The Psychological Changes in Patients Undergoing Elective Aesthetic Surgery: A Longitudinal Study

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ABSTRACT

The popularity of elective cosmetic surgery has risen rapidly over the last two decades, drawing attention to its pursuit and psychological effects. However, the literature shows mixed results regarding the psychological outcomes of cosmetic surgery, suggesting methodological weaknesses across a majority of the studies, and lending weight to the belief that there is insufficient evidence to demonstrate the psychological benefits of cosmetic surgery. The current study explores the psychological change in cosmetic surgery patients before and six months after the surgery, using mixed methods of applied longitudinal analysis and thematic analysis. It explores the psychological differences between 17 prospective cosmetic surgery patients and a comparison group of 20 not planning cosmetic surgery, examines why patients undergo surgery, and looks at factors that could influence surgery outcomes. Psychological measures were taken before the surgery and two weeks, three months and six months after the surgery. The psychological outcome variables include global self-esteem, appearance evaluation and orientation, psychological wellbeing and body image-related quality of life. No psychological difference was found between prospective cosmetic surgery participants and the comparison group, except that the surgery participants were more dissatisfied with their overall appearance and their body image experiences were more likely to have negatively affected their lives preoperatively compared with the comparison group. Cosmetic surgery was sought to address concerns and dissatisfaction over physical appearance, and under the expectation of postoperative psychological enhancement. Cosmetic surgery participation was significantly associated with increased appearance satisfaction over time, whereas no significant changes was found in other psychological variables. The majority of the postoperative cosmetic participants reported that their appearance dissatisfaction in other parts of their bodies have a somewhat negative impact on their lives, whereas the comparison group described that such appearance dissatisfaction has no effect on their lives or minor preoccupation at the most. Implications for future research and clinical practice are discussed.

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INTRODUCTION

Elective cosmetic surgery is becoming a common form of aesthetic enhancement worldwide. The world's top three countries for cosmetic procedures in 2016 were the United States, Brazil, and Japan, with Australia on the 18th rank (International Society of Aesthetic Plastic Surgery [ISAPS], 2017a, 2017b). The popularity of cosmetic surgery has risen rapidly and steadily over the last two decades, with estimates of just more than nine hundred thousand cosmetic surgical procedures being undertaken in 1997, and almost two million surgical procedures in 2016 in the United States (The American Society for Aesthetic Plastic Surgery [ASAPS], 2016). As a result of the growing population undergoing cosmetic surgery, much attention has been placed on the phenomenon of cosmetic surgery pursuit and its effects, particularly the psychological aspects before and after cosmetic surgery.

The role of psychology in cosmetic surgery is significant. Some have suggested that cosmetic surgery could be seen as psychological intervention or surgery with psychological consequences (Sarwer, Wadden, Pertschuk, & Whitaker, 1998). According to the Medical Council of New Zealand (2011), cosmetic surgery is defined as "operations and other procedures that revise or change the appearance, colour, texture, structure or position of normal bodily features with the sole intention of improving the patient's appearance or self-esteem" (p. 1). To be more specific, people who seek cosmetic surgery typically possess appearance dissatisfaction, with an aim to solely improve appearance dissatisfaction, as well as self-esteem and confidence through modification of physical appearance. It is also suggested that people often believe elective cosmetic surgery can achieve improvements in psychosocial functioning and quality of life (Adams, 2010). Many third-party funders even refer to people seeking elective cosmetic surgery as "a psychotherapeutic response to 'exceptional' psychosocial need" (Cook, Rosser, & Salmon, 2006, p. 1134). The motivation and reasons for cosmetic surgery and the desired outcomes undoubtedly involve many psychological elements in an individual seeking the surgery.

Over the last three decades, behavioural and social scientists have learned about numerous favourable aspects of 'beauty', and proposed that physical

attractiveness is generally perceived by people as being associated with many flattering characteristics, such as higher intelligence and social desirability (Hatfield & Sprecher, 1986). Based on this perceived association, cosmetic surgery, presumably, could provide psychosocial and psychological benefits through enhancing one's appearance and attractiveness. However, not only does cosmetic surgery come with a risk of surgical complications, but also research to date shows mixed results in terms of its psychological and psychosocial outcomes (Brunton et al., 2014).

Cosmetic surgery, like all other types of surgery, is accompanied by the risk of surgical complications. Depending on the types of procedure, complications can range from scars and sensory disturbance to more serious complication such as hematogenic shock and sepsis (Harth & Hermes, 2007). In fact, cosmetic surgeons reportedly face a higher number of malpractice claims when compared with other specialties (Jena, Seabury, Lakdawalla, & Chandra, 2011; Mehta, Frahadi, & Atrey, 2010), where breast-related surgeries account for 37% of the overall claims (Dyer, 2012; Richards & Vijh, 2011). A study examining breast surgery malpractice found that most common litigation involved disfigurement (e.g., scarring and asymmetry), and dissatisfaction with the surgical outcome (e.g., size or appearance of the breasts) (Paik, Mady, Sood, Eloy, & Lee, 2014). Despite the more advanced surgical techniques that now allow surgeries to be performed more safely and successfully partially explaining the growth in cosmetic surgery (Sarwer, Crerand, & Magee, 2011), the relative surgical risk of complications and anaesthesia, with the unpleasant recovery process (i.e., pain and swelling) understandably make people seek reassurance not only about the appearance outcome, but also the desired psychological effects, before undergoing it.

The literature shows mixed results regarding the psychological outcomes of cosmetic surgery, with some showing positive outcomes (e.g., improved self-esteem or quality of life), some reporting no change, and others finding negative postoperative results (Brunton et al., 2014; Cook et al., 2006; Honigman, Phillips, & Castle, 2004). Most of the individual studies were identified with methodologically weak designs, leading to a consensus in the literature that there is insufficient evidence to demonstrate the psychological and psychosocial benefits of cosmetic surgery (Brunton et al., 2014; Cook et al., 2006; Sarwer & Crerand, 2004).

The large and growing cosmetic surgery population and the controversial findings in the literature motivate and inspire the current exploratory research. The primary aim of the current study is to explore psychological change in cosmetic surgery patients over time, in an attempt to improve methodology in current research design and contribute empirically sound evidence to the literature. In Chapter 1, several theoretical perspectives are introduced to explain the growth in the cosmetic surgery population and the psychological mechanisms underlying the effects of cosmetic surgery on body image. Chapter 2 provides an overview of the seekers of cosmetic surgery, including demographic characteristics and common factors that influence one's likelihood to consider cosmetic surgery, followed by an overview of the preoperative psychological characteristics of individuals who actually underwent cosmetic surgery. In Chapter 3, an overview is presented of the psychological and psychosocial outcomes of cosmetic surgery, including factors that may influence outcomes, followed by a summary of the studies' common methodological limitations and weaknesses. Chapter 3 concludes that the somewhat pervasive methodological limitations across relevant studies limit the confidence to generalise findings to the targeted population.

The current research is introduced with the research questions described in Chapter 4, and the method in Chapter 5. The general aims of the study are to explore the effects of cosmetic surgery on various psychological domains, as well as the within- and interpersonal differences between cosmetic surgery patients. The current study employed both quantitative and qualitative analyses for the longitudinal data from 17 cosmetic surgery patients and 20 participants in the comparison group. The longitudinal data was obtained from four consecutive waves of data collection, occurring approximately one month before the scheduled cosmetic surgery (Wave 1), and follow-up at 2 weeks, 3 months, and 6 months after the surgery (i.e., Wave 2 to Wave 4, respectively). The results are presented in Chapter 6, detailing the outcomes of bivariate inferential statistical analysis, applied longitudinal analysis (multilevel regression analyses), and thematic analysis. Finally, Chapter 7 presents a discussion of the current research findings, comparisons with the existing literature, and possible explanations for the findings of the current study. This is followed by a discussion of the contribution to the literature, limitations of the study, suggestions for future research, and practical implications in the field of cosmetic surgery.

CHAPTER 1
THEORETICAL PERSPECTIVES FOR COSMETIC SURGERY

The growth in the cosmetic surgery population and the reason for individuals to seek cosmetic surgery can be explained by a number of empirically sound theoretical perspectives. For instance, from an evolutionary theoretical perspective, a wide range of human behaviours are associated with physical attractiveness, particularly under the influence of sexual selection (Swami, 2011). The theory proposes that individuals inherently select potential mates through assessing certain facial and body features as one of the indications of enhancing one's chance of reproduction success (Swami, 2011). From a sociocultural perspective, powerful and pervasive sociocultural influences, namely the media, family and peers (also known as the tripartite model) convey the societal ideals of beauty and attractiveness, where the ideals are internalised by individuals and result in one's appearance satisfaction or dissatisfaction and subsequent attainment of the ideal appearance through various means (Tiggemann, 2011).

Sarwer and colleagues (1998), based on the existing body image literature (e.g. Cash & Pruzinsky, 1990, as cited in Sarwer et al., 1998), propose a model that explains the relationship between body image and the decision to seek cosmetic surgery. The model considers physical appearance the foundation that influences one's perception of appearance, developmental and sociocultural experiences, and self-esteem. These influences are believed to impact on one's body image valence and value, which involve the levels of body image importance and body image satisfaction respectively. Sarwer and colleagues (1998) propose that individuals with lower body image valence may be more unlikely to pursue cosmetic surgery as their self-esteem may not be largely dependent on appearance, regardless of their body image satisfaction or dissatisfaction. In contrast, people with higher body image valence are believed to be more likely to seek cosmetic surgery. There is support in the literature for the idea that appearance dissatisfaction is the main motivation for individuals to seek cosmetic surgery (more details are discussed in the next chapter). There is some evidence suggesting that prospective cosmetic patients exhibit higher body image valence compared to the control group (e.g. Henderson-King &

Henderson-King 2005; Sarwer et al., 2003), with other research found no significant difference between the two groups (e.g. Oidie & Sarwer 2003).

From a biological point of view, genetic and biological factors may contribute to a vulnerability to poor body image, which is supported by twin studies carried out on women; however, only a few studies examined and supported such susceptibility to body image dissatisfaction in men and further research was recommended by the review author (Suisman & Klump, 2011). These theoretical frameworks provide a useful basis for understanding why appearance and physical attractiveness are important and how one's body dissatisfaction can be influenced by sociocultural, biological and genetic factors, and presumably explain the rapid growth of the cosmetic surgery population and the reason for undergoing the surgery. However, these theories do not specifically address why sociocultural and media messages are largely targeted at women and why women appear to seek and attain physical attractiveness or societal ideals more than men, as suggested by the disproportionately higher rates of women undergoing cosmetic surgery (Brown, Furnham, Glanville, & Swami, 2007; Swami, 2009). The objectification theory (Fredrickson & Roberts, 1997), too, is socioculturally oriented, but its additional framework of sexual objectification addresses the above questions of 'why women' and appears to be useful for understanding why higher rates of women pursue cosmetic surgery.

In striving for a theory that explains the effect or outcomes of cosmetic surgery, researchers have suggested that to understand the psychology of cosmetic surgery, studies need to focus on body image, a psychological construct that is closely related to physical appearance (Sarwer et al., 1998). Cash (2011, 2012) advocates the use of an integrative cognitive-behavioural model of body image to explain how several key factors serve to influence one's body image through various empirically supported psychological mechanisms. The theoretical framework provided by this model appears to be useful in understanding how a change in appearance through cosmetic surgery may affect body image.

The remainder of this chapter presents a general overview of the objectification theory and cognitive-behavioural model of body image, each followed by a discussion of how their relative theoretical perspectives apply to the psychology of cosmetic surgery. Both theories provide important perspectives relative to different aspects of cosmetic surgery and form the basis for the current exploratory study.

Objectification Theory and Self-Objectification

Objectification theory (Fredrickson & Roberts, 1997) provides a framework of understanding how sociocultural elements may impact women's perception of the self. To 'objectify' is to treat something that can be used, manipulated and controlled as an object (Fredrickson & Roberts, 1997). The objectification theory proposes that the prevalent Western cultural practice of sexually objectifying women creates opportunities for a female's body to be looked at and publicly evaluated (Fredrickson & Roberts, 1997). This theory is developed in the Western cultural context and it is unclear whether it holds in other cultures. Sexual objectification occurs when the sexual parts or functions of a person are separated out from the person, whereby the person is treated solely as a body or a collection of body parts for sexual use (Fredrickson & Roberts, 1997). For example, a common behaviour of sexually objectifying women is the sexualised evaluation, such as gaze, catcalls or visual inspection of the woman's body by men. Sexual objectification is most apparent in interpersonal interactions, including interactions with strangers (e.g., passing jokes that are sexually degrading, or having body parts stared at), and in mass media consumption (e.g., portrayals that visually spotlight women's bodies or body parts) (Calogero, 2012).

The theory proposes that women and younger girls who are sexually objectified over time eventually internalise the sexual objectification and as a result girls and women come to perceive themselves as objects to be publicly evaluated based on their appearance (Fredrickson & Roberts, 1997). This consequence of internalising sexual objectification refers to 'self-objectification', where women adopt the sexually oriented evaluations from others as their own self-perspective, that is, internalising other's perspectives of oneself (Fredrickson & Roberts, 1997). Fredrickson and Roberts (1997) have described that the internalisation process can be understood through socialisation theory where compliance with minimal external pressures eventually leads to individuals incorporating the socialised attitude into their sense of self. For example, women learn that they are judged by their appearance through the observed benefits associated with physical attractiveness (e.g., being praised). This encourages women to view their body from a third-person perspective and to avoid negative judgement by taking care of their appearance, and eventually internalise other's perspectives into their sense of self. As a result of self-

objectification, women place greater value on and give more attention to how others perceive and view their physical appearance rather than how they feel and what they can achieve, and thereby women become dependent on others for approval (Fredrickson & Roberts, 1997; McKinley, 2011). The consequence of self-objectification is accompanied by 'self-surveillance' characterised by vigilant monitoring of physical appearance, representing the behavioural manifestation of self-objectification (Fredrickson & Roberts, 1997; Nita Mary McKinley & Hyde, 1996). Studies have suggested that self-objectification and self-surveillance is directly associated with negative inter- and intrapersonal psychological consequences, including greater hostility towards other women (Loya, Cowan, & Walters, 2006); and body shame, which is characterised by the extent to which women feel shame regarding their physical appearance when the cultural standard has not been met (e.g., Chen & Russo, 2010).

To summarise, women endure more pressure to attain the social ideals of beauty as a result of the common cultural practice of sexual objectification of women, by means of media exposure and interpersonal interactions. The resultant self-objectification is understood as the main psychological mechanism that accounts for the association between the women's sexually objectified experience at the cultural level and their subjective experience at the individual level (i.e., the subjective wellbeing) (Calogero, 2012; Fredrickson & Roberts, 1997).

Objectification and cosmetic surgery. Emerging evidence has suggested that objectification-related variables and body shame are associated with positive attitudes towards cosmetic surgery (e.g., Calogero, Pina, Park, & Rahemtulla, 2010; Henderson-King & Henderson-King, 2005). For example, a recent study in Australia found that increases in acceptance and consideration of cosmetic surgery was predicted by increases in sexual objectification, self-objectification, self-surveillance, and body shame (Vaughan-Turnbull & Lewis, 2015). In particular, it has been suggested that objectification and self-objectification account for women seeking breast augmentation — one of the most popular cosmetic surgeries of all (Einon, 2012; Forbes & Frederick, 2008). Breasts are considered a feature that is highly sexualised and widely presented for evaluations and objectification via various media platforms (e.g., movies and games), as well as an important feature in the ideal female figure relating to women's attractiveness (as reviewed in Forbes & Frederick,

2008). Girls start to internalise the cultural objectification of women's ideal figure at an early age, which results in vigilant monitoring of their body parts based on unrealistic ideals that often leads to body shame (Einon, 2012). The ideal features of an ultra-skinny body and moderate to large breasts are simply incompatible due to biological and physiological reasons (i.e., the size of the breasts cannot be maintained through dieting or exercising in an attempt to lose weight), where cosmetic surgery appears to be the only solution for women with breast dissatisfaction and body shame as a result of self-objectification (Einon, 2012).

An objectification model of cosmetic surgery. Roberts and Gettman (2004) found that a state of self-objectification was automatically activated by priming women with mere exposure of visually presented sexually objectifying words, which subsequently increased their emotional experiences of shame, disgust and appearance anxiety, and decreased the appeal of sex. This finding replicated the findings of Fredrickson and colleagues' study (1998), where women's state of self-objectification was found to be activated by the wearing of a swimming suit. Calogero, Pina, and Sutton (2014) also examined the causal effect of priming participants with subtle exposure to sexually objectifying words (e.g., sexiness, physique or beauty) and found increased body shame and the intention to have cosmetic surgery, compared with the control group participants who were primed with non-sexually-objectifying-words. Calogero and colleagues (2014) subsequently propose an objectification model of cosmetic surgery based on their findings, as well as building on prior evidence supporting the automatic activation of the self-objectification state in women, and the association between objectification-related variables and the heightened pursuit of cosmetic surgery.

The model proposes that subtle environmental cues involving sexually objectifying printed content act as a trigger for the sexually objectified concepts in memory, which activates a state of self-objectification in women. As a result of the mere exposure, more women come to perceive themselves as a collection of body parts that may be subjected for modification through surgical procedures (Calogero et al., 2014). The objectification theory characterises self-objectification as a psychological strategy for some women to exert some control over how they are viewed and evaluated by others, as it is beyond women's control that they come to experience negative psychological consequences (e.g., body shame) as a result of

sexual objectification (e.g., random exposure to magazine covers in the supermarket or random visual inspection of their body from a stranger) (Fredrickson & Roberts, 1997). In other words, self-objectification and its resultant behaviours (i.e., being aware or taking care of one's appearance) can serve as a buffer for negative reactions to sexual objectifying cues for some women (Noll & Fredrickson, 1998). This, together with the strategic perspective of self-objectification, prompted Calogero and colleagues (2014) to conclude that cosmetic surgery could be viewed as a potential solution for some self-objectified women by allowing them to exert control over their physical appearance.

The objectification theory provides a comprehensive framework for understanding why women are much more likely to undergo cosmetic surgery than men. While the objectification theory, particularly the self-objectification perspective, provides the psychological mechanism that comprehensively accounts for some, if not most of the reasons and motivation for Western women seeking cosmetic surgery, it does not address the mechanism underlying appearance modification and the relative psychological outcomes of cosmetic surgery. The cognitive-behavioural model of body image provides a theoretical basis for further understanding in this regard.

Cognitive-Behavioural Model of Body Image

Cash (2011, 2012) advocates an integrative cognitive-behavioural (CB) model of body image, which is based on the empirical fundamental principles of several cognitive and behavioural theories, including classical (Pavlov, 1927) and operant conditioning (Skinner, 1938), social and cognitive learning (Bandura, 1977, 1986), self-schema theory (Markus, 1977), and coping for emotional distress (Folkman & Lazarus, 1988). Cash (2011, 2012) defines body image as 'the psychological experience of embodiment'. The CB model of body image consists of perceptual, affective, cognitive and behavioural aspects that underlie the multidimensionality of body image constructs, namely the body image perception, body image evaluation and body image investment (Cash, 2011, 2012). The model also details the influences of historical and proximal factors on the fundamental body image constructs. Figure 1 presents the CB model of body image as proposed by Cash (2011, 2012).

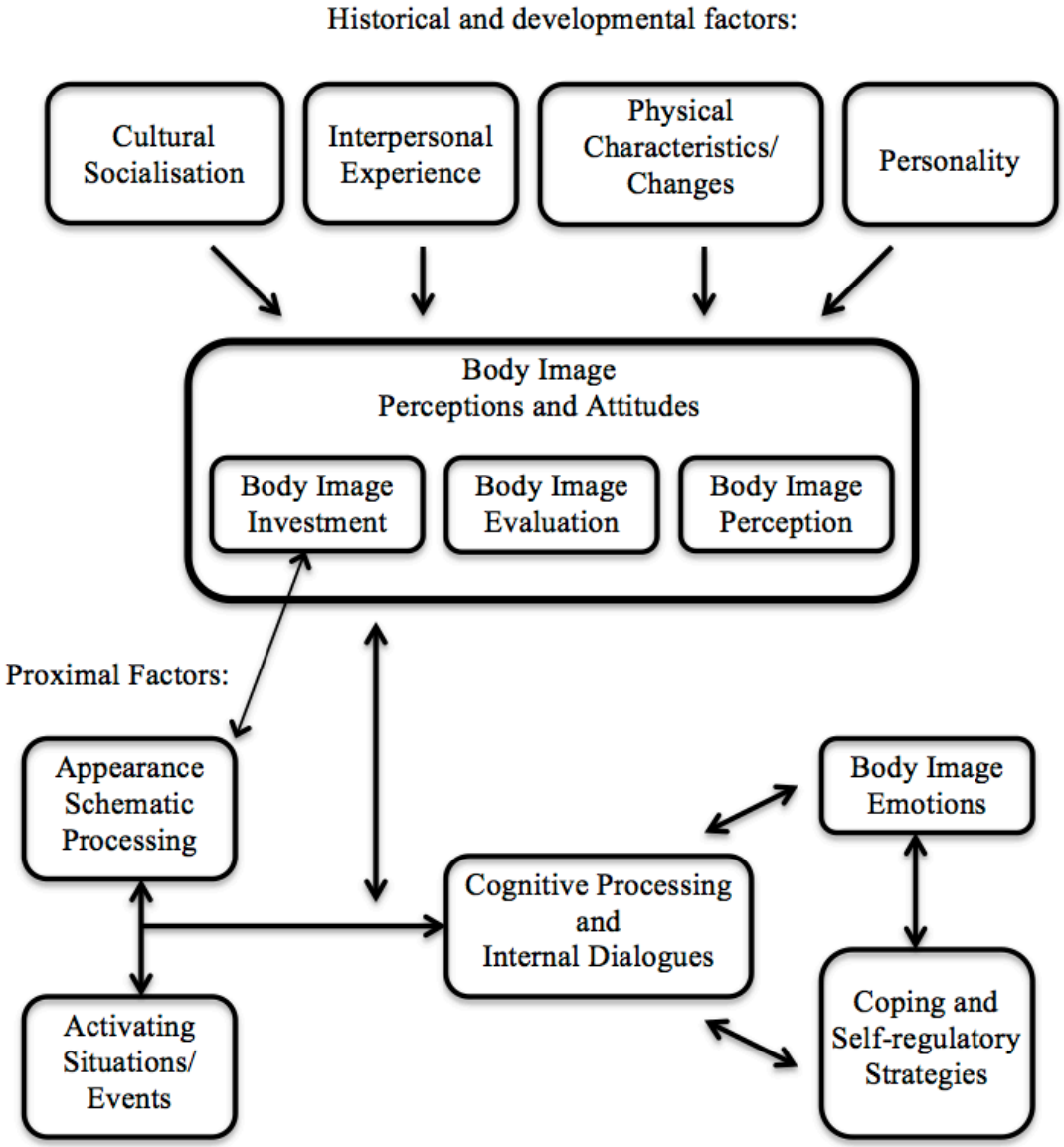

Figure 1. Detailed visual presentation depicting the cognitive-behavioural model of body image as proposed by Cash (2011).

Cash (2011, 2012) points out that salient historical and developmental factors include cultural socialisation, interpersonal experiences, physical characteristics and changes, and personality, all of which serve to predispose or influence the individual's cognitions, emotions, and behaviours in relation to body image through different types of conditioning, and cognitive and observational learning. Cultural socialisation plays an important role in conveying the 'standards' or expectations about physical appearance and attractiveness within the individual's culture that could be internalised by the individual through social and cognitive learning.

Interpersonal experiences with family and peers also play a role in conveying the value and meaning of physical appearance within the individual's interpersonal network (e.g., family) through more direct personal communication (e.g., parental and peer modelling, and peer teasing). Cash also points out that salient physical characteristics and changes include body weight, appearance change (e.g., puberty or aging), and virtually all the physical body features that are considered physically unattractive within the individual's culture (e.g., large nose or crooked teeth), all of which may influence the individuals' body image towards the self, and may involve struggles with social acceptance. Lastly, personality and other individual differences are considered as 'moderator variables' that can predispose individuals to a certain body image perception and attitude. For example, individuals with poor self-esteem and negative emotionality may be predisposed to negatively evaluate their appearances. According to the model, each historical and developmental factor may directly predispose or influence the fundamental body image constructs via various psychological mechanisms.

Proximal factors refer to the more immediate body image experiences in the individual's daily life, including cognitive processing and internal dialogues, body image emotions, and self-regulatory strategies, which serve to precipitate and maintain influences on body image (Cash 2011, 2012). According to the model, the cognitive processing and internal dialogues are simultaneously and directly influenced by two separate interactive components, with the first being the activating events and the individual's appearance-related self-schema, and the other being body image emotions and coping strategies. Based on the CB framework, specific situational cues and both internal and external contextual events can activate cognitive processing of self-evaluation driven by the individual's appearance-related self-schema. For instance, appearance self-schematic individuals may preferentially process relevant information about their appearance, as more attention is placed on one's physical appearance. The resultant internal dialogues, also known as the 'private body talk', involve various cognitive processing (e.g., automatic thoughts, inferences and cognitive distortions) that lend 'meaning' to daily situations and events, and lead to conclusions about one's physical appearance. On the other hand, body image emotions are the affective element of body image and are discrete emotional reactions to the aforementioned cognitive processing and internal dialogues that are triggered by specific context. In terms of body image coping and

self-regulatory strategies, individuals adopt various coping strategies to manage and cope with their body image distress that are triggered and maintained by the negative body image emotions. Cash (2012) described how people may behaviourally avoid triggering situations or people, including avoiding wearing certain types of clothes, engaging in appearance-correcting, such as altering the perceived troublesome appearance features (e.g., dieting, exercising or cosmetic surgery), seeking social feedback and reassurance from others, and using compensatory strategies to enhance other nonphysical and physical self-evaluable features (e.g., improve clothing to compensate for overweight concerns). Cash (2011, 2012) points out that the influence of appearance schematic processing activated by contextual events is directly associated with fundamental body image constructs, mediated by internal dialogues that are also influenced by body image emotions and coping strategies. All in all the proximal factors appear to summarise the intrapersonal experiences of body image.

The aforementioned historical and proximal factors influence the fundamental body image constructs, including body image perception, body image evaluation, and body image investment (also known as appearance orientation) (Cash, 2000, 2011, 2012). Body image perception concerns the individual's self-perception of his or her physical appearance and is not necessarily an accurate representation, where distorted self-perception is often associated with body image disorders (Cash, 2011, 2012). Body image evaluation is one of the two attitudinal elements of body image, and concerns the individual's belief in and cognitive appraisal of one's appearance (e.g., an individual may believe that he is attractive, and has an acceptable appearance) and is inseparable from the individual's level of appearance satisfaction (Cash, 2011, 2012). The second body image attitude is body image investment, which concerns the level of importance the individual places on appearance, and is positively associated with the amount of invested cognitive, emotional, and behavioural efforts in relation to body dissatisfaction. Cash points out that body image investment is directly associated with the individual's appearance-related self-schema, as the individual invests time and energy based on cognitively generalised beliefs and assumptions about the importance, meaning and significance of one's appearance in life (Cash, 2011, 2012; Cash, Melnyk, & Hrabosky, 2004).

Cognitive-behavioural model of body image and cosmetic surgery. Cosmetic surgery is viewed as a copying strategy that falls under the 'appearance correcting' category in the CB model of body image (Cash, 2012). Cash, Santos and Williams (2005) examined several coping strategies for body image concerns and found that individuals with 'appearance fixing' as well as 'avoidance' strategies showed more interest in cosmetic surgery. However, most items under the 'appearance fixing' category consist of short-term strategies that alter appearances by "covering, camouflaging, or correcting the perceived defect" (p. 192), which do not lead to permanent physical change in appearance (e.g., making an extra effort to look the best or to 'cover up' troublesome areas), except for one item: 'I do something to try to look more attractive' (Cash et al., 2005), which potentially involves cosmetic surgery. The influence of using permanent appearance alteration such as cosmetic surgery as a coping strategy for body image distress was not specifically addressed in the CB model of body image.

Based on the CB model of body image shown in Figure 1, one could hypothesise that undergoing cosmetic surgery as a coping strategy for body image distress would directly influence the individual's body image emotions, and have direct but limited influence on cognitive processing and internal dialogues, as they are also driven by the individual's appearance schematic processing. However, one could also argue that cosmetic surgery with permanent appearance change can be viewed as a change in one of the historical factors — 'the physical characteristics and changes', which have a more straightforward influence on the individual's body image perceptions and attitudes according to the model. In other words, it could be argued that permanent change in physical appearance could simultaneously activate chains of interactive effects between the psychological constructs and ultimately affect body image perception and attitudes. However, the extent to which permanent physical change can affect body image is unclear as both body image evaluation and investment are also influenced by other historical factors, as well as self-schematic processing that is known to be particularly stable and enduring (Markus, 1977). The current research intends to explore the extent to which cosmetic surgery with permanent physical change can impact on an individual's body image on the basis of the CB model.

To tentatively conclude, the psychology of cosmetic surgery may be understood from a biopsychosocial perspective. Individuals who seek cosmetic surgery due to body dissatisfaction may be predisposed to certain personality traits or susceptibility to body dissatisfaction, under powerful and pervasive sociocultural influences through media and interpersonal experiences which result in self-objectification and body dissatisfaction that motivate cosmetic surgery pursuit. The resultant body image through cosmetic surgery may also be influenced by the interaction of biologically predisposing factors and sociocultural elements. However, as briefly discussed earlier, more research is required to examine the biological and genetic influences on body image (Suisman & Klump, 2011). In addition, most of the studies reviewed in the following chapters lack theoretical orientation, particularly studies that investigate the effects or outcomes of cosmetic surgery, making it difficult to confirm the utility of the CB model of body image for cosmetic surgery, let alone as a biopsychosocial theoretical perspective of cosmetic surgery. The biological perspective of body image is beyond the scope of the current study, which aims to explore the psychology of cosmetic surgery pursuit and its effects on the basis of the objectification theory and the CB model of body image frameworks, respectively.

CHAPTER 2
COSMETIC SURGERY SEEKERS AND PATIENTS

This chapter describes individuals who are interested in, and who actually underwent cosmetic surgery, including demographic characteristics, choice of surgery, and a general overview of the motivating factors and influences underlying the increased interest in seeking cosmetic surgery in the population. Finally, an overview of cosmetic surgery patients' preoperative psychological status is presented.

Demographic Characteristics

According to ASAPS (2016), 75.5% of the total cosmetic procedures were performed on Caucasians and 91.1% were performed on females in the United States in 2016. Women continue to drive demand for aesthetic procedures worldwide, such that 86.2% of cosmetic procedures globally were performed on women in 2016 (ISAPS, 2017a).

Women are more likely to undergo cosmetic surgery than men (Brown et al., 2007; Swami, 2009; Swami et al., 2008). The extreme and confirmed gender difference among cosmetic surgery patients has led some to refer to cosmetic surgery as a 'gendered activity' (Dull & West, 1991), much like societal expectations for girls to play with dolls (Markey & Markey, 2015). From a sociocultural perspective, women are believed to experience greater sociocultural pressure from the pervasive media exposure and interpersonal communication concerning what their society or culture considers a 'standard' or ideal appearance and attractiveness for women (Brown et al., 2007). For instance, a recent study found that exposure to appearance-related programmes and conversations with friends were positively associated with increased interest in cosmetic surgery and appearance dissatisfaction respectively in a sample of 351 Australian women from the community (Sharp, Tiggemann, & Mattiske, 2014). However, as discussed in the previous chapter, the sociocultural perspective does not appear to specifically address why more attention is placed on women and why women experience greater pressure to attain the ideal physical appearance. These questions may be addressed by the theoretical objectification perspectives, as they propose that women are more likely to be subjected to self-

objectification than men, due to the common Western cultural practice of sexual objectification of women (Fredrickson & Roberts, 1997). For instance, numerous studies have suggested that self-objectification-related variables such as interpersonal sexual objectification, self-surveillance and body shame, are unique predictors for considering future cosmetic surgery in women (e.g., Calogero et al., 2010; Henderson-King & Henderson-King, 2005; Vaughan-Turnbull & Lewis, 2015).

The age distribution for cosmetic surgeries in the United States showed that individuals between 35 and 50 years of age received most cosmetic surgical procedures (38.8%) in 2016, followed by those 51 to 64 years of age (26.5%) and 19 to 34 years of age (25.3%) (ASAPS, 2016). In addition, women who received breast augmentation at the age of 17 years or younger in 2016 constituted 13.4% of the total breast augmentation procedures worldwide with 37.4% of them undergoing surgery for purely aesthetic reasons (ISAPS, 2017b). It is possible that different levels of financial independence and signs of aging contributed to the discrepancies between these age groups. Research found that males were significantly younger than females on their first visit to a cosmetic surgery agency, with males showing a 'deformity' preoccupation from a younger age up to early adulthood, compared with females, who showed such preoccupations across all age groups (Brown et al., 2007; Ishigooka et al., 1998). In addition, the considerable amount of breast augmentation performed on girls aged 17 or younger for purely aesthetic reasons has been suggested as a reflection of younger girls also experiencing increasing pressure to attain societal ideals of beauty and attractiveness as a result of cultural sexualisation of girls (Oppliger, 2008).

Choices of Surgery

The top five cosmetic surgical procedures in the United State were liposuction and breast augmentation, followed by tummy tuck (abdominoplasty), eyelid surgery, and breast lift in 2016 (ASAPS, 2016). From a worldwide perspective, breast augmentation continues to be the most popular cosmetic procedure (15.8%), followed by liposuction (14%), eyelid surgery (12.9%), nose job (rhinoplasty, 7.6%) and abdominoplasty (7.4%) (ISAPS, 2016a). The ISAPS (2016) also showed some difference in the ranking of surgical procedure groups by country. For example, the first rank for Australia was face and head procedures (37.6%), closely followed by

breast procedures (36%) and body and extremities procedures (26.4%); whereas for Iran, the lowest number of procedures performed was breast procedures (24.2%) compared with its first rank of face and head procedures (49%).

The most frequent operations in Westernised countries seemed to involve breast enhancement and fat reduction, particularly in the stomach region, and the popularity of different types of surgery may vary between countries. This perhaps reflects the different sociocultural norms of beauty between cultures and countries, where Westernised cultures tend to convey a beauty standard of 'skinny' and 'large breasts' for women (Einon, 2012) and non-Westernised cultures otherwise (e.g., prefer a larger body shape) (Dunkel, Davidson, & Qurashi, 2010). Such differences also fit in the objectification theory where Fredrickson and Roberts (1997) propose that sexual objectification practices are more common in Westernised than non-Westernised cultures.

Motivating Factors and Influences for Cosmetic Surgery

Numerous factors and influences underlying individuals' increased interest in cosmetic surgery are identified in the literature. These can be arranged into categories of body dissatisfaction, personality disposition, familiarity with cosmetic surgery, sociocultural influences and physical change. The overall findings are presented below.

Body dissatisfaction. Body dissatisfaction or poor body image is arguably the most influential factor associated with the increased desire to seek cosmetic surgery (Brown et al., 2007; Swami, Chamorro-Premuzic, Bridges, & Furnham, 2009). Body dissatisfaction does not generally represent the views of cosmetic surgery patients as individuals who are satisfied with their body may still consider cosmetic surgery beneficial (Slevec & Tiggemann, 2010). However, body dissatisfaction was a significant predictor for the actual consideration of undergoing surgery in numerous studies (e.g., Brown et al., 2007; Henderson-King & Henderson-King, 2005; Javo & Sørlie, 2010; Slevec & Tiggemann, 2010; Swami, 2009), possibly as a means of improving the damaged self-concept resulting from negative self-perception (Sarwer, Cash, et al., 2005; Swami, 2009). In particular, high levels of body image investment (i.e., the importance of appearance) are found to be a strong

predictor for undergoing cosmetic surgery (Henderson-King & Henderson-King, 2005; Slevec & Tiggemann, 2010). It is therefore suggested that a lower level of body image evaluation with a higher level of body image investment predicts the likelihood of undergoing cosmetic surgery (Sarwer et al., 2003). In addition, body shame (Calogero et al., 2010, 2014) and the fear of becoming unattractive (as opposed to the desire to become attractive) were also found to be significant predictors of cosmetic surgery consideration (Henderson-King & Henderson-King, 2005). It is worth noting that whether low self-esteem underlies the motivation for cosmetic surgery remains debatable with findings showing mixed results (Ferraro, Rossano, & D'Andrea, 2005; von Soest, Kvalem, Skolleborg, & Roald, 2006).

Personality dispositions. A number of studies also found that differences in personality traits were relevant to cosmetic surgery consideration (reviewed by Milothridis, Pavlidis, Haidich, & Panagopoulou, 2016). Von Soest and colleagues (2006) found that the personality trait of 'self-monitoring', an ability to regulate behaviours according to social environmental cues, was associated with a higher probability of undergoing cosmetic surgery. Four out of the big five personality traits, namely agreeability, conscientiousness, emotional stability and openness were found to be significantly and negatively associated with an interest in aesthetic surgery (Javo & Sørlie, 2010). Swami and colleagues (2009) also found association between the four personality traits and the likelihood of considering cosmetic surgery. In the same study, openness in particular was a strong negative predictor of surgery consideration. In addition, they found that participants who were less open and more emotionally stable were more likely to consider cosmetic surgery for self-oriented benefits (Swami et al., 2009). Based on the findings in personality trait differences, Markey and Markey (2015) suggested that individuals who are conventional and less open may have a higher tendency to conform to the cultural norm and societal 'standard' of attractive appearance, and therefore are more orientated towards cosmetic surgery compared with those who are more individualised.

Familiarity with cosmetic surgery. Studies found that being familiar with cosmetic surgery, such as having prior experience of undergoing cosmetic surgery (Swami et al., 2008) or knowing someone who has had cosmetic surgery, is positively associated with women's acceptance of cosmetic surgery and

contemplating undergoing it (Eriksen & Goering, 2011; Javo & Sørlie, 2010; von Soest et al., 2006). Von Soest and colleagues (2006) extended this finding, and showed that acceptance of cosmetic surgery was one of the two most powerful predictors of undergoing cosmetic surgery, with the other one being body image. Personal history of prior cosmetic surgery was a significant predictor for additional cosmetic surgery in Swami and colleagues' study (2008), although the sample of participants with prior cosmetic surgery experience was small and further research was recommended by the authors.

Sociocultural influences. There is strong support in the literature for an association between sociocultural influences, body image and interest in cosmetic surgery (reviewed by Milothridis et al., 2016). These can be categorised as interpersonal experiences and media exposure.

Interpersonal experiences. Personal experiences of being teased about appearance was found to be positively associated with an increased likelihood of considering cosmetic surgery (Javo & Sørlie, 2010; Markey & Markey, 2009). Markey and Markey (2009) explained that individuals who received negative social feedback, possibly repetitive feedback, about their appearance (i.e., appearance teasing) would understandably want to conform to the desired societal 'standard' of physical attractiveness and therefore show more interest and desire for cosmetic surgery. However, other studies have found appearance teasing not a significant influence on women's attitudes towards cosmetic surgery (e.g., Nerini, Matera, & Stefanile, 2014).

Appearance-related conversations with peers was also suggested to increase individuals' interest in cosmetic surgery (Nerini et al., 2014; Sharp et al., 2014). The positive association between appearance-related conversation with peers and body dissatisfaction is evident in the literature (e.g., Clark & Tiggemann, 2006; Jones, Vigfusdottir, & Lee, 2004), and the positive association between appearance-related conversations and the interest in cosmetic surgery could be explained by the increased level of body dissatisfaction. Nerini and colleagues (2014) suggested that the more an individual converses with peers about appearance, the more importance the individual gives to appearance for social acceptance purposes, which leads to a greater internalisation of the ideal appearance.

Media exposure. Research suggests that individuals, women in particular, internalise the media-norm or cultural 'standard' of physical attractiveness as a result of media exposure (e.g., Grabe, Ward, & Hyde, 2008; Yamamiya, Cash, Melnyk, Posavac, & Posavac, 2005), particularly when they perceive these media messages as informative and important about being attractive (Swami, 2009). Building on these findings, Swami (2009) found that the desire for cosmetic surgery increased in women with such internalisation after being exposed to media containing appearance-related materials. There is strong support in the literature for a positive association between appearance-related media exposure, such as magazines and television shows, and an interest in and acceptance of cosmetic surgery in women (e.g., Markey & Markey, 2009; Sarwer & Crerand, 2004; Sharp et al., 2014; Slevec & Tiggemann, 2010; Swami et al., 2008).

To summarise, from a sociocultural point of view, women tend to receive greater sociocultural pressure to attain 'standard' bodily and sexual attractiveness, mostly based on unrealistic ideals (Einon, 2012), through personal negative appearance-related history, and through means of media exposure, and interpersonal experiences. This social norm of physical attractiveness is subsequently internalised by women, and as a result, women are much more likely to consider obtaining cosmetic surgery. The social phenomenon of more women being influenced by sociocultural elements in their pursuit of cosmetic surgery may be addressed by the cultural practice of sexual objectification and is discussed in chapter one of the current study.

Physical change. Natural physical changes due to aging can lead to aging anxiety for some individuals (Lasher & Faulkender, 1993). Slevec and Tiggemann (2010) revealed aging anxiety to be a unique predictor of reported motives for cosmetic surgery among a group of middle-aged women aged 35 to 55 years, the primary consumer age group of cosmetic surgery. Based on prior findings, Slevec & Tiggemann (2010) postulated that the internalisation of unrealistic ideals or norms of appearance attractiveness is likely to promote appearance dissatisfaction and aging anxiety and increase the motivation for undergoing cosmetic surgery. Further, other body changes such as aging, pregnancy and post-partum appearance changes, can

negatively impact one's body image (Cash, 2012). In a qualitative study, recent body change was found to be a motivating factor for women to undergo cosmetic surgery, including physical transformation such as puberty and pregnancy (Locatelli et al., 2017).

