R	17.70	4.03	.83
GSE	31.45	4.43	.89
PSR13 at 7 days	50.80	20.80	.91
PSR13 at 14 days	61.73	19.67	
PSR13 at 42 days	79.19	17.13	
PSR13 at 90 days	80.52	16.25	

Note. Abbreviations include Life Orientation Test – Revised (LOT-R; Scheier et al., 1994), General Self-Efficacy Scale (GSE; Schwarzer & Jerusalem, 1995), and Post-Discharge Surgical Recovery Scale 13 (PSR13; Carpenter et al., 2017). For the PSR13, Cronbach's alpha was calculated using data from the 7-day time point.

Table 3: Pattern Matrix Factor Loadings for the Three-Factor Model

Item	**Bladder/Bowel Function**	**Sexual Function**	**Physical Function**
My recovery time will be longer than 6 weeks.	.052	.060	**.597**
I will have lifting restrictions.	-.021	-.024	**.457**
My vagina will be narrowed making sex a problem.	.013	**.728**	.000
Loss of sensation during sex will be a problem.	-.024	**.701**	-.018
I will be able to walk for two hours without having to urinate 3 times.	**-.514**	-.021	-.025
I will empty my bladder completely	**-.383**	-.167	-.180
Urine leakage will be a problem.	**.528**	-.024	.180
Bowel leakage will be a problem.	**.583**	-.013	-.152

Note. Bolded numbers represent items grouped into each factor.

Table 4: Eigenvalues and Percent of Variance Explained by Number of Factors

Factor	Eigenvalue total	% of variance	Cumulative % of variance
1	2.327	29.087	29.087
2	1.258	15.728	44.815
3	1.154	14.425	59.240
4	0.826	10.323	69.563
5	0.718	8.980	78.543
6	0.645	8.057	86.600
7	0.603	7.533	94.133
8	0.469	5.867	100.000

Table 5: Pattern Matrix Factor Loadings for the Two-Factor Model

Item	**Factor 1**	**Factor 2**
My recovery time will be longer than 6 weeks.	.307	.147
I will have lifting restrictions.	-.192	-.060
My vagina will be narrowed making sex a problem.	.044	**.700**
Loss of sensation during sex will be a problem.	-.016	**.695**
I will be able to walk for two hours without having to urinate 3 times.	**-.526**	.037
I will empty my bladder completely	**-.493**	-.147
Urine leakage will be a problem.	**.634**	-.077
Bowel leakage will be a problem.	**.449**	-.076

Note. Bolded numbers represent items grouped into each factor.

Table 6: Pattern Matrix Factor Loadings for the Four-Factor Model

Item	**Factor 1**	**Factor 2**	**Factor 3**	**Factor 4**
My recovery time will be longer than 6 weeks.	.136	.070	**.703**	.138
I will have lifting restrictions.	-.102	-.019	**.399**	-.124
My vagina will be narrowed making sex a problem.	-.084	**.666**	.002	-.157
Loss of sensation during sex will be a problem.	.053	**.778**	-.001	.130
I will be able to walk for 2 hours without having to urinate 3 times.	-.217	-.015	-.011	**.484**
I will empty my bladder completely.	-.133	-.172	-.158	**.368**
Urine leakage will be a problem.	**.490**	-.009	.224	-.084
Bowel leakage will be a problem.	**.569**	.018	-.109	-.078

Note. Bolded numbers represent items grouped into each factor.

Table 7: Fit Indices for the Three-Factor Models with and without Optimism and Self-Efficacy Included

Model	χ^2	*df*	AIC	SRMR	RMSEA	90% CI	CFI	NNFI
1. 3-factor CFA	9.04	17	47.04	.03	.00	.00 - .02	1.00	1.10
2. 7-day recovery	28.34	22	74.34	.05	.04	.00 - .08	0.96	0.93
3. 7-day recovery w/optimism & self-efficacy	51.09*	32	119.09	.06	.06	.03 - .09	0.91	0.85
4. 14-day recovery	39.51*	22	85.51	.06	.07	.03 - .10	0.90	0.80
5. 14-day recovery w/optimism & self-efficacy	63.62*	32	131.62	.06	.08	.05 - .10	0.87	0.80
6. 42-day recovery	13.23	22	59.23	.04	.00	.00 - .02	1.00	1.10
7. 42-day recovery w/optimism & self-efficacy	36.30	32	104.30	.05	.03	.00 - .07	0.98	0.96
8. 90-day recovery w/optimism & self-efficacy	33.83	32	101.83	.05	.02	.00 - .06	0.99	0.98

Note. * $p < .05$

Table 8: Intercorrelations between PERPS factors at the 7-day time point.

Factor	1	2	3
1. Bladder/Bowel Function	-	.50*	.49*
2. Sexual Function		-	.19
3. Physical Function			-

Note. * $p < .05$. Values correspond to Figure 5.

Table 9: Intercorrelations between PERPS factors, Optimism, and Self-Efficacy at the 7-day time point.

Factor/Variable	1	2	3	4	5
1. Bladder/Bowel Function	-	.50*	.50*	.06	-.06
2. Sexual Function		-	.20	.20	.00
3. Physical Function			-	-.01	.08
4. Optimism				-	.36*
5. Self-Efficacy					-

Note. * p < .05. Values correspond to Figure 6.

Table 10: Intercorrelations between PERPS factors at the 14-day time point.

Factor	1	2	3
1. Bladder/Bowel Function	-	.50*	.45*
2. Sexual Function		-	.18
3. Physical Function			-

Note. * $p < .05$. Values correspond to Figure 7.

Table 11: Intercorrelations between PERPS factors, Optimism, and Self-Efficacy at the 14-day time point.

Factor/Variable	1	2	3	4	5
1. Bladder/Bowel Function	-	.50*	.48*	.07	-.08
2. Sexual Function		-	.20	.21	-.02
3. Physical Function			-	.01	.06
4. Optimism				-	.35*
5. Self-Efficacy					-

Note. * $p < .05$. Values correspond to Figure 8.

Table 12: Intercorrelations between PERPS factors at the 42-day time point.

Factor	1	2	3
1. Bladder/Bowel Function	-	.46*	.51*
2. Sexual Function		-	.17
3. Physical Function			-

Note. * $p < .05$. Values correspond to Figure 9.

Table 13: Intercorrelations between PERPS factors, Optimism, and Self-Efficacy at the 42-day time point.

Factor/Variable	1	2	3	4	5
1. Bladder/Bowel Function	-	.47*	.50*	.05	-.07
2. Sexual Function		-	.18	.18	.01
3. Physical Function			-	-.05	.08
4. Optimism				-	.36*
5. Self-Efficacy					-

Note. * $p < .05$. Values correspond to Figure 10.

Table 14: Intercorrelations between PERPS factors, Optimism, and Self-Efficacy at the 90-day time point.

Factor/Variable	1	2	3	4	5
1. Bladder/Bowel Function	-	.47*	.50*	.03	-.07
2. Sexual Function		-	.18	.18	.01
3. Physical Function			-	-.07	.08
4. Optimism				-	.35*
5. Self-Efficacy					-

Note. * $p < .05$. Values correspond to Figure 11.

Table 15: Linear regression analysis of surgery expectancy as a predictor of recovery at 7 days after surgery (N = 149)

Variable	B	S.E.	β	*t*	*p*
Sexual Function	0.143	0.097	.127	1.471	.144
Physical Function	0.149	0.078	.164	1.920	.057
Bladder/Bowel Function	0.026	0.119	.019	0.221	.825

Note. R^2 = .052, F (3, 138) = 2.538, *p* = .059.

Table 16: Linear regression analysis of surgery expectancy as a predictor of recovery at 14 days after surgery (N = 156)

Variable	B	S.E.	β	*t*	*p*
Sexual Function	0.167	0.093	.151	1.799	.074
Physical Function	0.045	0.074	.051	0.613	.541
Bladder/Bowel Function	0.176	0.114	.132	1.547	.124

Note. R^2 = .059, F (3, 144) = 3.006, *p* = .032.

Table 17: Linear regression analysis of surgery expectancy as a predictor of recovery at 42 days after surgery (N = 155)

Variable	B	S.E.	β	*t*	*p*
Sexual Function	0.092	0.080	.098	1.146	.254
Physical Function	0.093	0.064	.121	1.437	.153
Bladder/Bowel Function	0.099	0.099	.086	1.001	.319

Note. R^2 = .044, F (3, 143) = 2.210, *p* = .090.

Table 18: Linear regression analysis of surgery expectancy as a predictor of recovery at 90 days after surgery (N = 134)

Variable	B	S.E.	β	*t*	*p*
Sexual Function	0.007	0.078	.008	0.083	.934
Physical Function	0.110	0.063	.146	1.751	.083
Bladder/Bowel Function	0.118	0.096	.113	1.219	.225

Note. R^2 = .0047, F (3, 123) = 2.023, *p* = .114.

Table 19: Bivariate Correlations Between PERPS Factors, Optimism, and Self-Efficacy

Factor/Variable	1	2	3	4	5
1. Bladder/Bowel Function	-	.27*	.22*	.17*	.27*
2. Sexual Function		-	.15	.13	.04
3. Physical Function			-	.07	.11
4. Optimism				-	.43*
5. Self-Efficacy					-

Note. * p < .05

Table 20: Linear regression analysis of utility as a predictor of recovery at 7 days after surgery

Variable	B	S.E.	β	*t*	*p*
Step 1					
Sexual Function	0.149	0.107	.132	1.393	.166
Physical Function	0.154	0.086	.169	1.803	.074
Bladder/Bowel Function	0.058	0.148	.042	0.388	.698
Step 2					
Utility	-0.001	0.002	-.048	-0.437	.663

Note. R^2 = .052 for step 1; ΔR^2 = .002 for step 2 (p > .05).

Table 21: Linear regression analysis of utility as a predictor of recovery at 14 days after surgery

Variable	B	S.E.	β	*t*	*p*
Step 1					
Sexual Function	0.165	0.101	.150	1.634	.105
Physical Function	0.044	0.081	.050	0.545	.586
Bladder/Bowel Function	0.168	0.141	.126	1.192	.235
Step 2					
Utility	0.000	0.002	.013	0.125	.900

Note. $R^2 = .059$ for step 1; $\Delta R^2 = .000$ for step 2 ($p > .05$).

Table 22: Linear regression analysis of utility as a predictor of recovery at 42 days after surgery

Variable	B	S.E.	β	*t*	*p*
Step 1					
Sexual Function	0.088	0.088	.094	0.999	.320
Physical Function	0.089	0.071	.117	1.262	.209
Bladder/Bowel Function	0.078	0.123	.069	0.637	.525
Step 2					
Utility	0.001	0.002	.037	0.345	.730

Note. R^2 = .044 for step 1; ΔR^2 = .001 for step 2 ($p > .05$).

Table 23: Linear regression analysis of utility as a predictor of recovery at 90 days after surgery

Variable	B	S.E.	β	*t*	*p*
Step 1					
Sexual Function	-0.004	0.086	-.005	-0.051	.960
Physical Function	0.101	0.069	.146	1.459	.148
Bladder/Bowel Function	0.059	0.120	.057	0.489	.626
Step 2					
Utility	0.002	0.002	.117	1.012	.314

Note. R^2 = .047 for step 1; ΔR^2 = .009 for step 2 ($p > .05$).

Table 24: Linear regression analysis of untransformed utility as a predictor of recovery at 7 days after surgery

Variable	B	S.E.	β	*t*	*p*
Step 1					
Sexual Function	0.141	0.097	.125	1.448	.150
Physical Function	0.145	0.078	.159	1.843	.068
Bladder/Bowel Function	0.044	0.124	.033	0.358	.721
Step 2					
Untransformed Utility	-0.006	0.010	-.049	-0.572	.569

Note. R^2 = .052 for step 1; ΔR^2 = .002 for step 2 (p > .05).

Table 25: Linear regression analysis of untransformed utility as a predictor of recovery at 14 days after surgery

Variable	B	S.E.	β	*t*	*p*
Step 1					
Sexual Function	0.167	0.093	.152	1.793	.075
Physical Function	0.046	0.075	.051	0.612	.542
Bladder/Bowel Function	0.175	0.118	.131	1.480	.141
Step 2					
Untransformed Utility	0.000	0.010	.004	0.045	.964

Note. R^2 = .059 for step 1; ΔR^2 = .000 for step 2 (p > .05).

Table 26 Linear regression analysis of untransformed utility as a predictor of recovery at 42 days after surgery

Variable	B	S.E.	β	*t*	*p*
Step 1					
Sexual Function	0.093	0.081	.099	1.153	.251
Physical Function	0.095	0.065	.124	1.461	.146
Bladder/Bowel Function	0.090	0.102	.079	0.878	.381
Step 2					
Untransformed Utility	0.003	0.008	.029	0.343	.732

Note. R^2 = .044 for step 1; ΔR^2 = .001 for step 2 (p > .05).

Table 27: Linear regression analysis of untransformed utility as a predictor of recovery at 90 days after surgery

Variable	B	S.E.	β	*t*	*p*
Step 1					
Sexual Function	0.008	0.079	.010	0.997	.321
Physical Function	0.115	0.063	.166	1.813	.072
Bladder/Bowel Function	0.100	0.100	.096	0.997	.321
Step 2					
Untransformed Utility	0.006	0.008	.065	0.711	.487

Note. R^2 = .047 for step 1; ΔR^2 = .004 for step 2 ($p > .05$).

FIGURES

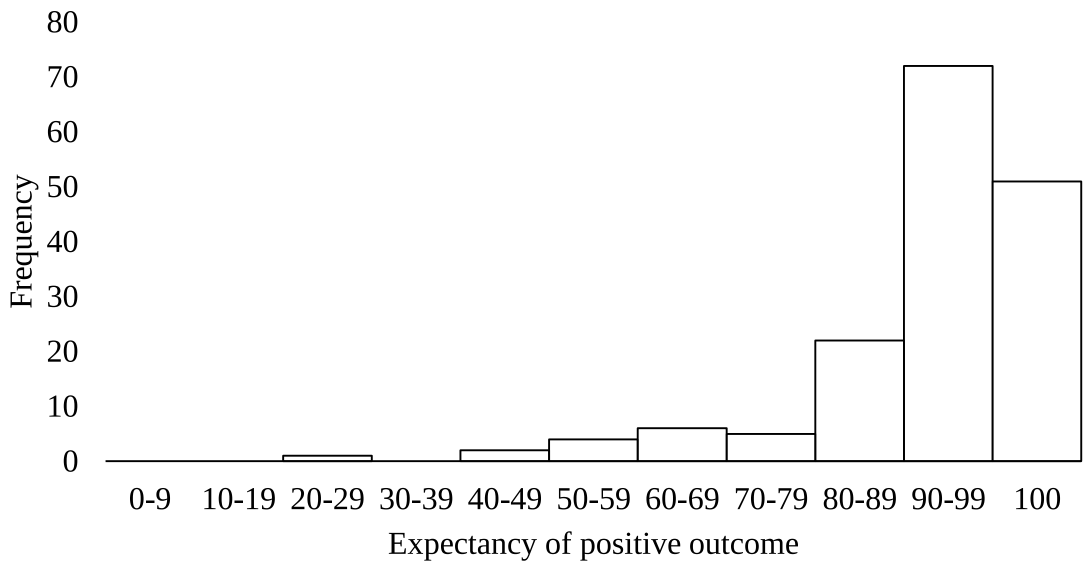

Figure 1: Example of a negatively skewed distribution of PERPS items.

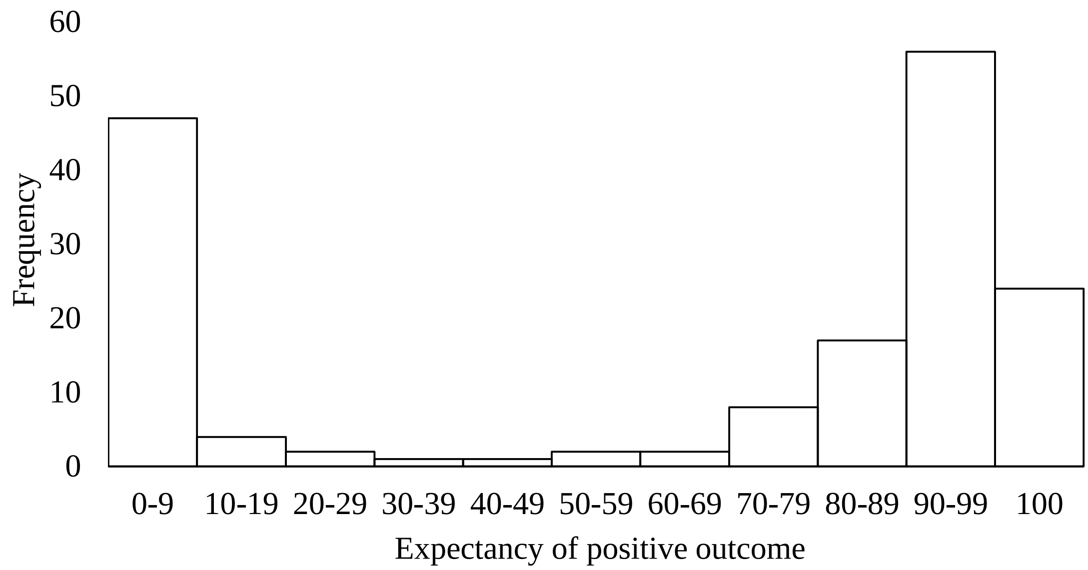

Figure 2: Example of a bimodal distribution of a negatively-worded PERPS item removed before EFA

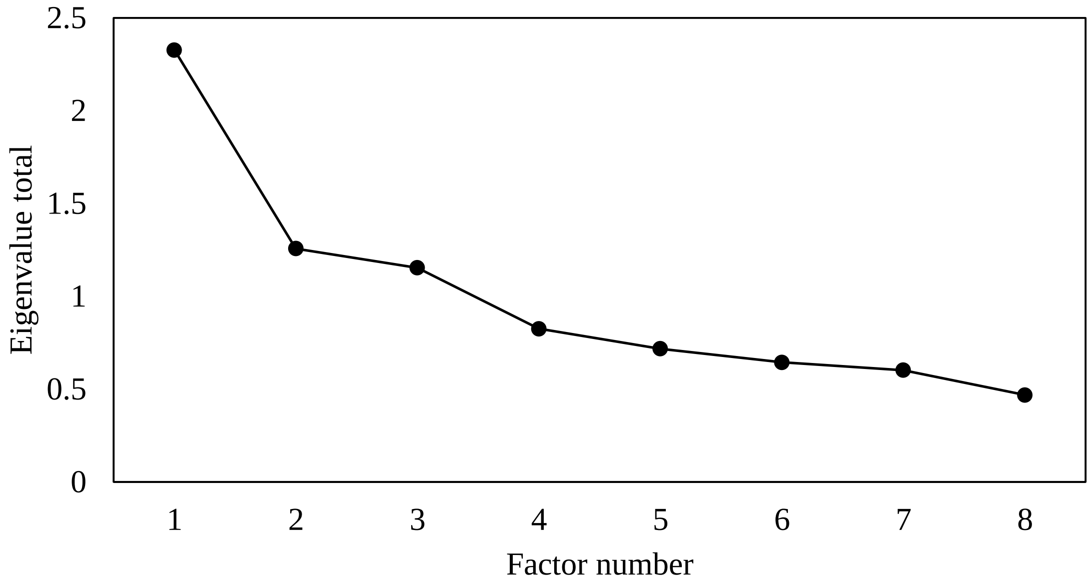

Figure 3: Scree plot from the EFA showing a three-factor solution.

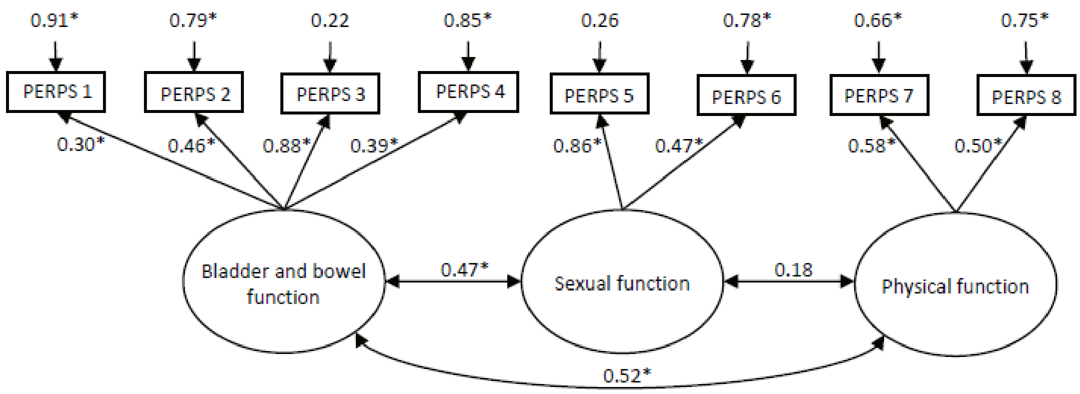

Figure 4: Three-factor model of the PERPS developed via EFA. All coefficients are standardized. * $p < .05$.