To summarise, women may endorse many motivations under certain sociocultural influences from their experiences of interpersonal interaction and media exposure when they come to consider undergoing cosmetic surgery. Many motivations and influences described above are interrelated, and mostly lead to body dissatisfaction. These findings support the CB model of body image, where historical and developmental factors such as sociocultural influences and personality disposition, as well as physical characteristics and changes, are influential on one's body image (Cash, 2011, 2012). Body dissatisfaction is considered the most common and the primary reason that prompts women's interest in cosmetic surgery. Other possible reasons for individuals to seek cosmetic surgery were not included in the current review as by far the most attention has been placed on body dissatisfaction in the literature. For instance, an individual may consider cosmetic surgery for enhancement purposes without body dissatisfaction (Slevec & Tiggemann, 2010), and others might consider undergoing cosmetic surgery for reasons that are not related to negative self-perception, such as for a modelling job.

Preoperative Psychological Status of Cosmetic Surgery Patients

A brief history. Much attention has been drawn to the preoperative psychological characteristics of cosmetic surgery patients since the 1950s and 1960s and continues to the present. It was once believed that individuals who sought cosmetic surgery were significantly psychologically different compared with the general population, such that the majority were seen as psychologically ill in various degrees (reviewed by Sarwer et al., 1998). Some even suggested that almost all the rhinoplasty candidates were "ill from a psychiatric point of view" (Linn & Goldman, 1949, p. 307), and others suggested that every individual seeking cosmetic surgery is a potential problem patient (Wright & Wright, 1975). Numerous methodological weaknesses and limitations in the earlier research have been identified and criticised in the literature, where the findings seem to have been determined by the choice of

assessment methods (reviewed by Sarwer & Crerand, 2004; Sarwer et al., 1998). In particular, the tendency to utilise psychodynamically oriented clinical interviews and interpretations in the earlier studies tends to report a high prevalence of psychological illness, including personality disorders, among cosmetic surgery patients (Sarwer & Crerand, 2004; Sarwer et al., 1998). Subsequent research in the 1970s and 1980s began to rely on more standardised psychological assessments such as the Minnesota Multiphasic Personality Inventory and standardised self-reports, and have found that psychopathology in cosmetic surgery patients was less prevalent than previously reported (e.g., Shipley, O'Donnell, & Bader, 1977; Sarwer & Crerand, 2004; Sarwer et al., 1998). Later research in the early 1990s attempted to improve their assessment methods by the use of pre- and postoperative assessments or empirically established diagnostic criteria for clinical interviews. However, the assessment methods have continued to predict most of the outcomes, where studies with clinical interviews tend to show a prevalence of psychopathology compared with studies that used psychological assessments, with the latter often lacking appropriate control or comparison groups (Sarwer & Crerand, 2004; Sarwer et al., 1998). The overall methodological weakness has led Sarwer and Crerand (2004) to tentatively conclude that cosmetic surgery patients present with psychological symptoms in various degrees, from mild conditions to severe psychological illness. Others have concluded that cosmetic surgery patients, at the very least, are psychologically different from the general population (Grossbart & Sarwer, 2003).

An overview of the later findings. Later and more recent findings continue to show mixed results regarding the preoperative psychological characteristics of cosmetic surgery patients. In a cross-sectional study, Vargel and Ulusahin (2001) found no difference in the level of psychopathology between cosmetic surgery patients who were undergoing various types of cosmetic surgery and the control patients who were undergoing general surgery. Other studies also found no difference in the levels of psychopathology and self-esteem between cosmetic surgery patients and control groups from the general population (Ferraro et al., 2005; von Soest, Kvalem, Roald, & Skolleborg, 2009). In another study, Taiwanese female cosmetic surgery patients also showed no differences from the control group in terms of their body image and self-esteem (Chen et al., 2010).

In contrast to the above findings, cosmetic surgery patients who were undergoing publicly funded elective cosmetic surgery for purely appearance reasons were found to be more distressed and moderately impaired in psychosocial functioning compared with the general population norm and the control group, but were not as impaired as the clinical group with psychological disorders (Cook, Rosser, Toone, Ian James, & Salmon, 1997). In another study that examined 103 cosmetic surgery patients who were undergoing various types of cosmetic surgery, cosmetic patients were found to be more anxious and depressed when compared with the general population norms (Meningaud et al., 2003). One of the more recent studies found cosmetic surgery participants showed significantly higher levels of anxiety and the others found significantly lower self-esteem compared with the relative control groups (Moss & Harris, 2009; Nikolic, Janjic, Marinkovic, Petrovic, & Bozic, 2013). In addition, a prospective longitudinal study found that on average prospective cosmetic surgery patients had more psychological problems, including higher rates of symptoms of depression, anxiety, deliberate self-harm and parasuicide compared with the control group (von Soest, Kvalem, & Wichstrøm, 2012). However, some argued that a higher level of anxiety before cosmetic surgery is associated with the fear of the surgical operation itself, anaesthesia and postoperative recovery, as the anxiety often decreases significantly soon after the surgery (e.g., Pérez-San-Gregorio, Martín-Rodríguez, Arias-Moreno, Rincón-Fernández, & Ortega-Martínez, 2016).

Obsessiveness and narcissistic personality traits were identified to be significantly more common among patients that were undergoing rhinoplasty compared with the control group in a number of studies (e.g., Zojaji et al., 2014; Zojaji, Javanbakht, Ghanadan, Hosien, & Sadeghi, 2007). In terms of psychological disorders, Ishigooka and colleagues (1998) found that 47.7% of 415 Japanese cosmetic surgery patients met criteria for various psychological disorders, with depressive episodes, neurotic and hypochondriac disorders as the most commonly identified disorders. In addition to this finding, 56% of the total cosmetic surgery participants in the study were characterised with poor social adjustment (Ishigooka et al., 1998). Despite the various psychological disorders identified in Ishigooka and colleagues' (1998) study, the main disorders highlighted in the literature as being more common than others include narcissistic personality disorder (NPD), histrionic personality disorder (HPD), and body dysmorphic disorder (BDD) (Shridharani,

Magarakis, Manson, & Rodriguez, 2010). A systematic clinical review suggested that NPD, HPD and BDD are the most common psychological disorders in the cosmetic surgery population, with a higher prevalence compared with the general population (Shridharani et al., 2010). However, this review has received criticism regarding the author's apparent biased selection of studies to review, and the conclusion of the review was considered inappropriate given the inadequate amount of evidence from the literature (Sarwer & Whitaker, 2011).

Among numerous psychological disorders that have been identified in the literature, a considerable amount of attention has been given to BDD and its high prevalence among cosmetic surgery patients. Symptoms of BDD are characterised by a preoccupation with perceived defects in physical appearance that are either minor or invisible, which impairs the individual's important areas of functioning, where the individual finds it difficult to stop these appearance concerns (American Psychiatric Association [APA], 2013). The BDD prevalence is estimated at 0.7% in the general population (Faravelli et al., 1997; Otto, Wilhelm, Cohen, & Harlow, 2001), and ranges from 6.3% to 9% in the cosmetic surgery population (Altamura, Paluello, Mundo, Medda, & Mannu, 2001; Aouizerate et al., 2003). Given the characteristic of pathological concerns about appearance, patients with BDD frequently pursue cosmetic procedures to 'fix' the perceived defects in their physical appearance (Crerand, Menard, & Phillips, 2010).

To summarise, the preoperative psychological status of cosmetic surgery patients varies widely, from mild distress to more severe psychological disorders, and some are not different from the general population. The most common psychological distress appears to involve anxiety and depressive symptoms. There may be an association between specific procedures and personality traits, where narcissistic and obsessive traits were commonly observed among patients undergoing rhinoplasty. BDD is a common psychological disorder seen among cosmetic surgery patients, and has a higher prevalence rate in the cosmetic population than the general population. However the later and more recent studies too suffered from methodological limitations and their ability to generalise the findings remains questionable (Brunton et al., 2014). The methodological limitations and weaknesses in the majority of the studies are summarised in the next chapter

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CHAPTER 3
OUTCOMES OF COSMETIC SURGERY

To achieve psychological benefits, such as to improve self-confidence, body dissatisfaction and quality of life, is arguably the most important reason for individuals to undergo cosmetic surgery. This chapter presents a general overview of the current findings of psychological and psychosocial outcomes of cosmetic surgery, including the predictors and factors that may influence the surgery outcomes. The overview focuses on studies after the 1990s, given the apparent methodological flaws in the earlier studies discussed in the previous chapter. A summary of methodological limitations identified to date in the later studies is presented last.

An Overview of Cosmetic Surgery Outcomes

General overview. A number of systematic reviews have reported that cosmetic surgery patients in general showed satisfaction with the surgical result and felt better about themselves; however, the extent to which cosmetic surgery has a positive impact on various psychological domains, particularly psychological illnesses, remained less clear due to the mixed results presented across studies (e.g., Brunton et al., 2014; Castle, Honigman, & Phillips, 2002; Cook et al., 2006; Honigman, Phillips, & Castle, 2004). Below are some example studies demonstrating the mixed outcomes presented in the literature, most of which involved a sample of patients who underwent various types of cosmetic surgery including breast-related surgeries, liposuction, abdominoplasty, rhinoplasty and other facial surgeries. The findings of these studies are primarily related to the postoperative body satisfaction and self-esteem, psychopathology and quality of life of cosmetic surgery patients. A section devoted to breast augmentation outcomes follows, partly because breast augmentation is arguably the most popular procedure worldwide; and also because much attention has been placed on breast augmentation patients due to the significantly higher rates of suicide after the surgery (Sarwer, Brown, & Evans, 2007).

Body image and self-esteem. The first psychological outcome concerns the cosmetic surgery patients' postoperative body image. Body image measures typically involved body image evaluation (i.e., overall appearance satisfaction) and body image investment (i.e., the amount of effort the individual invests in physical appearance), also known as appearance evaluation and appearance orientation respectively (Cash, 2000). In general, cosmetic surgery patients are satisfied with the surgery outcome, and show improvement in body dissatisfaction (Mulkens et al., 2012). Some studies found significant improvement in dissatisfaction towards the particular body feature altered by surgery, but the improvement in overall body satisfaction (i.e., appearance evaluation) was insignificant (e.g., Sarwer, Wadden, & Whitaker, 2002). This finding is supported by a prospective longitudinal study with data collection over a period of 13 years, where cosmetic surgery patients showed no postoperative improvement in their general appearance satisfaction (von Soest et al., 2012). Other studies found significant improvement in both specific body part and general body dissatisfaction after the surgery (Bolton, Pruzinsky, Cash, & Persing, 2003; Sarwer et al., 2005). In terms of body image investment and self-esteem, von Soest and colleagues (2009, 2011) found no change in appearance orientation and little to no improvement in self-esteem at 6-month and 5-year postoperative follow-up. These findings are consistent with and supported by numerous studies (e.g., Dowling, Jackson, & Honigman, 2013; Sarwer et al., 2005), suggesting that cosmetic surgery may have no effect on individuals' global self-esteem, their perceived level of appearance importance and the amount of effort they invest in physical appearance due to appearance concerns. However, a few studies showed decreased body image investment (e.g., Margraf, Meyer, & Lavallee, 2013) and some showed improved self-esteem (Saariniemi et al., 2014), demonstrating the mixed findings in cosmetic surgery outcomes regarding body image and global self-esteem.

Psychopathology. Some studies showed postoperative improvements in psychological distress such as depression (Schlebusch & Mahrt, 1993), reduction in anxiety and neuroticism, and an increase in extraversion scores (Ercolani, Baldaro, Rossi, Trombini, & Trombini, 1999). Dowling and colleagues (2013) also found postoperative reduction in anxiety and depressive symptoms, as well as reduction in dysmorphic concerns with physical appearance among cosmetic surgery patients compared with their preoperative baseline measures. Findings of psychological

improvement are supported by a longitudinal study with data collection over a one-year period, where cosmetic surgery patients showed significant improvements in the areas of emotional and behavioural difficulties due to appearance concerns, as well as a reduction in depressive and anxiety symptoms compared with the control group (Moss & Harris, 2009). On the other hand, many other studies showed no significant improvement in psychological problems in cosmetic surgery patients (e.g., Bolton et al., 2003; von Soest et al., 2009), and some found no change in those with preoperative probable emotional disorders (e.g., Klassen, Jenkinson, Fitzpatrick, & Goodacre, 1996). In contrast to these findings, a prospective longitudinal population-based study found cosmetic surgery participation a significant predictor for greater increase in depressive and anxiety symptoms, eating problems, and alcohol consumption compared with the cohort sample who did not undergo cosmetic surgery (von Soest et al., 2012). The poorer mental health and higher health risk behaviours in women who have had cosmetic surgery have been previously found in a large population-based study in Australia, where women with a history of cosmetic surgery were more likely to have poorer psychological wellbeing, to smoke, drink alcohol and engage in dieting behaviours compared with the cohort sample without a history of cosmetic surgery (Schofield, Hussain, Loxton, & Miller, 2002).

More recent studies showed preliminary findings of improvement in patients with 'mild to moderate' BDD in terms of surgery outcome satisfaction and reduction in BDD symptoms, and suggested that cosmetic surgery may be beneficial for a selected group of BDD patients (e.g., Felix et al., 2014; see review by Bowyer, Krebs, Mataix-Cols, Veale, & Monzani, 2016). However, cosmetic surgery for patients with BDD or probable BDD is generally detrimental and the underlying symptomatology is unlikely to be addressed by the surgery (Crerand, Franklin, & Sarwer, 2006; Wilhelm, Phillips, & Steketee, 2013). In addition, some have found that the psychological improvement in mild to moderate BDD patients was of a temporary nature and the positive effect of the cosmetic surgery wore off over time (Crerand et al., 2010).

Psychosocial functioning and quality of life. Postoperative interviews revealed that cosmetic surgery patients often believe that surgery achieves not only a physical appearance change, but also a change in their psychosocial functioning and quality of life (Adams, 2010). Significant improvements in quality of life, as well as

other psychological measures, are often witnessed among patients undergoing breast reduction surgeries (e.g., Eggert, Schuss, & Edsander-Nord, 2009; Neto et al., 2008; Spector, Singh, & Karp, 2008). Excessively large breasts, also known as macromastia or breast hypertrophy, can often lead to physiological symptoms such as back or neck pain and consequently lower one's self-reported quality of life (Brown, Hill, & Khan, 2000). For this reason, breast reduction surgery may be driven by physiological reasons on top of aesthetic reasons. It can be difficult to assess whether patients are undergoing breast reduction surgery for purely aesthetic reasons without a more in-depth interview, making generalisation of findings difficult. Some studies of cosmetic surgery outcomes do not regard breast reduction as 'pure' cosmetic surgery and such surgery is excluded from their research. The current study takes the same stance, where studies investigating breast reduction outcomes exclusively are not further elaborated.

Among studies that investigated the psychosocial outcomes of other cosmetic surgery exclusively or of a combination of various cosmetic surgeries, research suggested that cosmetic surgery generally results in improvement in psychosocial functioning and quality of life (Cook et al., 2006). In addition to improvement in quality of life, sexual functioning (Saariniemi et al., 2014) and health-related quality of life (Papadopulos et al., 2007) were also documented. However, a 9-month follow-up study revealed that preoperative cosmetic surgery patients were significantly more anxious compared to the general population norm largely due to lack of self-confidence; the postoperative improved quality of life found in this study were largely accounted for by (or 'thanks to', as the author described it) the 'anxiety' component, as their findings showed no improvement in other areas of psychological components that were associated with quality of life (Meningaud et al., 2003). Nevertheless, the positive outcome of quality of life is supported by a prospective longitudinal research with data collection over a period of two years, where cosmetic surgery participants showed significant improvement in quality of life most apparently in the first three months after the surgery; the improvement did not continue but was maintained throughout the second postoperative year (Sarwer et al., 2008). It might be interesting to note that in the same study, cosmetic surgery patients showed significant improvement in appearance evaluation, and no significant change in appearance orientation, self-esteem and the quality of life in relation to body image as measured by the Body Image Quality of Life Inventory (BIQLI) (Sarwer et al.,

2008). Quality of life in relation to body image refers to how the individuals' overall body image experiences affect various aspects of their lives, such as feelings of self-worth, sexual and social relationships in their lives (Cash, Jakatdar, & Williams, 2004). The findings above may suggest that cosmetic surgery patients' increased appearance satisfaction has minimal or no influence on how their overall body image experience affects various important domains in life and their global sense of oneself. With an expectation that body image quality of life would improve with an improvement in appearance satisfaction, Sarwer and colleagues (2008) suggested that it may be possible that body image quality of life is more closely associated with a certain type of surgery and the effect was not detected in their heterogeneous sample involving various types of cosmetic surgery. However, one could also argue that body image quality of life is likely to remained unchanged after cosmetic surgery when appearance orientation — one of the fundamental constructs of overall body image — remained unchanged in the study. In addition, note that it is not uncommon for studies of cosmetic surgery outcomes to find a significant increase in appearance evaluation, and little or no change in self-esteem (e.g., Dowling et al., 2013); Sarwar and colleagues (2008) further pointed out that self-esteem is a multifaceted construct, and may not be responsive to one specific change in psychical appearance. Together, this may suggest that appearance satisfaction may not be directly associated with one's global self-esteem, and quality of life in relation to overall body image.

Breast augmentation outcomes. Breast augmentation is the most common cosmetic procedure in the United States and worldwide (ASAPS, 2016; ISAPS, 2016). Individual studies that involved smaller sample sizes tend to report positive outcomes among most of the patients undergoing breast augmentation with implants. For instance, a seven-month follow-up study found significant improvements in self-esteem and depression scores compared with baseline measures in a sample of 79 breast augmentation patients (Saariniemi et al., 2012). Longitudinal studies also found improvement in a number of areas when compared with baseline, such as increased satisfaction with breasts, improved psychological and sexual wellbeing (McCarthy et al., 2012); and improved psychosocial wellbeing (Alderman, Pusic, & Murphy, 2016).

However, it has been revealed by several population-based epidemiological studies that the postoperative suicide rates of breast augmentation patients are higher

compared with the general population, and compared with patients who underwent other types of cosmetic surgery (Zuckerman, Kennedy, & Terplan, 2016). For example, studies found that breast augmentation patients had higher suicide rates when compared with women of similar age and race who obtained other cosmetic surgeries during the same time period (e.g., Brinton, Lubin, Murray, Colton, & Hoover, 2006; Villeneuve et al., 2006) and compared with the national mortality statistics of women in the same age range from the same country (e.g., Lipworth et al., 2007). A population-based study also compared mastectomy (surgical removal of breast(s), commonly applied to women with breast cancer) patients with and without implants and found significant higher rates of death due to suicide in women with implants compared with women without (Le et al., 2005). Further, a recent review study conducted additional statistical analyses and compared postmenopausal women with and without implants based on Rubin and colleagues' (2010) study (Zuckerman et al., 2016). They found that postmenopausal women with implants were 12 times more likely to commit suicide compared with those without implants (Zuckerman et al., 2016).

Among epidemiological studies that also assessed mental health and quality of life, a study found that Danish women who underwent breast augmentation had higher rates of suicide compared with the general female population and higher rates of psychiatric hospital admission compared with other cosmetic surgery patients (Jacobsen et al., 2004). Jacobsen and colleagues (2004) pointed out that this finding is likely confounded by the fact that government funded breast augmentation procedures require psychological evaluation in some public hospitals during the timeframe of data collection, which may create an incentive for women to seek psychiatric care before the surgery. Another study found breast augmentation patients had overall poorer postoperative emotional and psychosocial wellbeing (Rubin et al., 2010). This study, however, lacked a preoperative assessment, making it impossible to identify whether the poor psychosocial and emotional functioning predated breast augmentation. Prospective two-year follow-up studies carried out by implant manufacturers analysing changes in several psychological and psychosocial domains in women with breast augmentation were submitted to the United States Food and Drug Administration (The United States Food and Drug Administration [FDA], 2005a, 2005b). The first study showed no significant change in global self-esteem and social functioning, and mental health was significantly poorer for breast

augmentation patients at two-year follow-ups compared with the baseline measures, although the baseline measures were reportedly higher than in the general population (FDA, 2005a). The second study showed no significant change in the individuals' feeling of self-worth and self-image, significant decreases in mental health and social functioning, and significant increases in global self-esteem (FDA, 2005b). Together, it appears difficult to determine the pre- and postoperative psychological wellbeing of breast augmentation patients given the mixed results and methodological shortcomings of the studies.

Several possible explanations for the potential association between breast augmentation and suicide were hypothesised in review articles, including preoperative psychopathology and psychological wellbeing, unrealistic expectations of the surgery, postoperative complications, and increased risk of suicide due to implants; however, population-based epidemiological studies to date either do not support or provide insufficient evidence for the hypothesised explanations (Sarwer et al., 2007; Zuckerman et al., 2016). This led several review authors tentatively to conclude that evidence to date suggests breast augmentation with implants may have a negative impact on mental health (Zuckerman et al., 2016) and there appears to be a relationship between breast implant and suicide, however, the nature of such a relationship is unknown (Sarwer et al., 2007).

Predictors of cosmetic surgery outcomes. A recent review article identified two 'moderate to high quality' systematic reviews from the review articles in the literature that examined predictors of postoperative psychological outcomes (Brunton et al., 2014). Based on these higher quality reviews, Brunton and colleagues (2014) briefly suggested that gender, relationship problems, and unrealistic expectations towards cosmetic surgery may influence the postoperative psychological outcomes of cosmetic surgery patients. In order to be more specific, some relevant findings of the 'moderate to high quality' reviews are discussed below.

In Cook and colleagues' (2006) systematic review of cosmetic surgery outcomes, they identified a potential association between gender and postoperative outcomes where males may show less postoperative improvement compared with females. They also tentatively showed that cosmetic surgery may be beneficial for patients with more severe preoperative psychological distress, such as severe depression. However, Cook and colleagues (2006) pointed out that only a few studies

examined such an association between preoperative psychopathology and surgery outcomes, and most of the improvements reported in the findings did not reach statistical significance, with some possibly confounded by other postoperative factors, such as possible psychological support after the surgery, which was not reported in the studies. This results in a conclusion that there is not enough evidence in the literature to suggest an association between preoperative psychopathology and postoperative cosmetic surgery outcomes (Cook et al., 2006).

In Honigman and colleagues' (2004) review, they examined the potential predictors of poor psychological and psychosocial outcomes among 14 individual studies that addressed such associations. Demographic factors such as being male or of a younger age may be associated with poorer surgery outcomes. In contrast to the review above, psychological factors such as patients with a history of depression or anxiety, BDD, or personality disorders are likely to predict negative postoperative outcomes. Another predictor concerns the reasons for and expectations about the cosmetic surgery. Reasons involving relationship problems, such as patients who believe cosmetic surgery can save a relationship, or they underwent cosmetic surgery despite disagreement between partners, could lead to unfavourable psychological and psychosocial outcomes. Unrealistic expectation towards the surgery was also considered an important predictor for poorer outcomes. However, Honigman and colleagues (2004) pointed out that some of the reviewed studies simply used clinical impression, and none carried out a rigorous statistical analysis for these predictors, where the presented summary of predictors is based on the congruence of variables that appear to associate with poor psychological and psychosocial outcomes after cosmetic surgery.

Based on the apparent methodological limitations in the reviewed studies, the authors concluded that there is very little information regarding indications and contraindications for cosmetic surgery (Cook et al., 2006), and cosmetic surgeons must be cautious when working with patients presenting with the relevant characteristics (Honigman et al., 2004). These systematic review articles, albeit identified as higher quality reviews, reviewed individual studies carried out before 2004 and the findings of more recent studies were excluded.

Findings to date support an association between patients with BDD and poor psychological and psychosocial postoperative results (Bowyer et al., 2016), as addressed earlier in this chapter. Patients with BDD are likely to seek multiple

cosmetic surgeries in an attempt to fix the perceived physical defects, and are more likely to remain preoccupied and dissatisfied with the body feature altered by surgery (Phillips, 2009). Among the few who are satisfied with the body part that underwent surgery, patients with BDD are likely to shift their preoccupation and dissatisfaction to another body part and may seek additional cosmetic surgery to address new appearance concerns (Bowyer et al., 2016; Phillips, 2009). Cosmetic surgery does not appear to address the underlying symptomatology of BDD and is associated with possible exacerbation of the symptoms and the already impaired functioning (Bowyer et al., 2016; Honigman et al., 2004; Phillips, 2009).

A more recent review also supports an association between unrealistic expectations and poor psychological outcomes of facial cosmetic surgery (Herruer, Prins, van Heerbeek, Verhage-Damen, & Ingels, 2015), and deemed it important in the current practice of cosmetic surgery to assess and screen patients for unrealistic expectations before they undergo cosmetic surgery (Paraskeva, Clarke, & Rumsey, 2014). Unrealistic expectations are often used to describe dissatisfaction towards the result after surgery (Herruer et al., 2015). The construct definition for 'unrealistic expectations' across studies is considerably vague as it could involve expectations regarding the physical, psychological, and psychosocial outcomes. Wright and Wright (1975) suggested that patients who desire exact alteration from cosmetic surgery could be one of the contraindications for the surgery. Herruer and colleagues (2015) further pointed out that unrealistic expectations for the physical appearance outcome could be described as 'unrealistic expectations of the surgical outcome', whereas unrealistic expectations beyond the physical appearance outcome and more related to favourable outcomes in life, such as success in relationships or career, could be described as 'unrealistic expectations with secondary gain'. Both are found to be associated with poorer psychological and psychosocial wellbeing after facial cosmetic surgery (Herruer et al., 2015).

In addition to the above predictors suggested by review articles, some recent studies that were not included in the reviews also attempted to identify factors that may influence the outcome of general cosmetic surgery (various types of surgery). For instance, Hessler and colleagues (2010) found that women over the sample mean age of 54 years and women who were being treated for depression during cosmetic surgery showed significantly greater overall outcome satisfaction at six-month follow-ups compared with younger women and women not treated for depression,

respectively. In the same study, they also found that single or widowed patients as well as patients with no history of cosmetic surgery showed visible trends towards greater outcome satisfaction, although the association was not statistically significant (Hessler et al., 2010). Another study found that having fewer or no psychological problems predicts greater postoperative improvement in terms of the patients' body image evaluation and self-esteem (von Soest, Kvalem, Roald, et al., 2009). The length of time spent considering the surgery was also found to be positively associated with the level of surgery outcome satisfaction (von Soest et al., 2011). The association between these factors and cosmetic surgery outcomes, however, have not been further investigated (i.e., by study replication) in the literature.

To summarise, recent findings of psychological and psychosocial outcomes of cosmetic surgery show a rather mixed picture. In general, most studies suggested positive postoperative outcomes in appearance evaluation and quality of life, and some showed improvements in psychopathology. However, a considerable number of studies also showed no change, particularly in the domains of appearance orientation (body image investment), self-esteem, and psychopathology. Some even reported negative outcomes such as greater increases in psychological distress that involves depressive and anxiety symptoms, and health risk behaviours, such as eating and alcohol problems. The findings regarding breast augmentation outcomes also remained controversial, with a potential association between breast augmentation patients and higher suicide rates. However, the nature of this association remains unclear, as evidence to date is insufficient to support the possible explanations proposed by several authors. Gender, age and relationship problems may be potential predictors for cosmetic surgery outcomes. Patients with BDD and unrealistic expectations towards surgery are likely to have negative psychological and psychosocial outcomes.

These findings have led to a consensus between reviews that although patients are generally satisfied with the surgery, there is insufficient evidence to demonstrate the psychological and psychosocial benefits of cosmetic surgery (e.g., Brunton et al., 2014; Cook et al., 2006; Sarwer & Crerand, 2004), with some commenting that cosmetic surgery in general does not lead to negative outcomes (Margraf et al., 2013). Such a conclusion mainly reflects the poor methodological designs of the published studies, rather than the actual evidence (Brunton et al., 2014; Cook et al.,

2006; Sarwer & Crerand, 2004). A summary of these methodological limitations is presented in the following section.

Methodology Limitations in Studies of Cosmetic Surgery

Numerous research authors and reviews have pointed out the common methodological limitations present in the majority of studies that investigated the psychology of cosmetic surgery, making replications of studies or generalisations of the findings difficult, if not impossible (e.g., Bowyer et al., 2016; Brunton et al., 2014; Cook et al., 2006; Dowling et al., 2013; Honigman et al., 2004; Pusic et al., 2007; Sarwer & Crerand, 2004). A summary of the limitations is presented in this section and listed in Table 1. Although some reviews may be considered outdated (e.g., Honigman et al., 2004) as later studies were precluded from the reviews, studies to date continue to show similar methodological flaws; some examples are provided below.

Sample. The majority of the studies, if not all, suffered from at least some methodological limitations concerning the sample examined in the studies. These include small or inadequate sample sizes, selection bias, and a rather vague definition of the patient population (Brunton et al., 2014; Honigman et al., 2004). Most cosmetic surgery patient samples in studies are subjected to potential selection bias as their recruitment usually involved one specific location (e.g., Hessler et al., 2010). In addition, many studies failed to include the characteristics of the patient sample, or with a vague definition of the sample. For instance, Moss and Harris (2009) prospectively examined psychological change in women who underwent various cosmetic surgeries but did not specify where the recruitment took place, and did not include additional patient characteristics except for gender and age, which limits the ability to generalise findings. In addition, as noted by the author of the same study, their findings may be confounded by an unknown third variable (Moss & Harris, 2009). This is of particular relevance when research has suggested that several patient characteristics such as reason for surgery and unrealistic expectations are likely to influence the surgery outcome.

Another limitation relating to sample concerns the heterogeneous samples of patients undergoing various cosmetic surgeries, including breast reduction, especially

when considering the specific research questions in the study (Cook et al., 2006; Herruer et al., 2015). It is not uncommon for studies that investigate the psychology of cosmetic surgery to enrol patients who underwent different types of surgeries, including breast reduction, 'primarily for aesthetic reasons'. This limits the ability to detect the differences in preoperative status among people seeking different types of surgery and the potentially different effects of each cosmetic surgery. Although one study conducted additional analysis and found no significant difference between different types of surgery outcomes, there were trends suggesting greater appearance evaluation improvement in breast augmentation patients, and less in liposuction and abdominoplasty patients; where the author of the study suggested that further investigation is required to explore the potential differential effects among various cosmetic surgeries (von Soest, Kvalem, Roald, et al., 2009). Further, and more importantly, the heterogeneous sample including breast reduction limits the ability to generalise findings of cosmetic surgery for purely aesthetic reasons, as defined by many authoritative organisations, such as the Medical Council of New Zealand (Medical Council of New Zealand, 2011) and American Medical Association (American Academy of Dermatology and AAD Association, 2010). As briefly discussed earlier, it is difficult to know whether patients undergoing breast reduction had secondary motivations driven by physiological reasons. Most studies did not address this criterion (e.g., Schofield et al., 2002; von Soest et al., 2009), and others did not address it beyond reporting that a patient underwent surgery primarily for aesthetic reasons (e.g., Moss & Harris, 2009). Cook and colleagues (2006) also commented in their review that such uncertainty is relevant for all types of cosmetic surgery, making it difficult to generalise findings to the population pursuing cosmetic surgery for solely aesthetic reasons.

Research design. The methodologically weak designs discussed among systematic review articles include unstructured interviews, lack of pre- and post-assessments, lack of repeated measures and rigorous statistical analysis, no control group or inappropriate comparison group, short follow-up period, lack of valid and reliable measurement and assessment, and vague definitions of the variable constructs (Bowyer et al., 2016; Brunton et al., 2014; Cook et al., 2006; Herruer et al., 2015; Honigman et al., 2004; Sarwer & Crerand, 2004).

Unstructured clinical interviews are often seen, but not exclusively, among earlier studies, where the interviews were typically unstandardized (i.e., with unknown interrater reliability) leading to questionable validity and reliability of the findings (Sarwer et al., 2007; Sarwer & Crerand, 2004). This is also of particular relevance to interviews conducted by surgeons who performed the cosmetic procedures, where relative studies often reported high percentages of patient satisfaction (Sarwer, Nordmann, & Herbert, 2000). Such findings could be subject to bias considering patients may be uncomfortable expressing dissatisfaction to their surgeons (Figueroa-Haas, 2009). Despite the obvious, surgeons appear to continue interviewing their patients. For example, Swanson (2013) interviewed patients with breast augmentation conducted by the author, and reported findings consisted of patients' self-report on a scale of 1 to 10 describing their satisfaction towards the surgical outcome.

Many studies often lacked baseline measurements (e.g., Rubin et al., 2010; Schofield et al., 2002), making it almost impossible to identify whether the postoperative positive outcomes or poorer psychological wellbeing predate cosmetic surgery. Retrospective studies are of particular relevance to studies examining cosmetic surgery patients with BDD, as patients with preoperatively identified BDD are usually rejected by cosmetic surgeons for ethical reasons and the extent to which cosmetic surgery benefits or exacerbates BDD symptoms remain somewhat controversial due to the lack of baseline measures (Bowyer et al., 2016). Other studies were carried out with no control group or an inappropriate comparison group, such as making a comparison with the general population norm (Cook et al., 2006). Cook and colleagues (2006) pointed out that postoperative change could be due to a number of random and unknown confounding factors in studies that did not enrol a control group; and comparison with the general population norm precludes variations in the population. Studies that included a control group and compared the two time point measures (pre- and post-measures) lacked rigorous statistical analysis (e.g., various regression analyses), where the findings precluded the effect of time and the trend of change. Some studies have relatively short follow-up periods, ranging from one to three months (e.g., Bolton et al., 2003; Litner, Rotenberg, Dennis, & Adamson, 2015), where the findings could only be considered short-term effects of cosmetic surgery (Bensoussan et al., 2014).

Several review authors pointed out that many earlier studies of cosmetic surgery lacked valid and reliable measurements and assessment (e.g., Cook et al., 2006; Honigman et al., 2004). The more recent studies appear to have improved in this regard, where studies in general have administered published psychological self-report assessments. However, published psychological assessment does not necessarily suggest that the assessment is valid and reliable (Pusic et al., 2007). For instance, studies have administered various measures that are specifically developed for measuring the quality of life after breast-related surgeries. Among these measures, Pusic and colleagues (2007) identified only seven measures that were developed through some degrees of validating processes, with only one measure out of the seven showing upon more rigorous examination adequate and appropriate development and validation for the breast-related surgery population. Conclusions cannot be considered reliable and valid if they were based on findings from assessments that cannot be proven to measure the constructs they were intended to measure.

Table 1

A summary of methodological limitations and weaknesses identified in the literature

Sample
1. Small or inadequate sample size
2. Selection bias
3. Vague definition of the patient population
4. Heterogeneous sample with various cosmetic surgeries, including breast reduction
Research Design
1. Lack of pre- and post-assessments
2. Lack of repeated measures
3. Lack of rigorous statistical analysis
4. No control group or inappropriate comparison group
5. Short follow-up period
6. Lack of valid and reliable measurement and assessment
7. Vague definitions of variable constructs

Lastly, review authors have pointed out that the psychological variables of interest in the studies are often not clearly defined (Herruer et al., 2015; Honigman et al., 2004). For example, the term 'self-confidence' is commonly used in studies, which is broad and vague without being clearly defined. Another example, as briefly discussed earlier, is the term 'unrealistic expectation', which is usually only vaguely defined in studies, and may apply to a wide range of unrealistic expectations relating to physical, psychological and psychosocial (secondary gain) outcomes of surgery. Studies tend to use unrealistic expectation concerning patients with dissatisfaction towards the surgical result (Herruer et al., 2015). Without the explicit definitions of the variable constructs it is difficult to interpret and compare the results across studies (Honigman et al., 2004). In addition, Brunton and colleagues (2014) found that a wide range of psychological constructs have been examined among studies and were all defined differently, where the resultant heterogeneous findings prevented further knowledge accumulation.

To summarise, despite the increased findings that suggest cosmetic surgery generally leads to positive outcomes, the somewhat mixed results and the methodological limitations of the studies limit confidence to generalise the positive findings across the cosmetic surgery population. Many authors in the literature urge further investigations concerning the effects of cosmetic surgery with methodologically sound research designs (e.g., Brunton et al., 2014). Due to insufficient evidence on postoperative psychological benefits, the British All Party Parliamentary Group on Body Image (2012) released a Parliamentary Report in the UK encouraging and recruiting studies to assess the psychological impact of cosmetic surgery. The current study aims to explore the psychological change in cosmetic surgery patients with an improved methodological design. The details of the current research are presented in the next chapter.

CHAPTER 4
THE CURRENT RESEARCH

Rationale and Aim

The growing population of people undergoing cosmetic surgery has drawn much attention to whether cosmetic surgery results in psychological and psychosocial benefits. Given that the central motivation for undergoing cosmetic surgery is to improve psychological and psychosocial wellbeing, it is necessary to understand the psychological consequences of cosmetic surgery. As presented in the previous chapter, there is an increasing amount of evidence suggesting postoperative psychological improvement, with other studies showing negative or no change in psychological outcomes (e.g., Brunton et al., 2014). The consensus in the literature is that the majority of the studies are deemed methodologically weak and the psychological benefits of cosmetic surgery cannot be confidently confirmed and generalised to the targeted population (Brunton et al., 2014; Cook et al., 2006; Sarwer & Crerand, 2004). In addition, most of the studies investigating psychological change after cosmetic surgery simply reported the observed change and were not theoretically oriented, which may further weaken and narrow the scope of finding interpretation and thus limiting confidence in generalising their findings. The current study aims to explore the psychological change in cosmetic surgery patients over time, and to apply relevant theoretical perspectives from the objectification theory and CB model of body image to the interpretation of the findings. Given the exploratory nature of the current study as well as considering the somewhat controversial outcomes in the literature, there are no hypotheses for the research questions listed below.

Research Questions

The current study intends to explore the following research questions:

1. *The differences between cosmetic surgery patients and comparison group*: Are there psychosocial and psychological characteristic differences between participants who were undergoing cosmetic surgery and participants who do not wish to undergo cosmetic surgery?

2. *Reasons for seeking cosmetic surgery*: Describe the cosmetic surgery patients' motivation and the desired outcomes from cosmetic surgery.

3. Explore participants' pattern of change over time in psychological variables including global self-esteem, body image, psychological wellbeing and quality of life in relation to body image.

    a. *The time - psychological variables relationship*: Characterise individual patterns of change by evaluating the within-individual change over time. That is, how does each participant's psychosocial and psychological wellbeing change over time?

    b. *The cosmetic surgery participation - psychological variables relationship*: Explore the potential effect of cosmetic surgery participation over time. That is, whether the interindividual differences in change can be explained by cosmetic surgery participation.

    c. *The patient characteristics - cosmetic surgery outcomes relationship*: Explore interindividual differences among the cosmetic surgery patients, and the potential association between patient characteristics and the differences in change after the surgery. (A list of cosmetic surgery patient factors that may be associated with postoperative psychological outcome is presented in Table 2)

4. *The appearance dissatisfaction - quality of life relationship*: Describe how participants' appearance dissatisfaction impact or influence their everyday lives.

Table 2

A list of cosmetic surgery patient factors that may be associated with postoperative psychological outcomes

Cosmetic surgery patient factors
Demographic background
Age
Sex
Marital Status
Surgery-related factors
Type(s) of surgery
Length of time considering the surgery
Length of time feeling dissatisfied about the specific body part
Unrealistic expectation of the surgical outcome

CHAPTER 5
METHOD

Recruitment

Two groups of participants were recruited for the current study – a cosmetic group and a comparison group. The comparison group was recruited via public and online media advertisements (see Appendix A for an example). The study intended to recruit the cosmetic group via cosmetic surgeons in New Zealand. However, due to the extremely low response rate an amendment creating an additional recruiting method was made and approved by the Health and Disability Ethics Committee. The participants for the cosmetic group were subsequently recruited from an accredited cosmetic website forum based in Australia where the members of the forum openly state and discuss their preoperative and postoperative status. Information such as the type of surgery, the reason for undergoing the surgery, their appointed surgeon and the date of the scheduled surgery were readily available to the public. The advertisement for participants was posted in the forum (see Appendix B for an example). In addition, brief invitation messages with a link to the advertisement were sent to potential participants who appeared to meet the criteria for the study based on the information they shared in the forum.

Participant criteria. The inclusion and exclusion criteria for both cosmetic and comparison groups were based on specific definitions. In terms of elective cosmetic surgery, the current study adopted the definition from the Medical Council of New Zealand (2011), where a cosmetic procedure is defined as "operations and other procedures that revise or change the appearance, colour, texture, structure or position of normal bodily features with the sole intention of improving the patient's appearance or self-esteem" (p. 1).

According to this definition, surgeries driven by or related to any physiological, functional or medical reasons were not considered cosmetic surgery and were excluded from the cosmetic group. For instance, breast augmentation for women with breast cancer was not included in the study. Moreover, cosmetic surgeries were required to be applied to "normal bodily features" as opposed to

abnormal bodily features. Abnormal bodily features were defined as uncommon physical appearances with significant deviation from the average or the majority of the general population within the individual's cultural context. Surgery that is applied to abnormal bodily features is known as reconstructive surgery, and is defined by the American Medical Association as surgery "performed on abnormal structures of the body, caused by congenital defects, development abnormalities, … or diseases" (p. 1), with the general aim of improving function (American Academy of Dermatology and AAD Association, 2010). For instance, breast augmentations for women whose chests are indistinguishable from male chests (i.e., bilateral amastia) were not considered cosmetic surgery in the current study, as it concerns development abnormality.

The criteria for the comparison group required participants with no history of cosmetic or reconstructive surgery, including minimal invasive, non-permanent (e.g., laser procedures or Botox injections) and permanent (e.g., rhinoplasty or breast augmentation) procedures. In addition, participants were not planning or considering undergoing any form of cosmetic surgery in the near future. A list of criteria for both cosmetic group and comparison group is presented in Table 3.

Participants

The final sample size for the cosmetic group was N = 17. Participants were provided with a cosmetic group information sheet (Appendix C). All participants in the cosmetic group were females in an age range of 20 to 56 years (M = 31.29 years, SD = 9.87 years). The final sample size for the comparison group was N = 20 with an age range of 22 to 69 years (M = 35.16 years, SD = 14.72 years). All participants in the comparison group were also females and received a comparison group information sheet (Appendix D). A t-test showed no significant difference in age between the two groups. Detailed demographic information of the cosmetic and comparison groups obtained from the initial survey of the study is presented in Table 4, and the surgery-related information of the cosmetic group is presented in Table 5.