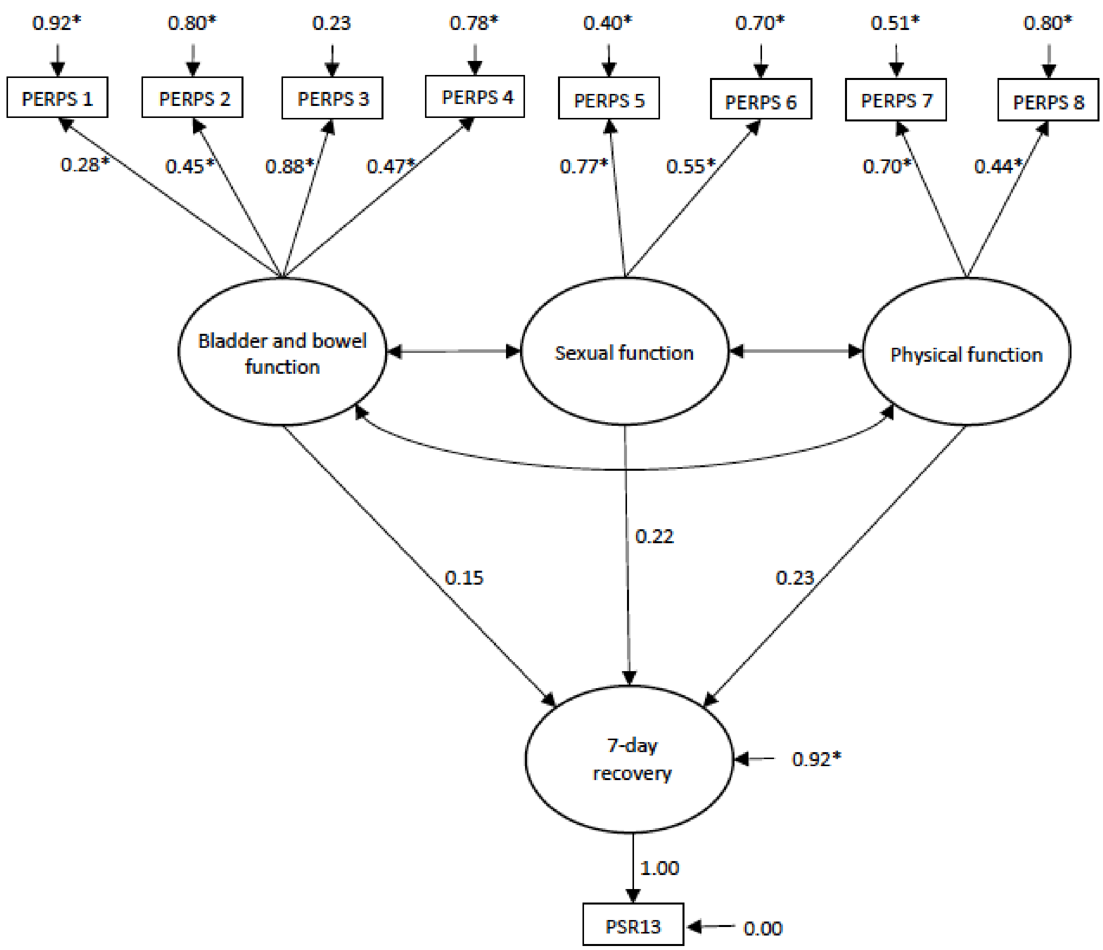

Figure 5: Seven-day recovery model with three PERPS factors. Latent variance for recovery was fixed to 1.00. Measurement error for recovery was fixed to 0.00. All coefficients are standardized. Correlations are described in Table 8. * $p < .05$.

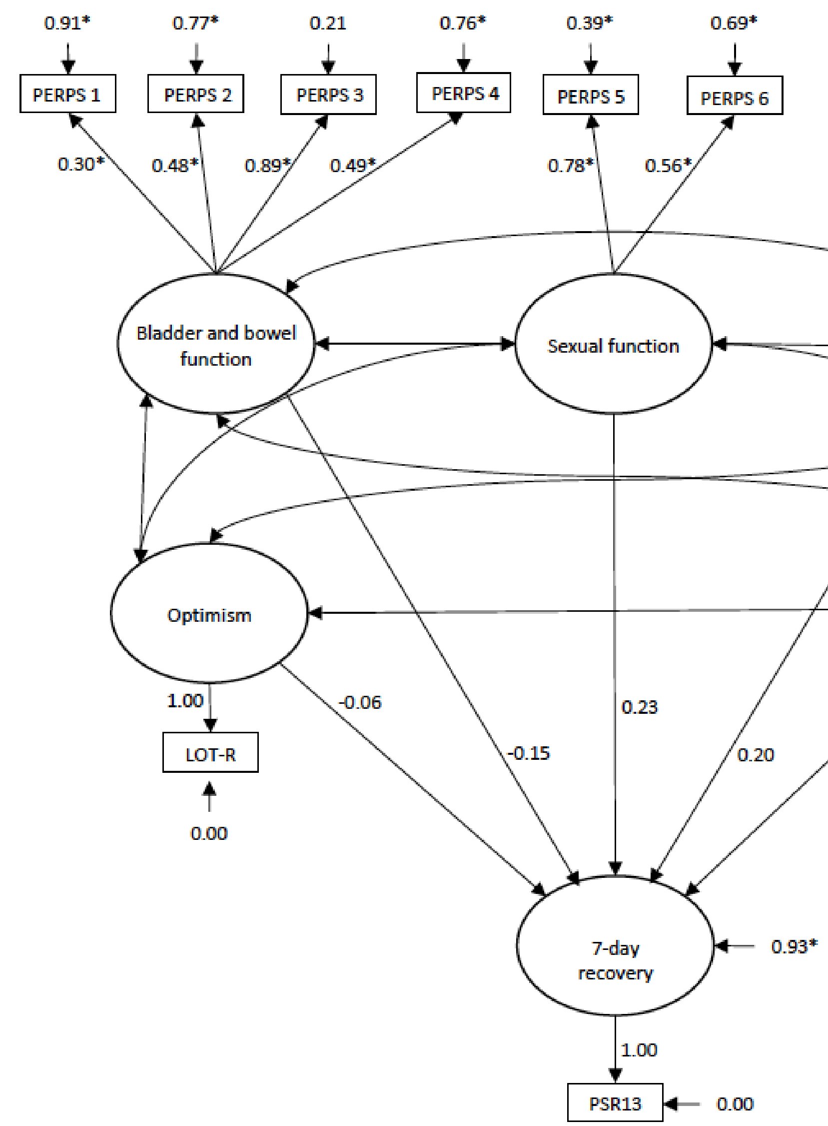

Figure 6: Seven-day recovery model with three PERPS factors, optimism, and self-efficacy. Latent variance for predictors was fixed to 1.00. Error terms for predictor variables and recovery were fixed to 0.00 All coefficients are standardized. Correlations are described in Table 9. * $p < .05$.

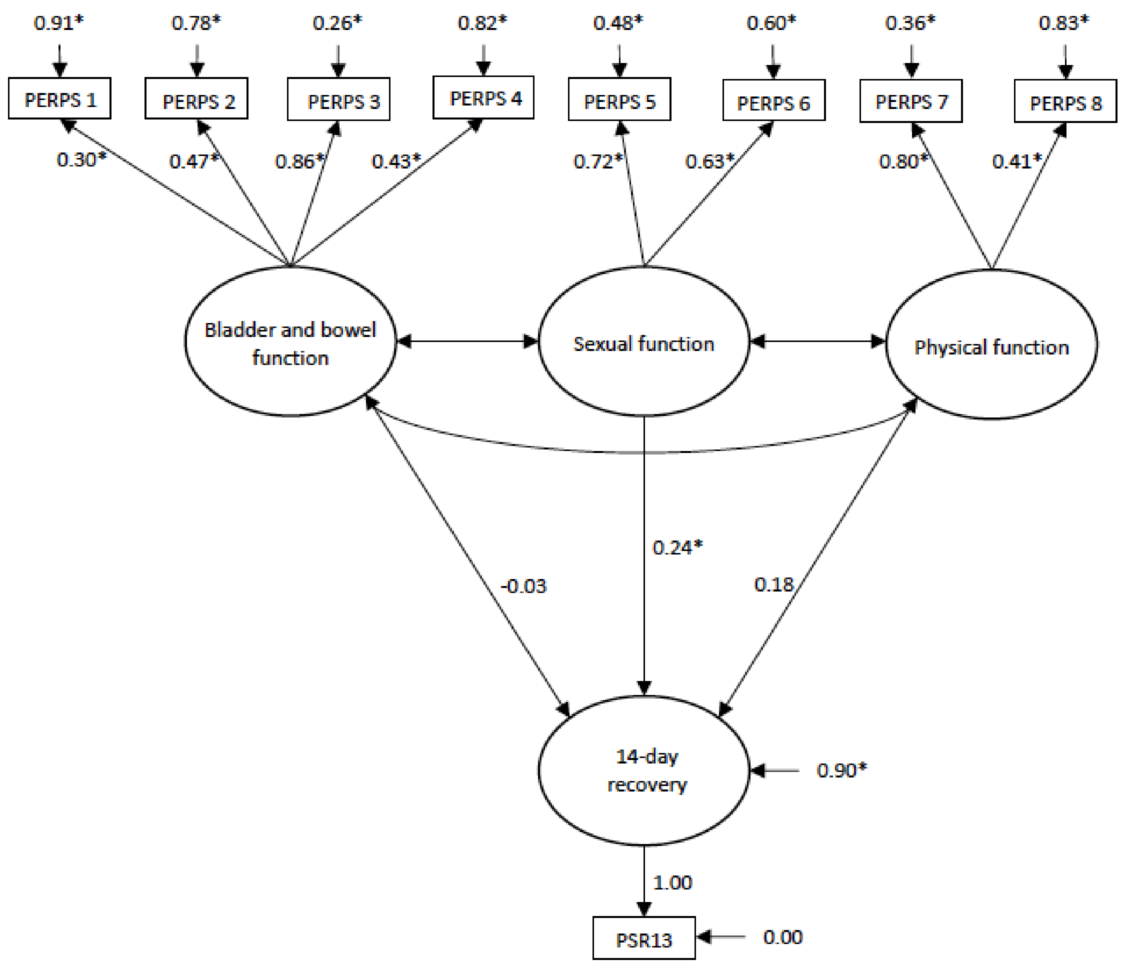

Figure 7: Fourteen-day recovery model with three PERPS factors. Latent variance for recovery was fixed to 1.00. Measurement error for recovery was fixed to 0.00. All coefficients are standardized. Correlations are described in Table 10. * $p < .05$.

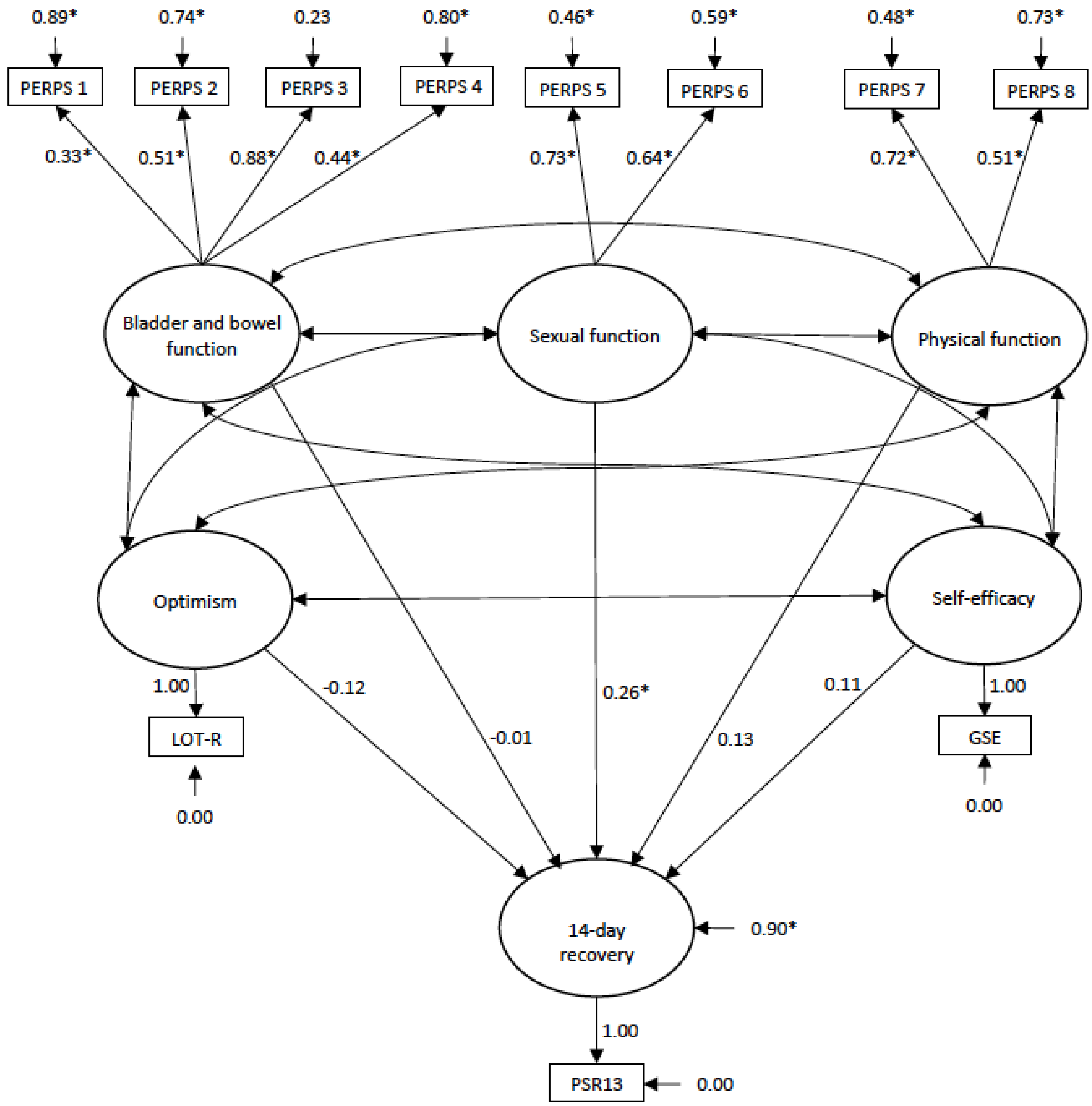

Figure 8: Fourteen-day recovery model with three PERPS factors, optimism, and self-efficacy. Latent variance for predictors was fixed to 1.00. Error terms for predictor variables and recovery were fixed to 0.00 All coefficients are standardized. Correlations are described in Table 11. * $p < .05$.

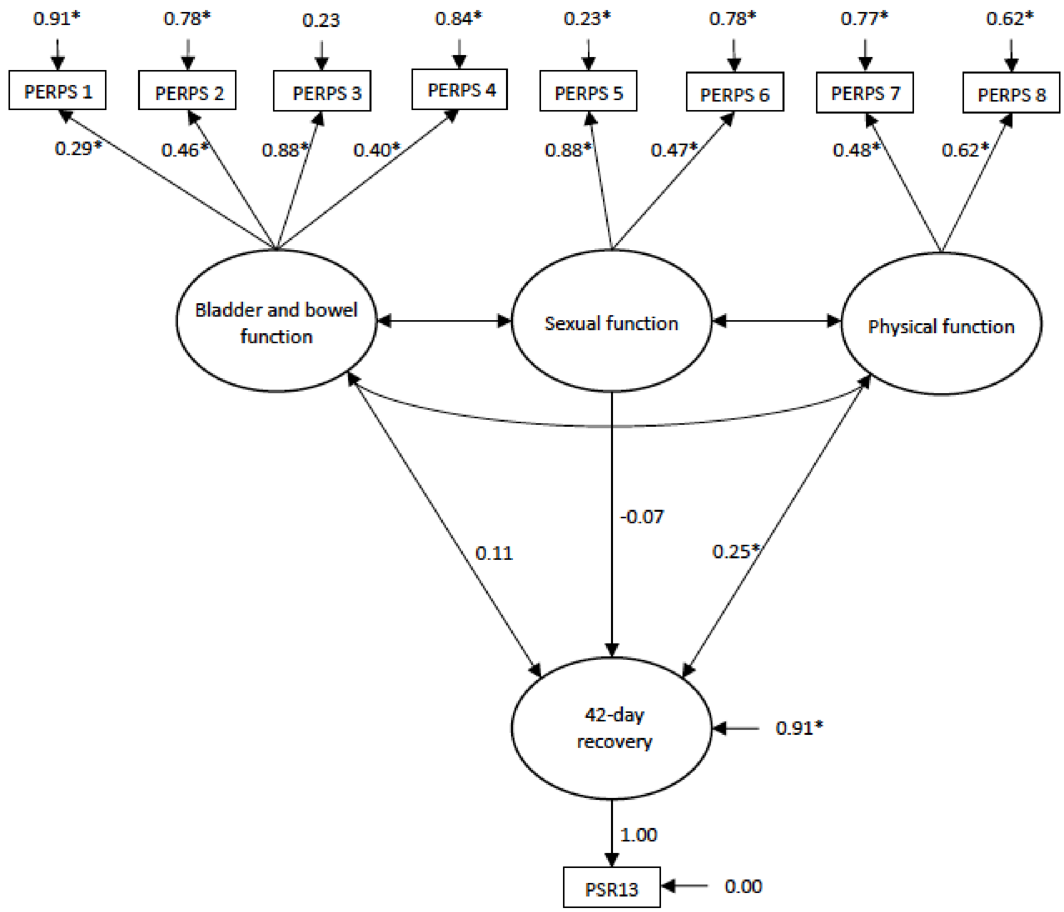

Figure 9: Forty-two-day recovery model with three PERPS factors. Latent variance for recovery was fixed to 1.00. Measurement error for recovery was fixed to 0.00. All coefficients are standardized. Correlations are described in Table 12. * $p < .05$.

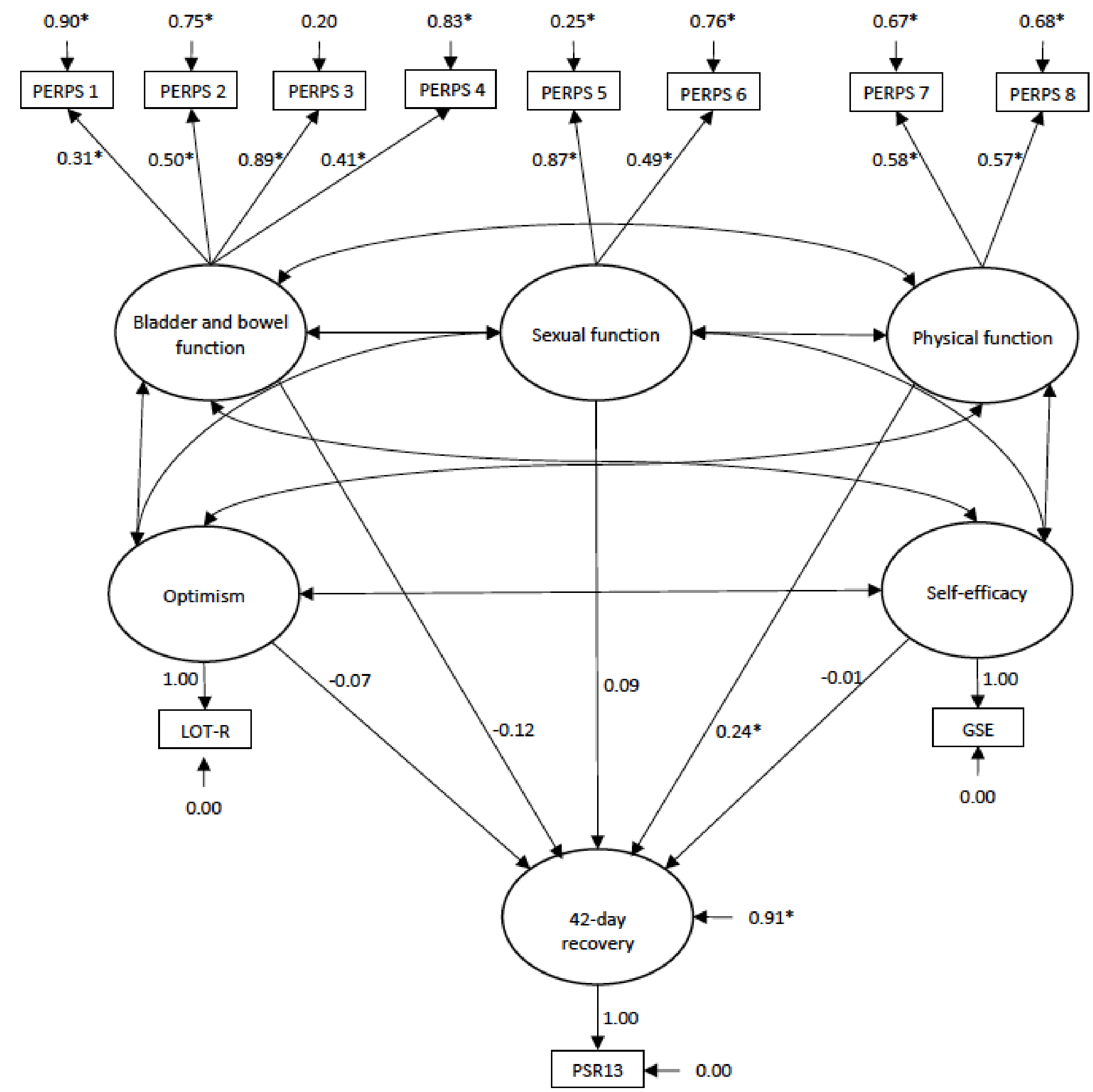

Figure 10: Forty-two-day recovery model with three PERPS factors, optimism, and self-efficacy. Latent variance for predictors was fixed to 1.00. Error terms for predictor variables and recovery were fixed to 0.00 All coefficients are standardized. Correlations are described in Table 13. * $p < .05$.