Table 3

The inclusion and exclusion criteria for participants in the current study

Criteria for Elective Cosmetic Surgery Patient Group
Inclusion Criteria
1. Individuals aged 18 or over.
2. Surgeries driven by non-medical and purely aesthetic reasons.
3. Surgeries that require either local or general anaesthesia.
4. Surgeries that involve permanent alterations to physical appearance.
Exclusion Criteria
1. Individuals under age of 18.
2. Surgeries driven by or related to physiological, functional or medical reasons.
3. Surgeries applied to abnormal bodily features.
Criteria for Comparison Group
1. Individuals aged over 18.
2. Individuals who have not had previous elective aesthetic or reconstructive procedures, including both non-permanent (e.g., Botox) and permanent (e.g., breast augmentation) procedures.
3. Individuals who are not planning to undergo cosmetic procedures in the near future.

Table 4

Demographic information of cosmetic and comparison group

	Cosmetic group		Comparison group	
	N	(%)	N	(%)
Ethnicity				
Australian	7	41.2	-	-
European/Caucasian	6	35.3	3	15.8
Asian	2	11.8	1	5.3
New Zealand European/ Pakeha	1	5.9	12	63.2
New Zealand Maori	-	-	1	5.3
Other	1	5.9	2	10.5
Marital status				
Married	7	41.2	6	31.6
Has a partner	7	41.2	8	42.1
No partner/not married	3	17.1	5	26.3
Education level				
Postgraduate	1	5.9	4	21.1
Bachelor's degree	3	17.6	9	47.4
Tertiary certificate/diploma	8	47.1	4	21.1
University entrance/NCEA level 3	2	11.8	-	-
School certificate/ NCEA level 1	2	11.8	2	10.5

Note. The total percentages may not add up to 100% due to rounding.

Table 5

Surgery-related information of the cosmetic group

	N	(%)
Types of surgeries		
Breast augmentation	13	76.5
Breast lift and augmentation	3	17.6
Breast reduction	1	5.9
History of previous cosmetic surgery		
Yes	2	11.8
No	15	88.2
Reasons for surgery		
Dissatisfaction towards the body part	17	100
Surgery can make life better	12	70.6
Surgeon can make the exact appearance desired	10	58.8
Recommended by friends	2	11.8
No reason	2	11.8
Requested by others	0	0
None of the above	3	17.6
Level of preoperative satisfaction towards the body part undergoing surgery		
Very dissatisfied	7	41.2
Moderately dissatisfied	8	47.1
Moderately satisfied	1	5.9
Very satisfied	1	5.9
Level of 6-month postoperative satisfaction towards the body part that underwent the surgery ($N = 11$)		
Very dissatisfied	1	0.9
Moderately dissatisfied	0	0
Moderately satisfied	2	18
Very satisfied	8	72

Note. The total percentages may not add up to 100% due to rounding or multiple selections of answer to one question.

Ethics

The current study was identified as low-risk research involving human participants and has been endorsed by the Health and Disability Ethics Committees via the expedited review pathway (Ethic reference: 14/NTA/204/AM02). An assurance of confidentiality and anonymity of the participants and data collected, as well as the informed consent statement, was presented at the beginning of the online survey (Appendix E). Participants were required to click the "yes" button to indicate that they had read and understood the information sheet for this study and consented to collection of their responses.

Procedure

The data collection phase occurred from April 2015 to February 2016 for the cosmetic group, and from June to December 2015 for the comparison group, during which the cosmetic surgery participants received and completed four waves of surveys including one preoperative survey (approximately four weeks before the surgery) and three postoperative surveys (two weeks, three months and six months after the surgery) via a survey link sent by email. Participants in the comparison group also completed four sets of surveys following the same timeframe as the cosmetic group. Each participant received an online account with a username of their choice for the purpose of aggregating the data received. All four waves of surveys included identical psychological measures to monitor the participants' psychosocial and psychological changes. The appointed times for and the number of completed surveys in preoperative (Wave 1) and postoperative (Wave 2 to 4) surveys for both cosmetic and comparison groups are presented in Table 6. Not all participants completed the surveys at the appointed times due to various personal reasons (e.g., personal schedule and time inconvenience). Reminder emails were sent to participants who had not completed the survey one week after the survey invitations were sent. The last survey remained available online for approximately 10 weeks after the appointed time.

Table 6

The appointed timeline for and the number of completed surveys in four waves of data collection

	Week 1 (Wave 1)	Week 4	Week 6 (Wave 2)	Week 16 (Wave 3)	Week 28 (Wave 4)
Cosmetic group	*N* = 17 (4 weeks before surgery)	Undergone surgery	*N* = 12 (2 weeks after surgery)	*N* =13 (3 months after surgery)	*N* = 12 (6 months after surgery)
Comparison group	*N* = 19	-	*N* = 17	*N* = 14	*N* = 13

Note. The number of completed surveys in each wave does not equate to the total sample size as a number of participants did not complete all four surveys.

Measures

Demographic and surgery-related information. Wave 1 survey for both cosmetic and comparison groups included questions on participants' demographic information, with additional questions on surgery-related information for the cosmetic surgery participants. The preoperative questions (Wave 1) included the date for and the type(s) of the scheduled cosmetic surgery, history of previous cosmetic surgery, the length of time cosmetic surgery participants took to consider the surgery and the reasons for undergoing surgery. The reasons for the decision to undergo cosmetic surgery were selected based on the literature review and presented as a multiple choice question where participants could select more than one reason. These reasons included recommendation by others, body dissatisfaction, requested by others, expectation that surgery can make their life better or that the surgeon can make the exact appearance change desired, no reason, and none of the above. Cosmetic surgery participants also qualitatively specified further details regarding their reasons in the optional comment boxes attached to the reason options. Cosmetic surgery participants who answered 'yes' to the option 'the surgeon can make the exact appearance change I desire' as their reason to undergo surgery were considered as holding a rather unrealistic expectation of the surgical outcome, which was defined

as an unrealistic expectation towards the appearance outcome, and did not include other unrealistic expectations beyond the appearance outcome (e.g., psychological or psychosocial outcomes). The postoperative surveys for the cosmetic group also included additional questions related to the participant's postoperative satisfaction towards their surgery result. Cosmetic surgery participants rated their level of satisfaction on a scale of '1 – very satisfied' to '4 – very dissatisfied' towards the specific body part that was about to undergo surgery (Wave 1) and after the surgery (Wave 2 - 4). The demographic questions, preoperative and postoperative surgery-related questions are presented in Appendix F.

Psychosocial and psychological variables. The current study focused on a number of psychosocial and psychological variables associated with the outcomes of cosmetic surgery. These included the individual's level of self-esteem, body image, psychological wellbeing, and quality of life in relation to body image. These variables were measured throughout all four waves of data collection for both cosmetic and comparison groups. The definitions and the psychological measures used to assess these variables are discussed below. It should be noted that some measures are not presented in the Appendices due to copyright considerations.

Global self-esteem. The current study adopted the definition from Rosenberg, Schooler, Schoenbach and Rosenberg (1995), who stated that global self-esteem is "the individual's positive or negative attitude toward the self as a totality" (p. 141) as opposed to specific self-esteem, which is the individual's attitude toward a specific part of the self. In other words, global self-esteem is an attitude towards the person as a whole, and it consists of both self-confidence and self-deprecation (Rosenberg et al., 1995).

Global self-esteem was measured by Rosenberg's Self-Esteem Scale (RSES) (Appendix G) (Rosenberg, 1979), which consists of ten items that measure self-esteem and the individual's feelings of self-worth. The item is rated on a four-point scale from 0 to 3 where 0 indicates 'strongly agree' and 3 'strongly disagree'. The individual total score ranges from 0 to 30, such that high total scores indicate high self-esteem.

The RSES has an excellent internal consistency indicated by a Gutman scale coefficient of reproducibility of .92, with excellent stability indicated by the test-

retest reliability (over 2 weeks period) of .85 and .88 (Rosenberg, 1979). The RSES also correlates significantly with other self-esteem measures, as well as measures of depression and anxiety in the predicted direction, which indicated good concurrent, predictive, and construct validity (Rosenberg, 1979).

Body image. Based on Cash and Colleagues' (1989) two-dimensional model of body image, two variables in relation to body image were examined in the current study. The first variable, appearance evaluation, is defined as "a feeling of physical attractiveness or unattractiveness; satisfaction or dissatisfaction with one's look" (p.3) (Cash, 2000). In other words, appearance evaluation is the individual's level of satisfaction towards his or her own body, and represents the affective element of body image (Cash et al., 1989). The second variable is the appearance orientation, which is defined as the "extent of investment in one's appearance" (p.3) (Cash, 2000). Appearance orientation is the level of importance of one's appearance to oneself and others, and how much effort or behaviour one carries out to take care of how they look, such as grooming and checking behaviours (Cash, 2000).

The 7-item Appearance Evaluation (AE) Subscale and the 12-item Appearance Orientation (AO) Subscale from The Multidimensional Body-Self Relations Questionnaire (MBSRQ) – Appearance Scale (Cash, 2000) were used to measure participants' body image. The items in both subscales are rated on a five-point scale where 1 indicates 'definitely disagree' and 5 'definitely agree'. The mean scores are computed where a high score of AE suggests that the individual feels mostly satisfied with his or her appearance, and a high score of AO indicates that the individual places more importance and attention on his or her physical appearance (Cash, 2000).

Both AE and AO Subscales endorse high internal consistency indicated by Cronbach's alpha ranging from .85 to .88, and 1-month test-retest reliability of .81 to .90 for a sample of 996 males and 1070 females aged 18 years or older from the U.S. national survey data (Cash, 2000).

Psychological wellbeing. In terms of general psychological wellbeing, the current study focused on the level of depressive and anxiety symptoms, as well as presentations that indicate possible body dysmorphic characteristics. Two separate measures, the Hopkins Symptom Checklist - 25 and Body Dysmorphic Disorder

Questionnaire – Dermatology version, were used to examine the changes in participants' psychological wellbeing. It is important to note that these measures merely indicated a temporary psychological state during the time of assessment and the current study had no intention to examine these symptoms for diagnostic purposes. Therefore, the definition of psychological wellbeing was broadly based on the general criteria for anxiety, depression and body dysmorphic disorder (BDD) in the DSM-5 (American Psychiatric Association, 2013), and on the associated measures used in the current study.

Based on the Hopkins Symptom Checklist – 25 (HSCL-25) (Appendix H) and DSM-5, anxiety symptoms are primarily based on physiological symptoms of anxiety (e.g., faintness, dizziness, shakiness, trembling, panic and headaches) and feelings of apprehension (Derogatis, Lipman, Rickels, Uhlenhuth, & Covi, 1974; APA, 2013). Depressive symptoms on the other hand are characterised by low mood, diminished interest or pleasure in activities, poor appetite, problems with sleeping and concentrating, feelings of hopelessness and worthlessness, and thoughts of ending one's life (Derogatis et al., 1974: APA, 2013).

The HSCL-25 is derived from the Symptom Checklist – 90, which is a well-known screening instrument assessing common psychological symptoms with internal consistency reliability coefficients of .77 to .90, test-retest reliability of .78 to .90 (over 1 week), interrater reliability of .74 to .91, and convergent validity of .73 to .88 with measures of depression (Groth-Marnat, 2009). HSCL-25 has been translated into many different languages and high test-retest reliability and internal reliability were also found in several non-western clinical and non-clinical populations (e.g., Hollifield et al., 2002; Mollica, 2004). It consists of 10 items for anxiety symptoms and 15 for depressive symptoms where the items are measured on a four-point scale, ranging from '1 – not at all' to '4 – extremely' (Derogatis et al., 1974). Participants were asked to indicate how much these symptoms bothered them in the last week and tick the appropriate rating for each item. The average of all 25 items was calculated as the total score that indicates the level of 'unspecified emotional distress', and the average of all 15 items for depression was the HSCL-25 depression score (HSCL-Dep) (Winokur, Winokur, Rickels, & Cox, 1984).

Lastly, symptoms of BDD are characterised by a preoccupation with perceived minor defects in physical appearance that impairs the individual's important areas of functioning, where the individual finds it difficult to stop these

appearance concerns (Dufresne, Phillips, Vittorio, & Wilkel, 2001; APA, 2013). The Body Dysmorphic Disorder Questionnaire – Dermatology version (BDDQ-DV) developed by Dufresne and colleagues (2001) was used to assess possible symptoms of BDD and the impact of appearance dissatisfaction on life. It should be noted that the current study has no intention to diagnose BDD based on the BDDQ-DV outcomes. The BDDQ-DV has demonstrated a good sensitivity (100%) and specificity (89%) in psychiatric settings, and a better sensitivity (100%) and specificity (92.3 – 94.7% in cosmetic settings (Dufresne et al., 2001; Danesh, Beroukhim, Nguyen, Levin, & Koo, 2015). The BDDQ-DV was selected because it contains qualitative items that allow further understanding in the participants' appearance dissatisfaction and its impact on their lives. In addition, there are no references to dermatology in the actual items in the questionnaire, thus making it suitable in the current context. It has also been suggested by a number of review authors that the BDDQ-DV is a useful screening tool for studies investigating participants undergoing cosmetic surgeries (Picavet, Gabriels, Jorrissen, Hellings, 2011; Phillips 2017; Higgins & Waysong, 2018).

It consists of ten questions, of which five require dichotomous responses of 'yes/no'; three require qualitative responses; and two questions on a five-point scale that indicate the level of distress and impairment the appearance defect has caused in different important areas of functioning (from '1 – no distress' to '5 – extreme, incapacitating'). The BDDQ-DV produces a final overall dichotomous outcome (positive or negative screening of possible BDD) where positive screening results from participants who reported a presence of preoccupation about appearance concerns and rated 3 or above for distress or impairment in important areas of functioning (Dufresne et al., 2001).

Quality of life in relation to body image. The current study adopted the definition from Cash and Fleming (2002), where quality of life in relation to body image is defined as "the effects of one's body image on various self-experiences and life contexts" (p. 456). To be more specific, it comprises a wide range of life domains that could be affected by one's body image experiences, such as social functioning, sexuality, daily routine and emotional wellbeing (Cash & Fleming, 2002).

Body Image Quality of Life Inventory (BIQLI) was developed by Cash and Fleming (2002) and was used to measure the quality of life in relation to body image

in the current study. High internal consistency is indicated by Cronbach's alpha of .95 and a good stability indicated by test-retest reliability of .79 (over 2 – 3 weeks) (Cash & Fleming, 2002). It also correlates significantly with several body image related measures that indicates good convergent validity (Cash & Fleming, 2002; Cash, Jakatdar, & Williams, 2004). The BIQLI consists of 19 items on a seven-point scale from '-3 – very negative effect', to '+3 – very positive effect' with "0 – no effect". The higher average scores indicate that an individual's body image has a positive influence on various aspects of life.

It may be worth noting that the BREAST-Q developed by Pusic and colleagues (2009) could be a useful measure for participants recruited in the current study. This measure, however, was not included because the study intended to recruit participants undergoing various cosmetic surgeries and was not designed to focus exclusively on breast surgeries. Another reason the BREAST-Q was not used in the study was due to the length of the questionnaire, where the Augmentation Module in the BREAST-Q contains 88 postoperative items. Given the exploratory nature of the study, brief screening tools were selected with an attempt to reduce attrition rate over time. More lengthy and in-depth measures, such as the BREAST-Q were not included.

Data Analyses

Data analyses involved bivariate inferential statistical tests, applied longitudinal analysis, and the examination of the overall descriptive and qualitative data. Statistical Package for Social Science (SPSS) for Windows was used for all statistical analyses in this study. The statistical significance was tested at a $p < .05$ level in all the statistical analyses discussed below.

Bivariate inferential statistical analysis. Chi-square and independent sample *t* tests were carried out to explore the potential psychological differences between the preoperative cosmetic group and the comparison group. More specifically, the psychological measures at Wave 1 were compared between the two groups, including self-esteem, psychological wellbeing (i.e., unspecified emotional distress and possible BDD symptoms), body image and quality of life in relation to body image.

These analyses aimed to answer the first research question of the study: is there a difference between the psychosocial and psychological characteristics of preoperative cosmetic surgery patients and participants who did not plan to undergo cosmetic surgery?

Applied longitudinal analysis. The applied longitudinal analysis (Singer & Willett, 2003) is commonly known under different model names, such as multilevel regression model (Hox, 2002) and mixed model (Boik, 1988). Despite minor differences in the methods of these analyses, all share the same purpose of analysing change (Hox, 2002).The applied longitudinal analysis or the multilevel analysis can be understood as an extended multiple regression analysis at multilevel, in which the dependent variable is measured at the lowest level, and the predictors, or the explanatory variables at all other levels (Hox, 2002). It was deemed that the current research design met the three methodological criteria for the applied longitudinal analysis specified by Singer and Willett (2003), including the availability of three or more waves of data, an outcome measure that changes systematically, and with a reasonable timeframe that allows meaningful change to occur.

The applied longitudinal analysis involves fitting multiple levels of regression models to the data and often involves more than one explanatory variable for the outcome variable (Singer & Willett, 2003). The current study focused on the basic two-level regression model using the MIXED method for maximum likelihood (ML) estimation with the aim of addressing two different research questions. Level-1 involves the descriptive analysis of individual growth model that describes individual change over time with a suitable functional form (i.e., ordinary least square (OLS) regression); and level-2 involves the analysis of interindividual differences in change that describe the patterns of change across individuals (Hox, 2002; Singer & Willett, 2003). That is, level-1 analysis attempts to answer the question of how the psychosocial and psychological wellbeing of each participant changes over time within the timeframe of the current study; and level-2 analysis explores whether there are any explanatory variables for different patterns of change over time across participants.

It is important to note that the outcome of BDDQ-DV was examined qualitatively and was not included in the applied longitudinal analysis, as the current study did not intend to diagnose BDD based on the BDDQ-DV but merely to identify

the possible BDD symptoms. The BDDQ-DV contains a mixture of different types of question (i.e., dichotomous, scales, and qualitative questions) that make up the final outcome of the questionnaire. Statistical analysis carried out on the dichotomous and scale items alone would not accurately reflect the participants' presentation without the qualitative information. The BDDQ-DV was therefore used to examine the overall effect of appearance dissatisfaction on life, and it was deemed less suitable for statistical analysis in this study. In accordance with the exploratory nature of the current study, the combined information obtained from every item of the questionnaire, including the quantitative and qualitative properties, appeared more meaningful compared with its final dichotomous outcome (i.e., positive or negative screening). For these reasons, BDDQ-DV outcomes were excluded from the statistical analysis, and the qualitative analysis of BDDQ-DV is presented in the later section 'qualitative analysis – thematic analysis'. In addition, the psychosocial and psychological wellbeing or the variables of interest (outcome variables) in applied longitudinal analysis are therefore referred to the outcomes of all other psychological measures, including RSES, MBSRQ-AS and -AO, HSCL-25, HSCL-Dep, and BIQLI.

The detailed analytical steps are discussed below. These include data management, such as missing data management and inspecting the data assumptions, followed by analyses of preliminary information that are necessary for model building in applied longitudinal analysis.

Missing data. Varying amounts of missing data were evident throughout the entire data collection from Wave 1 to 4. A number of participants did not complete either the entire survey (Table 6) or a particular psychological measure in the survey and these missing data were left as missing. Among participants who completed the entire survey or a particular psychometric measure, a small number of them presented with few missing items in different measures, which were subsequently replaced with the averaged value of the relevant items (mean substitution). For instance, the majority of these participants missed one item in a particular measure (e.g., one item out of 25 in HSCL-25), one participant missed two items and another missed three items. This constituted a low percentage of overall missing data ranging from 3.7% to 5.6% in each wave of data collection. Given the low percentage of missing items in

each psychological measure the mean substitution method has been deemed appropriate for dealing with them (Downey & King, 1998).

Inspecting the data assumptions. Evaluating assumptions of normally distributed errors and linear relationships between outcome variables and the predictor variables are considered a standard procedure for all types of regression analysis (Hox, 2002; Pallant, 2011), including applied longitudinal analysis (Singer & Willett, 2003). The normal probability plot (P-P plot) of the regression standardised residuals, and the scatterplot of the standardised residuals of the variables were produced and visually examined to check whether the normality and linearity assumptions are violated. Visual inspection of the graphs are recommended by many authors (e.g., Hox, 2002; Pallant, 2011; Singer & Willett, 2003), where P-P plot with residual points lying reasonably close to the straight diagonal line in the graph suggests close conformity to normal distribution; and a scatterplot with residual points evenly distributed around their mean of zero forming a rectangular-shaped distribution indicates conformity to normality and linearity assumptions (Hox, 2002; Pallant, 2011).

Reliability Analysis. Reliability analysis was performed to examine the internal consistency of the scales used to measure the outcome variables (i.e., RSES, MBSRQ-AE and -AO, HSCL-25, and BIQLI). Cronbach's alpha coefficient for each measure was computed at each wave of data collection to ensure that the measures are reliable with the sample of the current study (Pallant, 2011). A Cronbach's alpha of 0.7 or above for a measure was considered reliable (Nunnally & Bernstein, 1994).

Coding time variable. The data of the current study was collected through four consecutive waves, where one may assume that the time variable could be coded as Wave 1, 2, 3 and 4; however, this does not accurately reflect the varying nature of the actual data collection time. The waves of data collection were not evenly spaced as shown in Table 6. In addition, some participants have completed the survey after one or several reminder emails were sent. This means, for instance, that a participant could have completed her Wave 3 survey at Week 18 instead of Week 16, which was the appointed time for each participant to receive the Wave 3 survey. As a result, some participants may have completed the Wave 3 survey at Week 16, while others may have completed it in later weeks after the reminder emails were sent to them.

This reflects the varying data collection schedule differences between participants. Given that time is treated as a continuous variable in applied longitudinal analysis where the participants are not required to have identical data collection schedules (Singer & Willett, 2003), the time variable was coded in weeks instead of Wave 1, 2, 3, and 4 in order to reflect the most accurate change over time. Table 7 shows an example of how the time variable is converted from waves to weeks for three participants based on the time differences between their Week 1 survey and the date they completed the rest of the surveys.

Recoding BIQLI scores. The BIQLI were recoded from its raw scores of -3, -2, -1, 0, 1, 2, 3 to 1, 2, 3, 4, 5, 6, 7 respectively, as the null hypothesis in applied longitudinal analysis involves mean equals zero and statistical analysis does not recognise zero as a significant mean. Using the raw scores for model building would result in non-significant intercept parameter should the raw score mean be close to zero. It was subsequently discovered that the recoding was inconsequential, however, the recoding remained as it would have no meaningful effect on the output. In the context of recoded BIQLI scores, a mean score of 4 would represent a raw score of 0 which indicated that the participants' body image has 'no effect' on their lives; should a mean score be greater or less than 4 it would represent raw scores ranging from 1 to 3, and -1 to -3 respectively, and indicate that the participants' body image has more positive effect or more negative effect on their lives, respectively.

Sample size. As a conventional rule of thumb, large sample sizes are recommended as preferable for conducting multilevel analysis with the ML method (e.g., Long, 1997). However, Snijders and Bosker (1999) suggested that samples of 30 or more could be sufficient for a basic two-level multilevel analysis. In addition, Mass and Hox (2005) found accurate and unbiased estimates of regression coefficients and variance components across all different sample sizes in multilevel analysis, though smaller sample sizes ($N < 50$) tend to underestimate level-2 standard errors of the variance parameters. The total sample size ($N = 37$), as well as the sample size of the cosmetic group ($N = 17$) in the current study were therefore deemed appropriate for a basic two-level multilevel analysis. The outcomes of the analysis, particularly the variance components, were treated circumspectly and interpreted with caution.

Table 7

Coding time from Waves to Weeks

Participant ID	Wave number	Date of survey completion	Week number
1001	1	23rd April 2015	1
1001	2	23rd May 2015	5
1001	3	10th August 2015	17
1001	4	9th November 2015	30
1013	1	21st May 2015	1
1013	2	26th June 2015	6
1013	3	12th September 2015	17
1013	4	3rd January 2016	34
1016	1	9th June 2015	1
1016	2	7th July 2015	5
1016	3	21st September 2015	16
1016	4	21st December 2015	29

Exploring preliminary information. Analysing and examining preliminary information for model building primarily involved descriptive analyses of an exploratory nature. Individual empirical growth plots that present the observed values of how each participant's outcome variables change over time were developed and examined. The two standardised approaches – the nonparametric and parametric approaches, described by Singer & Willett (2003) were used to explore the pattern of each participant's change over time. Nonparametric trajectories were first superimposed on the growth plots, followed by a group-level analysis where the entire empirical growth plots were examined as a group. The nonparametric approach (the splines command) summarises each participant's observed change over time and has an important role in helping to inform the decision about the most suitable population individual growth trajectory (i.e., linear or curvilinear trajectories) (Singer & Willett, 2003).

Next, the ordinary least squares (OLS) regression for individual linear change was used as the parametric approach. Some may argue that different individuals require different trajectories as the observed change may appear linear for some, but

not for others (Singer & Willett, 2003); however, linear function appeared to be the most appropriate for the current dataset and was selected for the later model building. Singer and Willett (2003) suggested that a linear individual change model is often the most optimal option for exploring change in longitudinal data especially when the timeframe of the study is restricted and short, and the number of waves is small. In addition, the observed change in the empirical growth plots does not fully represent the individual's true change, but reflects the fallible observed change with measurement and random error (Bickel, 2007). Together with the exploratory purposes of the current research, as well as the outcome of the preliminary analysis (details are discussed in the Result section), the OLS trajectories were chosen for the analysis. Fitting OLS trajectories on the individual growth plots are part of level-1 submodel preliminary analysis and the details are discussed in the "Model B – level-1 submodel" section below.

Exploring time-invariant explanatory variables. Before proceeding to level-2 analysis, which involves fitting the model with the explanatory variable of interest, the relationships between psychosocial and psychological change and the explanatory variables were first explored using groups of individual growth trajectories. In accordance with the research questions, cosmetic surgery was considered the main potential time-invariant explanatory variable for the differences in change between the cosmetic and comparison group over time. This analysis involves the total sample (i.e., cosmetic and comparison groups, $N = 37$).

Possible explanatory variables for the differences in change between participants in the cosmetic group over time were also considered from literature review, including age, marital status, unrealistic expectation of the surgical outcome, the amount of time they took to consider undergoing the surgery, as well as the amount of time they felt dissatisfied towards the specific body part that underwent surgery. This addresses another research question in the current study, which is to explore the interindividual differences among the cosmetic patients, and the potential association between patient characteristics and their differences in change. This analysis involves the cosmetic group only ($N = 17$). It should be noted that not all the patient characteristics listed in Table 2 were chosen as potential explanatory variables for this level-2 analysis due to the inadequate sample sizes. For example, all the

participants in the cosmetic group were females undergoing breast surgeries where sex and the type of surgery were inadequate as explanatory variables for the analysis.

Plots of OLS fitted individual growth trajectories for all outcome variables (RSES, MBSRQ-AE & AO, HSCL-25, HSCL-Dep and BIQLI) were displayed separately by the presence of cosmetic surgery participation (i.e., cosmetic vs. comparison group). Similarly, plots of OLS fitted individual trajectories for the cosmetic surgery participants were also separated by marital status (married vs. not married), and unrealistic expectation (unrealistic vs. no unrealistic expectation). These plots were carefully examined for potential systematic interindividual differences in change including the distribution, intercept, and slope of the trajectories. The growth trajectories were not produced for other aforementioned potential explanatory variables given their continuous, rather than categorical, nature (i.e., age and time), and were added to the model in the later steps.

Exploring the preliminary information and the potential explanatory variables for differences in change provides the base and guidance for model building. The steps of model building are described in the following section.

Model A – the unconditional means model. The unconditional means model is the first step of model building where the outcome variables were entered separately in to the model alone (Singer & Willett, 2003). Model A describes the outcome variables without any explanatory variables at every level (e.g., time, and other time-invariant explanatory variables). This model allows the inspection of whether the outcomes at Week 0 are significantly different from zero, and whether there is a significant amount of unexplained variance to indicate the necessity for further model building with additional explanatory variables. In addition, a variance component that remained statistically significant (albeit decreased in magnitude) given the introduction of time as a predictor would suggest that additional explanatory variables could be used to explain the remaining variance.

Model B – level-1 submodel. Level-1 submodel, which is referred as the unconditional growth model (Singer & Willett, 2003) was specified next. Model B describes the participant change in psychosocial and psychological wellbeing over the timeframe of the study. As a result of the previous exploratory analyses, the OLS

regression model was adopted as the most suitable model for level-1 submodel where change is a linear function of time.

As the first step, separate regression analysis for each participant was carried out where the participant's variable outcomes (e.g., RESE scores) were regressed over time (i.e., weeks). The regression analysis produced a regression equation for each participant that represents the true value of their psychological characteristics at Week 0 (fitted intercept) when holding the explanatory variable at zero and the true weekly rate of change (fitted slope) in psychological wellbeing during the timeframe of the study. In addition, a summary of goodness of fit (i.e., residual variance and R^2) was also produced for each participant. Each regression line was superimposed on each participant's empirical growth plot accordingly, and a summary graph of all OLS trajectories across participants for each variable was produced. The sample means of the fitted intercepts and slopes, as well as the sample variance of the fitted intercepts and slopes for each measure were examined, followed by the bivariate correlation analysis between the fitted intercepts and slopes for the total sample.

Next, the time variable 'time' was added to Model A to form Model B. Model B describes the fixed intercepts and slopes (fixed effects) that show whether the outcome variables still remained significantly non-zero after time has been taken into account. The variance component in Model B indicates whether a portion of the unexplained variance in Model A is explained by the addition of an explanatory variable – time. In addition, a decreased variance component that remained significant would indicate the necessity of additional explanatory variables to the model to explain the remaining variance.

To summarise, level-1 submodel specified the within-individual change that could be explained by time. The outcome of these analyses provided important information about the hypothesised individual growth models, including the potential association between the fitted intercepts and slopes among different measures.

Model C – level-2 submodel. As discussed in the "exploring potential time-invariant explanatory variables" section, the level-2 analysis was carried out separately on two samples including the total sample (cosmetic and comparison groups, N = 37) and the cosmetic group (N= 17) with the aforementioned potential explanatory variables. To build the level-2 submodel, the explanatory variable of interest was added to Model B to form Model C. The level-2 submodel for the total

sample aims to explore the relationship between the interindividual differences in the individual growth trajectories and the main potential explanatory variable of interest – cosmetic surgery participation. Other potential explanatory variables of interest for the cosmetic group (N = 17), such as age, marital status, unrealistic expectation, the amount of time the participants took to consider surgery, and the amount of time they felt dissatisfied with the body part that underwent surgery, were also added to Model B separately to explore their potential effects. The explanatory variables were added to Model B separately due to the small sample size of the cosmetic group.

Multilevel regression analysis was performed separately for each outcome variable where regression equations upon the level-1 submodel regressions were produced. To be more specific, the level-2 submodel examines the interindividual differences and looks at the effect of the explanatory variable on the average level-1 fitted initial status and slopes for each outcome variables. Similar to level-1 submodel regression equations, the level-2 submodel regression equations also include fixed intercepts and slopes that describe the effect of the explanatory variable on the participants' average initial status and weekly rate of change respectively. In addition, the level-2 equations also contain a variance component, which is referred as the random component that represents the associated random error and the unexplained variance after the explanatory variable was being controlled. This unexplained variance may be further reduced after introducing additional explanatory variables to the model forming Model D and so on; however, this is beyond the scope of the current research given its exploratory nature, and the focus of level-2 analysis remained with exploring the effect of one explanatory variable for the differences in change. The examples of SPSS syntax for the level-2 analysis are presented in Appendix I.

To summarise, level-2 submodel specified the interindividual differences in the participants' growth trajectories and their relationship with the explanatory variables where a group-level regression model was produced. The outcome of these analyses provided information around the hypothesised population process based on the observed sample behaviour, and described the systematic interindividual patterns in growth trajectories influenced by each explanatory variable.

Qualitative Analysis – Thematic Analysis. Two collections of open-ended responses obtained from the preoperative surgery-related questions and four waves of BDDQ-DV were examined qualitatively to augment the current study findings. The first set involved the cosmetic surgery participants' reasons for undergoing the cosmetic surgery (N = 17), and the second set of data involved the effect the appearance concern and dissatisfaction has on life for participants with positive or negative screening of possible BDD symptoms (both cosmetic and comparison groups, N = 27). Some participants described more detailed answers, and others wrote very little. A simplified qualitative analysis was carried out based on the basic principles of thematic analysis described by Braun and Clarke (2006).

The open-ended responses from the data of interest were initially examined and analysed with an inductive approach. Upon reading and familiarising with the text, codes were generated manually for features of interest in the text across the entire data set. Coding with a data-driven approach was used for the 'reasons for cosmetic surgery' data. The 'effect of appearance dissatisfaction on life' data was coded with a focus on the actual effects described by the participants. Next, the codes with repeated patterns were collated into overarching themes that work in relation to the entire data. Once the themes were finalised and defined within their relative context, extract examples were selected and presented.

CHAPTER 6
RESULTS

Inspecting the Data Assumptions

Normal P-P plots and scatterplots of the standardised residuals were produced separately for different outcome variables for both samples (the total sample and the cosmetic group) through linear regression analysis. Dependent variables included scores of RSES, MBSRQ-AE and -AO, HSCL-25 and BIQLI, and independent variable was time. The outcomes of the two plots for all outcome variables for both samples (Appendix J) suggest close conformity to normality and linearity assumptions for level-1 submodel of all outcome variables. The assumption check was not performed for level-2 submodels to limit the number of checks performed for pragmatic reasons. It should be acknowledged that the uncertainty of assumption violation at level 2 may increase the uncertainty with the inferential statistics reported.

Reliability Analysis

Reliability analyses were carried out separately for the total sample and the cosmetic group including all the outcome variables and across four waves of data collection. The outcome variables included RSES, MBSRQ-AE and -AO, HSCL-25, BIQLI, and the results are presented in Appendix K. The Cronbach's Alpha for the psychological measures ranged from $\alpha = .82$ to .98 for the total sample and $\alpha = .80$ to .98 for the cosmetic group alone. This indicates that the measures are all reliable and the items in each psychological measure are likely to be acting in a consistent manner.

Bivariate Inferential Statistical Analysis

A series of chi-square and independent sample *t* tests was carried out to compare the outcome variables between the cosmetic and comparison groups at Wave 1 to determine whether differences in outcome variables between groups were significant. A summary of the outcomes is shown in Table 8.

Self-esteem and body image. The average RSES score for participants in the cosmetic group was 21.88 (*SD* = 5.01), and 23.33 (*SD* = 4.78) for the comparison group at Wave 1. The independent sample *t* test indicated that there was no significant difference between the RSES mean scores of the two groups at Wave 1.

In terms of MBSRQ, the independent sample *t* test indicated that the mean score for appearance evaluation (AE) in the cosmetic group (*M* = 2.87, *SD* = 0.72) was significantly lower compared with the comparison group (*M* = 3.39, *SD* = 0.50; $t(34) = -2.53$, $p < .05$) at Wave 1. There was no significant difference between the mean scores of appearance orientation (AO) in the cosmetic (*M* = 3.73, *SD* = 0.54) and comparison groups (*M* = 3.58, *SD* = 0.65).

Psychological wellbeing. The conventional cut-off point of 1.75 for HSCL-25 was used to indicate clinical emotional distress of unspecified diagnosis (Mollica, 2004). A number of participants in the cosmetic group (35.3%) and comparison group (22.2%) had HSCL-25 scores above the cut of point at Wave 1 indicating 'clinical unspecified emotional distress' that involves both depressive and anxiety symptoms. A chi-square test suggests no significant association between the participants' level of clinical emotional distress and the presence of an upcoming cosmetic surgery. The mean scores for HSCL-25 was 1.59 (*SD* = 0.54) for the cosmetic group and 1.53 (*SD* = 0.44) for the comparison group indicating the overall level of 'unspecified emotional distress' for the two groups. The average HSCL-25 depression scores derived from the HSCL-Dep were 1.62 (*SD* = 0.61) and 1.56 (*SD* = 0.47) for the cosmetic and comparison groups respectively. The independent sample *t* tests for the means of HSCL-25 and HSCL-Dep suggest that there were no significant differences between the two groups at Wave 1.

In terms of the BDDQ-DV outcomes, 29.4% of the participants in the cosmetic group and 15.8% in the comparison group were screened positive for symptoms of BBD at Wave 1, and a chi-square test suggests no significant relationship between the two groups and the symptoms of BDD at Wave 1.

Quality of life in relation to body image. The mean scores (raw scores) of BIQLI were -0.09 (*SD* = 1.2) and 0.38 (*SD* = 0.72) for the cosmetic group and comparison group respectively. In addition, 75% and 27.8% of the participants in the

cosmetic and comparison groups respectively indicated that their body image has a negative effect on their lives. While the independent sample *t* test suggests no significant difference between the means of the two groups, a chi-square test of independence suggests that the relation between the groups and their quality of life in relation to body image was statistically significant (χ^2 (1, N=34) = 7.792, $p < .05$), where the body image scores of participants in the cosmetic group are more likely to be negative compared with the comparison group.

Table 8

A summary of chi-square and independent sample t test outcomes

	Cosmetic group			Comparison group			*t* test		χ^2 test
	(%)	*M*	*SD*	(%)	*M*	*SD*	*t*	*p*	*p*
RSES	-	21.88	5.01	-	23.33	4.78	0.75	.46	-
MBSRQ - AE	-	2.87	0.72	-	3.39	0.50	-2.53	.02*	-
MBSRQ - AO	-	3.73	0.54	-	3.58	0.65	0.75	.46	-
HSCL-25 (unspecified emotional distress)	-	1.59	0.54	-	1.53	0.44	0.39	.70	-
HSCL-Dep	-	1.62	0.61	-	1.56	0.47	0.30	.76	-
HSCL-25 (clinical unspecified emotional distress)	35.3	-	-	22.2	-	-		-	>.05
BDDQ-DV (positive screening)	29.4	-	-	15.8	-	-		-	>.05
BIQLI	-	-0.09	1.2	-	0.38	0.72	-1.412	.17	-
BIQLI (negative effects on life)	75	-	-	27.8	-	-		-	<.05*

Note. *p<.05

Applied Longitudinal Analysis – The Preliminary Analysis

Descriptive statistics. Summaries of descriptive statistics, including the number of observations, means and standard deviations of all outcome variables for cosmetic and comparison groups from Wave 1 to 4 are presented in Table 9 and 10.

Table 9

A summary of descriptive statistics for the Cosmetic group from Wave 1 to 4.

	Wave 1			Wave 2			Wave 3			Wave 4	
Measures	N	Mean	Std.	N	Mean	Std.	N	Mean	Std.	N	Mean	Std.
RSES	17	8.12	5.01	12	7.17	5.52	13	8.21	4.29	12	7.22	4.76
MBSRQ-AE	17	2.87	0.72	12	3.45	0.89	13	3.48	0.64	12	3.71	0.79
MBSRQ-AO	17	3.73	0.54	12	3.65	0.64	13	3.47	0.63	12	3.60	0.45
HSCL-25	17	1.59	0.54	12	1.36	0.25	13	1.36	0.27	12	1.35	0.26
HSCL-Dep	17	1.62	0.61	12	1.41	0.30	13	1.41	0.28	12	1.36	0.29
BIQLI	16	-0.09	1.21	12	0.67	1.09	11	0.71	1.05	12	0.45	1.07

Table 10

A summary of descriptive statistics for the Comparison group from Wave 1 to 4.

	Wave 1			Wave 2			Wave 3			Wave 4	
Measures	N	Mean	Std.	N	Mean	Std.	N	Mean	Std.	N	Mean	Std.
RSES	19	6.84	4.78	17	7.18	4.61	14	11.00	2.86	13	9.69	5.15
MBSRQ-AE	19	3.39	0.50	17	3.48	0.45	14	3.05	0.63	13	3.21	0.59
MBSRQ-AO	19	3.58	0.65	17	3.52	0.51	14	3.66	0.53	13	3.57	0.54
HSCL-25	19	1.53	0.44	17	1.49	0.37	14	1.58	0.49	13	1.52	0.35
HSCL-Dep	19	1.56	0.47	17	1.55	0.36	14	1.60	0.44	13	1.52	0.35
BIQLI	18	0.38	0.72	17	0.69	0.90	13	0.48	0.78	13	0.56	1.24

Exploring preliminary information. The individual empirical growth plots that present the observed RSES scores over time for all the participants are shown in Figure 2. Figures 3 and 4 show the smooth nonparametric trajectories superimposed on each growth plot individually and as a group respectively. The OLS trajectories were subsequently fitted on the individual growth plots as shown in Figure 5. Group summaries that present all the OLS-estimated linear trajectories as a group are displayed separately for all the outcome variables (i.e., RSES, MBSRQ-AE and –AO, HSCL-25, HSCL-Deps, and BIQLI) in Figures 6 to 11 respectively. The individual growth trajectories including both nonparametric and OLS trajectories and the group summaries of nonparametric trajectories for the rest of the outcome variables are numerous and are displayed in Appendix L. Descriptive analysis, including bivariate correlation analysis, for the individual OLS growth trajectory parameters for each psychological measure is presented in Table 11. Note: the BIQLI scores in applied longitudinal analysis are recoded scores, and should not be interpreted without converting the recoded scores back to raw scores.

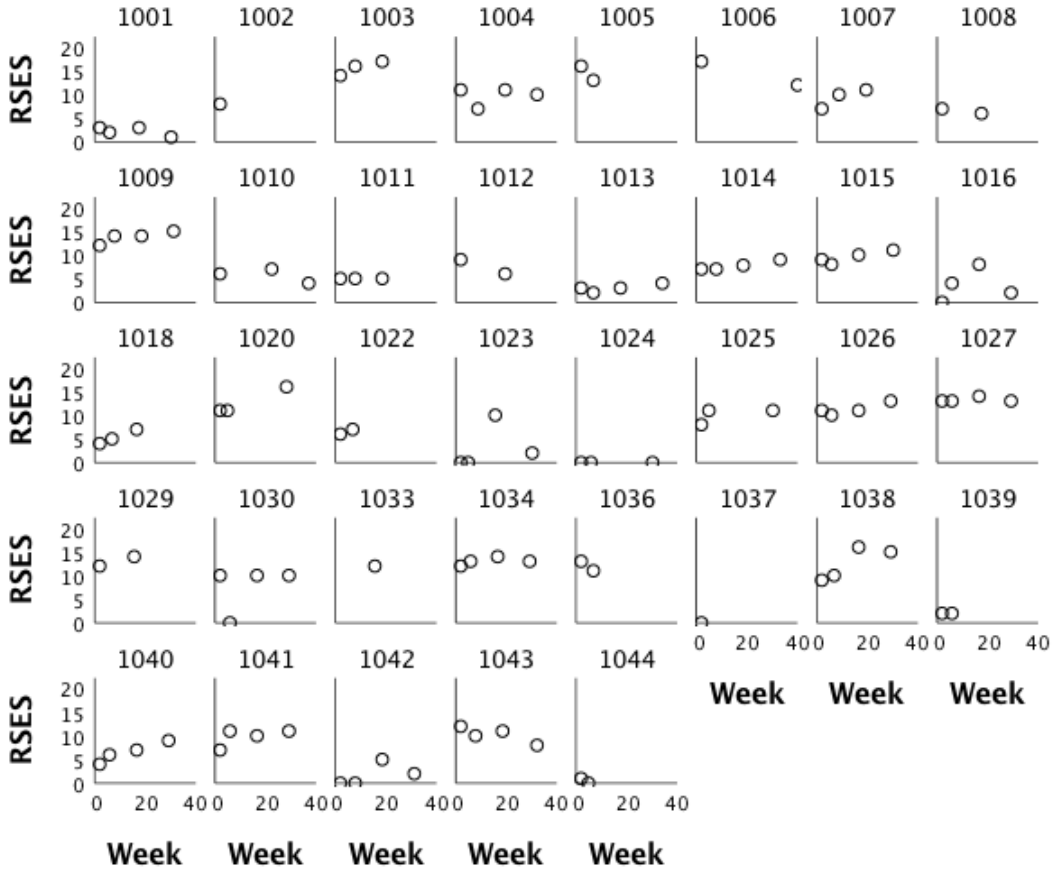

Figure 2. Empirical growth plots of individuals' RSES scores over time from Week 0 to Week 40 for the total sample (each plot represents one participant with their participant ID number displayed above the plots)

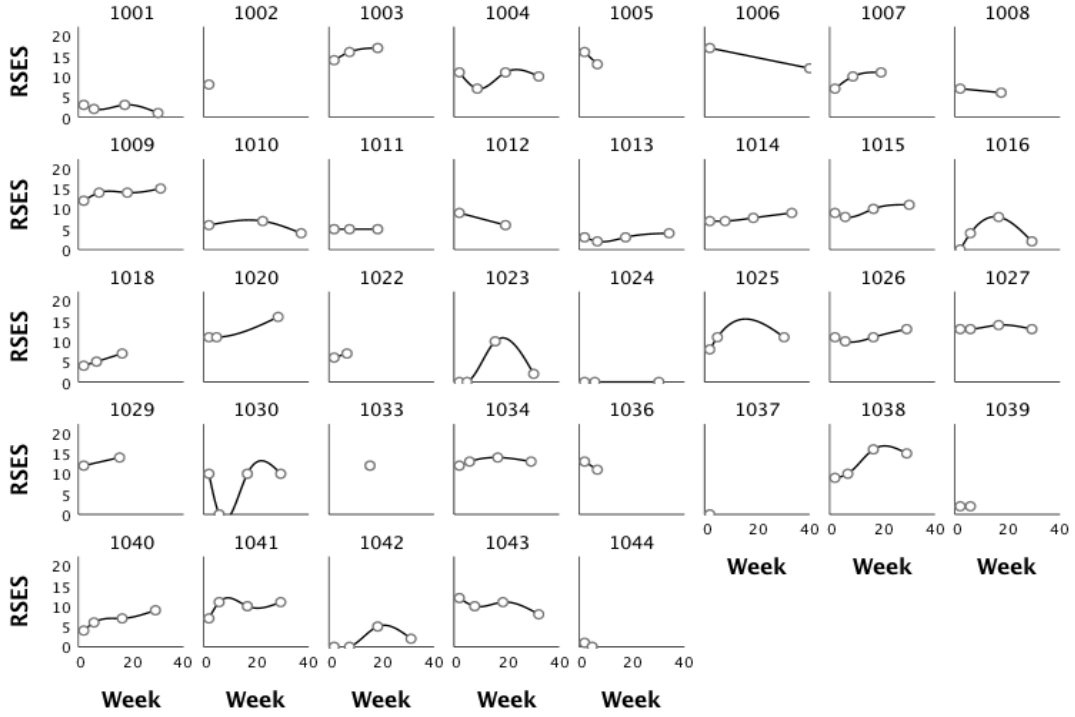

Figure 3. Smooth nonparametric trajectories superimposed on each individual empirical growth plot of RSES scores for the total sample

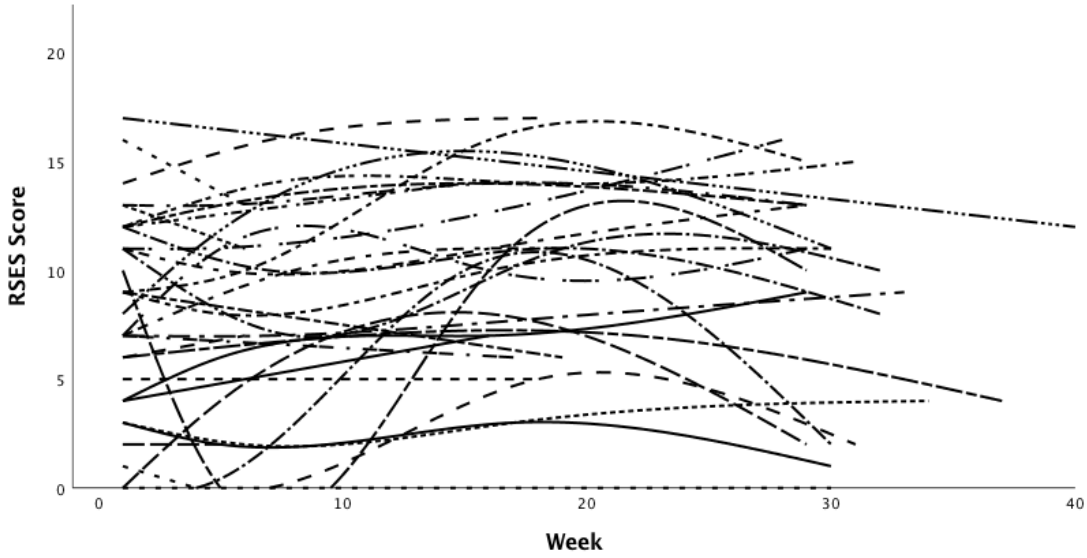

Figure 4. A group summary of nonparametric trajectories showing all 37 participants' RSES scores from Week 0 to Week 40

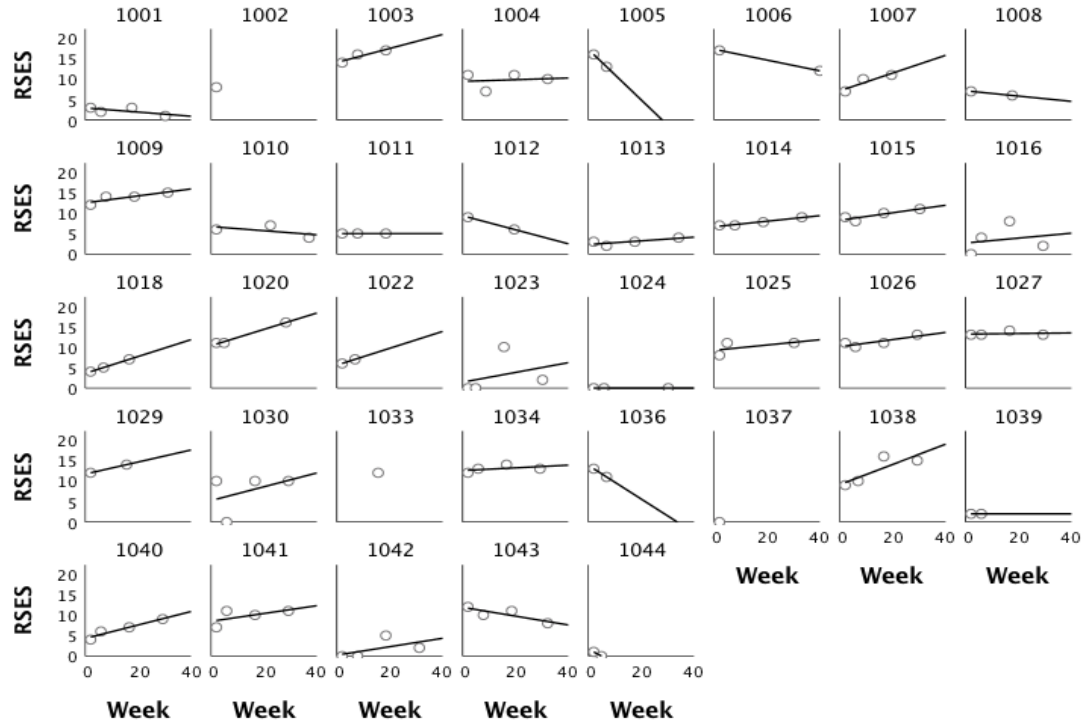

Figure 5. OLS trajectories superimposed on each individual empirical growth plot of RSES scores for the total sample

As seen in Figures 2, 3 and 4, most of the participants showed a gentle increase in RSES scores over time, with some that either decreased or seemed to remain relatively unchanged over time. Figure 4 shows a great variability in the participants' initial RSES scores at Week 0 (initial status) ranging from 0 to 17, as well as in their rates of change (slope) that suggests multilevel regression analyses would be beneficial to further understanding of the trend of change in self-esteem over time. As seen in Figure 5, the relationship between RSES scores and time appears linear for the majority of the participants with a couple of exceptions (i.e., participants ID 1023 and 1030). Together, taking the random and measurement errors into account, these plots reinforce the selection of OLS linear trajectory as the individual growth model for self-esteem in the later model building analyses.

The individual growth trajectories for the rest of the outcome variables (i.e., MBSRQ-AE and –AO, HSCL-25, HSCL-Dep and BIQLI) in Appendix L also show similar variability and patterns to the growth trajectories for the RSES scores. The relationships between time and each outcome variable also appear linear with a few exceptions that appear either curvilinear (e.g., AE scores for participants ID 1015 and

1016 ; AO scores for ID 1038), or rise and fall over time (e.g., HSCL-25 scores for participants ID 1009 and 1014; BIQLI scores for IDs 1030 and 1042). The group summaries of nonparametric trajectories also show a wide range of variability for each psychological measure. Together, these individual growth trajectories confirm that the OLS linear trajectory would be the most optimal individual growth model for all the variables, and is selected as part of the subsequent level-1 submodel building analyses.

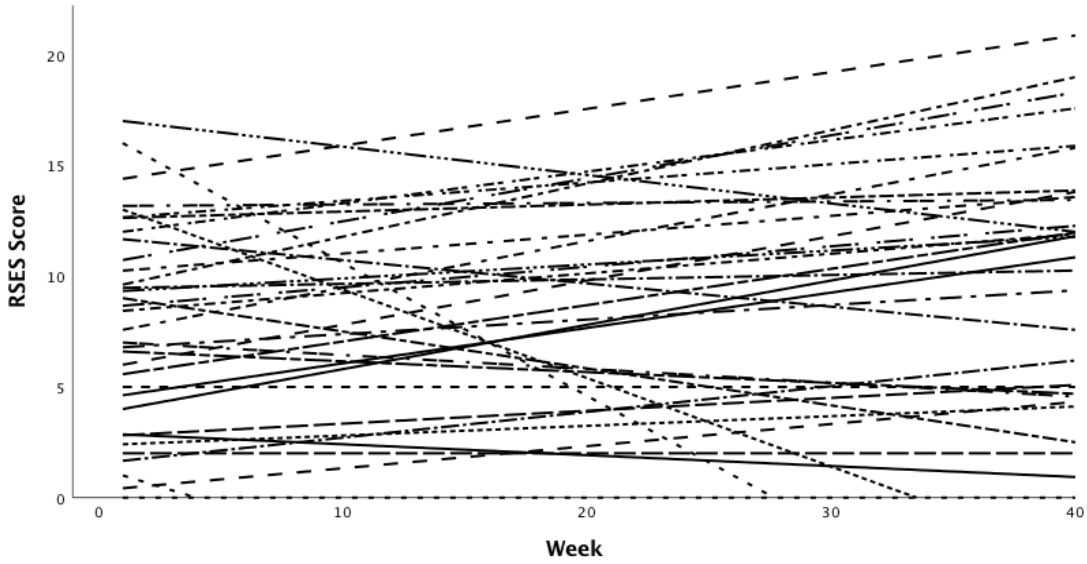

Figure 6. A group summary of OLS trajectories showing all 37 participants' RSES scores from Week 0 to Week 40

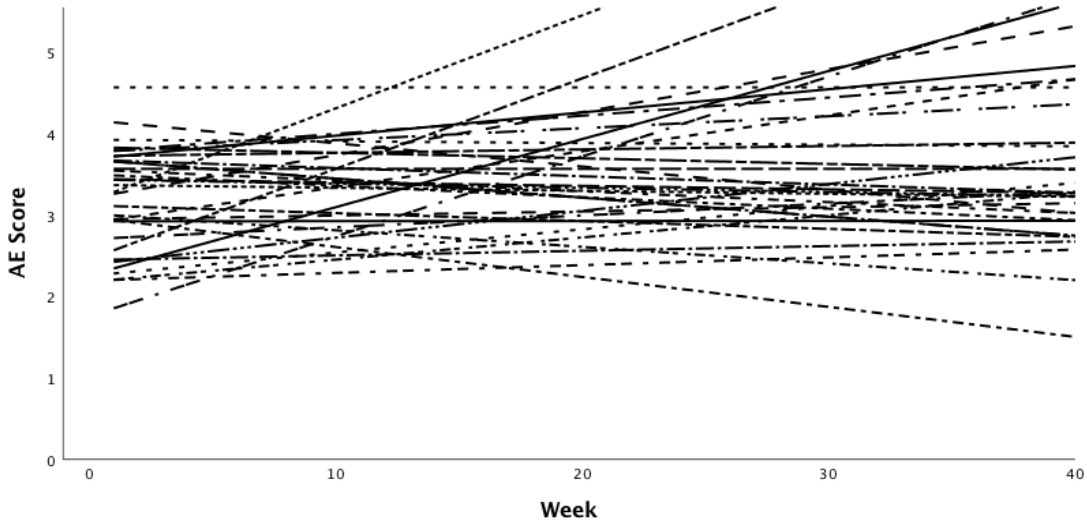

Figure 7. A group summary of OLS trajectories showing all 37 participants' MBSRQ-AE scores from Week 0 to Week 40

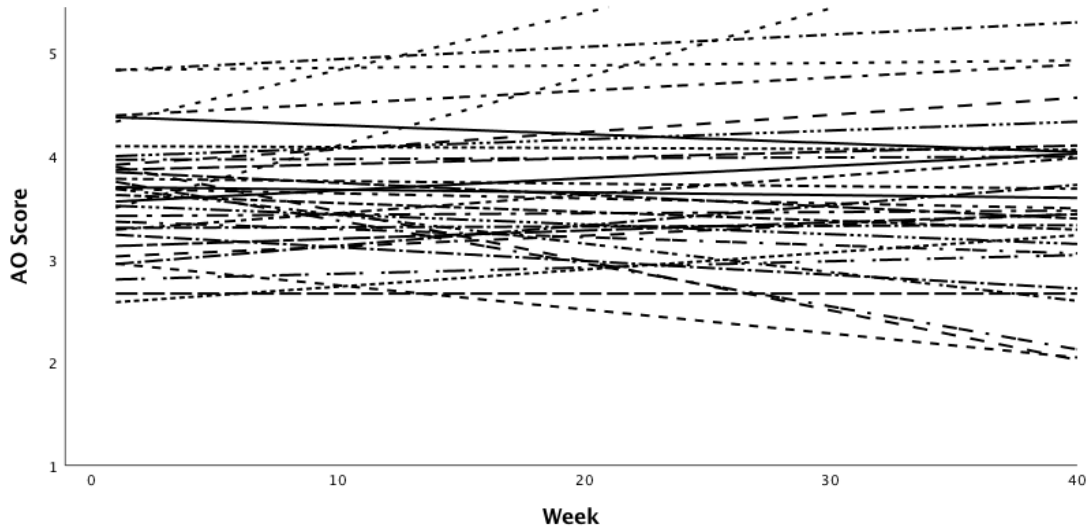

Figure 8. A group summary of OLS trajectories showing all 37 participants' MBSRQ-AO scores from Week 0 to Week 40

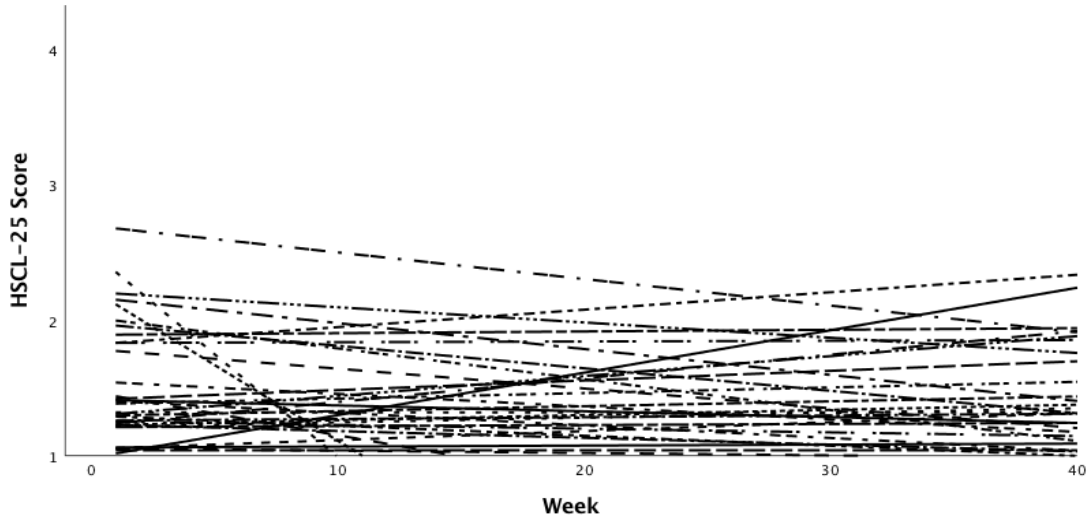

Figure 9. A group summary of OLS trajectories showing all 37 participants' HSCL-25 scores from Week 0 to Week 40

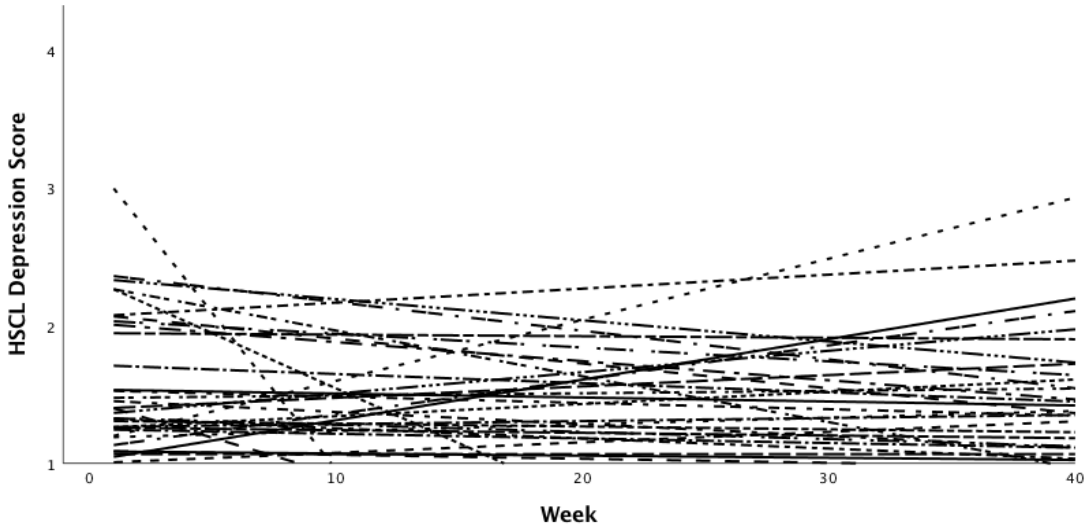

Figure 10. A group summary of OLS trajectories showing all 37 participants' HSCL depression scores from Week 0 to Week 40

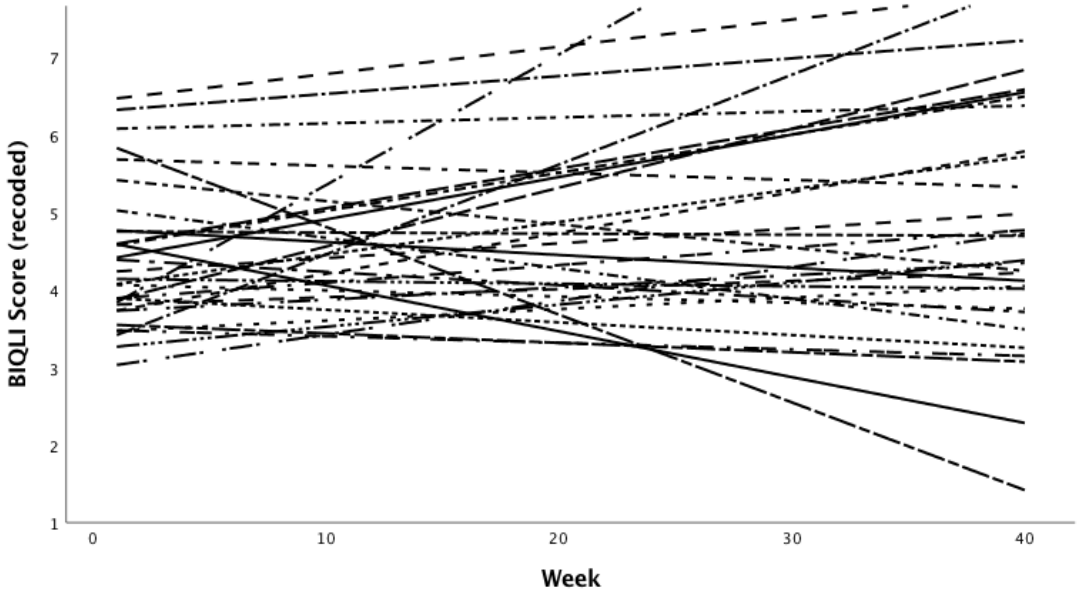

Figure 11. A group summary of OLS trajectories showing all 35 participants' BIQLI scores (recoded) from Week 0 to Week 40

Figures 6 to 11 show a wide range of variability in the participants' initial statuses and their OLS-estimated rate of change in each psychological measure over time. Most of the participants' self-esteem as measured by RSES appeared to increase over time with a wide range of initial statuses at Week 0 (Figure 6). In terms of body image, participants appeared to have an overall trend of slight increase in their appearance satisfaction as measured by the MBSRQ-AE (Figure 7); whereas the level of appearance importance, measured by MBSRQ-AO, appeared to remain relatively stable over time as shown in Figure 8. A visible portion of participants showed a decline in their level of unspecified emotional distress and depression severity as measured by HSCL-25 and HSCL-Dep, and the another portion appeared to remain relatively flat over time(Figures 9 and 10). The participants' quality of life in relation to body image as measured by BIQLI appeared to have more variability in their rates of change (Figure 11) and showed an overall trend of slight increase over time.

Descriptive analysis. To further understand the overall individual fitted OLS regression parameters, descriptive analyses, including the bivariate correlation analyses, between the average estimated intercepts (initial status) and the slopes (rate of change) for each measure were carried out (Table 11). In comparison to the estimated means, the magnitudes of their standard deviations suggest that participants varied widely around both average estimated intercepts and slopes. The negative correlation for AE indicates a negative relationship between its estimated intercept and the positive rate of change. That is, participants with higher AE scores at Week 0 are likely to become more satisfied (positive rate of change) with their appearance less rapidly (negative correlation) over time. Significant and negative correlation coefficient with a negative rate of change, such as for HSCL-25, suggests that participants with greater unspecified emotional distress at Wave 1 are likely to improve (decrease in scores) less rapidly over time.

To summarise the preliminary analyses, the great variability shown in the graphs and the descriptive statistics reinforce the need to incorporate further multilevel model building to explore the potential participant characteristics that could be related to the differences in change.

Table 11

Outcomes of descriptive analyses for the individual OLS trajectory growth parameters for each psychological measure

	N	Mean	Standard deviation	Bivariate correlation
RSES	31			
Initial status		8.28	4.53	
Rate of change		0.02	0.19	-.31
AE	32			
Initial status		3.13	0.63	
Rate of change		0.02	0.04	-.54**
AO	32			
Initial status		3.66	0.54	
Rate of change		0.00	0.02	-.03
HSCL-25	31			
Initial status		1.56	0.46	
Rate of change		-0.01	0.04	-.63**
HSCL-Dep	32			
Initial status		1.60	0.52	
Rate of change		-0.01	0.05	-.74**
BIQLI	31			
Initial status		4.39	0.94	
Rate of change		0.02	0.05	-.40*

Note. *p <. 05; **p < .01

Exploring potential time-invariant explanatory variables. Group summaries of OLS fitted individual growth trajectories of all the outcome variables for the total sample are displayed separately by the presence of cosmetic surgery participation (Figures 12 to 17). Descriptive analyses for the individual OLS-estimated trajectory parameters for each psychological measure were carried out separately for the cosmetic and comparison groups. Outcomes of the descriptive analyses, including bivariate correlation analyses are presented in Table 12. Group summaries of OLS fitted trajectories for the cosmetic group are separated by the presence of potential explanatory variables — marital status (Figures 18 to 23) and unrealistic expectation of the surgical outcome (Figures 24 to 29). The bold line in each group summaries of OLS fitted trajectories indicates the average trend line.

Exploring explanatory variable for the total sample. The group summaries of OLS trajectories separated by the potential explanatory variable of cosmetic surgery participation show a number of different average trends in each psychological measure. Figure 12 shows a large variability in RSES scores across both estimated intercepts and slopes for participants who underwent the surgery, and as a result, the average trend line for the cosmetic group appeared relatively flat over time; whereas participants who did not plan to undergo cosmetic surgery showed an overall increased average trend over time. In terms of body image, participants in the cosmetic group showed an overall incline in their level of appearance satisfaction; the comparison group showed a wide range of variability and the average trend line suggests a slight decline in their satisfaction with appearance (Figure 13). The appearance orientation average trend lines for both groups appear similar in terms of their intercepts and rates of change, which remained relatively unchanged over time; however, the cosmetic group showed more variation in their estimated rates of change compared with the comparison group (Figure 14). Participants who underwent cosmetic surgery showed an overall slight decline in their severity of unspecified emotional distress and depression symptoms over time compared with the comparison group that appears to remain unchanged over time (Figures 15 and 16). In terms of participants' quality of life in relation to body image, Figure 17 shows similar patterns between the two groups where the average trend lines appear relatively flat over time.

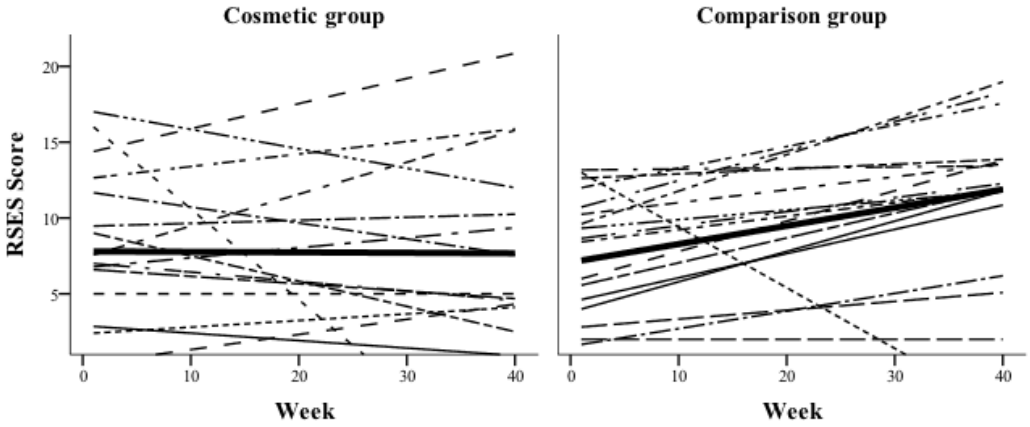

Figure 12. Group summaries of OLS fitted trajectories for the RSES data, separated by the presence of cosmetic surgery participation

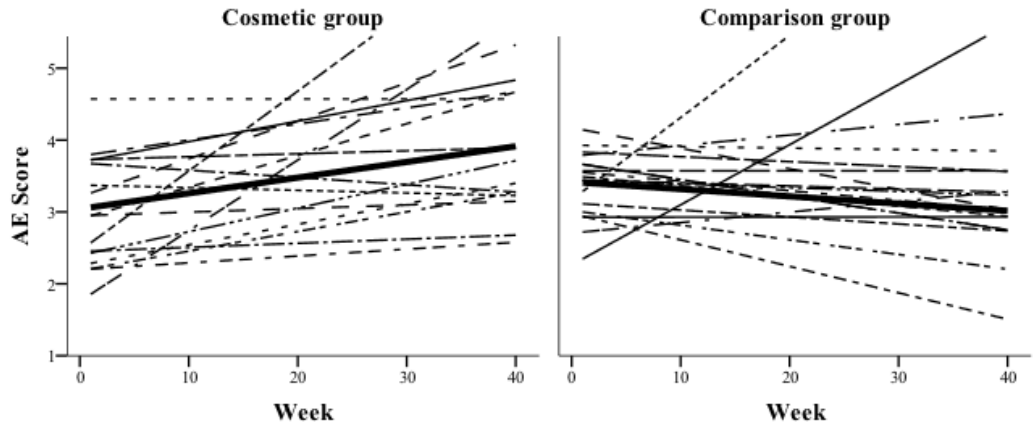

Figure 13. Group summaries of OLS fitted trajectories for the MBSRQ-AE data, separated by the presence of cosmetic surgery participation

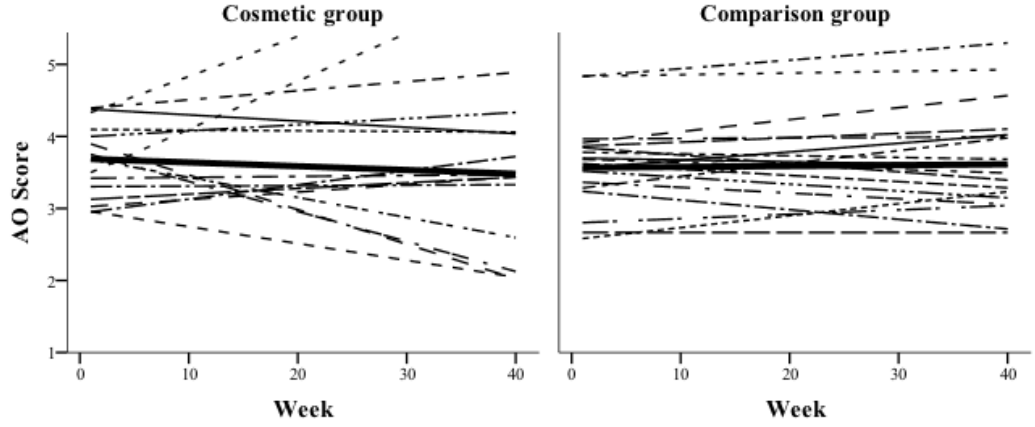

Figure 14. Group summaries of OLS fitted trajectories for the MBSRQ-AO data, separated by the presence of cosmetic surgery participation

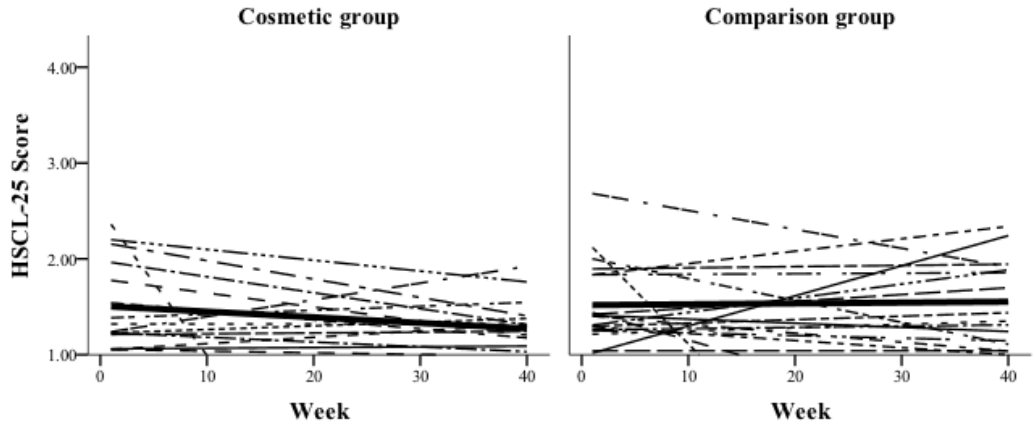

Figure 15. Group summaries of OLS fitted trajectories for the HSCL-25 data, separated by the presence of cosmetic surgery participation

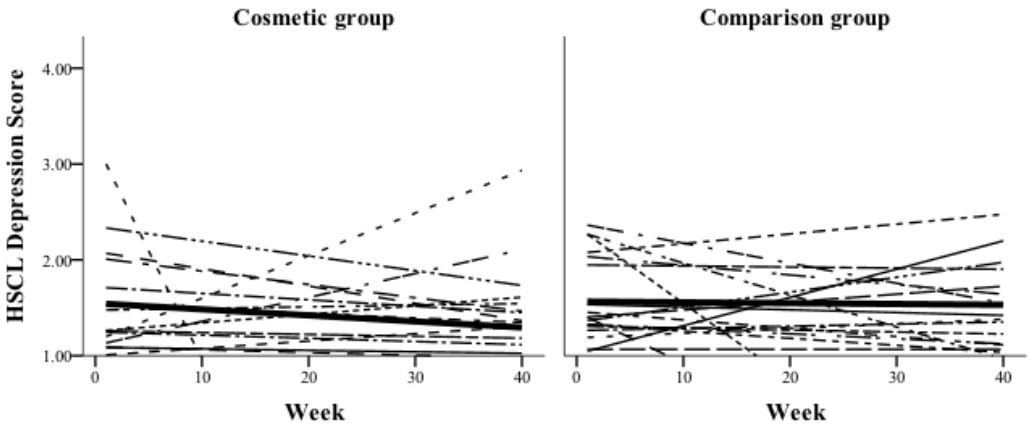

Figure 16. Group summaries of OLS fitted trajectories for the HSCL-Dep data, separated by the presence of cosmetic surgery participation

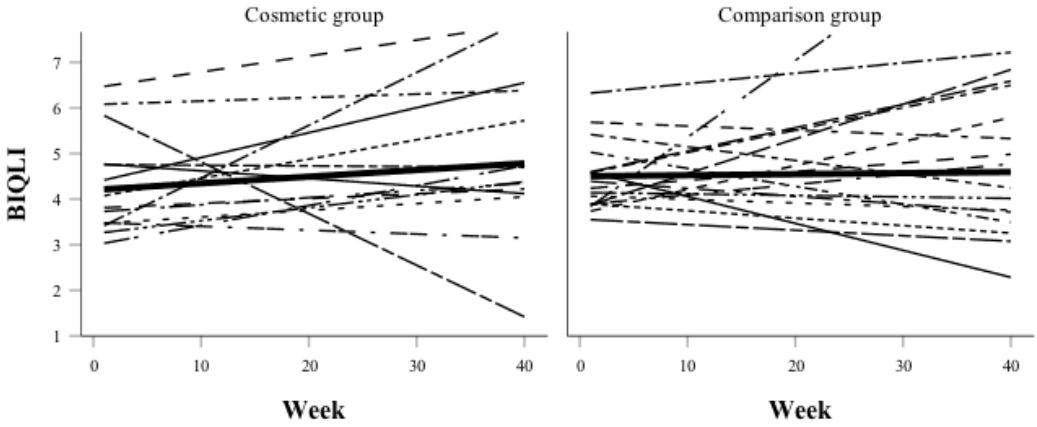

Figure 17. Group summaries of OLS fitted trajectories for the BIQLI data (scores recoded), separated by the presence of cosmetic surgery participation

The OLS-estimated average intercepts and slopes displayed in Table 12 reflect and confirm the visual inspection of the OLS trajectory group summaries separated by the presence of cosmetic surgery participation. The cosmetic group showed a small and negative estimated average rate of change in RSES scores, whereas the comparison group showed a positive estimated average rate of change over time. Participants in the cosmetic group also showed a positive average rate of change in their level of appearance satisfaction (AE) over time compared with the comparison group where the rate of change is extremely small. There are no major differences between the estimated parameters for the rest of the psychological measures in Table 12. The significant negative correlation coefficients with the

relative negative rates of change suggest that participants with higher initial score of HSCL-25 and HSCL-Dep at Week 0 are likely to become less severe in their distress less rapidly over time.

Table 12

Outcomes of descriptive analyses for the individual OLS fitted trajectory growth parameters for each psychological measure separated by groups

	Cosmetic group				Comparison group			
	N	Mean	Standard deviation	Bivariate correlation	N	Mean	Standard deviation	Bivariate correlation
RSES	15				16			
Initial status		8.38	5.33			8.19	3.80	
Rate of change		-0.05	0.20	-.25		0.09	0.15	-.46
AE	15				17			
Initial status		2.87	0.68			3.37	0.49	
Rate of change		0.03	0.03	-.48		0.00	0.04	-.46
AO	15				17			
Initial status		3.65	0.52			3.67	0.58	
Rate of change		0.00	0.03	-.03		0.00	0.01	-.04
HSCL-25	15				16			
Initial status		1.55	0.50			1.58	0.44	
Rate of change		-0.01	0.04	-.71**		-0.01	0.03	-.55*
HSCL-Dep	15				17			
Initial status		1.57	0.62			1.63	0.45	
Rate of change		-0.01	0.06	-.83**		-0.01	0.02	-.57*
BIQLI	14				16			
Initial status		4.32	1.13			4.45	0.78	
Rate of change		0.02	0.05	-.46		0.02	0.05	-.36

Note. *p <.05; **p < .01

Exploring explanatory variables for the cosmetic group. The potential explanatory variables for the differences in change between participants in the cosmetic group presented in this section include marital status and unrealistic expectation of the surgical outcome. Figures 18 to 23 show visible differences in the

data shape for the outcome variables between participants who are married and not married. For instance, participants who are not married show an increased appearance satisfaction over time with overall greater rates of change compared with participants who are married (Figure 19). The level of appearance importance for participants who are married appear to remain relatively unchanged over time, whereas a portion of participants who are not married show a visible decline in their AO scores (Figure 20). It should be noted that participants who are not married included participants who are single or have a partner. Together, these cosmetic group summaries of OLS fitted trajectories suggest that marital status could be a potential explanatory variable for the differences in change between participants who underwent cosmetic surgery, and supports marital status to be added in level-2 model analysis.