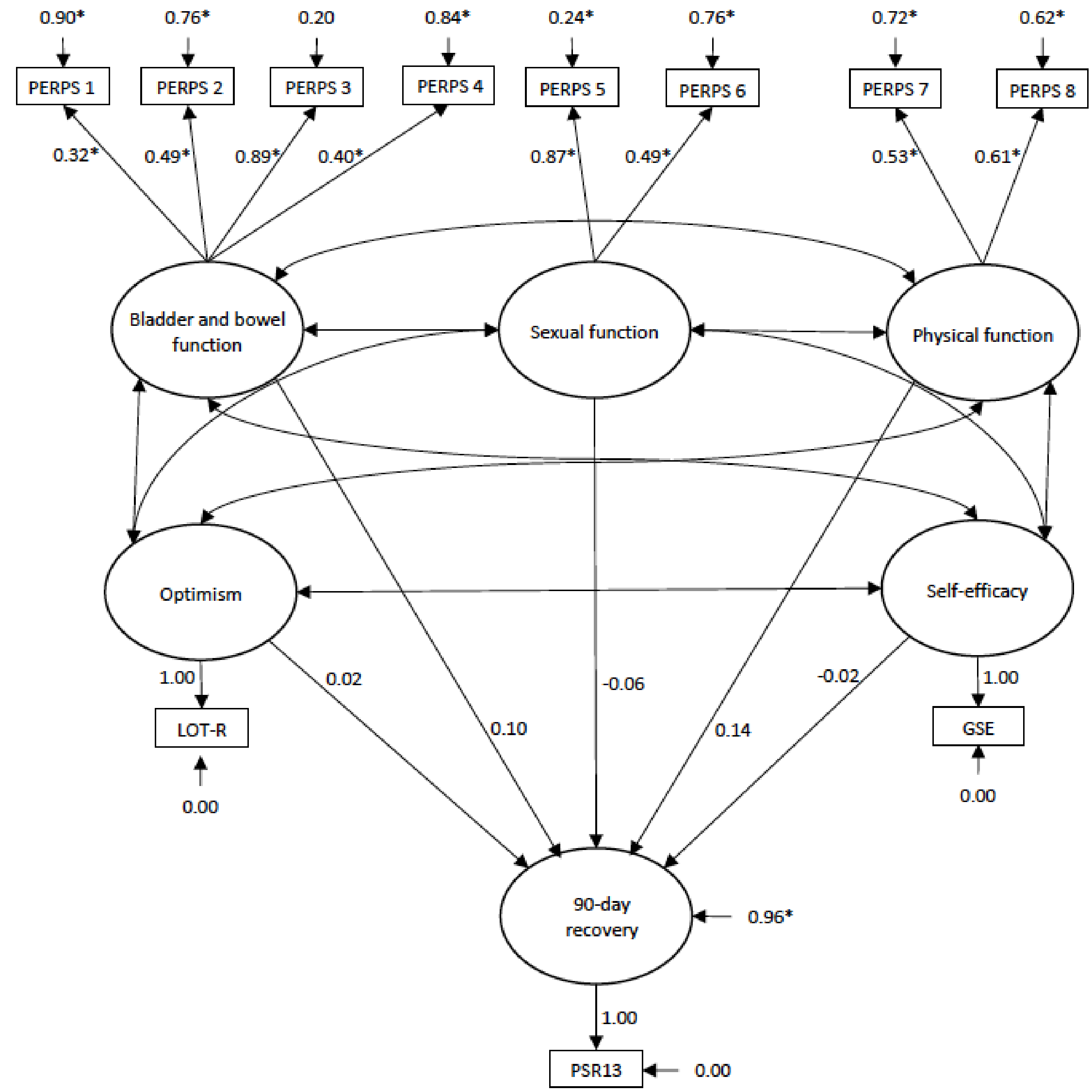

Figure 11: Ninety-day recovery model with three PERPS factors, optimism, and self-efficacy. Latent variance for predictors was fixed to 1.00. Error terms for predictor variables and recovery were fixed to 0.00 All coefficients are standardized. Correlations are described in Table 14. * $p < .05$.

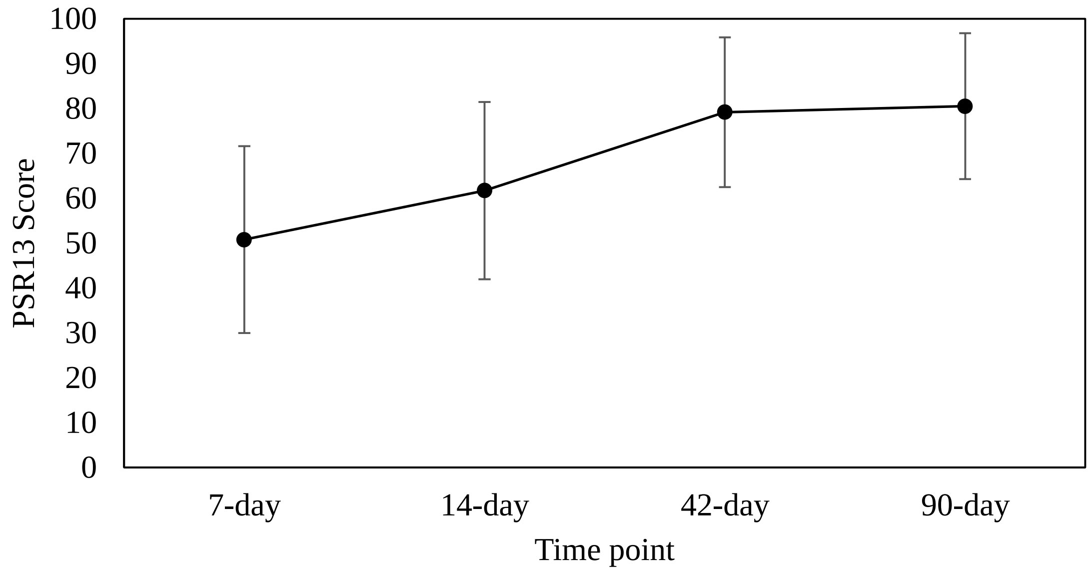

Figure 12: Trajectory of recovery over four time points measured by the PSR13.

REFERENCES

Affleck, G., Tennen, H., Zautra, A., Urrows, S., Abeles, M., & Karoly, P. (2001). Women's pursuit of personal goals in daily life with fibromyalgia: A value-expectancy analysis. *Journal of Consulting and Clinical Psychology*, *69*(4), 587–596. https://doi-org.proxy.ulib.uits.iu.edu/10.1037/0022-006X.69.4.587

Akaike, H. (1987). Factor analysis and the AIC. *Psychometrika*, *52*(3), 317-332.

Atkinson, J. W. (1957). Motivational determinants of risk-taking behavior. *Psychological Review*, *64*(6, Pt.1), 359-372. doi:10.1037/h0043445

Bandura, A. (1997). *Self-Efficacy: The exercise of control*. New York, NY, US: W. H. Freeman/Times Books/Henry Holt & Co.

Barber, Brubaker, L., Nygaard, I., Wheeler 2nd, T. L., Schaffer, J., Chen, Z., & Spino, C. (2009). Defining success after surgery for pelvic organ prolapse. *Obstetrics & Gynecology*, *114*(3), 600-609. doi:10.1097/AOG.0b013e3181b2b1ae

Barber, Walters, M., & Bump, R. (2003). Association of the magnitude of pelvic organ prolapse and presence and severity of symptoms. *Journal of Pelvic Medicine and Surgery*, *9*, 208-208.

Barber, M. D., Kuchibhatla, M. N., Pieper, C. F., & Bump, R. C. (2001). Psychometric evaluation of 2 comprehensive condition-specific quality of life instruments for women with pelvic floor disorders. *American Journal of Obstetrics Gynecology*, *185*(6), 1388-1395. doi:10.1067/mob.2001.118659

Barber, M. D., Walters, M. D., & Bump, R. C. (2005). Short forms of two condition-specific quality-of-life questionnaires for women with pelvic floor disorders (PFDI-20 and PFIQ-7). *American Journal of Obstetrics & Gynecology, 193*(1), 103-113.

Beavers, A. S., Lounsbury, J. W., Richards, J. K., Huck, S. W., Skolits, G. J. & Esquivel, S. L. (2013). Practical Considerations for Using Exploratory Factor Analysis in Educational Research. *Practical Assessment, Research & Evaluation*, *18*(6). Retrieved from: https://www.pareonline.net/getvn.asp?v=18&n=6

Bentler, P. M. (1990). Comparative fit indexes in structural models. *Psychological Bulletin*, *107*(2), 238-246. doi:10.1037/0033-2909.107.2.238

Bentler, P. M. (2007). On tests and indices for evaluating structural models. *Personality and Individual Differences, 42*(5), 825-829. doi:10.1016/j.paid.2006.09.024

Bentler, P. M., & Yuan, K.-H. (1996). Test of linear trend in eigenvalues of a covariance matrix with application to data analysis. *British Journal of Mathematical and Statistical Psychology*, *49*(2), 299–312.

Bollen, K. A. (1989). A New Incremental Fit Index for General Structural Equation Models. *Sociological Methods & Research*, *17*(3), 303-316. doi:10.1177/0049124189017003004

Borkan, J. M., & Quirk, M. (1992). Expectations and outcomes after hip fracture among the elderly. *International Journal of Aging and Human Development, 34*(4), 339-350. doi:10.2190/4klb-5cm4-1rrx-3u4u

Bradshaw, H. D., Hiller, L., Farkas, A. G., Radley, S., & Radley, S. C. (2006). Development and psychometric testing of a symptom index for pelvic organ prolapse. *Journal of Obstetrics and Gynaecology*, *26*(3), 241-252. doi:10.1080/01443610500537989

Brembo, E. A., Kapstad, H., Van Dulmen, S., & Eide, H. (2017). Role of Self-Efficacy and social support in short-term recovery after total hip replacement: a prospective cohort study. *Health and Quality of Life Outcomes*, *15*(1), 68. doi:10.1186/s12955-017-0649-1

Bump, R. C., Mattiasson, A., Bo, K., Brubaker, L. P., DeLancey, J. O., Klarskov, P., . . . Smith, A. R. (1996). The standardization of terminology of female pelvic organ prolapse and pelvic floor dysfunction. *American Journal of Obstetrics and Gynecology*, *175*(1), 10-17.