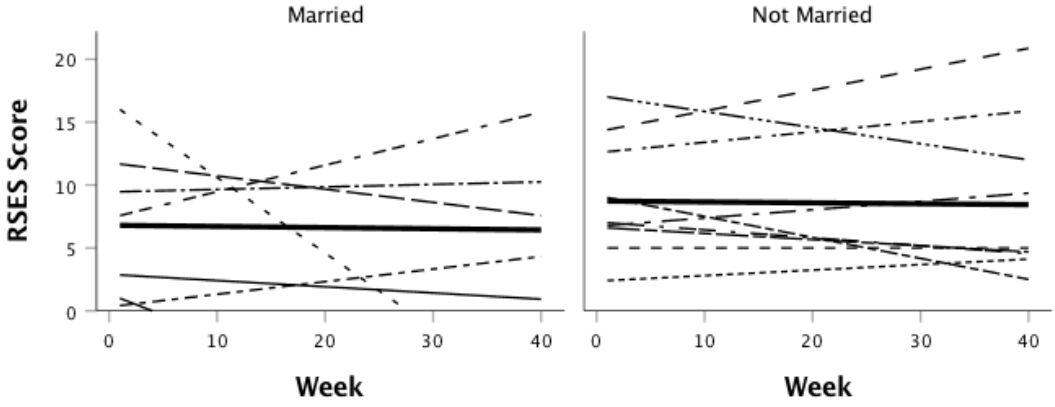

Figure 18. Cosmetic group summaries of OLS fitted trajectories for the RSES data, separated by participants' marital status

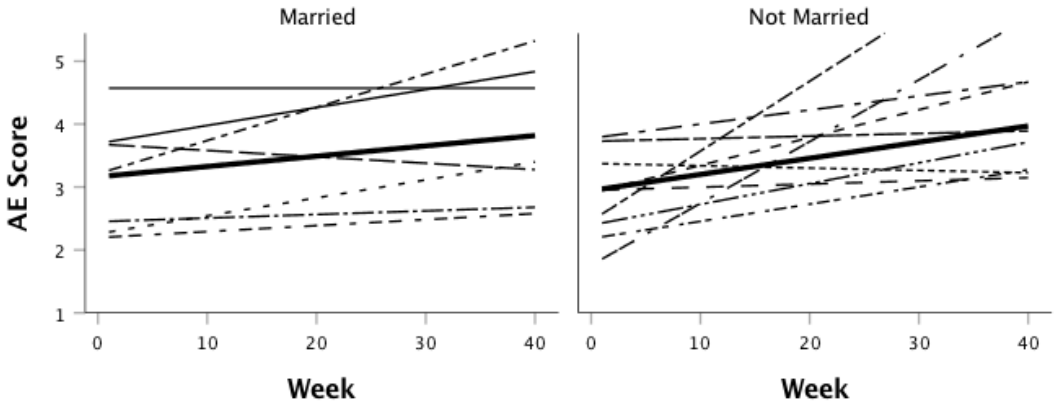

Figure 19. Cosmetic group summaries of OLS fitted trajectories for the MBSRQ-AE data, separated by participants' marital status

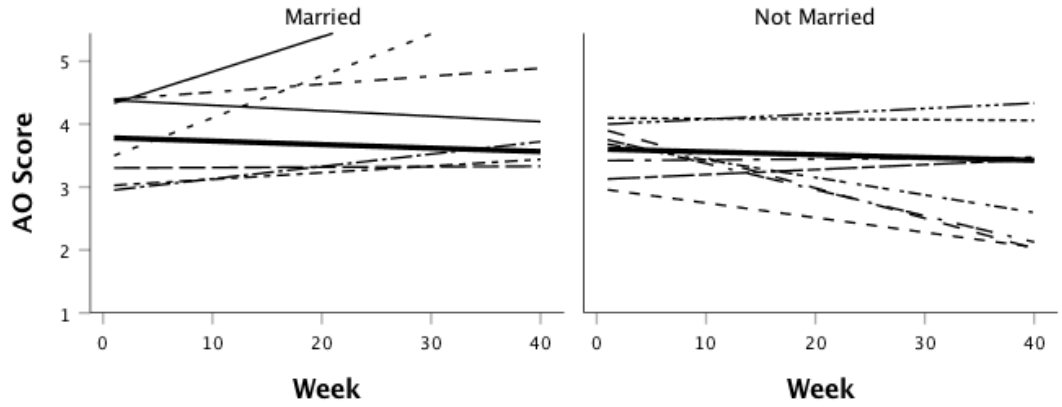

Figure 20. Cosmetic group summaries of OLS fitted trajectories for the MBSRQ-AO data, separated by participants' marital status

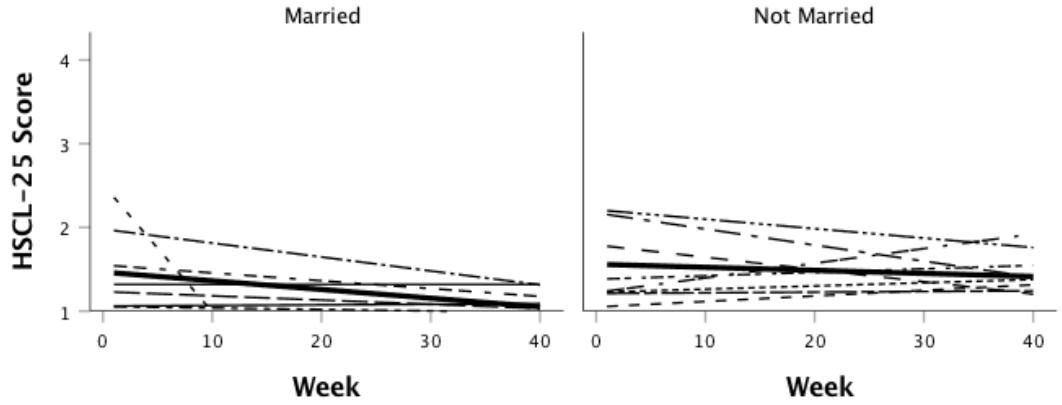

Figure 21. Cosmetic group summaries of OLS fitted trajectories for the HSCL-25 data, separated by participants' marital status

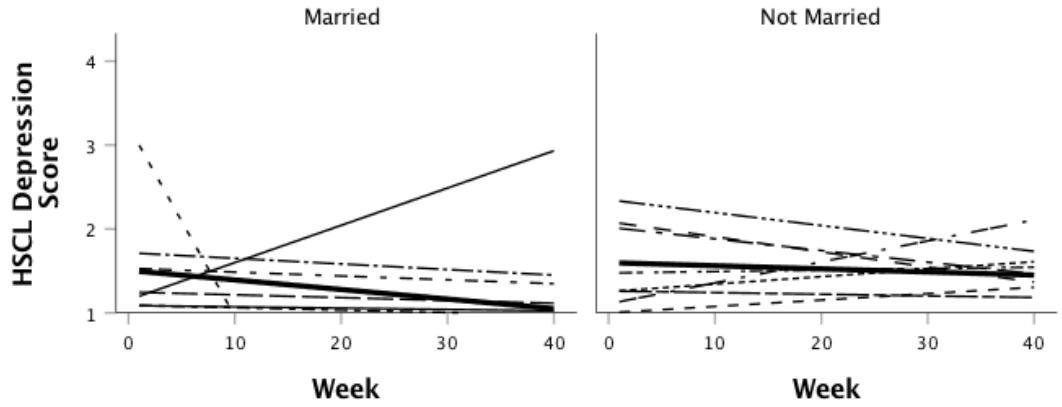

Figure 22. Cosmetic group summaries of OLS fitted trajectories for the HSCL-Dep data, separated by participants' marital status

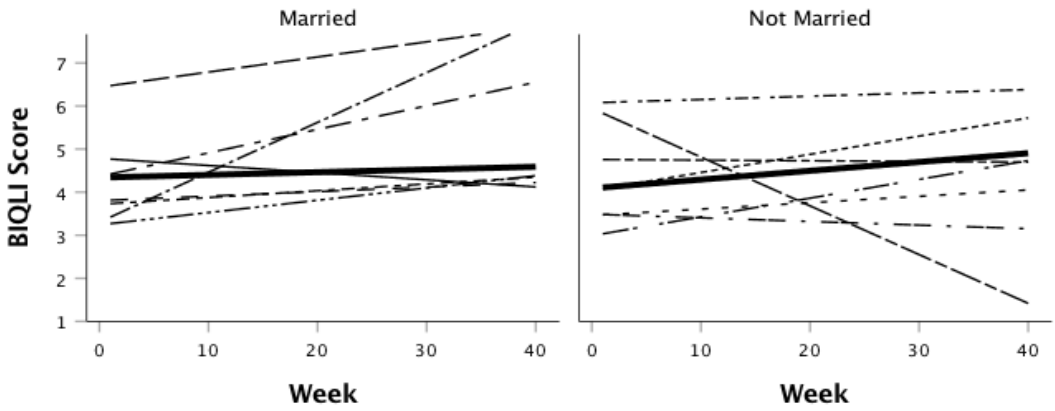

Figure 23. Cosmetic group summaries of OLS fitted trajectories for the BIQLI data (scores recoded), separated by participants' marital status

Another potential explanatory variable for the differences in change in the cosmetic group is the participants' unrealistic expectation of the surgical outcome. Participants who answered 'yes' to 'the surgeon can make the exact appearance change I desire' as their reason for surgery in the preoperative (Wave 1) survey are categorised as having a rather unrealistic expectation of the appearance outcome. Figures 24 to 29 show visible data shape differences for the outcome variables between participants with no unrealistic expectation and unrealistic expectation. For instance, participants with unrealistic expectation showed much more variation in their level of self-esteem at Week 0 compared with participants with no unrealistic expectation (Figure 24). Participants with unrealistic expectation also showed more variation in their level of distress at Week 0 as well as in their rate of change over time compared with participants with no unrealistic expectation (Figures 27 and 28). Together, these cosmetic group summaries of OLS fitted trajectories suggest that unrealistic expectation of the surgical outcome could be an important factor for the differences in change among participants who underwent cosmetic surgery.

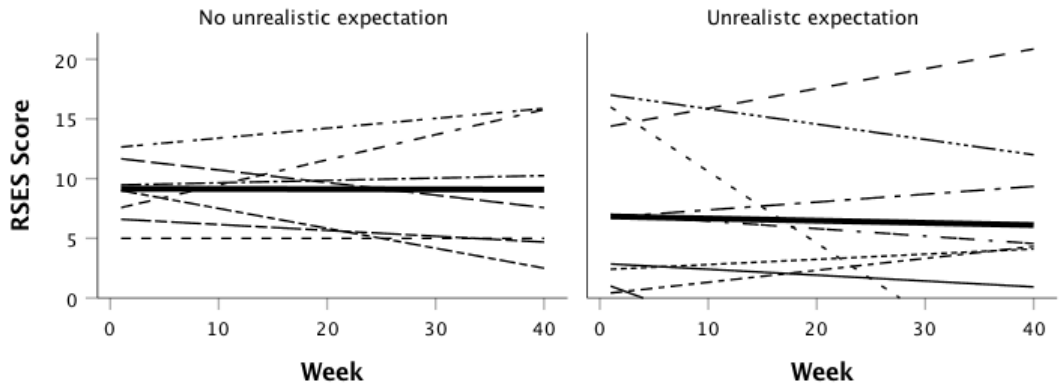

Figure 24. Cosmetic group summaries of OLS fitted trajectories for the RSES data, separated by participants' expectation towards the surgery result

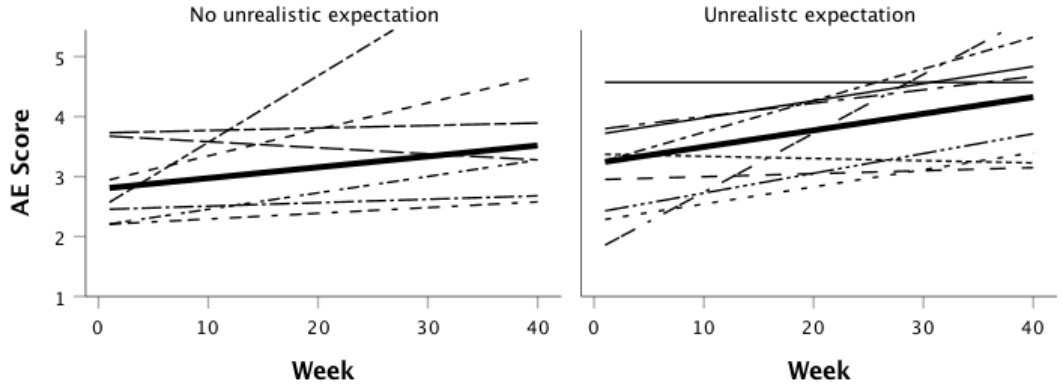

Figure 25. Cosmetic group summaries of OLS fitted trajectories for the MBSRQ-AE data, separated by participants' expectation towards the surgery result

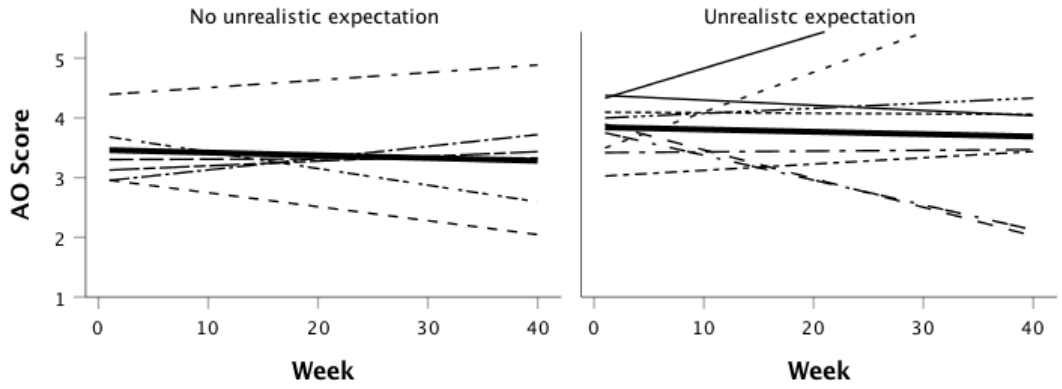

Figure 26. Cosmetic group summaries of OLS fitted trajectories for the MBSRQ-AO data, separated by participants' expectation towards the surgery result

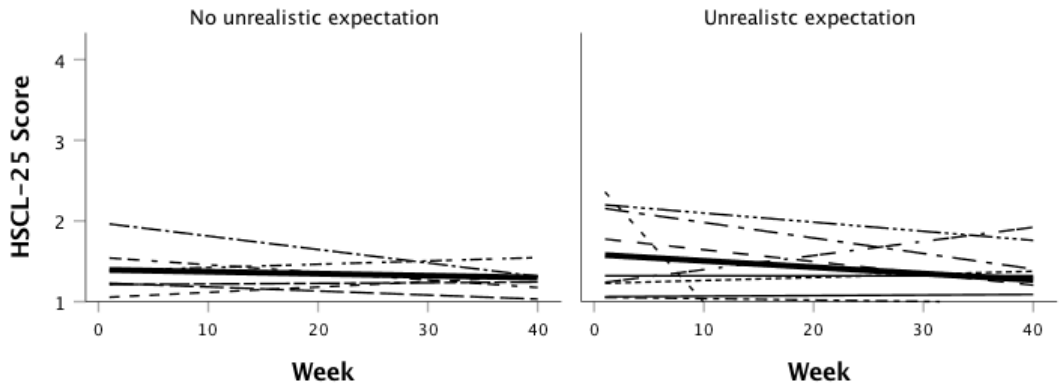

Figure 27. Cosmetic group summaries of OLS fitted trajectories for the HSCL-25 data, separated by participants' expectation towards the surgery result

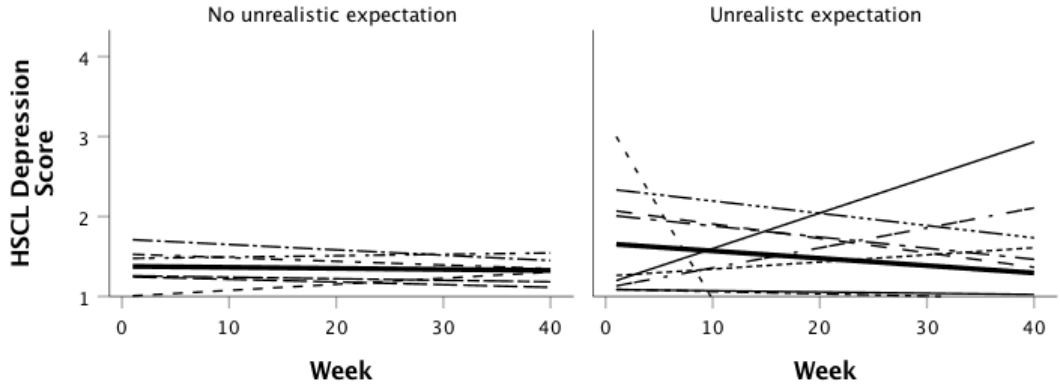

Figure 28. Cosmetic group summaries of OLS fitted trajectories for the HSCL-Dep data, separated by participants' expectation towards the surgery result

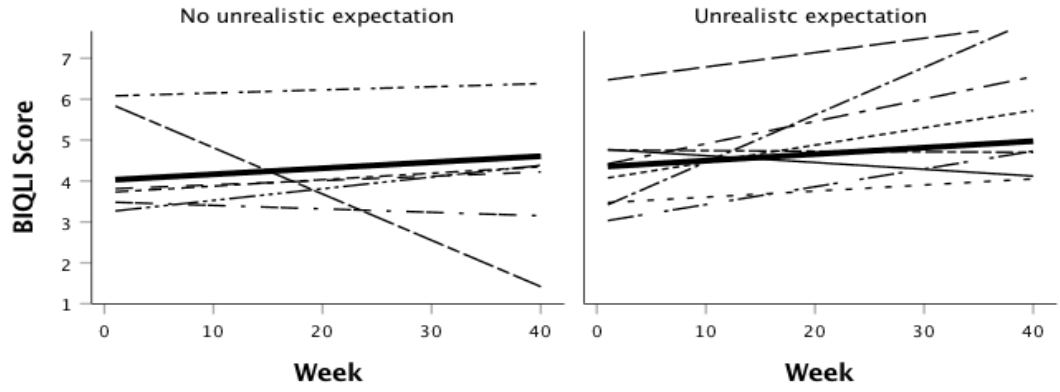

Figure 29. Cosmetic group summaries of OLS fitted trajectories for the BIQLI data (scores recoded), separated by participants' expectation towards the surgery result

Other potential explanatory variables are also considered for the cosmetic group, including age, the amount of time participants felt dissatisfied with the specific body part that underwent surgery, and the amount of time they took to consider undergoing the surgery. However, the group summaries of OLS trajectories were impossible to produce for these variables due to their continuous, rather than categorical, nature. The effects of these variables are examined in level-2 submodel analyses.

Applied Longitudinal Analysis – Multilevel Model Building

The first section in multilevel model building concerns the effect of cosmetic surgery participation (explanatory variable) on each psychological measure for the total sample. The two unconditional multilevel models (Models A and B) with RSES scores for the total sample is presented in Table 13, followed by interpretations of the fixed effects and the variance parameters shown in Table 13. Models A and B for the rest of the outcome variables (i.e., MBSRQ-AE and –AO, HSCL-25, HSCL-Dep, and BIQLI) are numerous and are presented separately in Appendix M. Model C fitted with the explanatory variable (cosmetic surgery participation) is then presented in Table 14 and the parameters are discussed.

The second section concerns the effects of the aforementioned potential explanatory variables on each psychological measure for the cosmetic group. It should be noted that the explanatory variables were introduced to Model C of each psychological measure separately due to the small sample size of the cosmetic group, as well as the relatively small variance components where adding further explanatory variables to Model C (which forms Model D) would be considered impractical. Following the structure of the previous section, the two baseline models (Models A and B) with RSES scores for the cosmetic group are first presented in Table 15. Models A and B for the rest of the outcome variables are presented separately in Appendix N. A collection of six versions (all six outcome variables) of Model C fitted with the same explanatory variable of 'the amount of time considered for surgery' is presented in Table 16; and a collection of six Model Cs fitted with 'the amount of time felt dissatisfied towards body part that underwent surgery' is presented in Table 17. Three other collections of Model C fitted with the rest of the potential explanatory variables (i.e., marital status, unrealistic expectation, and age) are presented separately in Appendix O.

Multilevel model building for the total sample.

Models A and B. The unconditional means model (Model A) and the unconditional growth model (Model B) with RSES scores for the total sample is presented in Table 13.

Table 13

The unconditional means model and the unconditional growth model for the total sample with RSES scores in Modal A, and RSES scores with the time variable in Model B

			RSES estimate	
Level	Variable	Parameter	Model A	Model B
Fixed Effects				
Initial status	Intercept	Υ^{00}	8.09***	7.53***
			(0.73)	(0.76)
Rate of change	Intercept	Υ^{10}	-	0.05**
			-	(0.02)
Variance components				
Level 1	Within person	σ_ε^2	4.91***	4.49***
			(0.80)	(0.73)
Level 2	In initial status	σ_0^2	18.1***	17.90***
			(4.68)	(4.93)
	In rate of change	σ_1^2	-	0.00
			-	(0.00)
	Covariance	σ_{01}	-	0.00
			-	(0.09)

Note. ***p < .001; **p < .01; *p <.05

The fixed effects. Model A consists of only one outcome variable data (i.e., RSES scores) for the total sample without any explanatory variable. The fixed effects initial status Υ^{00} for Model A represents the mean outcome variable scores for the total sample at Week 0. The time variable is then introduced into Model B (level-1 submodel) as the main explanatory variable for the change in the outcome variable scores. The fixed effects initial status Υ^{00} in Model B indicates the estimated mean

outcome variable when holding the explanatory variable at zero and is the predicted RSES scores at Week 0 with the effect of the time variable. As seen in Table 13, the Υ^{00} for both Models A and B are positive and significant, indicating that the mean RSES scores at Week 0 is significantly different from zero without and with time taken into consideration.

The fixed effects rate of change Υ^{10} in Model B indicates the OLS-estimated average change trajectory, or the slope, of the total sample's outcome variable scores over time. As seen in Table 13, The Υ^{10} in Model B is positive and significant suggesting that the mean RSES scores increase over time and the rate of change is significantly different from zero. In other words, self-esteem increases over time for all participants.

The other five versions of unconditional models with MBSRQ-AE and -AO, HSCL-25, HSCL-Dep, and BIQLI scores for the total sample displayed in Appendix M show mean scores from these measures at Week 0 are non-zero before and after time has been taken into account. The OLS-estimated average slopes of all the outcome variables are not significantly different from zero, indicating that the change in appearance satisfaction, appearance importance, unspecified emotional distress, depressive symptoms and body image quality of life did not change and remained relatively the same during the timeframe of the current study. Remember that the mean score for BIQLI are recoded scores rather than raw scores. Therefore, a BIQLI mean value of 4 suggests that participants' body image has 'no effect' on life (raw score = '0'); a value greater or less than 4 suggests that the participant's body image has more positive effect (raw scores = '1', '2', or '3') or negative effect (raw scores = '-1', '-2', or '-3') on life respectively.

The variance components. In Model A, the variance component at Level 1 σ_ε^2 represents the unexplained variance within individuals; and Level 2 σ_0^2 is the unexplained variance between individuals in the estimated initial status for the outcome variable scores. In Model B, both σ_ε^2 and σ_0^2 indicate the remaining amount of unexplained variance after the addition of the time variable within and between individuals. The Level 2 σ_1^2 in Model B is the unexplained variance in the estimated rate of change of the outcome variable. Lastly, the Level 2 covariance σ_{01} is the covariance between the estimated initial status and rate of change, which allows interpretation of whether participants with higher outcome variable scores at Week 0

increase (or decrease) in their scores more (or less) rapidly over time.

It should be noted, as discussed in the previous Method chapter, that multilevel analysis with a smaller sample size tend to underestimate Level 2 standard errors of the variance parameters (Maas & Hox, 2005). Given that the parameters may be estimated too small, all of the within- and interindividual variation at Level 2 (σ_ε^2 and σ_0^2) are broadly interpreted and compared between models based on their relative magnitude differences and the level of significance, instead of the pseudo R^2 statistics (i.e., R_ε^2, R_0^2, and R_1^2), which are derived from the variance parameters and provide more detailed interpretation. The fixed effects estimate parameters tend to remain accurate and unbiased in smaller sample sizes (Maas & Hox, 2005), and will be interpreted accordingly.

Table 13 shows higher Level 2 σ_0^2 compared with Level 1 σ_ε^2 in both Models A and B suggesting that there is more interindividual variation to be explained than within-individual variation in RSES scores. The significant σ_ε^2 and σ_0^2 in both models indicate that the within- and interindividual variations are non-zero at both levels. Table 13 also shows that Level 1 σ_ε^2 decreased in Model B compared with Model A suggesting that some within-individual variation in RSES scores in Model A is explained by the added time variable in Model B. The Level 2 σ_0^2 between the two models are not compared as the addition of the time variable into Model B changes the interpretation (Singer & Willett, 2003).

Tables M1 to M3 displayed in Appendix M show that the within- and interindividual variation in MBSRQ-AE and -AO, HSCL-25, HSCL-Dep, and BIQLI scores are non-zero. The level 1 unexplained within-individual variance in each of these measures decreased after the time variable is added in Model B; note that some measures (e.g., HECL-25) show the same amount of unexplained variance at Level 1 for both Models A and B due to rounding. The negative and significant Level 2 covariance in Table M2 (Appendix M) indicates that participants with higher HSCL-25 and HSCL-Dep scores at Week 0 decrease less rapidly over time. In other words, participants with greater unspecified emotional distress at week 0 improved less rapidly over time.

Model C: cosmetic surgery participation. Model C includes cosmetic surgery participation (*Cosmetic*) as a potential explanatory variable for the differences in

initial status and rate of change. In other word, Model C shows the effect of cosmetic surgery participation on the outcome variable. Table 14 shows a collection of six versions of Model C for each psychological measure. The fixed effects parameters for the psychological measures in their relative Model C are presented in graphs (Figures 30 to 35).

Model C: the fixed effects. The fixed effects initial status intercept Υ^{00} in Model C describes the mean outcome variable scores at Week 0 without the effect of *Cosmetic* — in other words, it describes the mean score at Week 0 for participants in the comparison group. As seen in Table 14, the Υ^{00} for each Model C is positive and significant, suggesting that the mean score for RSES, AE, AO, HSCL-25, HSCL-Dep, and BIQLI at Week 0 remained non-zero after the addition of the *Cosmetic* variable.

The fixed effects initial status Group (1 = *Cosmetic*) parameter Υ^{01} represents the estimated difference in the Week 0 mean score with and without the effect of *Cosmetic* — that is, between the cosmetic and comparison group. Table 14 shows that cosmetic surgery participation has no significant effect on the Week 0 mean scores of all outcome variables between the cosmetic and comparison group. As depicted in Figures 30 to 35, the intercepts (Week 0 mean scores) of the cosmetic and comparison group do not appear to differ much in each measure.

Moving on, the fixed effects rate of change intercept Υ^{10} represents the estimated average rate of change for the comparison group (without the effect of *Cosmetic*). The Υ^{10} for Model C with RSES scores is significantly non-zero and positive, indicating that without the effect of cosmetic surgery participation, the change in participants' level of self-esteem over time is increasing (Table 14 and Figure 30). The Υ^{10} for Model C for the rest of the psychological measures are non-significant[1], suggesting the rate of change for comparison group in these measures are indistinguishable from zero. As seen in Figures 31 to 35, the trajectory lines for the comparison group appear relatively flat over time in each measure.

[1] For the purpose of reading flow, the term "non-significant" in the current study refers to no statistically significant change, effect, or relationship was found.

Table 14

Model C for the total sample: the effect of cosmetic surgery participation ('Cosmetic') on each psychological measure

			Model C estimate					
	Parameter		RSES	AE	AO	HSCL-25	HSCL-Dep	BIQLI
Fixed Effects								
Initial status	Intercept	Υ^{00}	7.14***	3.39***	3.57***	1.52***	1.57***	4.51***
			(1.03)	(0.13)	(0.13)	(0.09)	(0.10)	(0.19)
	Group (1 = *Cosmetic*	Υ^{01}	0.87	-0.36	0.15	0.02	0.00	0.29
			(1.52)	(0.19)	(0.19)	(0.14)	(0.14)	(0.29)
Rate of change	Intercept	Υ^{10}	0.10***	-0.01	-0.00	0.00	-0.00	-0.00
			(0.02)	(0.01)	(0.00)	(0.00)	0.00	(0.01)
	Group*Rate	Υ^{11}	-0.11**	0.03***	-0.00	-0.01	-0.00	0.01
			(0.04)	(0.01)	(0.00)	(0.00)	0.00	(0.01)
Variance components								
Level 1	Within person	σ_ε^2	4.03***	0.17***	0.05***	0.05***	0.06***	0.48***
			(0.65)	(0.04)	0.01	(0.01)	(0.01)	(0.08)
Level 2	In initial status	σ_0^2	18.38***	0.23**	0.30***	0.15***	0.16***	0.39*
			(5.07)	(0.09)	(0.08)	(0.04)	(0.05)	(0.18)
	In rate of change	σ_1^2	0.00	0.00	0.00	0.00	0.00	0.00
			(0.00)	(0.00)	(0.00)	0.00	0.00	(0.00)
	Covariance	σ_{01}	-0.03	-0.00	0.00	-0.002*	-.0002*	0.00
			(0.10)	(0.00)	(0.00)	0.00	0.00	(0.00)

Note. ***p < .001; **p < .01; *p <.05

Lastly, the fixed effects rate of change Group*Rate parameter Υ^{11} is the estimated difference in the average rate of change between the cosmetic and the comparison group. The Υ^{11} for Model C with RSES and AE scores are significant, which indicate that the estimated differences in the average rate of change for RSES and AE between the two groups are significant. In other words, changes in RSES and

AE scores are significantly related to cosmetic surgery participation. The estimated average rate of change in RSES for the cosmetic group is -0.01 ($\Upsilon^{10} + \Upsilon^{11}$), which is negative but small indicating almost no change over time. The significant estimated difference in the average rate of change (Υ^{11}) is therefore due to the significant increase in RSES score for the comparison group (Υ^{10}). The significant $\Upsilon^{11}$for the AE score and a positive estimated rate of change for the cosmetic group suggest that the appearance satisfaction increases over time for the cosmetic group. The Υ^{11} for the rest of the psychological measures are not significant indicating that changes in these measures are not related to cosmetic surgery participation.

Model C: the variance components. The Level 1 within-individual variance and Level 2 interindividual variance are examined within all six versions of Model C (Table 14) and compared with their relative Model B (Table 13 and Appendix M). All six versions of Model C remained with significant unexplained within- and interindividual variance after the explanatory variable, *Cosmetic*, is added. Cosmetic surgery participation explained some of the Level 1 and Level 2 variance from Model B with RSES and BIQLI scores, but did not explain the variance in the other four versions of Model B (i.e., MBSRQ-AE and -AO, HSCL-25 and HSCL-Dep). The covariances of Model C for HSCL-25 and HSCL-Dep are significant and negative, suggesting that participants with greater unspecified emotional distress and depressive symptoms at Week 0 improved less rapidly over time after cosmetic surgery participation has been taken into account.

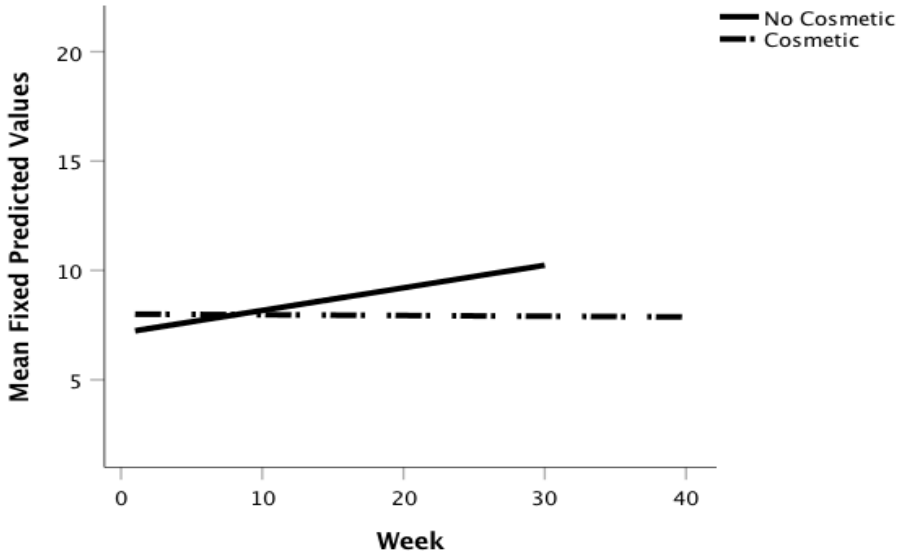

Figure 30. The fixed effects of Model C with RSES scores: trajectories for the average cosmetic group ('Cosmetic') and comparison group ('No Cosmetic')

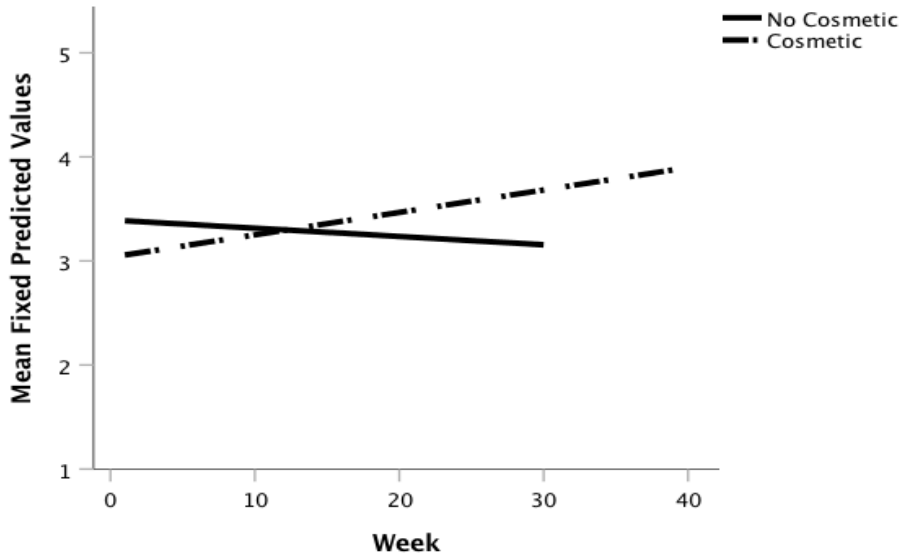

Figure 31. The fixed effects of Model C with MBSRQ-AE scores: trajectories for the average cosmetic group ('Cosmetic') and comparison group ('No Cosmetic')

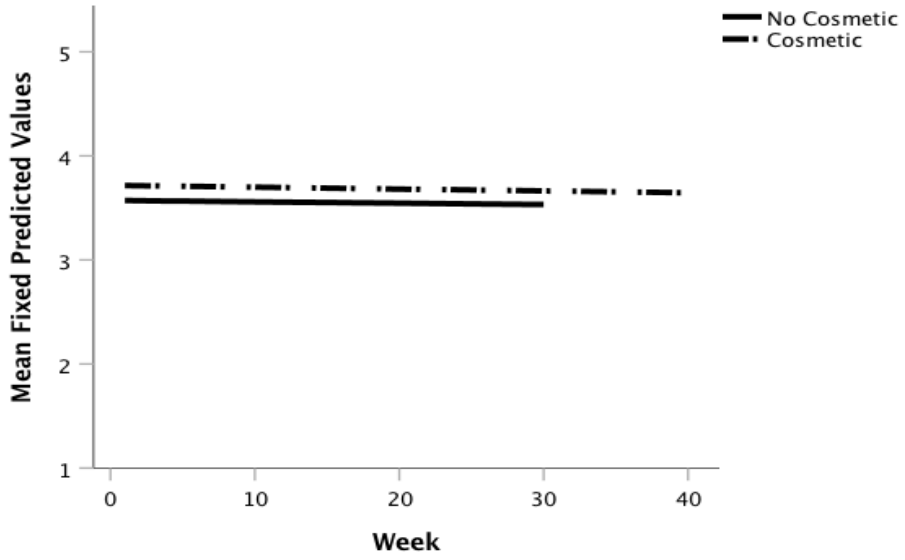

Figure 32. The fixed effects of Model C with MBSRQ-AO scores: trajectories for the average cosmetic group ('Cosmetic') and comparison group ('No Cosmetic')

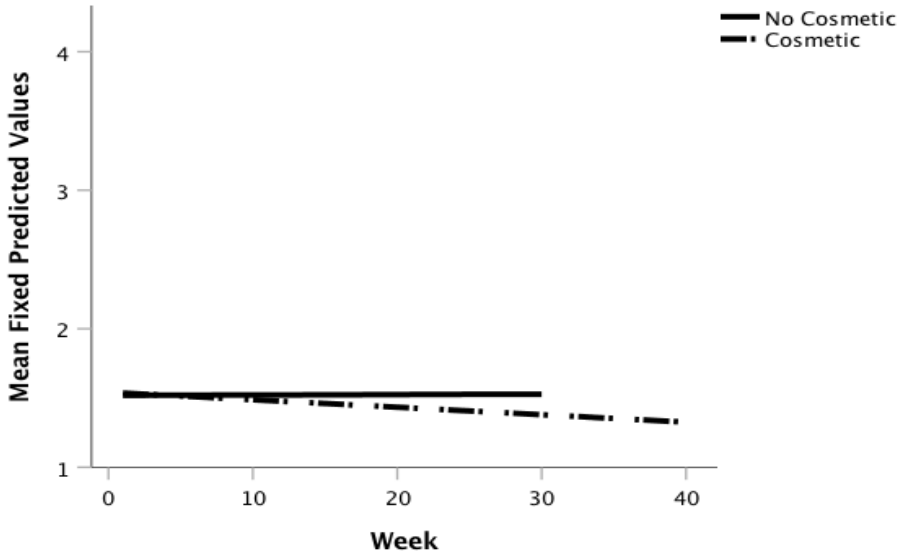

Figure 33. The fixed effects of Model C with HSCL-25 scores: trajectories for the average cosmetic group ('Cosmetic') and comparison group ('No Cosmetic')

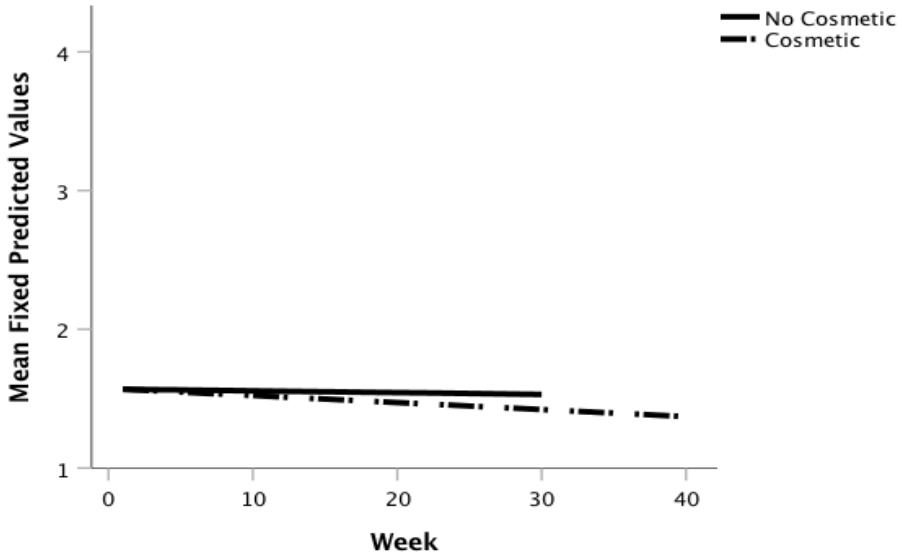

Figure 34. The fixed effects of Model C with HSCL-Dep scores: trajectories for the average cosmetic group ('Cosmetic') and comparison group ('No Cosmetic')

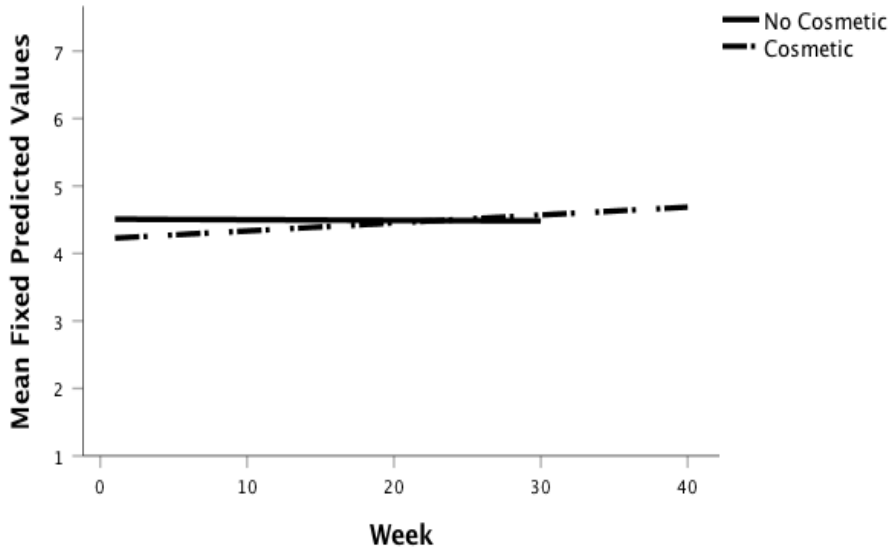

Figure 35. The fixed effects of Model C with BIQLI scores (recoded): trajectories for the average cosmetic group ('Cosmetic') and comparison group ('No Cosmetic')

Multilevel model building for the cosmetic group.

Models A and B. The two baseline models (Models A and B) with RSES scores for the cosmetic group are presented in Table 15. The other five versions of Models A and B with the rest of the outcome variables (MBSRQ-AE and –AO, HSCL-25, HSCL-Dep, and BIQLI) are numerous and are displayed in Appendix N.

As seen in Table 15 and Appendix N, all versions of Models A and B have significant Υ^{00}, indicating that the mean scores of the relative psychological measures at Week 0 are significantly different from zero both without and with time taken into account. Table N1 (Appendix N) shows that the Υ^{10} in Model B with AE scores is significant and positive, suggesting that the mean AE scores for cosmetic surgery participants increase over time and the rate of change is significantly different from zero. The remaining Υ^{10} in the other five versions of Model B (Table 15 and Appendix N) show that the rates of change are not significantly different from zero.

All six versions of Model B (Table 15 and Appendix N) show significant amounts of unexplained within- and interindividual variance after time is added; with the exception of Model B with HSCL-25 scores that shows non-significant Level 1 and Level 2 variance, and Model B with HSCL-Dep with non-significant Level 2

variance. The additional time variable in Model B explained some of the within-individual variance from Model A with RSES and MBSRQ-AE scores, but not for the rest of the other outcome variables.

Table 15

The unconditional means model and the unconditional growth model for the cosmetic group with RSES scores in Model A, and RSES scores with the time variable in Model B

			RSES estimate	
Level	Variable	Parameter	Model A	Model B
Fixed Effects				
Initial status	Intercept	Υ^{00}	8.07***	8.02***
			(1.11)	(1.19)
Rate of change	Intercept	Υ^{10}	-	-0.00
			-	(0.02)
Variance components				
Level 1	Within person	σ_{ε}^2	2.61***	2.07**
			(0.63)	(0.67)
Level 2	In initial status	σ_0^2	20.07**	22.59**
			(7.21)	(8.28)
	In rate of change	σ_1^2	-	0.00
			-	(0.00)
	Covariance	σ_{01}	-	-0.11
			-	(0.12)

Note. ***$p < .001$; **$p < .01$; *$p < .05$

Model C: the amount of time to consider surgery. A collection of six Model C with each psychological measure for the cosmetic group is presented in this section. The explanatory variable is the amount of time the participants took to consider undergoing surgery (*Time Considered*) and the outcomes of Model C are presented in Table 16.

Table 16

A collection of Model C for the cosmetic group: the effect of the amount of time the participants considered for the surgery ('Time Considered') on each psychological measure

			Model C estimate					
	Parameter		RSES	AE	AO	HSCL-25	HSCL-Dep	BIQLI
Fixed Effects								
Initial status	Intercept	Υ^{00}	9.41**	2.80***	3.47***	1.63***	1.69***	3.82***
			(1.69)	(0.24)	(0.18)	(0.15)	(0.17)	(0.34)
	Time Considered	Υ^{01}	-0.02	0.00	0.00	-0.00	-0.00	0.01
			(0.02)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Rate of change	Intercept	Υ^{10}	-0.04	0.03*	0.01	-0.01	-0.01	0.02
			(0.03)	(0.01)	(0.01)	(0.00)	0.01	(0.03)
	Time Considered	Υ^{11}	0.00	-0.00	-0.00*	0.00	0.00	-0.00
			(0.00)	(.00)	(0.00)	(0.00)	0.00	(0.00)
Variance components								
Level 1	Within person	σ_ε^2	2.12**	0.20**	0.07***	0.06	0.07**	0.87**
			(0.69)	(0.07)	0.02	(0.04)	(0.02)	(0.27)
Level 2	In initial status	σ_0^2	21.19**	0.32*	0.21*	0.15	0.18*	0.24
			(7.79)	(0.17)	(0.10)	(0.13)	(0.09)	(0.36)
	In rate of change	σ_1^2	0.00	0.00	0.00	0.00	0.00	0.00
			(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
	Covariance	σ_{01}	-0.10	-0.00	-0.00	-0.00	-0.00	0.02
			(0.11)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)

Note. ***$p < .001$; **$p < .01$; *$p < .05$; The '*Time Considered*' variable was measured in months.

As seen in Table 16, the mean score for each psychological measure at Week 0 remained non-zero (Υ^{00} parameters) after *Time Considered* is added into the model. The amount of time considered for surgery has no significant effect on the Week 0 mean scores of all the measures between participants who considered surgery for '0' month and those considered for more months (Υ^{01} parameters). The significant and positive Υ^{10} for AE (Υ^{10} = 0.03*) indicates that the cosmetic participant's change in their level of appearance satisfaction significantly increases over time even if they have considered the surgery for '0' month. In addition, for cosmetic surgery participants who considered the surgery for '0' month, their rates of change in the rest of the measures are indistinguishable from zero. Note that the magnitudes of the standard errors are relatively large compared with their relative estimated Υ^{10} parameter for almost all the psychological measures. This is likely due to the small sample size of the cosmetic group, which is to be expected. The estimated rate of change in the participants' level of appearance importance is positive and significant, although extremely small (Υ^{11} parameter). The apparently small unstandardised parameter estimate could purely due to an arbitrary coding decision, and as such it is not necessarily indicating that the effect is extremely small.

All six versions of Model C in Table 16 show that there is a significant amount of Level 1 or Level 2, or both variance left to be explained after *Time Considered* is introduced to the model, except for the HSCL-25 scores. The very small change in the Level 1 and Level 2 variance between all six versions of Model C and their relative Model Bs (Table 16 and Appendix N) indicate that the amount of time the participants considered surgery explains the very small or zero variance from the relative Model B. The differences between the Level 1 and Level 2 variance in the six versions of Model C show that there is more unexplained interindividual variance than the within-individual variance for all the outcome variables; with the exception of Model C with BIQLI scores, where there is more unexplained within-individual variance than interindividual.

Model C: the amount of time felt dissatisfied towards the body part. For this collection of Model C with all six psychological variables, the explanatory variable involves the amount of time the participants felt dissatisfied with the body part that underwent the surgery (*Time Dissatisfied*) (Table 17).

Table 17

A collection of Model C for the cosmetic group: the effect of the amount of time felt dissatisfied with the body part undergoing surgery ('Time Dissatisfied') on each psychological measure

			Model C estimate					
	Parameter		RSES	AE	AO	HSCL-25	HSCL-Dep	BIQLI
Fixed Effects								
Initial status	Intercept	Υ^{00}	8.75***	2.83***	3.47***	1.67	1.70***	4.01***
			(0.17)	(0.23)	(0.17)	(0.15)	(0.17)	(0.33)
	Time Dissatisfied	Υ^{01}	-0.01	0.00	0.00	-0.00	-0.00	0.00
			(0.01)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Rate of change	Intercept	Υ^{10}	-0.01	0.02*	0.01	-0.01	-0.01	0.02
			(0.03)	(0.01)	(0.00)	(0.00)	0.00	(0.04)
	Time Dissatisfied	Υ^{11}	0.00	-0.00	-0.00*	0.00	0.00	-0.00
			(0.00)	(0.00)	(0.00)	(0.00)	0.00	(0.00)
Variance components								
Level 1	Within person	σ_ε^2	2.16**	.22**	0.07***	0.06	0.07**	0.97**
			(0.72)	(0.08)	(0.02)	(0.09)	(0.02)	(0.34)
Level 2	In initial status	σ_0^2	21.54**	0.27	0.18*	0.14	0.18*	0.10
			(7.97)	(0.17)	(0.08)	(0.33)	(0.08)	(0.47)
	In rate of change	σ_1^2	0.00	0.00	0.00	0.00	0.00	0.01
			(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
	Covariance	σ_{01}	-0.10	0.00	0.00	-0.00	-0.00*	0.02
			(0.11)	(0.00)	(0.00)	0.00	(0.00)	(0.00)

Note. ***p < .001; **p < .01; *p <.05; The '*Time Dissatisfied'* variable was measured in months.

As seen in Table 17, the mean score for each psychological measure at Week 0 stayed non-zero after *Time Dissatisfied* was introduced to the model, except for

BIQLI scores (Υ^{00} parameter). The non-significant Υ^{01} parameters indicate that the amount of body dissatisfaction time has no significant effect on the Week 0 mean scores of all the measures between participants who felt dissatisfied for '0' month and those with more months of dissatisfaction. The significant and positive Υ^{10} for AE scores (Υ^{10} = 0.02*) indicates that the average cosmetic participant's appearance satisfaction or the feeling of attractiveness significantly increases over time even if they spent '0' months feeling dissatisfied with the body part that underwent surgery. The relatively large standard error for the Υ^{10} of AE score is to be expected due to the small sample size. In addition, the rates of change (Υ^{10} parameters) for the rest of the measures are not significantly different from zero for those participants who never felt dissatisfied with the body part. The change in the participants' level of appearance importance is significantly related to the amount of time they felt dissatisfied with the body part that underwent the surgery, although the estimate rate of change is again positive but extremely small.

All six versions of Model C in Table 17 show that there is a significant amount of either Level 1 or Level 2, or both, variances left to be explained after *Time Dissatisfied* is introduced to the model, except for the HSCL-25 scores. The change in the Level 1 and Level 2 variance between all six versions of Model C and their relative Model Bs (Table 17 and Appendix N) is very small, indicating that the amount of time dissatisfied explains very small or zero variance from Model B; with the exception of RSES scores, where its Level 2 variance decreased in Model C from its relative Model B (σ_0^2 = 22.59** in Model B and 21.54** in Model C). The differences between the Level 1 and Level 2 variance in this collection of Model Cs show that there is more unexplained interindividual variance than the within-individual variance for all the measures, except for the Model C with BIQLI, where there is more unexplained within-individual variance than interindividual. The Level 2 covariance in Model C for HSCL-Dep is extremely small but significant (σ_{01} = -.00*) indicating that there is a significant relationship between the participants' initial depression symptom severity at Week 0 and their rates of change over time when *Time Dissatisfied* has been taken into account.

Model C: marital status, unrealistic expectation of the surgical outcome and age. Three collections of Model C each with a different explanatory variable are

presented in Appendix O. The explanatory variables included the participant's marital status (*Married*), unrealistic expectation of the surgical outcome (*Unrealistic*), and age (*Age*).

Marital Status. The explanatory variable, *Married*, was coded into two dummy variables of married ('1') and not married ('0'), and was added to Model C for the cosmetic group for each psychological measures (Table O1, Appendix O). Note that participants who are coded as 'not married' include participants who are single or have a partner.

As seen in Table O1, the Week 0 mean score for each psychological measure at Week 0 continued to remain non-zero after *Married* was introduced to the model, except for BIQLI scores (Υ^{00} parameter). The non-significant Υ^{01} parameters suggest that participants' marital status has no significant effect on their Week 0 mean scores of all the measures between participants who are not married and who are married. The significant and positive Υ^{10} for AE scores (Υ^{10} = .03*) indicates that the average cosmetic participant's level of satisfaction to their appearance increases over time without the effect of being married. The rates of change (Υ^{10} parameters) for the rest of the measures are indistinguishable from zero for participants who are not married. The non-significant Υ^{11} parameters indicate that change in the scores of all the measures is not related to participants' marital status. All versions of Model C show significant unexplained within-individual variance (σ_ε^2 parameters) and some show significant unexplained interindividual variance (σ_ε^2 parameters) (i.e., RSES, MBSRQ-AE and –AO, and HSCL-25 scores). When comparing the variance components between all six versions of Model C (Table O1, Appendix O) and their relative Model B (Table 15 and Appendix N), the marital status of the participants appears to explain very little or no variance from the relative Model B. The Level 2 covariance for the Model C with HSCL-Dep scores is significant and negative (σ_{01} = -0.01***), suggesting that participants with more severe depression symptoms at Week 0 experience change less rapidly.

Unrealistic expectation and age. Two collections of Model C, each with a different explanatory variable of *Unrealistic* and *Age* for the six psychological measures, are presented in Table O2 and O3 respectively in Appendix O. The

explanatory variable, *Unrealistic*, was coded into two dummy variables of unrealistic expectation ('1') and no unrealistic expectation ('0'), and was added to Model C. The variable *Age* was measured in years as a continuous variable.

As seen in Table O2 and O3, the Week 0 mean score for each psychological measure at Week 0 continued to remain non-zero after *Unrealistic* and *Age* are introduced separately to the models, except for the BIQLI scores (Υ^{00} parameters). The non-significant Υ^{01} parameters suggest that neither of the explanatory variables has a significant effect on the participants' Week 0 mean scores of all the measures between participants with no unrealistic expectation or age of '0' year and those with unrealistic expectation or greater age. The rates of change (Υ^{10} parameters) for all the measures in both collections of Model C are indistinguishable from zero for those participants with no unrealistic expectation or age of '0' year. None of the Υ^{11} parameters are significant, which indicates that change in the scores of all the measures is related neither to participants' unrealistic expectation of the surgical outcome nor their age. Both collections of Model C show a significant amount of unexplained within-individual variance (σ_ε^2) and some show significant unexplained interindividual variance (σ_ε^2). When comparing the variance components between all six versions of Model C in each collection (Table O2 and O3, Appendix O) and their relative Model B (Table 15 and Appendix N), the unrealistic expectation or the age of the participants appear to explain very little or no variance for each measure from their relative Model B.

Thematic Analysis

Two collections of qualitative data were examined with a simplified thematic analysis (Braun & Clarke, 2006). The first concerned the cosmetic surgery participants' reasons for undergoing surgery, where the data was obtained from the preoperative surgery-related questions. The second concerned the BDDQ-DV data of all four waves of data collection for both cosmetic and comparison groups with regards to the effects of appearance dissatisfaction on the participants' lives. Each theme identified from the data was defined within its relative context.

Reasons for surgery. A number of common reasons for undergoing cosmetic surgery identified from the literature were presented as a multiple choice question in the Wave 1 survey where the participants in the cosmetic group were required to

select one or more reasons for their decision to undergo the upcoming cosmetic surgery. The qualitative information relating to the selected reasons was obtained from the comment box that was attached to the reason options in the survey. All participants selected 'dissatisfaction towards the specific body part undergoing surgery' as one of the reasons for undergoing cosmetic surgery, with the majority indicating that 'surgery can make life better' as one of the additional reasons. Despite a small number of participants indicating 'no reason' or 'none of the above', the qualitative descriptions provided by these participants were relevant to the overarching themes drawn from the thematic analysis.

Upon closer examination of the reasons specified qualitatively by the cosmetic surgery participants, 28 codes were generated and two overarching themes had emerged: Physical appearance and psychological enhancement. Within each of the overarching themes, a number of relative subthemes were also identified (Figure 36).

Physical appearance. 'Physical appearance' was defined as reasons associated with purely physical and outward appearance concerns, with the aim of improving the dissatisfaction associated with the physical appearance and/or how the individual physically presents oneself. Within the theme, three subthemes were established: Body change, general appearance dissatisfaction and outfit selection.

Body change. Body change was defined as the natural physical change to appearance due to life events that results in appearance dissatisfaction. Given that all participants underwent breast surgeries in the current study, body change mainly involved giving birth or breastfeeding, with one participant indicating loss of weight. Many participants reported undergoing surgery due to physical changes to breasts after having children: "Now I've had two children they [breasts] have lost fullness." [participant 07]; "lack of breast tissue and change in shape since breastfeeding" [participant 43].

General appearance dissatisfaction. General appearance dissatisfaction was defined as the dissatisfaction towards purely physical and outward appearance. Participants typically reported general physical appearance dissatisfaction with shorter descriptions: "don't like my boobs" [participant 02]; "too small" [participant 03].

Outfit selection. Outfit selection was defined as the perception of not being able to dress in the desired outfits and the limited selection of clothes and outfit due to appearance dissatisfaction. A large number of participants reported that the limited selections of clothes also motivated them in seeking cosmetic surgery: "I would be able to wear all the clothes that I always wished I could wear" [participant 12]; "all my life I have struggled to wear girly clothes … I will be able to wear the clothes I want to" [participant 14].

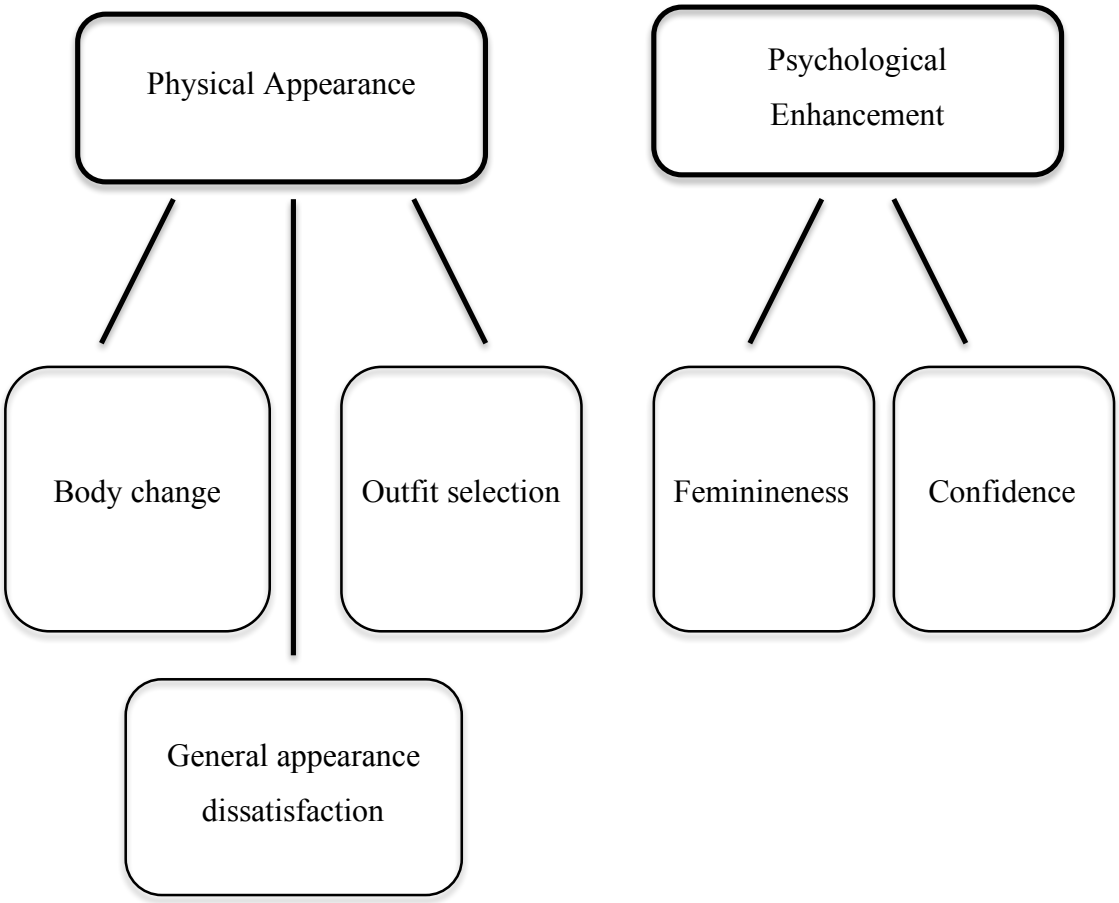

Figure 36. A visual representation of themes and subthemes drawn from the 'reason for surgery' data

Psychological enhancement. The second overarching theme was the 'psychological enhancement', which was defined as the expectation that improvements in self-image and self-confidence in relation to one's self-perception

and others' perception of one's physical self can be achieved by cosmetic surgery and make life better. A large number of participants appeared to share an expectation that cosmetic surgery can achieve improvements in how they feel about themselves and how others would see them based on the enhanced physical appearance, which would in turn lead to a better life. Two subthemes were identified within this theme: confidence and femininenes.

Confidence. Confidence was defined as positive feelings about oneself and how others perceive oneself in relation to physical appearance. The majority of the participants indicated that they sought cosmetic surgery because it will increase their confidence and self-esteem as well as how others will perceive them: "I would feel more confident … I wouldn't have to be afraid how my next boyfriend would see me …" [participant 12]; " … feeling self-conscious in bathers, out in public, and with friends … [after surgery] I will be able to wear the clothes and go out in confidence without feeling self-conscious" [participant 14].

Femininenes. Femininenes was defined as the feelings towards oneself and how others perceive oneself in relation to the individual's perceived physical characteristics that are attributed to women. Participants indicated that the reason for undergoing surgery was to feel more and to be seen like a woman through breast surgery: "not feeling womanly enough" [participant 09]; "feel like a girl not a woman … I want to be seen as a woman" [participant 03].

Effects of appearance dissatisfaction on life. BDDQ-DV was completed by both cosmetic and comparison groups. Few participants from both groups answered 'No' to question one 'are you very concerned about the appearance … which you consider especially unattractive?' and were not required to complete the rest of the questionnaire. Amongst participants with appearance dissatisfaction (i.e., participants who answered 'yes' to question one), a small number of participants were screened positive for possible BDD symptoms in both groups from the first survey they had completed, and the rest of the participants were screened negative for BDD symptoms. The majority of participants who were screened positive for possible BDD symptoms continued to show positive screening throughout their remaining surveys in the study. Although these participants reported that their preoccupation with appearance dissatisfaction was manageable, the relative distress was either rated

as moderate and disturbing, or the impairments in functioning were rated as moderate and definitely interfering with important areas of functioning. In comparison, participants with negative screening rated their appearance dissatisfaction as mild and not too disturbing or no distress, and mild interference with functioning but not impairing or no effect. The qualitative data obtained from the BDDQ-DV for participants with positive and negative screening were examined separately. Participants with negative BDD screening were also examined separately and compared between the cosmetic and comparison groups.

Both cosmetic and comparison groups showed appearance concerns and dissatisfaction in a wide range of body parts (e.g., breasts, stomach, legs, aging face, nose, skin, body fat and looking old in general) regardless of their screening outcomes, with the majority feeling dissatisfied with their stomach (in addition to breasts for the cosmetic group). A total of 41 initial codes were generated from the BDDQ-DV data.

Positive BDDQ-DV screening. In terms of the effects of appearance dissatisfaction on life for participants with initial positive screening, three common overarching themes were identified for both cosmetic and comparison groups: negative psychological effects, avoidance behaviour, and social and family interactions (Figure 37). Only few participants had initial positive screening from both groups, and the majority remained with positive screening throughout their remaining surveys in the study.

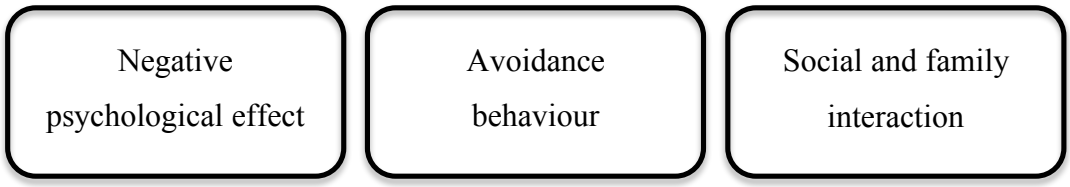

Figure 37. A visual representation of themes for participants with positive BDD screening

Negative psychological effect. Negative psychological effect was defined as negative feelings about oneself and towards others, as well as negative feelings about how others perceive oneself primarily due to physical appearance dissatisfaction. Participants from both groups indicated a range of negative psychological effects due to their appearance concerns and dissatisfaction: "… I feel nervous all the time. I feel unattractive. Sometimes make me jealous or angry at other girls" [participant 06]; "feel extremely uncomfortable if someone was on my bad side" [participant 29].

Avoidance behaviour. Avoidance behaviour was defined as behavioural avoidance from certain triggering situations as means of managing or coping with one's negative feelings due to physical appearance dissatisfaction. Most participants with positive BDD screening indicated certain avoidance behaviours due to their appearance dissatisfaction: "I get frustrated when choosing what to wear when going out … I choose not to go out much" [participant 07]; "I lost confidence when I look at the mirror, and I don't like going out in public, I feel nervous all the time, … avoid wearing some kind of clothes" [participant 06].

Social and family interaction. Social and family interaction was defined as the negative impacts on social and family interactions due to the individuals' physical appearance dissatisfaction and their perception of how others perceive the appearance or body parts they feel dissatisfied with. Many participants reported that the appearance dissatisfaction negatively impacted on their social and family interactions: "I don't let my husband touch those places [dissatisfied body parts]" [participant 05]; " … to the point of deciding not to go out or cancel social engagements" [participant 29]; "all the girls dancing with big boobs in their bikini and everyone including my boyfriend looking at them I can't compete" [participant 14].

Negative BDDQ-DV screening – cosmetic group. Moving on, participants with appearance dissatisfaction (negative BDD screening) in the cosmetic group appeared to have experienced a stronger effect of appearance dissatisfaction on life compared with participants with negative screening in the comparison group. The majority of the cosmetic surgery participants remained with appearance dissatisfaction after the surgery and did not indicate change in the effect of appearance dissatisfaction on life. Three overarching themes have emerged from the cosmetic group data: family interaction, poor confidence, and mental and behavioural preoccupation (Figure 38).

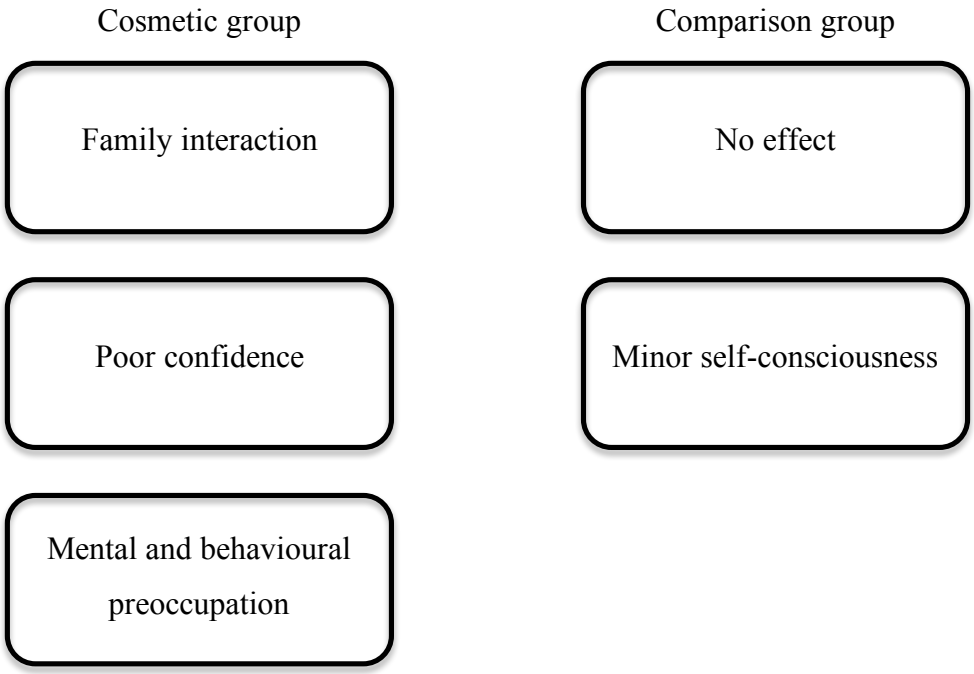

Figure 38. Visual representations of themes for participants with appearance dissatisfaction (negative BDD screening) between the cosmetic and comparison groups

Family interaction. Family interaction was defined as the impact on family interactions due solely to appearance dissatisfaction. Cosmetic surgery participants indicated that their appearance dissatisfaction had somewhat unpleasant impacts on their interaction with family: "I moan a lot to my husband about it" [participant 04]; "… affects me and some of my intimate moments with my partner" [participant 10].

Poor confidence. Poor confidence was defined as the negative feelings towards oneself due to physical appearance dissatisfaction. Participants reported that their level of confidence was affected by their physical appearance dissatisfaction and caused some distress: "lack of confidence" [participant 09]; 'not feeling confident' [participant 13].

Mental and behavioural preoccupation. Mental and behavioural preoccupation was defined as frequent mental acts, behaviours and effort the individual carries out solely to address appearance dissatisfaction, which had mild interference with important areas of functioning. Participants indicated that they frequently or routinely carry out behaviours or mental acts to address their

appearance concerns, which caused some distress and mild interference with life: “I always check to see if I look fat … dress carefully to hide it [dissatisfied body part] which is annoying” [participant 04]; “I think about them [dissatisfied body part] every day” [participant 42].

Negative BDDQ-DV screening – comparison group. On the other hand, two themes have emerged for participants with appearance dissatisfaction in the comparison group: no effect and minor self-consciousness (Figure 38).

No Effect and minor self-consciousness. No effect and minor self-consciousness were defined as the ineffectuality of appearance dissatisfaction in life and inconsequential self-awareness of physical dissatisfaction, respectively. Almost all the participants in the comparison group reported that their appearance dissatisfaction had “no effect” [participants 15, 16] on life, and some with additional comments on the minor self-consciousness: “a little self-conscious on occasion” [participant 26]; “no major effect other than slight self-consciousness” [participant 18].

CHAPTER 7
DISCUSSION

Overview

The primary aim of the current study was to explore the psychological and psychosocial change in elective cosmetic surgery patients over time. The potential patient characteristics that could be associated with cosmetic surgery outcomes were also explored. In addition to the primary aim, the study also aimed to explore the psychological differences between prospective cosmetic surgery patients and those who did not plan to undergo cosmetic surgery, as well as the reasons and motivations for cosmetic surgery patients to undergo surgery. All participants enrolled for the cosmetic group were undergoing breast surgeries, thus cosmetic surgery in the current chapter primarily refers to breast surgeries.

This chapter presents the main findings from the current study, and are discussed in the context of objectification theory and the CB model of body image perspectives accordingly. Discussion of contribution to the literature is presented next, followed by limitations and suggestions for future research, and the practical implications of the current study. Finally, this chapter closes with a conclusion that summarises the current research.

Main Findings of the Current Study

Differences between cosmetic surgery patients and comparison group. The first research question was to explore whether there are psychological differences between cosmetic surgery participants and participants who did not plan to undergo cosmetic surgery. The first finding of the current study was that cosmetic surgery participants did not differ from the comparison group in terms of their preoperative global self-esteem as measured by RSES, the degree of appearance importance and investment as measured by MBSRQ-AO, the overall unspecified emotional distress and depressive symptoms as measured by HSCL-25 and HSCL-Dep, and the possible BDD symptoms as measured by BDDQ-DV. The cosmetic surgery participants' preoperative mean score of self-esteem was slightly lower; and the mean scores for appearance importance and unspecified emotional distress were

slightly higher compared with the comparison group. However, the differences were non-significant.

Cosmetic surgery participants, however, were significantly more dissatisfied with their overall appearance before the surgery as measured by MBSRQ-AE, and there were significantly more cosmetic surgery participants with preoperative body image experiences that negatively affected life compared with the comparison group. The latter finding was further detailed and augmented by the qualitative analysis of the current study, and more in-depth details are discussed below in the 'appearance dissatisfaction - quality of life relationship' section. In short, except for participants in both groups who were screened positive for possible BDD symptoms or had no appearance dissatisfaction, cosmetic surgery participants qualitatively reported more unpleasant effects on life due to their appearance dissatisfaction before the surgery compared with the comparison group, where appearance dissatisfaction was considered as having no effect on life, or causing minor self-consciousness at most, at week 1 of the current study.

These results lend support to previous findings, which showed that cosmetic surgery patients were more dissatisfied with their physical appearance (von Soest et al., 2006; von Soest, Kvalem, Skolleborg, & Roald, 2009) and had poorer psychosocial quality of life (Cook et al., 2006, 1997) compared with the control groups in relative studies. A recent systematic review identified two studies that have examined body image quality of life of the same sample and none have reported preoperative comparisons (Bensoussan et al., 2014). As a possible addition to the previous findings, the current quantitative and qualitative findings provide further insight that the preoperative poorer psychosocial quality of life may be more likely to be associated with the individual's body image experiences. The current finding also suggests that prospective cosmetic surgery participants were not significantly psychologically different compared with the comparison group in terms of their anxiety and depressive symptoms, as well as their global self-esteem. These results are in line with previous findings that have suggested that there is no difference between the prospective cosmetic surgery patients and the general population in terms of their levels of psychopathology and self-esteem based on larger sample sizes (Ferraro et al., 2005; von Soest, Kvalem, Roald, et al., 2009).

Reasons for seeking cosmetic surgery. In addressing the second research question regarding the reasons for undergoing cosmetic surgery, the current finding showed that the components of reasons for seeking surgery reported by cosmetic surgery participants overlapped noticeably. The findings were summarised by thematic analysis within two overarching themes of physical appearance and psychological enhancement.

The first overarching theme, physical appearance, drawn from the thematic analysis, revealed that all participants underwent cosmetic surgery for reasons relating to purely physical and outward appearance concerns, with the aim of improving the dissatisfaction associated with their appearance or how they present themselves. The subthemes included body change, general appearance dissatisfaction, and outfit selection. Participants reported several appearance dissatisfactions as their reasons for undergoing cosmetic surgery, such as dissatisfaction towards the natural physical change in appearance due to life events (e.g., giving birth, breastfeeding and losing weight). A perception of not being able to dress in the desired outfits such as bathers, bikinis and certain party clothes, as well as the limited selection of clothes to wear due to appearance dissatisfaction were also endorsed by many participants, with others simply indicating general appearance dissatisfaction. The current finding of limited selection of clothes is further extended by another qualitative analysis in the study, and more details are discussed in the 'appearance dissatisfaction - quality of life relationship' section. In short, cosmetic surgery participants indicated that they chose to wear (or avoided wearing) certain types of clothes, or to dress in a certain way to hide the body parts that they were dissatisfied with. In other words, the limited selection of clothes appeared to be one of the coping strategies for the cosmetic surgery participants' appearance dissatisfaction. These findings suggest that physical and outward appearance dissatisfaction, including the presentation of oneself, was an important factor for the cosmetic surgery participants to undergo surgery.

Another overarching theme from the thematic analysis was psychological enhancement, where cosmetic surgery participants appeared to share an expectation that improvements in feelings in relation to one's self-perception and others' perception of one's physical self can be achieved by enhancing breasts, which would in turn make life better. The two subthemes included confidence and femininenes. Participants reported that breast enhancement would improve their confidence and

self-esteem as they would not need to be self-conscious when they are viewed by others or when out in public. Many participants also endorsed an expectation that breast enhancement would help the individual feel more like a woman and to be seen as a woman. These findings suggest that not only were the feelings towards one's physical appearance important, but how others perceive and evaluate one's outward appearance was also a crucial factor in relation to having a 'better life', all of which could be achieved by breast enhancement, and underlay the reasons for cosmetic surgery participants to undergo surgery.

The current findings are consistent with the existing literature which suggests body dissatisfaction is the primary reason for patients to undergo cosmetic surgery (Brown et al., 2007; Henderson-King & Henderson-King, 2005; Javo & Sørlie, 2010; Slevec & Tiggemann, 2010). The subthemes of body change and outfit selection are also consistent with prior findings (Adams, 2010; Klassen, Pusic, Scott, Klok, & Cano, 2009; Locatelli et al., 2017; Solvi et al., 2010), with reasons relating to selection of clothes being identified since the 1970s among women undergoing breast augmentation (e.g., Hetter, 1979; Schlebusch & Mahrt, 1993). Further, the overarching theme of psychological enhancement, as well as its subthemes of confidence and femininess, are consistent with prior research of both qualitative and quantitative designs, where expectations of improving confidence and femininity were the most important and highly rated motivation in women who underwent cosmetic and breast surgery (Adams, 2010; Locatelli et al., 2017; Nikolic et al., 2013; Solvi et al., 2010). In accordance with the current findings, prior studies have also suggested that cosmetic surgery patients have expectations of altering others' perception to one's physical appearance, which are equally important, if not more important than, one's own feelings and self-perception (Adams, 2010; Locatelli et al., 2017).

While acknowledging that it is highly likely that sociocultural influences (e.g., media messages, or societal ideals) may have played an important role in cosmetic surgery participants' decision to undergo surgery, the participants did not specifically address sociocultural factors that may have influenced their cosmetic surgery pursuit, possibly because of the less directive nature of the optional comment boxes in the survey (i.e., without specific questions). Rather, the cosmetic surgery participants reported what appeared to be a somewhat straightforward expectation that breast enhancement would lead to an improvement in how one felt about oneself

and how others perceived one's physical appearance, which appeared to equate to having a 'better life'. This perceived connection between altering and enhancing breast appearance and improving one's sense of self may be explained by the objectification theory. As reviewed in Chapter 1, self-objectification in women is a psychological consequence of internalising sexual objectification of women in western cultures where the sexual body parts are treated as objects and separated out from the person (Fredrickson & Roberts, 1997). As a consequence of self-objectification, women internalise others' perspectives into their sense of self as well as their physical self, and come to perceive themselves as a collection of body parts to be publically evaluated (Fredrickson & Roberts, 1997). It should be noted that this theoretical perspective may be more relevant to the current study as all the cosmetic surgery participants were women and had surgical operations on their breasts, a body feature that is considered highly sexualised and important in the ideal figure relating to women's attractiveness (Forbes & Frederick, 2008). Calogero and colleagues (2014) further propose an objectification model of cosmetic surgery that women who are self-objectified come to perceive themselves as a collection of body parts that may be subjected for modification through cosmetic surgery, where cosmetic surgery serves as a solution for women to manage the negative psychological consequences (i.e., self-objectification) caused by the common cultural practice of sexual objectification of women.

The objectification perspectives may be useful in explaining the current findings, such that the cosmetic surgery participants in the current study may have endorsed some degree of self-objectification. The participants appeared to have placed great value on how others perceive their breasts, where the participants seemed to perceive their breasts as an independent object that serves to influence their lives and how they feel about oneself. This may suggest some degree of internalising sexual objectification and adopting others' perception into one's sense of self. The current finding may also be explained by the objectification model of cosmetic surgery (Calogero et al., 2014) where cosmetic surgery seemed to be the solution for cosmetic surgery participants to manage the negative psychological consequences (i.e., lack of confidence, self-consciousness when out in public) caused by others' perceptions and evaluations of their breasts.

Further, the role of clothes on women's body image is considered relatively neglected in the relevant body image literature (Tiggemann & Andrew, 2012a,

2012b). In objectification theory, Fredrickson and Roberts (1997) propose that wearing clothes that do not reveal the body may be a strategy used by women to consciously opt out from the 'objectification limelight', that is, objectification from others, as well as to decrease one's self-objectification (i.e., less body shame and self-surveillance). Few studies have examined the relationship between the choice of clothes and self-objectification and found that women who chose to wear baggy or less revealing clothes (e.g., sweaters) were associated with lower levels of self-objectification, whereas women who chose to wear tight or more revealing clothes had significantly higher levels of self-objectification, which in turn supported Fredrickson and Roberts' (1997) original proposal (Tiggemann & Andrew, 2012a, 2012b). The current study shows that cosmetic surgery participants chose to wear certain types of clothes due to their appearance dissatisfaction, with some indicating it was a means to hide the body parts perceived as troublesome. This in turn may reflect that the cosmetic surgery participants' selection of clothes could be a strategy used to reduce the negative psychological consequences caused by self-objectification, as well as sexual objectification from others. Some cosmetic surgery participants' apparent desire to be able to wear more revealing clothes (e.g., bikinis or party clothes) may reflect higher degrees of self-objectification, where cosmetic surgery was the solution to cope with their psychological distress resulting from self-objectification.

Time – psychological variables relationship. The first aim of the third research question was to explore the relationship between time and all the psychological outcome variables — that is, how do the psychological variables change over time among the participants. The psychological outcome variables included global self-esteem, appearance satisfaction, appearance importance and investment, unspecified emotional distress, depressive symptoms, and body image quality of life.

The overall self-esteem of the total sample increased slowly over the timeframe of the study, whereas the rest of the variables did not change over time. To be more specific, time accounted for some change within participants in all the psychological measures and had an effect on the overall self-esteem; but did not have an effect on the rest of the psychological variables that showed no change over time

and did not explain the large remaining differences in change between participants for all the psychological measures, including self-esteem.

Cosmetic surgery participation – psychological variables relationship. The second aim of the third question was to explore the effect of cosmetic surgery participation on psychological outcome variables over time. That is, whether the differences in change between individuals that were not explained by time can be explained by cosmetic surgery participation. This analysis involved the total sample.

The current study found that the presence of cosmetic surgery participation was significantly associated with increased appearance satisfaction over time, and the comparison group showed a significant increase in self-esteem over time. In addition to appearance satisfaction, 89% of the cosmetic surgery participants preoperatively reported feeling dissatisfied with the body part that was about to undergo surgery, and 90% of the participants reported feeling satisfied with the body part that underwent surgery at the six-month follow-up. Further, the current finding shows that participants with higher levels of unspecified emotional distress and depressive symptoms at Week 0 were more likely to experience slower change in their level of distress over time.

The trend of the degree of appearance importance and investment for both cosmetic and comparison groups showed no change over time, and the relationship between cosmetic surgery participation and appearance importance and investment was non-significant. This finding is further supported and augmented by the qualitative outcome of the current study, which is discussed in more depth in the 'appearance dissatisfaction - quality of life relationship' section below. In short, cosmetic surgery participants with appearance dissatisfaction without positive BDD screening continued to report somewhat negative effects on life due to their appearance dissatisfaction towards other body parts that were not altered by surgery during the timeframe of the current study. The behavioural and mental efforts carried out to address the appearance dissatisfaction remained relatively unchanged after surgery and over time. On the other hand, participants in the comparison group with appearance dissatisfaction reported that their appearance dissatisfaction had 'no effect' on life or occasional minor self-consciousness at the most over time.

There were trends suggesting that the severity of unspecified emotional distress and depressive symptoms, as well as the body image quality of life, have

slightly improved for the cosmetic surgery participants compared with the comparison group, who showed no change in these variables over time. However, the relationship between cosmetic surgery participation and the trends of slight improvements were not statistically significant in the context of multilevel analysis.

The current finding shows no significant change in self-esteem for cosmetic surgery participants over time. This is in line with the majority of the previous findings that showed self-esteem remained unchanged for up to five years after cosmetic surgery (Dowling et al., 2013; D. B. Sarwer, Gibbons, et al., 2005; von Soest, Kvalem, Roald, et al., 2009; von Soest et al., 2011), On the other hand, there are a number of possible explanations for the finding regarding the significant change in self-esteem found in the comparison groups. According to Rosenberg and colleagues (1995), global self-esteem is an affective expression relating to one's overall psychological wellbeing, and is less sensitive to one change in behaviour. A large systematic analysis examined the stability of global self-esteem as measured by RSES and found that the stability of global self-esteem increased throughout later adolescence and into adulthood, suggesting that global self-esteem typically remains relatively stable during adulthood (Trzesniewski, Donnellan, & Robins, 2003). The current finding shows that self-esteem significantly increased over time for the comparison group. Based on the nature of global self-esteem, it appears likely that the finding could be confounded by the timeframe of data collection, which occurred from May and June, and ended after Christmas, a season known to be off work, and a time of family reunion and celebration. This may suggest that participants are less stressed and more relaxed towards the end of the data collection compared with week 1 of the study, and hence the improved feelings about oneself.

Moving on, the current finding shows that cosmetic surgery participation has no effect on cosmetic surgery participants' level of unspecified emotional distress as measured by HSCL-25 and HSCL-Dep, where the trend of slight improvement in a combination of various anxiety and depressive symptoms was not significant. This finding is in line with numerous studies that found non-significant improvement or no change in psychological problems after cosmetic surgery (e.g., Bolton et al., 2003; Cook et al., 2006; Klassen et al., 1996; von Soest, Kvalem, Roald, et al., 2009). In addition, the current finding shows that participants with higher levels of unspecified emotional distress are likely to experience slower change in the associated symptoms, which is to be expected given that higher pre-treatment severity in depression is one

of the well-known predictors for slower remission (Hamilton & Dobson, 2002).

Further, the current finding shows that cosmetic surgery participation was significantly associated with increased appearance satisfaction over time, but there was no change in the degree of appearance importance and investment, as well as body image quality of life for the cosmetic surgery participants over time. This finding is consistent with Sarwer and colleagues' (2008) prospective longitudinal study with data collection over a period of two years, which was the only study identified in a recent review that had examined body image quality of life specifically (Bensoussan et al., 2014). Sarwer and colleagues (2008) tentatively speculated that it may be possible that body image quality of life is more closely associated with a certain type of surgery and the effect was not detected in their heterogeneous sample involving various types of cosmetic surgery. However, based on the CB model of body image (Cash 2011, 2012), the current author proposes to differ. There appears to be sufficient evidence in the current study to explain and make sense of the non-significant change over time in the degree of appearance importance and investment, as well as body image quality of life, despite the significantly increased appearance satisfaction in the context of Cash's (2011, 2012) CB model of body image.

According to the CB model of body image (Cash, 2011, 2012) as presented in Figure 1, the fundamental constructs of body image attitude include body image appearance and body image investment, which was measured by MBSRQ-AE (appearance evaluation, the level of appearance satisfaction) and MBSRQ-AO (appearance orientation, the degree of appearance importance and investment) in the current study respectively. The body image attitude is influenced by a number of historical and developmental factors, as well as proximal factors that represent the overall intrapersonal experience of body image. The current finding discussed earlier showed that historical and developmental factors such as physical change due to breastfeeding, as well as sociocultural and interpersonal experiences such as perceived negative evaluations by others, possibly involving self-objectification, contributed to one's body dissatisfaction, which was in accordance with the CB model of body image. The intrapersonal experience of body image involves primarily the cognitive processing and the resultant internal dialogue that are simultaneously and directly influenced by two interactive components, with the first involving appearance self-schematic processing, and the other involving coping strategies and body image emotions. Cosmetic surgery was considered a coping strategy (Cash,

2012), which according to the model would have limited influence on the overall body image attitudes because the intrapersonal experience of body image also involves appearance self-schematic processing. Self-schema are known to be relatively stable and enduring over time and maintain one's resistance to counterschematic information (Markus, 1977), which could involve the change of appearance and other changes in relation to the altered appearance (e.g., others' reaction to the altered appearance) in the context of cosmetic surgery. Cash (2011, 2012) proposes that appearance orientation directly involves appearance self-schematic processing, suggesting that one's appearance orientation or the degree of appearance importance and investment is also rather stable and enduring. From a strong theoretical perspective, cosmetic surgery participation would understandably have no immediate effect on one's appearance self-schema, as self-schema are established through long-term and repetitive information processing of past experiences and information relating to one's appearance (Markus, 1977). This relationship between appearance orientation and appearance self-schema in the CB model of body image (Cash, 2011, 2012) may be used to explain the current findings, where the current quantitative and qualitative findings show that cosmetic surgery participants continued to maintain appearance dissatisfaction towards other body parts after the surgery, and the effort they took to address the appearance dissatisfaction remained relatively unchanged after surgery and over a timeframe of six months. In other words, the current finding of a non-significant change in appearance orientation after surgery and over time may suggest that the cosmetic surgery participants' appearance self-schema were left unchallenged. Further, for the comparison group, the thematic analysis shows that their appearance dissatisfaction had no effect on their lives, suggesting that the two groups differ in their overall intrapersonal experiences of body image, and possibly involves different appearance-related self-schema.