Carpenter, J. S., Heit, M., Chen, C. X., Stewart, R., Hamner, J., & Rand, K. L. (2017). Validating the Postdischarge Surgical Recovery Scale 13 as a Measure of Perceived Postoperative Recovery After Laparoscopic Sacrocolpopexy. *Female Pelvic Medicine and Reconstructive Surgery*, *23*(2), 86-89. doi:10.1097/spv.0000000000000352

Carver, C. S., & Scheier, M. F. (1998). *On the self-regulation of behavior*. New York, NY, US: Cambridge University Press.

IBM Corp. (2013). *IBM SPSS Statistics for Windows, Version 24.0*. Armonk, NY: IBM Corp.

Costello, A. B., & Osborne, J. (2005). Best Practices in Exploratory Factor Analysis: Four Recommendations for Getting the Most From Your Analysis. *Best Practices Research & Evaluation, 10*(7), 1-9.

Dhital, R., Otsuka, K., Poudel, K. C., Yasuoka, J., Dangal, G., & Jimba, M. (2013). Improved quality of life after surgery for pelvic organ prolapse in Nepalese women. *BMC Women's Health, 13*, 22. doi:10.1186/1472-6874-13-22

Digesu, G. A., Khullar, V., Cardozo, L., Robinson, D., & Salvatore, S. (2005). P-QOL: a validated questionnaire to assess the symptoms and quality of life of women with urogenital prolapse. *International Urogynecology Journal and Pelvic Floor Dysfunction, 16*(3), 176-181; discussion 181. doi:10.1007/s00192-004-1225-x

Elkadry, E. A., Kenton, K. S., FitzGerald, M. P., Shott, S., & Brubaker, L. (2003). Patient-selected goals: a new perspective on surgical outcome. *American Journal of Obstetrics and Gynecology, 189*(6), 1551-1557; discussion 1557-1558.

Engel, C., Hamilton, N. A., Potter, P. T., & Zautra, A. J. (2004). Impact of Two Types of Expectancy on Recovery From Total Knee Replacement Surgery (TKR) in Adults With Osteoarthritis. *Behavioral Medicine, 30*(3), 113-123. doi:10.3200/BMED.30.3.113-123

Engelschalk, T., Steuer, G., & Dresel, M. (2016). Effectiveness of motivational regulation: Dependence on specific motivational problems. *Learning and Individual Differences, 52*, 72-78. doi:10.1016/j.lindif.2016.10.011

Freeman, R. M. (2010). Do we really know the outcomes of prolapse surgery? *Maturitas, 65*(1), 11-14. doi:10.1016/j.maturitas.2009.10.007

Gerbing, D. W., & Anderson, J. C. (1993). Monte Carlo evaluations of goodness-of-fit indices for structural equation models. *Sage Focus Editions, 154*, 40-40.

Graham, J. W. (2009). Missing data analysis: Making it work in the real world. *Annual review of psychology*, *60*, 549-576.

Hartley, S. M., Vance, D. E., Elliott, T. R., Cuckler, J. M., & Berry, J. W. (2008). Hope, Self-Efficacy, and functional recovery after knee and hip replacement surgery. *Rehabilitation Psychology, 53*(4), 521-529. doi:10.1037/a0013121

Heit, M., Blackwell, L., & Kelly, S. (2008). Measuring the utility of incontinence care seeking. *International Urogynecology Journal*, *19*, 143-149.

Hendrix, S. L., Clark, A., Nygaard, I., Aragaki, A., Barnabei, V., & McTiernan, A. (2002). Pelvic organ prolapse in the Women's Health Initiative: gravity and gravidity. *American Journal of Obstetrics and Gynecology, 186*(6), 1160-1166.

Hoffmann, T. C., & Del Mar, C. (2015). Patients' expectations of the benefits and harms of treatments, screening, and tests: a systematic review. *JAMA internal medicine*, *175*(2), 274-286.

Hollingshead, A. A. (1975). Four-factor index of social status. Unpublished manuscript. Yale University. New Haven, CT.

Hullfish, K. L., Bovbjerg, V. E., & Steers, W. D. (2004). Patient-centered goals for pelvic floor dysfunction surgery: long-term follow-up. *American Journal of Obstetrics and Gynecology, 191*(1), 201-205. doi:10.1016/j.ajog.2004.03.086

Hullfish, K. L., Bovbjerg, V. E., & Steers, W. D. (2007). Colpocleisis for pelvic organ prolapse: patient goals, quality of life, and satisfaction. *Obstetrics and Gynecology*, *110*(2 Pt 1), 341-345. doi:10.1097/01.AOG.0000270156.71320.de

Hu, L. T., & Bentler, P. M. (1999). Cutoff criteria for fit indexes in covariance structure analysis: Conventional criteria versus new alternatives. *Structural Equation Modeling: a multidisciplinary journal*, *6*(1), 1-55.

Jamison, R. N., Parris, W. C., & Maxson, W. S. (1987). Psychological factors influencing recovery from outpatient surgery. *Behaviour Research and Therapy*, *25*(1), 31-37. doi:10.1016/0005-7967(87)90112-4

Jelovsek, J., & Barber, M. (2006). Women seeking treatment for advanced pelvic organ prolapse have decreased body image and quality of life. *American Journal of Obstetrics &Gynecology*,*194*(5), 1455-1461.

Jelovsek, J. E., Maher, C., & Barber, M. D. (2007). Pelvic organ prolapse. *Lancet, 369*(9566), 1027-1038. doi:10.1016/s0140-6736(07)60462-0

Jin, S., & Yang-Wallentin, F. (2017). Asymptotic robustness study of the polychoric correlation estimation. *Psychometrika*, *82*(1), 67-85. doi:10.1007/s11336-016-9512-2

Jöreskog, K. G. (1994). On the estimation of polychoric correlations and their asymptotic covariance matrix. *Psychometrika*, *59*(3), 381-389. doi:10.1007/bf02296131

Joreskog, K. G., & Sorbom, D. (2015). *LISREL 9.20 for Windows*. Skokie, IL: Scientific Software International, Inc.

Kenton, K., Pham, T., Mueller, E., & Brubaker, L. (2007). Patient preparedness: an important predictor of surgical outcome. *American Journal of Obstetrics and Gynecology*, *197*(6), 654.e651-656. doi:10.1016/j.ajog.2007.08.059

Klassen, D., Homstra, R. K., & Aderson, P. B. (1975). Influence of social desirability on symptom and mood reporting in a community survey. *Journal of Consulting and Clinical Psychology*, *43*, 448–452. Retrieved from https://search-ebscohost-com.proxy.ulib.uits.iu.edu/login.aspx?direct=true&db=psyhref&AN=JCCP.DC.DDH.KLASSEN.ISDSMR&site=ehost-live

Kline, R. B. (2005). *Principles and Practice of Structural Equation Modeling (2nd ed.)*. New York, NY, US: Guilford Press.

Kube, T., Glombiewski, J. A., & Rief, W. (2018). Using different expectation mechanisms to optimize treatment of patients with medical conditions: A systematic review. *Psychosomatic Medicine*, *80*(6), 535–543.

Lance, C. E., & Vandenberg, R. J. (2015). *More statistical and methodological myths and urban legends*. New York, NY, US: Routledge/Taylor & Francis Group.

Lawndy, S. S. S., Withagen, M. I., Kluivers, K. B., & Vierhout, M. E. (2011). Between hope and fear: patient's expectations prior to pelvic organ prolapse surgery. *International Urogynecology Journal*, *22*(9), 1159-1163. doi:10.1007/s00192-011-1448-6

Leedham, B., Meyerowitz, B. E., Muirhead, J., & Frist, W. H. (1995). Positive expectations predict health after heart transplantation. *Health Psychology*, *14*(1), 74–79. https://doi-org.proxy.ulib.uits.iu.edu/10.1037/0278-6133.14.1.74

Lin, T. H., & Dayton, C. M. (1997). Model selection information criteria for non-nested latent class models. *Journal of Educational and Behavioral Statistics, 22*(3), 249-264.

Linder, B. J., Gebhart, J. B., & Occhino, J. A. (2016). Total colpocleisis: technical considerations. *International Urogynecology Journal*, *27*(11), 1767-1769. doi:10.1007/s00192-016-3034-4

Little, R. J. A. (1988). A Test of Missing Completely at Random for Multivariate Data with Missing Values. *Journal of the American Statistical Association, 83*(404), 1198-1202. doi:10.1080/01621459.1988.10478722

Low, L. K., & Tumbarello, J. A. (2012). Falling out: authoritative knowledge and women's experiences with pelvic organ prolapse. *Journal of Midwifery & Women's Health, 57*(5), 489-494. doi:10.1111/j.1542-2011.2012.00187.x

Lowenstein, L., Gamble, T., Sanses, T. V., van Raalte, H., Carberry, C., Jakus, S., . . . Kenton, K. (2009). Sexual function is related to body image perception in women with pelvic organ prolapse. *Journal of Sexual Medicine, 6*(8), 2286-2291. doi:10.1111/j.1743-6109.2009.01329.x

Lowenstein, L., Kenton, K., Pierce, K., Fitzgerald, M. P., Mueller, E. R., & Brubaker, L. (2007). Patients' pelvic goals change after initial urogynecologic consultation. *American Journal of Obstetrics and Gynecology, 197*(6), 640.e641-643. doi:10.1016/j.ajog.2007.08.021

Luszczynska, A., Scholz, U., & Schwarzer, R. (2005). The general Self-Efficacy scale: Multicultural validation studies. *The Journal of Psychology: Interdisciplinary and Applied, 139*(5), 439-457. doi:10.3200/JRLP.139.5.439-457

Maeland, J. G., & Havik, O. E. (1987). Measuring Cardiac Health Knowledge. *Scandinavian Journal of Caring Sciences, 1*(1), 23-31. doi:10.1111/j.1471-6712.1987.tb00296.x

Mondloch, M. V., Cole, D. C., & Frank, J. W. (2001). Does how you do depend on how you think you'll do? A systematic review of the evidence for a relation between patients' recovery expectations and health outcomes. *Canadian Medical Association Journal, 165*(2), 174-179.