In terms of body image quality of life, the cosmetic surgery participants' overall body image experiences that affect various aspects of their lives was understandably not affected by cosmetic surgery participation; given that cosmetic surgery participants remained with appearance dissatisfaction, which continued to have similar impacts on their lives. Given that the qualitative analysis revealed that cosmetic surgery participants' appearance dissatisfaction towards other body parts remained relatively unchanged, it may be possible that their significantly increased

appearance evaluation reflected a degree of appearance satisfaction towards the specific body part that underwent surgery. Prior research has demonstrated such positive association between satisfaction towards a specific body part that underwent surgery and the overall appearance evaluation (Bolton et al., 2003; Sarwer, Gibbons, et al., 2005; Sarwer et al., 2002; von Soest et al., 2011).

The significantly increased appearance evaluation in the cosmetic group may also indicate that cosmetic surgery was not merely a coping strategy as suggested by Cash (2012), which would have limited influence on body image attitudes due to the enduring appearance self-schema as discussed above and significant body image improvement may not be expected. In fact, Cash and colleagues (2005) found that individuals who engaged in 'appearance fixing' coping strategy for body image distress had elevated levels of body dissatisfaction and poorer psychosocial functioning, although cosmetic surgery (presumably under the appearance fixing category) was not specifically addressed in their study. Thus, given the current finding of improved appearance evaluation, one could argue that cosmetic surgery may also involve a change in historical factors due to the permanent outcome of cosmetic surgery, which has more direct impact on the body image attitudes, compared with a coping strategy, which has a lesser degree of influence on body image according to the CB model of body image. Although change in historical factors would have a similar impact on appearance orientation, given the enduring nature of both the establishment of, and the established appearance self-schema (Cash, Melnyk, et al., 2004; Markus, 1977), change in appearance orientation may require a considerable amount of time after the permanent change in appearance from cosmetic surgery.

Patient characteristics - cosmetic surgery outcome relationship. The third aim of the third research question was to explore whether certain patient characteristics are associated with differences in cosmetic surgery outcomes over time in terms of the psychological measures. The patient characteristics included the amount of time participants took in considering surgery, the amount of time they felt dissatisfied with the body part that underwent surgery, unrealistic expectation of the surgical outcome, age, and marital status. This analysis involved participants in the cosmetic group.

The current study found that the amount of time participants took to consider

undergoing surgery was significantly associated with the change in the degree of appearance importance and investment. However, the magnitude of the estimated fixed effect was very small. In addition, the outcome of multilevel analysis indicated that participant's level of appearance satisfaction increased over time even without the effect of taking time to consider. Similarly, the amount of time participants felt dissatisfied with the body part that underwent surgery was significantly associated with change in appearance importance and investment over time. The participants' appearance satisfaction too increased over time even without the effect of the amount of time feeling dissatisfied. Both patient characteristics had no significant effects on the rest of the psychological measures over time.

There were visible patterns showing that the cosmetic surgery participants with unrealistic expectation of the surgical outcome (i.e., Figures 24 to 29) or who were not married (i.e., Figures 18 to 23) had more variability in their preoperative psychological measures and their rates of change in most of the psychological measures over time compared with cosmetic surgery participants who had no unrealistic expectation or were married. However, unrealistic expectation, marital status and age had no significant effect on any of the psychological measures during the timeframe of the current study in the context of multilevel analysis.

In terms of the relevant existing literature, von Soest and colleagues (2011) found that the amount of time individuals took to consider undergoing cosmetic surgery was positively associated with increased positive perception of the surgical outcome at 5-year follow-up, although the definition of surgical outcome was not specifically addressed in the study. Following a similar direction, the current study found that the amount of time in both surgery consideration and dissatisfaction with the body part undergoing surgery were significantly associated with changes between participants' appearance orientation. However, other patient characteristics such as unrealistic expectation, age, and marital status showed no effect on various psychological dimensions of surgery outcome. That is, global self-esteem, appearance satisfaction, appearance importance and investment, unspecified emotional distress and depressive symptoms, and body image quality of life.

It has been suggested by research examining larger sample sizes that unrealistic expectations of the surgical outcome is a negative predictor of cosmetic surgery outcome (Brunton et al., 2014; Herruer et al., 2015; Honigman et al., 2004), where preoperative assessment for cosmetic surgery patients routinely screens for

unrealistic expectation towards surgery outcomes (Paraskeva et al., 2014). In addition, prior research also indicated the potential association between marital status and cosmetic surgery outcome. Some found that married women showed non-significantly decreased satisfaction with the surgical result and significantly increased willingness to undergo the same surgery again (von Soest et al., 2011); and others found single or widowed women showed trends towards greater satisfaction of the surgical outcome (Hessler et al., 2010). However, the current finding shows that unrealistic expectation of the surgical outcome and marital status had no significant effects on the current sample in terms of their cosmetic surgery outcome.

The very small yet significant estimated fixed effects of the current findings, as well as the non-significant effects of the other patient characteristics are very likely a result of the small cosmetic sample size, where the null hypothesis was left unchallenged. Based on the visible, though non-significant, differences in the trends, as well as the existing literature described above, it appears likely that unrealistic expectation as well as marital status would show significant effects with a larger sample size.

The appearance dissatisfaction - quality of life relationship. The last research question was to explore and describe how appearance dissatisfaction impacts on or interferes with participants' lives. A few participants in the current study from both cosmetic and comparison groups were screened positive for possible BDD symptoms in their initial BDDQ-DV and the majority of them remained with positive screening throughout their remaining surveys. Participants with positive BDD screenings reported a wide range of negative effects on life due to their appearance dissatisfaction. The qualitative responses were summarised by thematic analysis within three overarching themes of negative psychological effects, avoidance behaviour, and social and family interaction.

The first theme revealed that participants with positive BDD screening experienced negative feelings about oneself and towards others, as well as negative feelings about how others perceive them primarily based on their physical appearance dissatisfaction. Participants also engaged in avoidance behaviour including avoiding going out, or looking in the mirror, or avoiding certain types of clothes, as a means of managing their negative feelings resulting from their appearance dissatisfaction. Appearance dissatisfaction also appeared to interfere with participants' interaction with family and friends, including intimate interaction with one's partner, primarily

due to their perceptions of how others would negatively perceive the body part that they felt dissatisfied with as well as their own negative feelings towards the dissatisfying appearance.

Participants with possible BDD symptoms in both cosmetic and comparison groups reported higher levels of distress and interference to important areas of functioning in relation to their appearance dissatisfaction on the five-point scales. The thematic analysis suggests that these negative effects are likely to remain unchanged regardless of their experiences with cosmetic surgery participation. This finding is in accordance with the existing literature on patients with BDD in general and cosmetic surgery patients with mild to moderate BDD. It is suggested that BDD symptoms generally involve negative psychological effects, avoidance coping behaviour and the consequential interference with important areas of functioning (APA, 2013; Castle, Rossell, & Kyrios, 2006; Phillips, 2009), and cosmetic surgery is unlikely to address the underlying symptomatology and benefit cosmetic surgery patients with mild to moderate BDD (Bowyer et al., 2016; Crerand et al., 2006, 2010; Pavan et al., 2008).

A large number of participants from both cosmetic and comparison groups were screened negative for possible BDD symptoms. That is, participants with appearance dissatisfaction, where the dissatisfaction did not significantly interfere with their important areas of functioning that would otherwise be suggestive of possible BDD symptoms. The majority of the cosmetic surgery participants remained with appearance dissatisfaction after the surgery and continued to provide data throughout the study. Both groups were examined separately and several overarching themes were identified for cosmetic and comparison groups. Among all participants with appearance dissatisfaction without positive screening of BDD, cosmetic surgery participants reported detailed impacts on life from their appearance dissatisfaction compared with the comparison group who literally reported no effect or minor self-consciousness. The negative impact was evident from week 1 of the study and remained relatively unchanged throughout the rest of the waves of data collection.

Three themes drawn from the thematic analysis for the cosmetic group were family interaction, poor confidence, and mental and behavioural preoccupation. Participants from the cosmetic group reported experiencing minor effects on family interaction, including intimate interaction with partner, and poor confidence in relation to their appearance dissatisfaction. Cosmetic surgery participants also frequently engaged in thinking, checking and other behaviours to address or manage

their physical appearance dissatisfaction; most of which involved thinking about their perceived troublesome body parts, checking their looks for unpleasantness, and trying to dress carefully or avoiding certain types of clothes in order to present 'the best' of themselves. For the comparison group, the two themes identified involved no effect and occasional minor self-consciousness as they literally reported that their physical appearance dissatisfaction had no effect, or minor self-awareness at most, on their everyday lives.

This finding is in accordance with the current quantitative findings summarised in the earlier 'cosmetic surgery participation - psychological variables relationship' section, where cosmetic surgery participants showed no change in their degree of appearance importance and investment and their body image quality of life after cosmetic surgery and over time. The qualitative finding suggests that even after cosmetic surgery, participants continued to possess appearance dissatisfaction towards other parts of their body and continued to feel negative about their appearance. The effort they exerted to address and manage the perceived troublesome appearance also appeared to have remained relatively stable over the timeframe of the study. These findings provide additional support and detail the reasons as to why cosmetic surgery participants' overall appearance orientation and body image quality of life did not change over time in the current quantitative analysis discussed above.

The current finding further suggests that appearance dissatisfaction is fairly common among individuals. However, cosmetic surgery participants appeared to differ from the comparison group in terms of their slightly or somewhat negative experiences in life in relation to appearance dissatisfaction, compared with the comparison group who reported no effects. In the context of the CB model of body image (Cash, 2011, 2012), one may argue that the current findings suggest that cosmetic surgery participants with additional appearance dissatisfaction on top of the specific dissatisfaction towards the body part that underwent surgery appeared to have different intrapersonal experience of body image compared with other participants with appearance dissatisfaction but who did not plan to undergo cosmetic surgery. It may be sensible to further speculate that given the similar stimulation (i.e., perceived appearance dissatisfaction), cosmetic surgery participants appeared to have interpreted the perceived appearance information differently from the comparison group. That is, cosmetic surgery participants may have different appearance-related self-schema compared with the comparison group, a stable core element that serves

to influence the entire interpersonal body image experience. Cash (2012) describes that individuals who are appearance self-schematic will selectively attend to and process information relating to one's physical appearance differently compared with individuals who are appearance aschematic.

In addition, appearance self-schema involves two important constructs: the self-evaluative salience of appearance and motivational salience of appearance, which represent the importance of appearance in relation to one's sense of self-worth, and the importance of possessing or maintaining physical attractiveness, respectively (Cash, Melnyk, et al., 2004). The current qualitative finding appears to show that the cosmetic surgery participants with additional appearance dissatisfaction presented with fairly different yet persistent self-evaluative and motivational saliences of appearance, or intrapersonal experiences of body image at least, compared with the comparison group. It may be sensible to further speculate that this finding may serve to explain cosmetic surgery participants' unchanged global self-esteem over time. Rosenberg and colleagues (1995) propose that change in global self-esteem is more likely to be affected by the degree of schematization of the specific facets, rather than specific self-esteem of the specific facet, where the specific facet refers to the physical appearance in the context of the current study; although the extent of cosmetic surgery participants' appearance self-schema was not measured in the current study.

Together, the current qualitative and quantitative findings show that prospective cosmetic surgery participants did not differ from the comparison group in terms of global self-esteem and psychopathology, however, cosmetic surgery participants with additional appearance dissatisfaction other than the body part that underwent surgery may endorse different intrapersonal experience of body image, possibly involving appearance self-schema, compared to the comparison participants with appearance dissatisfaction.

Contribution to the Literature

The current study provides an important contribution to the existing literature on the psychology of cosmetic surgery. These include the advanced methodology, the current main findings, and the psychological insights of cosmetic surgery in the context of theoretical frameworks.

Advanced methodology. Methodological limitations across studies investigating the psychology of cosmetic surgery have long limited the confidence of generalising study findings to the targeted population (Brunton et al., 2014; Cook et al., 2006; Herruer et al., 2015; Honigman et al., 2004). The advanced methodological design of the current study is one of the main contributions to the existing literature. The methodological advantages include mixed methods of advanced data analyses; and the inclusions of an appropriate comparison group, specific definitions of the sample and psychological constructs, and the empirically established psychological measurements.

The current study has shifted away from the traditional mono-method research design and employed prospective mixed methods that involved applied longitudinal analysis and thematic analysis. Both methods employed in the current research are well known for their advantageous and advanced quality in data analysis. Repeated measures, including baseline (preoperative) measures, and the incorporation of longitudinal data into the analysis, is an important advantage of applied longitudinal analysis (Singer & Willett, 2003). It involves developing individual and group trajectories that allow the investigation of both individual and group trends of change over time. To be more specific, it allows the investigation of relationships both within and between individuals rather than relying on variable mean differences, while taking the effect of time into account, an important yet often overlooked variable that may account for some change in the outcome variables (Cook et al., 2006).

Thematic analysis is known for its flexibility and independence from a theoretical framework that allows the analysis to provide a rich and detailed, yet complex, description of data (Braun & Clarke, 2006). In the context of the current research, thematic analysis provided rich and insightful information that augmented the quantitative findings from applied longitudinal analysis, and detailed most of the statistical findings in several psychological measures. The mixed methods involve the data based on the participants' own categories of meanings. It is also useful for describing complex phenomena such as the effect of cosmetic surgery, which involves multiple constructs and psychological mechanisms, as well as individual subjective personal experiences. Research questions are typically most fully answered through mixed methods involving quantitative and qualitative methods

(Johnson & Onwuegbuzie, 2004), which appeared to be the case for the current study where both methods were powerfully complementary.

The current advanced methodological design also involves improvements on several common methodological limitations identified across relevant studies in the literature. It has been suggested that the comparison with the general population norm is subject to biased outcomes as the variations within the population are not accounted for and the lack of a control group does not account for spontaneous change within individuals (Cook et al., 2006). Other common limitations include a lack of valid and reliable measures and vague definitions for both the psychological constructs of interest and the sample of the studies (Brunton et al., 2014; Cook et al., 2006; Honigman et al., 2004). The inclusion of clear and specific inclusion and exclusion criteria for both cosmetic and comparison groups ascertained that cosmetic surgery participants were undergoing cosmetic surgery for pure aesthetic reasons, and the comparison group had no plan nor history of undergoing cosmetic surgery. The assessment of detailed demographic information of the participants further provided a clear definition of the sample. All the constructs of interest in the study were clearly and specifically defined based on empirically published research or theoretical frameworks and were assessed via valid and reliable measurements. All of which enabled more valid and reliable findings and allowed future study replications.

The current main findings. Positive psychosocial outcomes were typically reported by patients who underwent breast reduction surgery, and whether these patients had undergone cosmetic surgery for purely aesthetic reasons were rarely addressed in the relevant studies. Further, these studies with patients undergoing breast reduction surgery are usually included in systematic review articles of cosmetic surgery (e.g., Bensoussan et al., 2014; Brunton et al., 2014), where the reported impression of overall improved psychosocial wellbeing may be questionable, particularly in the context of undergoing cosmetic surgery with solely aesthetic reasons (Cook et al., 2006). In addition, in studies investigating the psychology of cosmetic surgery, high rates of surgical outcome satisfaction appeared to support the view that cosmetic surgery results in a positive outcome (Cook et al., 2006). However, being satisfied with the surgical or appearance outcome does not necessarily indicate the psychological and psychosocial benefits of cosmetic surgery, where the long-term gains in psychosocial functioning remain questionable (Cook et

al., 2006; Honigman et al., 2004). The current research lends support for the view above and provides additional insights to the psychological outcomes of cosmetic surgery. That is, cosmetic surgery participants were generally satisfied with the surgical outcome and had an overall increased appearance satisfaction, however, there was no change in their level of emotional distress, nor in their appearance orientation, quality of life in relation to body image and global self-esteem. All of which appeared to have not achieved, if not contradicted, the psychological purposes of undergoing cosmetic surgery reported by the participants. The current study revealed that the unchanged appearance dissatisfaction towards the other body parts as well as the associated impacts on life, possibly maintained by the intrapersonal experiences of body image and appearance-related self-schema, may be the primary mechanisms underlying the ineffectiveness of cosmetic surgery for a selected group of participants (i.e., cosmetic surgery participants with additional appearance dissatisfaction in addition to the body part that underwent surgery).

The presence of the possible appearance-related self-schema differences, or the intrapersonal experience of body image at least, between cosmetic surgery participants and comparison group highlights an important facet in the psychology of cosmetic surgery. Sarwer and colleagues (1998) have stressed that the relationship between body image schema and cosmetic surgery is crucial for understanding cosmetic surgery pursuit, as well as the potential psychological effects of cosmetic surgery. However, appearance self-schema has received relatively little attention in studies investigating predictors of cosmetic surgery pursuit. Few studies have examined such association and found that appearance self-schema was one of the strongest predictor for individuals to actually consider cosmetic surgery (Slevec & Tiggemann, 2010; Swami & Mammadova, 2012). One study found no difference in appearance self-schema between prospective cosmetic surgery group and participants who applied for cosmetic surgery and had not yet undergone surgery (Margraf et al., 2013). In addition, Swami and Mammadova (2012) extended their findings and found that appearance self-schema was significantly correlated with perfectionism trait. Perfectionism personality trait is known to have various dimensions including obsessiveness and narcissistic traits (Ayearst, Flett, & Hewitt, 2012), all of which are common personality traits found in prospective cosmetic surgery patients (e.g., Swami et al., 2009; Zojaji et al., 2014). Given that prior research have investigated a wide range of psychological constructs that are associated with cosmetic surgery

pursuit, it is the author's speculation that the findings of prospective cosmetic surgery patients in the literature (i.e., certain personality traits) are likely to reflect certain degrees, possibly dysfunctional, appearance self-schema or intrapersonal experiences of body image, and may represent the primary difference between cosmetic surgery patients and individuals who had no plans to undergo cosmetic surgery. This inevitably highlights the importance of investigating the effect of cosmetic surgery on individuals' intrapersonal experiences of body image and appearance-related self-schema. Sarwer and colleagues (1998) have suggested that the differential body image schema determines its relative importance to global self-esteem. This in turn, reflects the individuals' overall psychological wellbeing, as specified by Rosenberg and colleagues (1995). In other words, investigating the extend to which cosmetic surgery has effects on one's appearance-related self-schema may provide more comprehensive understanding as to whether cosmetic surgery results in psychological benefits. However, outcome research in elective cosmetic surgery and schema remains scarce in the literature. A literature search has only found two studies that examined such relationship for participants undergoing cosmetic surgery for solely aesthetic reasons. One suggested no change in appearance self-schema after cosmetic surgery (Bolton et al., 2003), and the other showed decreased scores in Appearance Schema Inventory – Revised compared with the participants who were on the waiting list for cosmetic surgery (Margraf et al., 2013).

The psychology of cosmetic surgery in the context of theoretical framework. The current study adds to the literature on cosmetic surgery and objectification theory (Calogero et al., 2014; Forbes & Frederick, 2008; Vaughan-Turnbull & Lewis, 2015). While acknowledging the potential sociocultural influences that was not specifically addressed by the participants, the current findings appear to further indicate the potential self-objectification of the cosmetic surgery participants, where the breasts seemed to have been objectified and were responsible for one's feeling of self and others' perception of oneself. The study provides support for the existing literature that self-objectification is likely relevant to cosmetic surgery pursuit, particularly to women pursuing breast enhancement surgeries.

Further, the main findings and interpretations discussed in the previous section are explained in the context of empirically sound theoretical frameworks and models, and highlight the importance of further investigating cosmetic surgery

beyond the observable changes in patients. The majority of the existing research focused on examining body image variables, namely the body image evaluation and orientation, and appeared to have overlooked the underlying psychological mechanisms. A literature search has not found any studies that examined outcomes of cosmetic surgery with purely aesthetic reasons in the context of the CB model of body image proposed by Cash (2011, 2012); it is thought that the current study could be the first to interpret cosmetic surgery outcomes based on this particular model. As a result, the interpretation of the findings were strengthened and with a much wider scope, contributing rich and detailed insights to the existing literature on the psychology of cosmetic surgery. In addition, the finding highlights the possibility that cosmetic surgery may simultaneously serve as a coping strategy, and as a change in historical factor, which provides opportunities for future studies to investigate the effects of cosmetic surgery on the basis of empirically sound theories.

Limitations and Suggestions for Future Research

One limitation of the current study is the attrition rate and the small sample size, which may limit the power to detect statistical significance and underestimate the standard errors of the variance components during model building. The quantitative analysis was therefore carried out and interpreted with caution where further model building (i.e., model D, E and so on), as well as further analysis of the variance components were not considered. However, the estimated fixed effects are known to be accurate and unbiased with smaller sample size in the context of multilevel analysis (Maas & Hox, 2005), the outcomes are therefore promising in terms of a preliminary exploration of the psychological effects of cosmetic surgery, as well as the effects of the explanatory variables examined in the study.

Given the practical difficulties during the recruitment phase, participants in the comparison group in the study were from New Zealand, not seeking cosmetic surgery and appeared to be more heavily educated compared with the cosmetic group, where the majority was from Australia. This difference between the two groups may limit the validity of the casual inferences claimed in the study.

The model and the theories discussed in the study were used to explain the current findings, and were not being empirically tested. In addition, the follow-up period of six months is not a substantial period, but the time restraints of the current

study prevented a longer follow-up. Nevertheless, future research is encouraged to empirically test the theories, and replicate the current study with an appropriate sample size allowing further model building and analysis of the variance components, an improved qualitative questionnaire for the targeted sample population, and a longer follow-up period.

The relevance of the current findings is also limited to women within a Westernised culture who underwent breast surgeries. Beauty is subjective and the perception of physical attractiveness varies across cultures and countries, some of which may not necessarily engage in sexual objectification. For instance, cosmetic surgeries are prevalent among Korean women and young girls (Ko, 2002). Some have suggested that attaining the ideal physical appearance in Korea enables women to achieve social recognition in a society that is apparently dominated by males (Park, 2007). In addition, the societal ideal of physical attractiveness has changed over the last several decades in Korea, where some have referred to as the 'Westernisation' of the country (Jung & Lee, 2006). However, Bissell and Chung (2009) found that under similar sociocultural influences, the ideal of attractiveness remains significantly different between women from Korea and the United States in several ways. This brief example highlights the variations between cultures and countries in terms of beauty ideals and the role of physical attractiveness; it also highlights the potential difference in the mechanism underlying cosmetic surgery pursuit between the current findings and other cultures, and warrants further research exploration of the underlying psychosocial mechanisms of cosmetic surgery between different cultures.

In light of the current study, intrapersonal cognitive and behavioural experiences of body image and appearance-related self-schema appeared to be important components associated with the psychological outcomes of cosmetic surgery in the context of the CB model of body image, which has not been investigated in the existing literature on cosmetic surgery with purely aesthetic reasons. Future research is encouraged to explore this area further, as appearance self-schema theoretically serves to influence the outcome of cosmetic surgery. Further, a future methodologically sound longitudinal study is recommended to explore both short-term and long-term relationships between cosmetic surgery and the individuals' appearance schematic processing, and also to confirm the effects of the potential multirole of cosmetic surgery as a coping strategy and as a permanent change to the historical component of physical appearance in the context of the CB

model of body image.

In addition, self-objectification has been conceptualised to be both a stable trait and a situational context-dependent state (Fredrickson & Roberts, 1997). The current author further speculated that it may be possible that women in Westernised cultures who seek cosmetic surgery endorse appearance self-schema involving certain degrees of trait self-objectification. Further, in accordance with current findings, it has been suggested that women were not more satisfied with their overall appearance after cosmetic surgery (e.g., von Soest et al., 2012). In addition, other studies demonstrated that self-objectification, body shame, and cosmetic surgery pursuit were positively correlated (Calogero et al., 2010, 2014; Henderson-King & Henderson-King, 2005). Based on these findings, Calogero and colleagues (2014) suggested that cosmetic surgery may serve to intensify self-objectification in women, resulting in a vicious cycle of psychological distress and surgical modification to physical appearance, highlighting another important area to be further investigated.

Practical Implications

In contemporary cosmetic surgical practices, preoperative psychological screening is essential and crucial for practitioners, including the surgeons and clinical psychologists as a means to improve postoperative outcome and satisfaction, and to prevent postoperative psychological complications (Paraskeva et al., 2014). Mental health practitioners may also be referred patients who remained with appearance dissatisfaction or exacerbation of psychopathology after what one would consider a successful cosmetic surgical procedure (Sarwer et al., 2011). This study provides important implications for both cosmetic surgeons and psychologists when working with cosmetic surgery patients preoperatively and after the surgery.

Findings from the current study suggest that prospective cosmetic surgery participants were not significantly different from the comparison group in terms of their self-esteem and psychopathology. However, the current findings also suggest that cosmetic surgery participants with non-clinically prominent psychopathology characteristics may not be sufficient to indicate the likelihood of positive psychological outcome after cosmetic surgery. Given that much of the attention has been placed on identifying BDD characteristics and psychological disorders when it comes to assessing preoperative cosmetic surgery patients (Paraskeva et al., 2014);

this study suggests that it may be important for practitioners to screen beyond the severe or clinical psychopathologies, and take into consideration the patient's overall appearance dissatisfaction. In particular, the additional dissatisfaction with body parts that are not undergoing the surgery and its effects on life may be important when considering preoperative psychological screening. This study suggests that participants remained dissatisfied with other body parts that did not undergo surgery, and the somewhat unpleasant impacts from these dissatisfactions continued after the surgery. This in turn appeared to impact on their quality of life in relation to body image, and resulted in null psychological gains after the surgery.

Another practical implication of this study is that patients' overall intrapersonal experiences of body image, including the possible presence of appearance self-schema, cognitive processing, body image emotion and coping strategy may be important for both preoperative screening and postoperative psychological intervention. The current findings suggest that the overall intrapersonal experience of body image appeared to have maintained the appearance dissatisfaction and the coping strategy after the surgery, which may be maladaptive in nature (e.g., mental and behavioural preoccupation) and impacts on one's psychosocial wellbeing.

The final implication is that the current findings suggest that cosmetic surgery is effective in terms of improving one's dissatisfaction towards the specific body part undergoing surgery, which results in improving one's overall appearance satisfaction to some extent. Therefore, cosmetic surgery should be beneficial for those with solely and specifically appearance dissatisfaction towards the body part that is undergoing the surgery. However, cosmetic surgery patients' expectation that enhancing body parts will result in improvements of one's life (i.e., result in a 'better life') is not necessarily realistic and achievable, and may depend on one's overall intrapersonal experiences of body image or appearance-related self-schematic processing.

CONCLUSION

The popularity of elective cosmetic surgery has risen rapidly and steadily over the last two decades and cosmetic surgery is becoming a common form of appearance enhancement worldwide. The primary aim of undergoing cosmetic surgery is to solely improve appearance dissatisfaction, as well as self-esteem, confidence and

quality of life. In other words, cosmetic surgery could be seen as psychological intervention or surgery with psychological consequences. Given the relative risk of surgical and psychological complications of cosmetic surgery, it is important to be certain of the effects of the cosmetic surgery and the psychological or psychosocial benefits of the surgery. However, the literature showed mixed results regarding the psychological outcomes of cosmetic surgery — some showed positive outcomes, some reported no change, and others found negative postoperative results. The mixed findings have been suggested to reflect mainly the methodological weaknesses and limitations across the majority of the studies, leading to a consensus in the literature that there is insufficient evidence to demonstrate the psychological benefits of cosmetic surgery. In addition, the majority of the existing research investigating psychological change after cosmetic surgery simply reported the observed change and were not theoretically oriented, where the potential underlying psychological mechanisms were not further explored. The lack of theoretical orientations could limit and narrow the scope of interpretation of the findings and may serve to maintain the contradictory findings in the literature without plausible explanations. The current study aimed to explore the psychology of cosmetic surgery pursuit and effects over time, and to interpret the findings in the context of empirically sound theoretical frameworks and models, including the CB model of body image and the objectification theory.

The findings of the current study indicated that participants generally pursue cosmetic surgery for reasons primarily relating to purely physical appearance concerns and an expectation of postoperative psychological enhancement, which further suggested the potential self-objectification of the prospective cosmetic surgery participants. The current findings demonstrated that satisfaction with the surgical outcomes and the improved appearance satisfaction after surgery do not necessarily indicate that cosmetic surgery participants have achieved their psychological and psychosocial aims for the surgery, such as to improve global self-esteem, confidence and quality of life in relation to body image. The current research highlighted the potential psychological mechanisms underlying the ineffectiveness of cosmetic surgery for a selected group of cosmetic surgery participants, as well as the importance of investigating cosmetic surgery in the context of theoretical frameworks, that is, beyond the observable changes in patients. At the same time, this study provides important implications for both cosmetic surgeons and clinical

psychologists that the preoperative psychological screening could be beneficial by further assessment in addition to the assessment of severe or clinically prominent psychopathologies that takes into consideration the patients' overall appearance satisfaction and the degree of self-objectification, if any. Finally, the current study showed that cosmetic surgery is effective in terms of improving appearance dissatisfaction towards the specific body part undergoing surgery, however, practitioners should be aware of the prospective patients' psychological expectations towards the surgery, and may need to assess more thoroughly to include the patients' overall intrapersonal experiences of body image.

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APPENDICES

Appendix A

A public and online media advertisement example

Cosmetic research participants needed!!
Mindy Hung from Massey University is looking for people to join her research that looks at how cosmetic surgery changes people!

If you are aged 18 or over; and have NOT had, and NOT planning to have, a cosmetic surgery - please support and join this research! All you will need to do is to fill in some anonymous surveys and the Research team will do the rest! We will be extremely grateful for your participation!!
Please contact Mindy via email: [redacted]
A detailed Participant Information Sheet will be sent to you!

Appendix B

The advertisement example for cosmetic group recruitment

Hi All!

My name is Mindy Hung, and I'm from Massey University, Auckland, New Zealand.

I'm currently conducting a doctoral research on cosmetic surgery looking at how it changes the way you perceive and feel about yourself, and how it changes your life!!

This research has the potential to further our contemporary understanding in cosmetic surgery and how it may benefit people, if not otherwise!

Your participation in the research will be highly appreciated!

All you have to do is to complete 4 sets of anonymous online surveys within a 7-month period!!

If you:

1. Are 18 years of age or older

2. Have a cosmetic surgery scheduled in **May, June, or July** 2015

3. The surgery has nothing to do with physiological or medical reasons (e.g. back pain, or functional problems), and it is purely for appearance enhancement

4. The surgery requires either general or local anaesthesia

5. The surgery will lead to permanent physical change (so no botox and etc)

Please contact me via email **mindy.m.hung@gmail.com** and get involved!! You will not need to give me any information that may personally identify you, simply use a nickname for yourself in the email will do, for the purpose of anonymity!

I will also be sending you more information about the research

Please help us further understand the effects of cosmetic surgery!

I would be extremely grateful for your support and participation!

Best regards,

Mindy

Appendix C

Information sheet for the cosmetic group

Mindy Hung
Doctoral Student

School of Psychology
Massey University
Albany

MASSEY UNIVERSITY
COLLEGE OF HUMANITIES
AND SOCIAL SCIENCES
TE KURA PŪKENGA TANGATA

Dr Richard Fletcher
Main Supervisor

Dr Paul Merrick
Co-supervisor

Participant Information Sheet

The Psychological Changes after Cosmetic Surgery

Introduction

You are invited to participate in a doctoral research project on psychological changes associated with cosmetic surgery. **Your participation is completely voluntary, and you are free to withdraw from the study anytime up to two weeks after you have completed your survey. If you would like to withdraw, please email me via the contact details below and your data will be discarded and excluded from the study.**

This sheet provides a brief summary of the research, which will help you decide whether you would like to participate in this study.

About the Author

My name is Mindy Hung and I'm a Doctoral Clinical Psychology student at Massey University, Albany. This study is part of my Doctoral thesis and I would be most grateful for your assistance.

Aim of the Study

Overseas findings of psychological outcomes after cosmetic surgery yielded mixed results. Some have suggested adverse psychological consequences, and others reported benefits after surgery. As a result, more evidence is required to understand the psychological effects of cosmetic surgery.

I'm interested to explore how cosmetic surgery changes the way you perceive and feel about yourself, as well as how it affects your quality of life over a 7-month period before and after surgery.

The long-term design of this study will allow us to understand the changes more thoroughly among participants and may provide potentially valuable information on the factors that may impact on how people perceive their surgery results.

Cosmetic & Psychology

Who are we looking for?

We are looking for people to join the Cosmetic Group of the research.

The following criteria are:

1. You are aged 18 or over.
2. You are planning to undergo cosmetic surgery in the timeframe between February to April 2015.
3. Your cosmetic procedure involves local or general anaesthesia.
4. Your cosmetic procedure will result in permanent physical alteration.
5. The cosmetic procedure is not driven by physiological or medical reasons (e.g. breast reduction due to back pain).

What will you do in the project?

You will be assigned to the Cosmetic Group of this study. A link to an online questionnaire will be provided if you have agreed to participate in the study.

Please note that your information will remain anonymous throughout all written reports.

The questionnaire consists of items that measure the level of your psychological experience (e.g. anxiety), self-esteem, quality of life, and the way you view your body.

You will be asked to complete the online questionnaire at the appointed times before and after the surgery. Reminder emails or messages will be sent to you at each appointed time, including 1 month before surgery, 2 weeks after surgery, 3 months after surgery, and 6 months after surgery.

The questionnaire should take approximately 25 to 30 minutes to complete.

An interview may be carried after the completion of the last questionnaire**. Your participation to the interview is completely voluntary, and you are free to withdraw from the study at this point of the research.**

Confidentiality and Ethical Considerations

Your information will be **confidential**. Any information relating to personal identification will be discarded once the research is complete. This means that the report will not contain any information that will personally identify you. **Anonymity** will be maintained throughout all written reports.

Should your questionnaire scores suggest you might be having some degree of psychological difficulty, the scores will be informed and explained to you. We can contact you through the contact details you have provided us. However, it is completely up to you whether or not you would follow-up with your medical practitioner.

The Health and Disability Ethics Committees has endorsed this study, and the study will strictly adhere to the guidelines, including confidentiality.

Should you wish to participate in the study, the informed consent will appear on the first page of the online questionnaire for you to read and click "Yes" before proceeding. The purpose of the informed consent is to make sure that you have read and understood the information provided in this Participant Information Sheet before you start answering the questionnaire.

What happens after the research?

- A summary of the overall result will be provided upon request.
- Should your questionnaire scores suggest you might be having some degree of psychological difficulty, we will be able to provide relevant information and resources to assist you if required.

If you are concerned about your mental health and feel like you want to talk to someone, a variety of options are available and are listed below.

Lifeline free phone	0800 111 757
Samaritans free phone	0800 543 354
Depression helpline free phone	0800 111 757
The Lowdown	www.thelowdown.co.nz
DHB Mental Health Crisis Team	0800 611 116

If you want to talk to someone who isn't involved with the study, you can contact an independent health and disability advocate on:

Phone: 0800 555 050
Fax: 0800 2 SUPPORT (0800 2787 7678)
Email: advocacy@hdc.org.nz

For Maori health support please contact :

Byron Perkins,
Senior Maori Support Tutor
Phone: (09) 414 0800 ext. 43365
Email: B.Perkins@massey.ac.nz

You can also contact the health and disability ethics committee (HDEC) that approved this study on:

Phone: 0800 4 ETHICS
Email: hdecs@moh.govt.nz

Your support and participation in this study will be extremely appreciated.

Should you wish to know anything further about this study, please contact:

Mindy Hung

DClinPsych Student
School of Psychology
Massey University, Albany

Email: [redacted]

Mobil: [redacted]

Dr Richard Fletcher, PhD

Senior Lecturer in Research Methods

School of Psychology
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Appendix D

Information sheet for the comparison group

Mindy Hung
Doctoral Student

School of Psychology
Massey University
Albany

MASSEY UNIVERSITY
COLLEGE OF HUMANITIES
AND SOCIAL SCIENCES
TE KURA PŪKENGA TANGATA

Dr Richard Fletcher
Main Supervisor

Dr Paul Merrick
Co-supervisor

Participant Information Sheet

The Psychological Changes after Cosmetic Surgery

Introduction

You are invited to participate in a doctoral research project on psychological changes associated with cosmetic surgery. **Your participation is completely voluntary, and you are free to withdraw from the study anytime up to two weeks after you have completed your survey. If you would like to withdraw, please email me via the contact details below and your data will be discarded and excluded from the study.**

About the Author

My name is Mindy Hung and I'm a Doctoral Clinical Psychology student at Massey University, Albany. This study is part of my Doctoral thesis and I would be most grateful for your assistance.

This sheet provides a brief summary of the research, which will help you decide whether you would like to participate in this study.

Aim of the Study

Overseas findings suggested that cosmetic patients have different psychological experiences compared to people in the general public. However, studies to date yielded mixed results with some suggesting no such difference. I'm interested to explore this potential difference between cosmetic patients and people who have not had cosmetic surgery. I'm also interested in the potential changes in cosmetic patients over a 7-month period before and after the surgery. These changes might include the way they perceive and feel about themselves, as well as the changes in their quality of life.

The long-term design of this study will allow us to understand the changes more thoroughly among cosmetic patients. The study may also provide potentially valuable information on the psychological experiences between cosmetic patients and people who have not had cosmetic surgery.

Cosmetic & Psychology

Who are we looking for?

We are looking for people to join the Control Group of the research.

The following criteria are:

1. You are aged 18 or over.
2. You have NOT had previous cosmetic or reconstructive surgeries. These include both nonpermanent (e.g. Botox) and permanent (e.g. breast augmentation) procedures.
3. You are not planning to undergo cosmetic surgery in the near future.
4. You have a similar demographic background (e.g. age, marital status, ethnicity etc.) to those who have cosmetic surgery*.

*As participants from both Cosmetic and Control Groups are recruited at the same time, the specific criteria indicating a similar demographic background can only be confirmed when all participants have been selected.

Should you wish to participate, please leave your contact details, and we will confirm your inclusion in the study prior to sending out the questionnaires.

What will you do in the project?

You will be assigned to the Control Group of this study. A link to an online questionnaire will be provided if you have agreed to participant in the study.

Please note that your information will remain anonymous throughout all written report.

The questionnaire consists of items that measure the level of your psychological experience (e.g. anxiety), self-esteem, quality of life, and the way you view your body.

You will be asked to complete the questionnaire at week 1, week 6, week 16, and week 28 of the study. Reminder emails or phone text messages will be sent to you at each appointed times.

The questionnaire should take approximately 25 to 30 minutes to complete.

Confidentiality and Ethical Considerations

Your information will be **confidential**. Any information relating to personal identification will be discarded once the research is complete. This means that the report will not contain any information that will personally identify you. **Anonymity** will be maintained throughout all written reports.

Should your questionnaire scores suggest you might be having some degree of psychological difficulty, the scores will be informed and explained to you. We can contact you through the contact details you have provided us. However, it is completely up to you whether or not you would follow-up with your medical practitioner.

The Health and Disability Ethics Committees has endorsed this study, and the study will strictly adhere to the guidelines, including confidentiality.

Should you wish to participate in the study, the informed consent will appear on the first page of the online questionnaire for you to read and click "Yes" before proceeding. The purpose of the informed consent is to make sure that you have read and understood the information provided in this Participant Information Sheet before you start answering the questionnaire.

What happens after the research?

- A summary of the overall result will be provided upon request.
- Should your questionnaire scores suggest you might be having some degree of psychological difficulty, we will be able to provide relevant information and resources to assist you if required.

If you are concerned about your mental health and feel like you want to talk to someone, a variety of options are available and are listed below.

Lifeline free phone	0800 111 757
Samaritans free phone	0800 543 354
Depression helpline free phone	0800 111 757
The Lowdown	www.thelowdown.co.nz
DHB Mental Health Crisis Team	0800 611 116

If you want to talk to someone who isn't involved with the study, you can contact an independent health and disability advocate on:

Phone: 0800 555 050
Fax: 0800 2 SUPPORT (0800 2787 7678)
Email: advocacy@hdc.org.nz

For Maori health support please contact :

Byron Perkins,
Senior Maori Support Tutor
Phone: (09) 414 0800 ext. 43365
Email: B.Perkins@massey.ac.nz

You can also contact the health and disability ethics committee (HDEC) that approved this study on:

Phone: 0800 4 ETHICS
Email: hdecs@moh.govt.nz

Your support and participation in this study will be extremely appreciated.

Should you wish to know anything further about this study, please contact:

Mindy Hung

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Appendix E

Informed consent statement on the survey

Psychological Changes After Cosmetic Surgery

About this study

You are invited to participate in a research project on the psychological changes after cosmetic surgery.
My name is Mindy Hung, and I am a Doctoral student at Massey University. This study is part of my Doctoral thesis and I would be most grateful for your assistance.

The survey will take approximately 25 to 30 minutes of your time to complete, and your participation in this project is entirely voluntary. You have the right to withdraw from the study any time up to two weeks after you have completed the survey. If you would like to withdraw up until this time, please email via the contact details below and your data will be discarded and excluded from the study.

You may also be invited to participate in an interview to discuss your responses in the questionnaires after the last questionnaire has been completed. Likewise, your participation in the interview is completely voluntary and you are free to withdraw from the study before this stage of the research.

Your information will be **confidential** and the report will not contain information that will personally identify you. This study has been endorsed by the Health and Disability Ethics Committees and will strictly adhere to protocols in all areas.

You should have previously received the "Participant Information Sheet". Please read this carefully before participating. If you have not received and read the participant information sheet, please click here to download the document.