Montgomery, G. H., & Bovbjerg, D. H. (2004). Presurgery Distress and Specific Response Expectancies Predict Postsurgery Outcomes in Surgery Patients Confronting Breast Cancer. *Health Psychology, 23*(4), 381-387. doi:10.1037/0278-6133.23.4.381

Muller, N. (2010). Pelvic organ prolapse: a patient-centred perspective on what women encounter seeking diagnosis and treatment. *Australian & New Zealand Continence Journal, 16*(3), 70-80.

Olsen, A. L., Smith, V. J., Bergstrom, J. O., Colling, J. C., & Clark, A. L. (1997). Epidemiology of Surgically Managed Pelvic-Organ Prolapse and Urinary Incontinence. *Obstetrics and gynecology, 89*(4), 501-506.

Özengin, N., Duygu, E., Çankaya, H., Uysal, F., & Bakar, Y. (2017). Does stage of pelvic organ prolapse affect female sexual functions? A retrospective study. *International Journal of Sexual Health, 29*(3), 221–227. https://doi-org.proxy.ulib.uits.iu.edu/10.1080/19317611.2017.1284172

Persu, C., Chapple, C. R., Cauni, V., Gutue, S., & Geavlete, P. (2011). Pelvic Organ Prolapse Quantification System (POP-Q) - a new era in pelvic prolapse staging. *Journal of Medicine and Life, 4*(1), 75-81.

Pizarro-Berdichevsky, J., Hitschfeld, M. J., Pattillo, A., Blumel, B., Gonzalez, S., Arellano, M., . . . Goldman, H. B. (2016). Association between pelvic floor disorder symptoms and QoL scores with depressive symptoms among pelvic organ prolapse patients. *Australian & New Zealand Journal of Obstetrics & Gynaecology, 56*(4), 391-397. doi:10.1111/ajo.12467

Roets, L. (2007). The experience of women with genital prolapse. *Curationis, 30*(3), 7-14.

Rogers, R. G., Coates, K. W., Kammerer-Doak, D., Khalsa, S., & Qualls, C. (2003). A short form of the Pelvic Organ Prolapse/Urinary Incontinence Sexual Questionnaire (PISQ-12). *International Urogynecology Journal and Pelvic Floor Dysfunction, 14*(3), 164-168; discussion 168. doi:10.1007/s00192-003-1063-2

Rogers, R. G., Kammerer-Doak, D., Villarreal, A., Coates, K., & Qualls, C. (2001). A new instrument to measure sexual function in women with urinary incontinence or pelvic organ prolapse. *American Journal of Obstetrics and Gynecology, 184*(4), 552-558. doi:10.1067/mob.2001.111100

Ronaldson, A., Poole, L., Kidd, T., Leigh, E., Jahangiri, M., & Steptoe, A. (2014). Optimism measured pre-operatively is associated with reduced pain intensity and physical symptom reporting after coronary artery bypass graft surgery. *Journal of Psychosomatic Research, 77*(4), 278-282. doi:10.1016/j.jpsychores.2014.07.018

Sadati, L., Golchini, E., Pazouki, A., Jesmi, F., & Pishgahroudsari, M. (2014). Effect of preoperative education on recovery time of laparoscopic cholecystectomy: a randomized clinical trial. *Tehran University Medical Journal, 72*(4), 222-228.

Şahin, E., & Vural, G. (2015). Assessment of the Qualıty of Lıfe in Women wıth a Dıagnosıs of Urogenıtal Prolapse. *International Journal of Caring Sciences*, *8*(2), 404-411.

Scheier, & Carver, C. S. (1987). Dispositional Optimism and physical well-being: the influence of generalized outcome expectancies on health. *Journal of Personality, 55*(2), 169-210.

Scheier, M. F., & Carver, C. S. (1992). Effects of Optimism on psychological and physical well-being: Theoretical overview and empirical update. *Cognitive Therapy and Research, 16*(2), 201-228. doi:10.1007/bf01173489

Scheier, M. F., Carver, C. S., & Bridges, M. W. (1994). Distinguishing Optimism from neuroticism (and trait anxiety, self-mastery, and self-esteem): a reevaluation of the Life Orientation Test. *Journal of Personality and Social Psychology, 67*(6), 1063-1078.

Scheier, M. F., Matthews, K. A., Owens, J. F., Magovern, G. J., Lefebvre, R. C., Abbott, R. A., & Carver, C. S. (1989). Dispositional Optimism and recovery from coronary artery bypass surgery: The beneficial effects on physical and psychological well-being. *Journal of Personality and Social Psychology*, *57*(6), 1024-1040. doi:10.1037/0022-3514.57.6.1024

Schou-Bredal, I., Heir, T., Skogstad, L., Bonsaksen, T., Lerdal, A., Grimholt, T., & Ekeberg, Ø. (2017). Population-based norms of the Life Orientation Test-Revised (LOT-R). *International Journal of Clinical and Health Psychology, 17*(3), 216-224. doi:10.1016/j.ijchp.2017.07.005

Schwarzer, R., & Jerusalem, M. (1995). Generalized Self-Efficacy Scale. In J. Winman, S. Wright, & M. Johnston (Eds.), Measures in health psychology: A user's portfolio. (pp. 35-37). Windsor, UK: NFER-NELSON.

Siegel, S., & Castellan, N. J. (1988). Nonparametric statistics for the behavioral sciences (2nd ed.). New York, NY: McGraw-Hill.

Steiger, J. H., & Lind, J. C. (1980). Statistically based tests for the number of common factors. Paper presented at the Psychometric Society, Iowa City, IA.

Tamir, M., Bigman, Y. E., Rhodes, E., Salerno, J., & Schreier, J. (2015). An expectancy-value model of emotion regulation: Implications for motivation, emotional experience, and decision making. *Emotion, 15*(1), 90-103. doi:10.1037/emo0000021

Tomás, J. M., Oliver, A., Galiana, L., Sancho, P., & Lila, M. (2013). Explaining method effects associated with negatively worded items in trait and state global and domain-specific self-esteem scales. *Structural Equation Modeling*, *20*(2), 299-313. doi:10.1080/10705511.2013.769394

Touza, Rand, K. L., Carpenter, J. S., Chen, C. X., & Heit, M. H. (2018). A Scoping Study of Psychosocial Factors in Women Diagnosed With and/or Treated for Pelvic Organ Prolapse. *Female Pelvic Medicine and Reconstructive Surgery*. Advance online publication. doi:10.1097/spv.0000000000000578

U.S. Census Bureau (2018). Quick Facts, Indiana. Retrieved from https://www.census.gov/quickfacts/fact/table/in#

van Sonderen, E., Sanderman, R., & Coyne, J. C. (2013). Ineffectiveness of Reverse Wording of Questionnaire Items: Let's Learn from Cows in the Rain. *PLoS ONE*, *8*(7). doi:10.1371/journal.pone.0068967

Waldrop, D., Lightsey, O. R., Jr., Ethington, C. A., Woemmel, C. A., & Coke, A. L. (2001). Self-Efficacy, Optimism, health competence, and recovery from orthopedic surgery. *Journal of Counseling Psychology*, *48*(2), 233-238. doi:10.1037/0022-0167.48.2.233

Warr, P. B., Barter, J., & Brownbridge, G. (1983). On the independence of positive and negative affect. *Journal of Personality and Social Psychology*, *44*(3), 644-651.

Whiteside, J. L., Weber, A. M., Meyn, L. A., & Walters, M. D. (2004). Risk factors for prolapse recurrence after vaginal repair. *American Journal of Obstetrics and Gynecology*, *191*(5), 1533-1538.

Wolf, E. J., Harrington, K. M., Clark, S. L., & Miller, M. W. (2013). Sample Size Requirements for Structural Equation Models: An Evaluation of Power, Bias, and Solution Propriety. *Educational and psychological measurement*, *76*(6), 913-934.

APPENDIX A. POSTOPERATIVE EXPECTATION OF RECONSTRUCTIVE PELVIC SURGERY SCALE

Women have different beliefs about both positive and negative results after surgery for pelvic organ prolapse. Please rate how likely each of the following items will occur as a result of surgery for pelvic organ prolapse. Additionally, please rate how important each belief is in <u>your decision to have surgery</u> for pelvic organ prolapse.

1. Urine leakage will be a problem.**

    Left anchor (0) "Not at all likely"

    Right anchor (100) "Definitely likely"

2. How <u>important</u> is this belief in your decision to have surgery for pelvic organ prolapse?

    Left anchor (0) "Not important"

    Right anchor (100) "Extremely important"

3. My recovery time will be longer than 6 weeks.**

    Left anchor (0) "Not at all likely"

    Right anchor (100) "Definitely likely"

4. How <u>important</u> is this belief in your decision to have surgery for pelvic organ prolapse?

    Left anchor (0) "Not important"

    Right anchor (100) "Extremely important"

5. I will be able to walk for two hours without having to urinate 3 times.

    Left anchor (0) "Not at all likely"

    Right anchor (100) "Definitely likely"

6. How important is this belief in your decision to have surgery for pelvic organ prolapse?

Left anchor (0) “Not important”

Right anchor (100) “Extremely important”

7. I will have lifting restrictions.**

Left anchor (0) “Not at all likely”

Right anchor (100) “Definitely likely”

8. How important is this belief in your decision to have surgery for pelvic organ prolapse?

Left anchor (0) “Not important”

Right anchor (100) “Extremely important”

9. I will empty my bladder completely.

Left anchor (0) “Not at all likely”

Right anchor (100) “Definitely likely”

10. How important is this belief in your decision to have surgery for pelvic organ prolapse?

Left anchor (0) “Not important”

Right anchor (100) “Extremely important”

11. Bowel leakage will be a problem.**

Left anchor (0) “Not at all likely”

Right anchor (100) “Definitely likely”

12. How <u>important</u> is this belief in your decision to have surgery for pelvic organ prolapse?

Left anchor (0) “Not important”

Right anchor (100) “Extremely important”

13. When going out, I won’t need to wear pads.

Left anchor (0) “Not at all likely”

Right anchor (100) “Definitely likely”

14. How <u>important</u> is this belief in your decision to have surgery for pelvic organ prolapse?

Left anchor (0) “Not important”

Right anchor (100) “Extremely important”

15. Complications during or after surgery will occur.**

Left anchor (0) “Not at all likely”

Right anchor (100) “Definitely likely”

16. How <u>important</u> is this belief in your decision to have surgery for pelvic organ prolapse?

Left anchor (0) “Not important”

Right anchor (100) “Extremely important”

17. I won’t feel or see a bulge or tissue protruding from my vagina.

Left anchor (0) “Not at all likely”

Right anchor (100) “Definitely likely”

18. How <u>important</u> is this belief in your decision to have surgery for pelvic organ prolapse?

Left anchor (0) “Not important”

Right anchor (100) “Extremely important”

19. Pelvic pain won’t be a problem.

Left anchor (0) “Not at all likely”

Right anchor (100) “Definitely likely”

20. How <u>important</u> is this belief in your decision to have surgery for pelvic organ prolapse?

Left anchor (0) “Not important”

Right anchor (100) “Extremely important”

21. My body will reject the mesh.**

Left anchor (0) “Not at all likely”

Right anchor (100) “Definitely likely”

22. How <u>important</u> is this belief in your decision to have surgery for pelvic organ prolapse?

Left anchor (0) “Not important”

Right anchor (100) “Extremely important”

23. I won’t need to wear a pessary.

Left anchor (0) “Not at all likely”

Right anchor (100) “Definitely likely”

24. How <u>important</u> is this belief in your decision to have surgery for pelvic organ prolapse?

Left anchor (0) “Not important”

Right anchor (100) “Extremely important”

25. Low back pain won’t be a problem.

Left anchor (0) “Not at all likely”

Right anchor (100) “Definitely likely”

26. How <u>important</u> is this belief in your decision to have surgery for pelvic organ prolapse?

Left anchor (0) “Not important”

Right anchor (100) “Extremely important”

27. The surgery will not help.**

Left anchor (0) “Not at all likely”

Right anchor (100) “Definitely likely”

28. How <u>important</u> is this belief in your decision to have surgery for pelvic organ prolapse?

Left anchor (0) “Not important”

Right anchor (100) “Extremely important”

29. I will be able completely empty my bowels.

Left anchor (0) “Not at all likely”

Right anchor (100) “Definitely likely”

30. How important is this belief in your decision to have surgery for pelvic organ prolapse?

Left anchor (0) “Not important”

Right anchor (100) “Extremely important”

31. Problems with anesthesia will occur.**

Left anchor (0) “Not at all likely”

Right anchor (100) “Definitely likely”

32. How important is this belief in your decision to have surgery for pelvic organ prolapse?

Left anchor (0) “Not important”

Right anchor (100) “Extremely important”

33. I won’t need to put my hands near my vagina to completely empty my bowels.

Left anchor (0) “Not at all likely”

Right anchor (100) “Definitely likely”

34. How important is this belief in your decision to have surgery for pelvic organ prolapse?

Left anchor (0) “Not important”

Right anchor (100) “Extremely important”

35. My vagina will be narrowed making sex a problem.**

Left anchor (0) “Not at all likely”

Right anchor (100) “Definitely likely”

36. How important is this belief in your decision to have surgery for pelvic organ prolapse?

Left anchor (0) “Not important”

Right anchor (100) “Extremely important”

37. I will be able to perform my job duties.

Left anchor (0) “Not at all likely”

Right anchor (100) “Definitely likely”

38. How important is this belief in your decision to have surgery for pelvic organ prolapse?

Left anchor (0) “Not important”

Right anchor (100) “Extremely important”

39. My bulge will come back.**

Left anchor (0) “Not at all likely”

Right anchor (100) “Definitely likely”

40. How important is this belief in your decision to have surgery for pelvic organ prolapse?

Left anchor (0) “Not important”

Right anchor (100) “Extremely important”

41. I will be able to participate in normal activities.

Left anchor (0) “Not at all likely”

Right anchor (100) “Definitely likely”

42. How important is this belief in your decision to have surgery for pelvic organ prolapse?

Left anchor (0) “Not important”

Right anchor (100) “Extremely important”

43. I will need to wear a catheter.**

Left anchor (0) “Not at all likely”

Right anchor (100) “Definitely likely”

44. How important is this belief in your decision to have surgery for pelvic organ prolapse?

Left anchor (0) “Not important”

Right anchor (100) “Extremely important”

45. I will be able to resume normal sexual relations.

Left anchor (0) “Not at all likely”

Right anchor (100) “Definitely likely”

46. How important is this belief in your decision to have surgery for pelvic organ prolapse?

Left anchor (0) “Not important”

Right anchor (100) “Extremely important”

47. I won’t feel tired.

Left anchor (0) “Not at all likely”

Right anchor (100) “Definitely likely”

48. How <u>important</u> is this belief in your decision to have surgery for pelvic organ prolapse?

Left anchor (0) "Not important"

Right anchor (100) "Extremely important"

49. Painful intercourse won't be a problem.

Left anchor (0) "Not at all likely"

Right anchor (100) "Definitely likely"

50. How <u>important</u> is this belief in your decision to have surgery for pelvic organ prolapse?

Left anchor (0) "Not important"

Right anchor (100) "Extremely important"

51. I will feel like a young woman again.

Left anchor (0) "Not at all likely"

Right anchor (100) "Definitely likely"

52. How <u>important</u> is this belief in your decision to have surgery for pelvic organ prolapse?

Left anchor (0) "Not important"

Right anchor (100) "Extremely important"

53. Loss of sensation during sex will be a problem.**

Left anchor (0) "Not at all likely"

Right anchor (100) "Definitely likely"

54. How important is this belief in your decision to have surgery for pelvic organ prolapse?

Left anchor (0) “Not important”

Right anchor (100) “Extremely important”

(**items are reversed scored)

APPENDIX B. POSTDISCHARGE SURGICAL RECOVERY SCALE 13

(Carpenter et al., 2017)

(1) Overall feeling compared with how you thought you would be feeling*

Left anchor (0) “Better”

Right anchor (100) “Worse”

(2) Level of pain*

Left anchor (0) “Pain free”

Right anchor (100) “Worst possible”

(3) Level of energy

Left anchor (0) “Very tired”

Right anchor (100) “Full of energy”

(4) Level of recovery

Left anchor (0) “Need more time”

Right anchor (100) “Recovered”

(5) Activity level

Left anchor (0) “No activity”

Right anchor (100) “Usual activity”

(6) Level of sleepiness

Left anchor (0) “Need daytime nap”

Right anchor (100) “Not needed”

(7) Ability to move around

Left anchor (0) “Difficult to move around”

Right anchor (100) “Move like normal”

(8) Length of time it took to get well

Left anchor (0) “Took long time”

Right anchor (100) “Took 1-2 days to get well”

(9) Readiness to get out

Left anchor (0) “Need to stay home”

Right anchor (100) “Ready to go out”

(10) Bowel functioning

Left anchor (0) “Bowels in poor condition”

Right anchor (100) “No problem”

(11) Ability to work*

Left anchor (0) “Ready to work”

Right anchor (100) “Unable”

(12) Ability to exercise*

Left anchor (0) “Do exercise”

Right anchor (100) “Unable”

(13) Overall feeling of normalcy*

Left anchor (0) “Back to normal”

Right anchor (100) “Very different”

(*items are reversed scored)

APPENDIX C. LIFE ORIENTATION TEST- REVISED

(Scheier, Carver, & Bridges, 1994)

Please answer the following questions about yourself by indicating the extent of your agreement using the following scale:

0 = strongly disagree

1 = disagree

2 = neutral

3 = agree

4 = strongly agree

Be as honest as you can throughout, and try not to let your responses to one question influence your responses to other questions. There are no right or wrong answers.

______ 1. In uncertain times, I usually expect the best.

______ 2. It's easy for me to relax.

______ 3. If something can go wrong for me, it will.

______ 4. I'm always optimistic about my future.

______ 5. I enjoy my friends a lot.

______ 6. It's important for me to keep busy.

______ 7. I hardly ever expect things to go my way.

______ 8. I don't get upset too easily.

______ 9. I rarely count on good things happening to me.

______ 10. Overall, I expect more good things to happen to me than bad.

APPENDIX D. GENERAL SELF-EFFICACY SCALE

(Schwarzer & Jerusalem, 1995)

Please circle the most appropriate letter corresponding to the extent of agreement or disagreement with each statement below. Please be as honest as you can. There are not right and wrong answers just your judgement about your own feelings rather than how you think "most people would answer."

I can always manage to solve difficult problems if I try hard enough.

a) Not at all true
b) Hardly true
c) Moderately true
d) Exactly true

If someone opposes me, I can find the means and ways to get what I want.

a) Not at all true
b) Hardly true
c) Moderately true
d) Exactly true

It is easy for me to stick to my aims and accomplish my goals.

a) Not at all true
b) Hardly true
c) Moderately true
d) Exactly true
e)

I am confident that I could deal efficiently with unexpected events.

a) Not at all true

b) Hardly true

c) Moderately true

d) Exactly true

Thanks to my resourcefulness, I know how to handle unforeseen situations.

a) Not at all true

b) Hardly true

c) Moderately true

d) Exactly true

I can solve most problems if I invest the necessary effort.

a) Not at all true

b) Hardly true

c) Moderately true

d) Exactly true

I can remain calm when facing difficulties because I can rely on my coping abilities.

a) Not at all true

b) Hardly true

c) Moderately true

d) Exactly true

When I am confronted with a problem, I can usually find several solutions.

a) Not at all true

b) Hardly true

c) Moderately true

d) Exactly true

If I am in trouble, I can usually think of a solution.

a) Not at all true

b) Hardly true

c) Moderately true

d) Exactly true

I can usually handle whatever comes my way.

a) Not at all true

b) Hardly true

c) Moderately true

d) Exactly true

APPENDIX E. NEGATIVELY WORDED PERPS ITEMS REMOVED BEFORE EFA.

7. When going out, I won't need to wear pads.

    Left anchor (0) "Not at all likely"

    Right anchor (100) "Definitely likely"

9. I won't see or feel a bulge or tissue protruding from my vagina.

    Left anchor (0) "Not at all likely"

    Right anchor (100) "Definitely likely"

10. Pelvic pain won't be a problem.

    Left anchor (0) "Not at all likely"

    Right anchor (100) "Definitely likely"

12. I won't need to wear a pessary.

    Left anchor (0) "Not at all likely"

    Right anchor (100) "Definitely likely"

13. Low back pain won't be a problem.

    Left anchor (0) "Not at all likely"

    Right anchor (100) "Definitely likely"

14. The surgery will not help.

    Left anchor (0) "Not at all likely"

    Right anchor (100) "Definitely likely"

17. I won't need to put my hands near my vagina to completely empty my bowels.

    Left anchor (0) "Not at all likely"

    Right anchor (100) "Definitely likely"

24. I won’t feel tired.

Left anchor (0) “Not at all likely”

Right anchor (100) “Definitely likely”

25. Painful intercourse won’t be a problem.

Left anchor (0) “Not at all likely”

Right anchor (100) “Definitely likely”