Should you wish to discuss this questionnaire further, please contact me by email [redacted]. Or should you wish to discuss this project with my main supervisor, please contact Richard Fletcher on R.B.Fletcher@massey.ac.nz.

Many thanks,
Mindy Hung

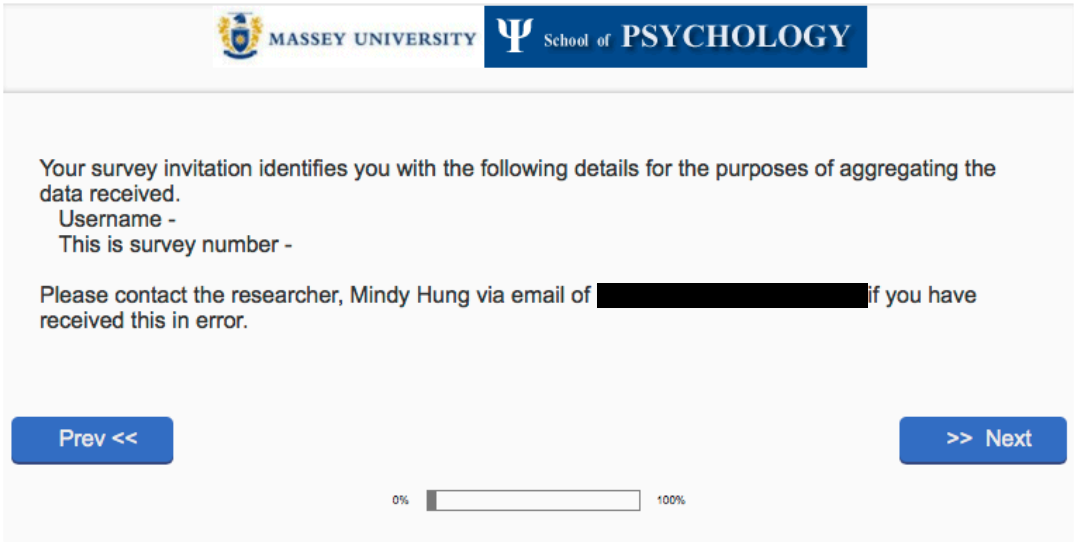
Contact information

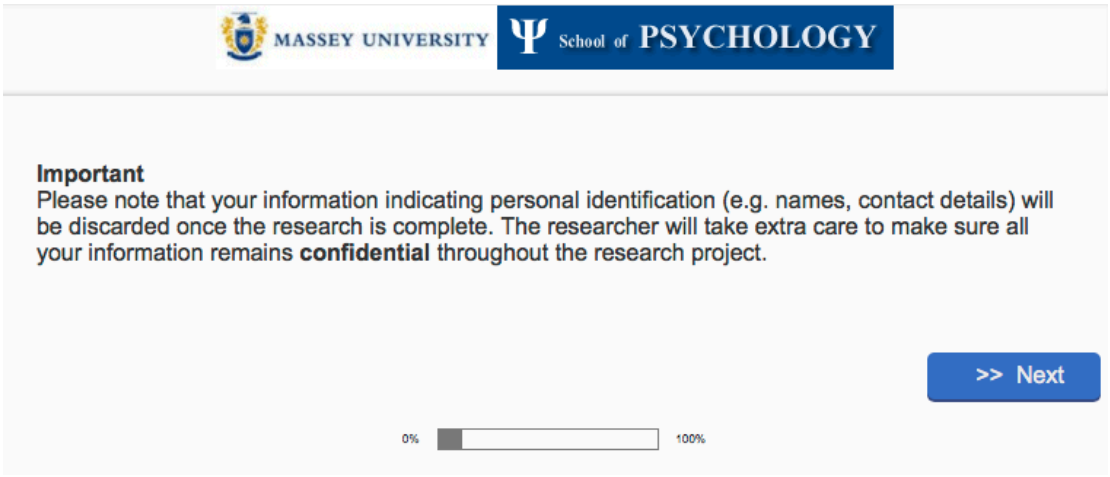
Researcher	Supervisor
Mindy Hung School of Psychology Massey University Albany Auckland New Zealand Email: [redacted]	Dr Richard Fletcher School of Psychology Massey University Albany Auckland New Zealand +64 9 414-0800 ext 43096 R.B.Fletcher@massey.ac.nz

Te Kunenga ki Pūrehuroa

Massey University School of Psychology – Te Kura Hinengaro Tangata
Albany, Auckland, New Zealand
T +64 9 414-0800 ext 41244 : W psychology.massey.ac.nz

This project has been reviewed and approved by the Health and Disability Ethics Committee.
If you have any concerns about the conduct of the research, please contact the Committee at Ministry of Health, Freyburg Building, 20 Aitken Street, PO Box 5013, Wellington.
telephone 04 819-6877, email hdecs@moh.govt.nz.





Respondent Consent

By clicking the "Yes" button below you are indicating that:

- You have read and understood the information on the previous page and the "Participant Information Sheet".
- You are consenting to participate in this project.

Thank you.

I have read and understood the information sheet for this study and consent to collection of my responses.
(Please click on the 'Yes' choice if you wish to proceed.)

- ○ Yes
- ○ No

Appendix F

Demographic questions, preoperative and postoperative surgery-related questions

Demographics

1. How old are you? (in years)

   [ ]

2. What is your gender? ☐Male ☐Female
3. Which ethnic group do you belong to? (if your answer includes more than one ethnic group, please indicate which one you consider to be your primary ethnicity).
   ☐New Zealand European/ Pakeha
   ☐New Zealand Maori
   ☐Pacific Islander
   ☐Asian
   ☐European
   ☐Other
   [ ]
4. What is your marital status?

   ☐Married
   ☐Not Marries
   ☐Has partner
   ☐Has no partner

5. What is your current occupation?

   [ ]

6. What is the highest qualification you have achieved?

   ☐School certificate or NCEA Level 1
   ☐University Entrance, Bursary or NCEA Level 3
   ☐Tertiary certificate or diploma (not a degree)
   ☐Bachelor's degree (For example: BA, BSc)
   ☐Postgraduate (For example: Masters, PhD or postgraduate diploma

Surgery-Related Information

Preoperative questions

1. What is the scheduled date of upcoming cosmetic surgery? (dd/mm/yyyy)
2. What type(s) of surgery is proposed?
3. How many elective aesthetic surgeries (cosmetic surgeries), if any, have you had before?
   - Please specify the types of surgeries you have had in the past.
4. How long have you considered to have this upcoming surgery?
   ☐Months ☐Years
5. For the questions which follow, try to identify the reasons for your decision to undergo surgery. Please select the options that apply to you, and fill in the subsequent questions associated with each reason. (You may select more than one option.)
   a. Recommended or suggested by others. ☐Yes ☐No
      - Please specify who made the recommendation (e.g. sister or friends)
   b. Dissatisfaction towards the specific body part undergoing surgery.
      ☐Yes ☐No
      - Please specify the reasons of your dissatisfaction toward the specific body part.
      - How long have you been dissatisfied with the specific body part?
      ☐Months ☐Years
   c. Requested by others. ☐Yes ☐No
      - Please specify who and why.
   d. Because I think surgery can make my life better. ☐Yes ☐No
      - Please specify why and how it might make your life better.
   e. Because the surgeon can make the exact appearance change I desire.
      ☐Yes ☐No
   f. No reason, I just feel like having the surgery. ☐Yes ☐No
      - Please specify the feelings and thoughts that motivated you to have surgery.
   g. None of the above reasons for surgery apply, ☐Yes ☐No
      - Please specify the reason(s) for your decision to undergo this surgery.

6. Please select the option that best describes your current level of satisfaction towards the specific body part that is about to undergo surgery:
   ☐Very Satisfied
   ☐Moderately Satisfied
   ☐Moderately Dissatisfied
   ☐Very Dissatisfied

Postoperative questions

1. Please select the option that best describes your current level of satisfaction towards the specific body part that is about to undergo surgery:
   ☐Very Satisfied
   ☐Moderately Satisfied
   ☐Moderately Dissatisfied
   ☐Very Dissatisfied

   Please add (optional) comments about your current level of satisfaction with this surgery.

2. Are you considering having another cosmetic surgery in the future?
   ☐Yes ☐No

   If YES, which body part are you considering?
   ☐The same body part that just had the surgery
   ☐Another body part

Appendix G

Rosenberg's Self-Esteem Scale (RSES)

Please **SELECT** one response for each of the following ten items based on your **current** feelings about yourself.

	Strongly Agree	Agree	Disagree	Strongly Disagree
I feel that I a person of worth, at least on an equal basis with other.	○	○	○	○
I feel that I have a number of good qualities.	○	○	○	○
All in all, I am inclined to feel that I am a failure.	○	○	○	○
I am able to do things as well as most other people.	○	○	○	○
I feel I do not have much to be proud of.	○	○	○	○
I take a positive attitude toward myself.	○	○	○	○
On the whole, I am satisfied with myself.	○	○	○	○
I wish I could have more respect for myself.	○	○	○	○
I certainly feel useless at times.	○	○	○	○
At time I think I am no good at all.	○	○	○	○

Appendix H

Hopkins Symptom Checklist – 25 (HSCL-25)

Please read each item carefully and **SELECT** the option that best indicated how much the symptoms bothered or distressed you in the last week, including today.

	Not at all	A little	Quite a bit	Extremely
Suddenly scared for no reason	○	○	○	○
Feeling fearful	○	○	○	○
Faintness, dizziness, or weakness	○	○	○	○
Nervousness or shakiness inside	○	○	○	○
Heart pounding or racing	○	○	○	○
Trembling (Shakes slightly)	○	○	○	○
Feeling tense or keyed up (nervous)	○	○	○	○
	Not at all	A little	Quite a bit	Extremely
Headaches	○	○	○	○
Spells (a period of time) of terror or panic	○	○	○	○
Feeling restless, can't sit still	○	○	○	○
Feeling low in energy, slowed down	○	○	○	○
Blaming yourself for things	○	○	○	○
Crying easily	○	○	○	○
Loss of sexual interest or pleasure	○	○	○	○
	Not at all	A little	Quite a bit	Extremely
Poor Appetite	○	○	○	○
Difficulty falling asleep, staying asleep	○	○	○	○
Feeling hopeless about the future	○	○	○	○
Feeling blue (to feel sad)	○	○	○	○
Feeling lonely	○	○	○	○
Thoughts of ending your life	○	○	○	○
Feeling of being trapped or caught	○	○	○	○
	Not at all	A little	Quite a bit	Extremely
Worrying too much about things	○	○	○	○
Feeling no interest in things	○	○	○	○
Feeling everything is an effort	○	○	○	○
Feeling of worthlessness	○	○	○	○

Appendix I

An example of level-2 analysis SPSS syntax for the total sample with 'RSES' as the outcome variable, and 'cosmetic surgery participation' as the explanatory variable.

```
value labels Cosmetic 1 "Cosmetic group" 0 "Comparison group".

*Fitting Model A.
title "Model A".
mixed Ros_Total
/print = solution testcov
/method = ml
/fixed = intercept
/random intercept | subject(Resp_ID)

*Fitting Model B.
title "Model B".
mixed Ros_Total with Week_num
/print = solution testcov
/method = ml
/fixed = Week_num
/random intercept Week_num | subject(Resp_ID) covtype(un).

*Fitting Model C level 2 model.
title "Model C"
mixed Ros_Total with Cosmetic Week_num
/print = solution testcov
/method = ml
/fixed = Week_num Cosmetic Week_num*Cosmetic
/random intercept Week_num | subject(Resp_ID) covtype(un).
```

An example of level-2 analysis SPSS syntax for the cosmetic group with 'RSES' as the outcome variable, and 'age' and 'marital status' as separate explanatory variables.

```
*Fitting Model A.
title "Model A"
mixed Ros_Total
/print = solution testcov
/method = ml
/fixed = intercept
/random intercept | subject(Resp_ID)

*Fitting Model B.
title "Model B"
mixed Ros_Total with Week_num
/print = solution testcov
/method = ml
/fixed = Week_num
/random intercept Week_num | subject(Resp_ID) covtype(un).

*Fitting Model C.
*Explanatory variable - Age.
title "Model C"
mixed Ros_Total with Age Week_num
/print = solution testcov
/method = ml
/fixed = Week_num Age Week_num*Age
/random intercept Week_num | subject(Resp_ID) covtype(un).

*Fitting Model C.
*Explanatory variable - Marital Status.
value labels Marital 1 "Married" 0 "Not Married".
mixed Ros_Total with Marital Week_num
/print = solution testcov
/method = ml
/fixed = Week_num Marital Week_num*Marital
/random intercept Week_num | subject(Resp_ID) covtype(un).
```

Appendix J

Normal P-P plots and scatterplots of the standardised residuals

Regression analyses against the outcome variables separately for the *total sample.*

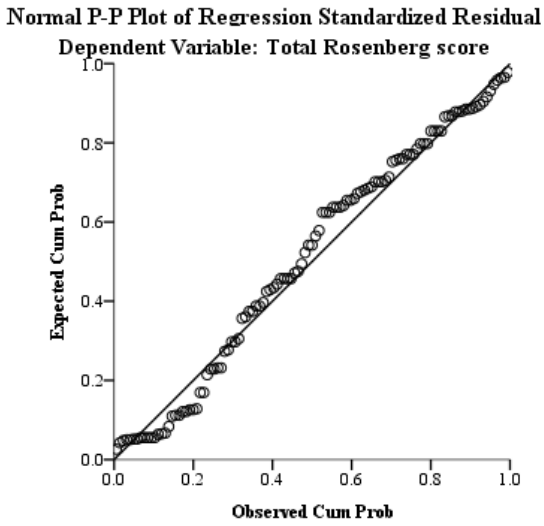


Figure J1. Normal P-P plot of the regression standardised residuals for RSES scores over time for the total sample.

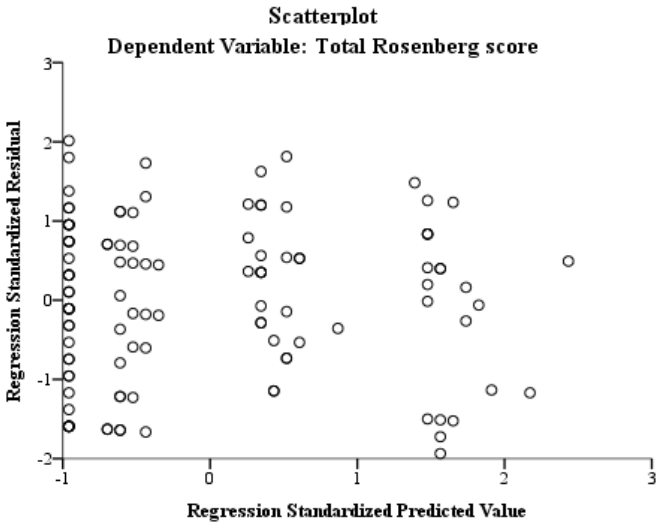


Figure J2. The scatter plot of standardised residuals for RSES scores over time for the total sample.

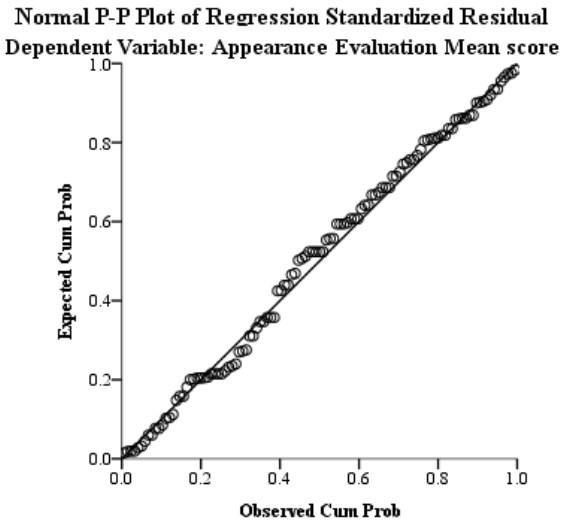


Figure J3. Normal P-P plot of the regression standardised residuals for AE scores over time for the total sample.

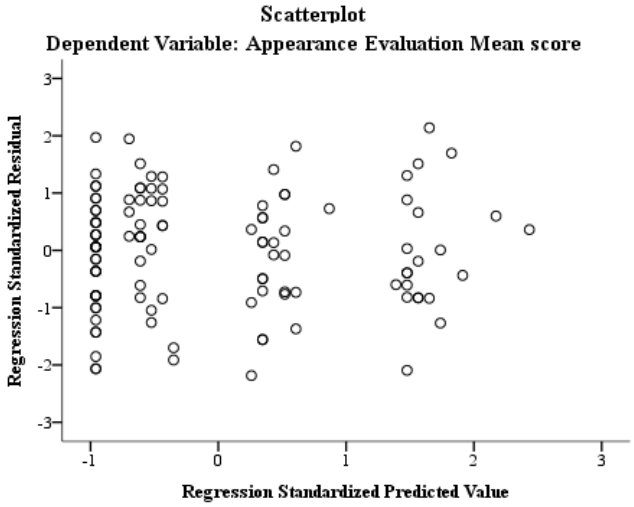


Figure J4. The scatterplot of standardised residuals for AE scores over time for the total sample.

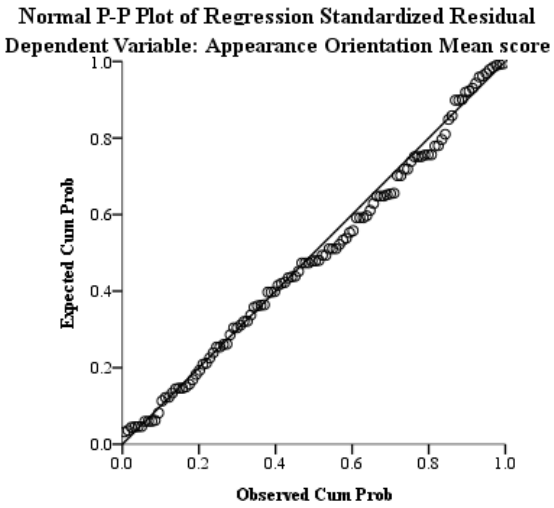


Figure J5. Normal P-P plot of the regression standardised residuals for AO scores over time for the total sample.

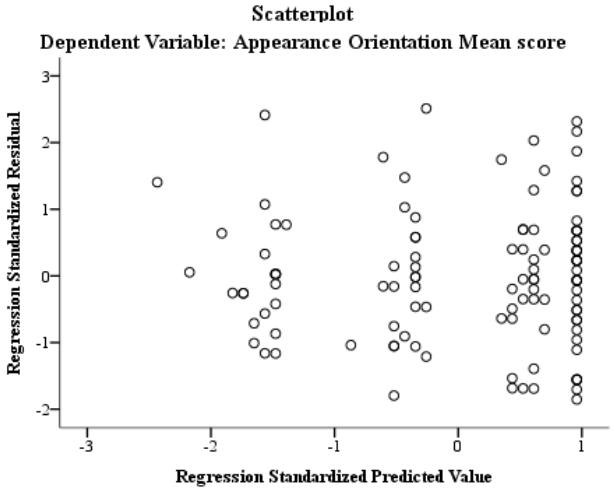


Figure J6. The scatterplot of standardised residuals for AO scores over time for the total sample.

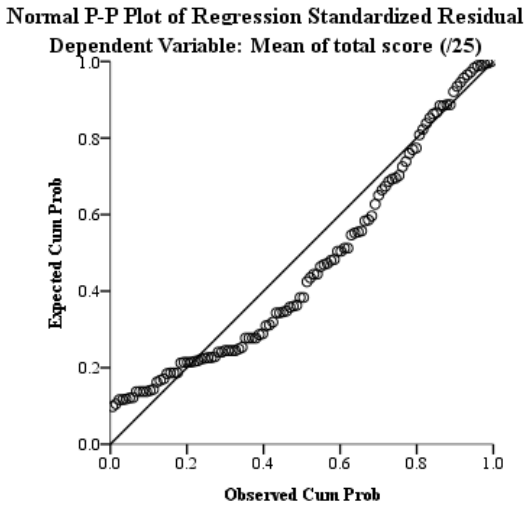


Figure J7. Normal P-P plot of the regression standardised residuals for HSCL-25 scores over time for the total sample.

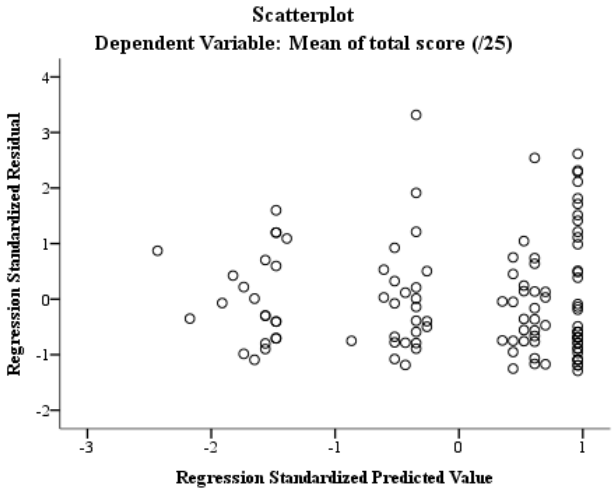


Figure J8. The scatterplot of standardised residuals for HSCL-25 scores over time for the total sample.

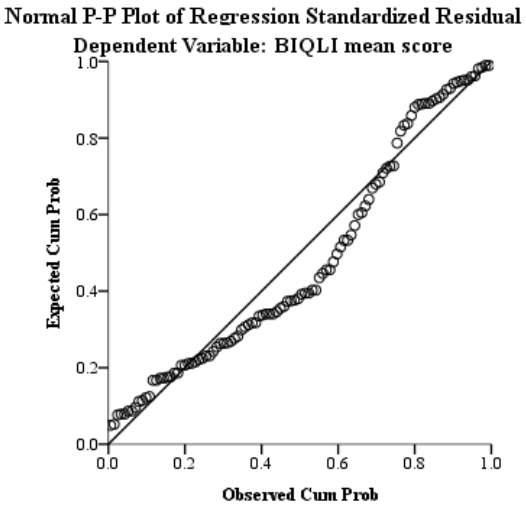


Figure J9. Normal P-P plot of the regression standardised residuals for BIQLI scores over time for the total sample.

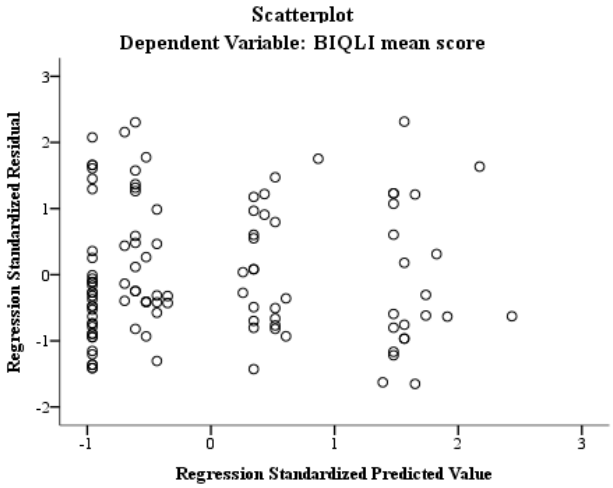


Figure J10. The scatterplot of standardised residuals for BIQLI scores over time. for the total sample

Regression analyses against the outcome variables separately for the *cosmetic group.*

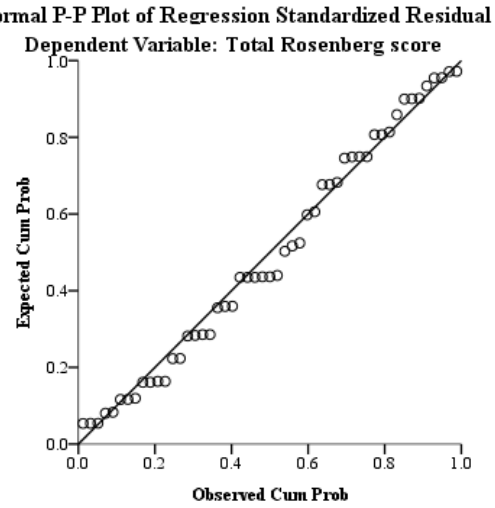


Figure J11. Normal P-P plot of the regression standardised residuals for RSES scores over time for the cosmetic group

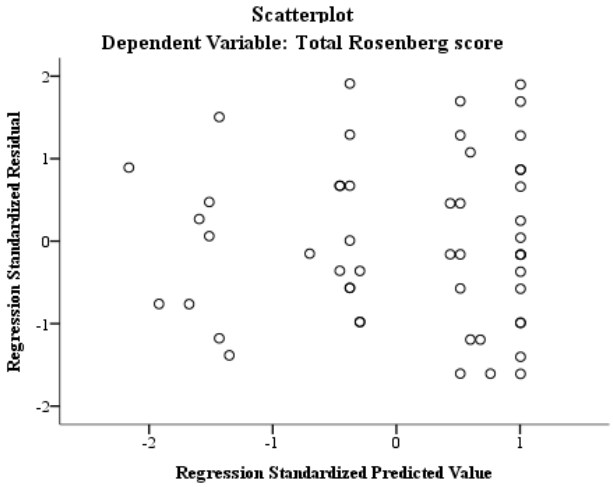


Figure J12. The scatterplot of standardised residuals for RSES scores over time for the cosmetic group.

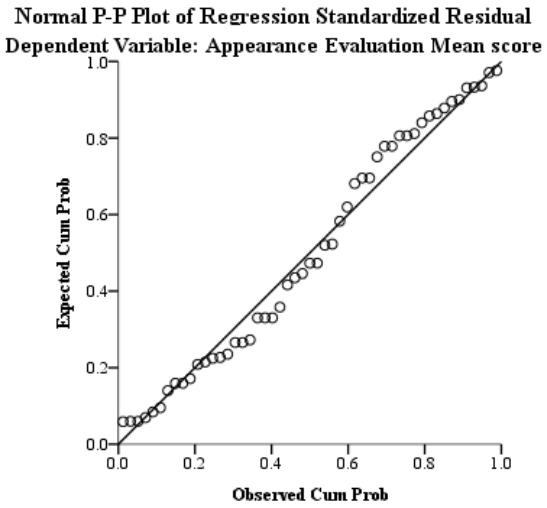


Figure J13. Normal P-P plot of the regression standardised residuals for AE scores over time for the cosmetic group.

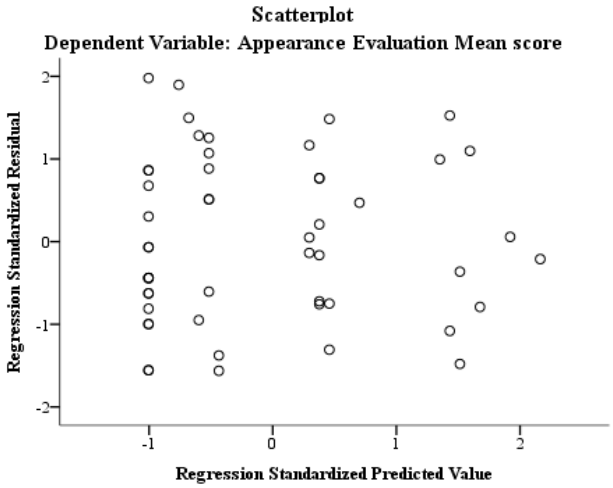


Figure J14. The scatterplot of standardised residuals for AE scores over time for the cosmetic group.

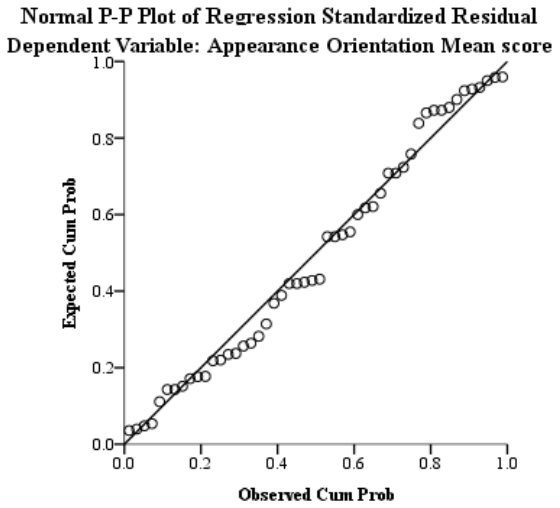


Figure J15. Normal P-P plot of the regression standardised residuals for AO scores over time for the cosmetic group.

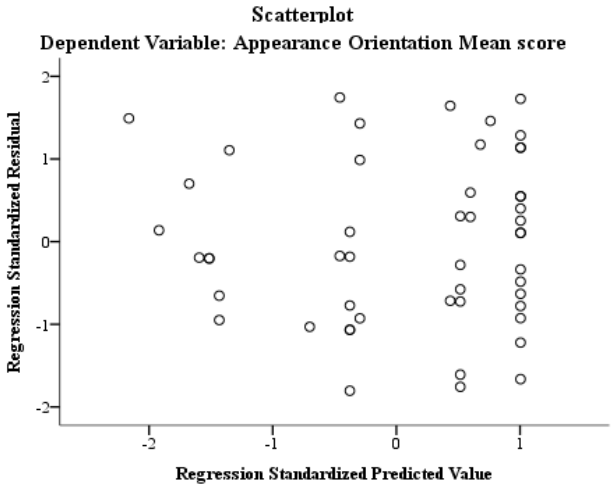


Figure J16. The scatterplot of standardised residuals for AO scores over time for the cosmetic group.

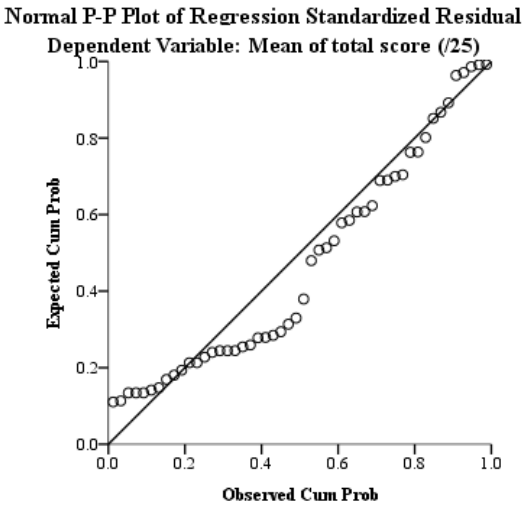


Figure J17. Normal P-P plot of the regression standardised residuals for HSCL-25 scores over time for the cosmetic group.

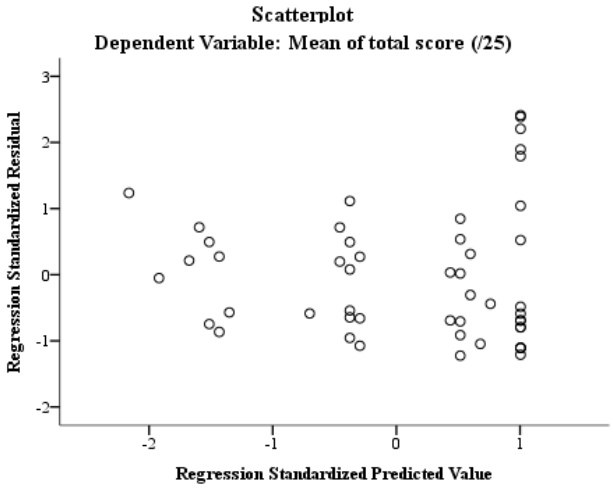


Figure J18. The scatterplot of standardised residuals for HSCL-25 scores over time for the cosmetic group.

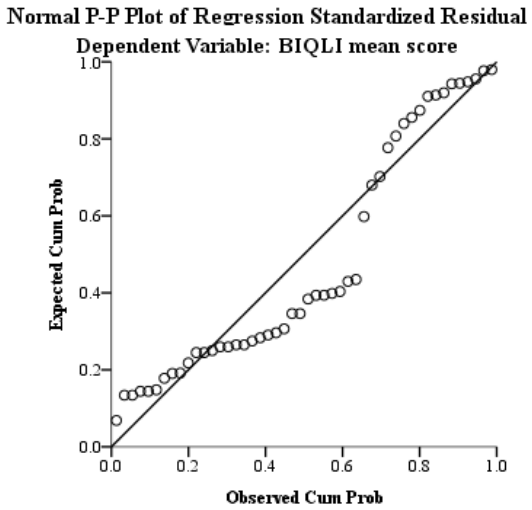


Figure J19. Normal P-P plot of the regression standardised residuals for BIQLI scores over time for the cosmetic group.

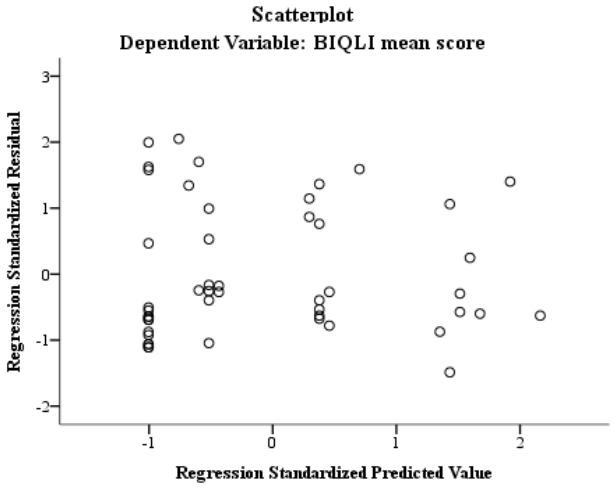


Figure J20. The scatterplot of standardised residuals for BIQLI scores over time for the cosmetic group.

Appendix K

Reliability Analyses for the *Total Sample*

Table K1

RSES, MBSRQ-AE and AO reliability analyses at each wave of data collection

	Wave 1 (*N*=36)			Wave 2 (*N*=29)			Wave 3 (*N*=27)			Wave 4 (*N*=25)		
	Alpha	Mean	SD	Alpha	Mean	SD	Alpha	Mean	SD	Alpha	Mean	SD
RSES	.90			0.90			.82			.91		
1		0.47	0.56		0.48	0.57		0.58	0.50		0.68	0.57
2		0.42	0.55		0.41	0.50		0.62	0.50		0.55	0.51
3r		0.53	0.56		0.45	0.57		0.73	0.60		0.55	0.51
4		0.56	0.61		0.55	0.51		1.04	0.53		0.86	0.56
5r		0.56	0.69		0.48	0.69		0.72	0.72		0.68	0.57
6		1.00	0.63		0.86	0.58		1.19	0.49		0.86	0.64
7		1.06	0.67		0.79	0.49		1.15	0.46		0.91	0.61
8r		0.89	0.78		1.00	0.96		1.19	0.75		1.23	0.92
9r		1.11	0.82		1.21	0.94		1.31	0.74		1.23	0.81
10r		0.89	0.75		0.93	0.75		1.08	0.80		1.14	0.89
Total		7.47	4.86		7.17	4.91		9.61	3.84		8.68	5.04
AE	.84			.86			.86			.88		
1		3.06	0.86		3.41	0.82		3.42	0.71		3.50	0.74
2		3.17	0.94		3.38	0.86		3.15	0.88		3.14	0.94
3		3.42	0.69		3.48	0.74		3.38	0.64		3.41	0.67
4		2.53	1.06		3.21	0.98		3.04	1.04		3.09	1.11
5		2.92	1.05		3.31	1.04		3.19	1.13		3.59	1.05
6r		3.14	0.93		3.59	0.82		3.00	0.94		3.41	1.05
7r		3.81	0.86		3.90	0.94		3.69	0.88		3.77	0.81
Total		22.03	4.60		24.28	4.60		22.88	4.63		23.91	4.97
AO	.85			.86			.86			.83		
1		4.03	1.03		4.07	0.88		4.23	0.73		4.05	0.72
2		4.36	0.68		4.34	0.61		4.44	0.51		4.36	0.58
3		3.28	1.11		3.21	0.90		3.20	1.00		2.91	0.81
4		3.06	1.15		3.00	1.04		2.83	1.17		3.05	0.90
5		3.44	0.91		3.41	0.87		3.44	0.87		3.55	0.67
6		3.06	1.17		2.90	1.18		2.92	1.19		2.82	1.10
7		3.44	1.03		3.31	0.97		3.27	1.01		3.36	0.85
8		3.86	0.80		3.83	0.85		3.72	0.84		3.77	0.87
9		3.72	0.94		3.66	0.90		3.60	0.96		3.64	0.85
10		3.47	0.97		3.41	0.98		3.24	1.05		3.55	0.96
11		4.42	0.69		4.17	0.66		4.16	0.69		4.27	0.70
12		3.67	0.99		3.59	0.78		3.80	0.87		3.68	0.84
Total		43.81	7.17		42.90	6.74		42.84	6.90		43.00	5.90

Table K2

HSCL-25 reliability analyses for the total sample at each wave of data collection

	Wave 1 (*N*=36)			Wave 2 (*N*=29)			Wave 3 (*N*=27)			Wave 4 (*N*=25)		
	Alpha	Mean	SD	Alpha	Mean	SD	Alpha	Mean	SD	Alpha	Mean	SD
HSC	.94			.90			.92			.90		
1		1.42	0.73		1.24	0.64		1.20	0.65		1.36	0.58
2		1.53	0.84		1.28	0.53		1.40	0.71		1.41	0.59
3		1.31	0.58		1.28	0.53		1.28	0.61		1.45	0.60
4		1.58	0.73		1.38	0.62		1.40	0.71		1.41	0.50
5		1.36	0.59		1.28	0.53		1.48	0.71		1.50	0.74
6		1.13	0.33		1.17	0.47		1.16	0.47		1.14	0.35
7		1.86	0.83		1.55	0.69		1.60	0.91		1.77	0.69
8		1.83	0.70		1.62	0.56		1.80	0.76		1.64	0.58
9		1.29	0.63		1.17	0.47		1.26	0.52		1.23	0.43
10		1.81	0.95		1.59	0.73		1.68	0.85		1.59	0.73
11		1.89	0.89		1.86	0.64		1.84	0.62		1.73	0.55
12		1.68	0.80		1.48	0.69		1.64	0.76		1.55	0.60
13		1.58	0.94		1.41	0.57		1.76	1.05		1.55	0.67
14		1.75	1.00		1.69	0.97		1.92	1.15		1.64	0.85
15		1.53	0.94		1.38	0.68		1.36	0.64		1.32	0.57
16		2.03	0.97		1.90	0.77		1.72	0.89		1.77	0.61
17		1.53	0.81		1.38	0.49		1.40	0.58		1.36	0.49
18		1.56	0.73		1.52	0.57		1.64	0.57		1.41	0.59
19		1.49	0.65		1.48	0.57		1.40	0.58		1.36	0.58
20		1.11	0.40		1.03	0.19		1.04	0.20		1.05	0.21
21		1.42	0.81		1.28	0.53		1.20	0.50		1.23	0.43
22		2.19	1.01		1.97	0.78		2.00	0.71		1.86	0.83
23		1.41	0.65		1.31	0.47		1.20	0.41		1.32	0.48
24		1.44	0.65		1.41	0.50		1.24	0.44		1.36	0.49
25		1.21	0.47		1.21	0.41		1.24	0.52		1.32	0.48
Total		38.93	12.11		35.86	8.17		36.86	10.18		36.32	8.06

Table K3

BIQLI reliability analyses for the total sample at each wave of data collection

	Wave 1 (*N*=36)			Wave 2 (*N*=29)			Wave 3 (*N*=27)			Wave 4 (*N*=25)		
	Alpha	Mean	SD	Alpha	Mean	SD	Alpha	Mean	SD	Alpha	Mean	SD
BIQLI	.96			.96			.95			.98		
1		0.41	1.44		0.79	1.42		0.57	1.31		0.41	1.59
2		0.18	1.51		1.03	1.24		0.96	1.02		0.50	1.37
3		0.12	1.27		0.72	1.28		1.04	1.07		0.41	1.47
4		0.09	1.49		0.79	1.32		1.09	1.08		0.45	1.57
5		0.50	1.19		0.76	1.21		0.91	1.08		0.50	1.47
6		0.59	1.05		0.83	1.07		0.87	1.06		0.59	1.30
7		0.71	1.17		0.93	1.36		1.17	1.19		0.82	1.22
8		0.50	1.08		0.83	1.47		1.04	1.33		0.68	1.09
9		-0.09	1.16		0.41	1.27		0.43	1.44		0.36	1.50
10		0.12	1.20		0.69	1.28		0.52	1.44		0.64	1.36
11		-0.38	1.63		0.66	1.20		0.48	1.41		0.41	1.41
12		-0.18	1.47		0.66	1.34		0.22	1.44		0.41	1.53
13		-0.21	1.55		0.52	1.48		-0.22	1.31		0.41	1.18
14		-0.18	1.51		0.21	1.50		-0.09	1.38		0.18	1.26
15		0.50	1.33		0.90	1.21		0.52	.95		0.86	1.25
16		-0.18	1.40		0.14	1.22		0.09	1.24		0.32	1.46
17		0.32	1.22		0.59	1.15		0.43	1.20		0.59	1.14
18		0.00	1.23		0.69	1.14		0.48	1.31		0.64	1.40
19		0.21	1.07		0.83	1.07		0.65	1.30		0.64	1.43
Total		3.03	18.89		12.97	18.34		11.17	17.16		9.82	21.77

Reliability Analyses for the *Cosmetic Group*

Table K4

RSES, MBSRQ-AE and AO reliability analyses at each wave of data collection for the cosmetic group

	Wave 1 (*N*=17)			Wave 2 (*N*=12)			Wave 3 (*N*=13)			Wave 4 (*N*=12)		
	Alpha	Mean	SD	Alpha	Mean	SD	Alpha	Mean	SD	Alpha	Mean	SD
RSES	.89			.91			.85			.92		
1		0.53	0.62		0.58	0.67		0.46	0.52		0.56	0.53
2		0.53	0.62		0.50	0.52		0.54	0.52		0.56	0.53
3r		0.53	0.62		0.42	0.67		0.54	0.66		0.44	0.53
4		0.47	0.62		0.50	0.52		1.00	0.71		0.89	0.78
5r		0.71	0.77		0.67	0.89		0.60	0.76		0.67	0.71
6		1.06	0.66		0.83	0.58		1.15	0.55		0.78	0.67
7		1.24	0.75		0.83	0.58		1.08	0.49		0.89	0.60
8r		0.88	0.78		0.92	1.00		0.92	0.76		0.89	0.60
9r		1.24	0.90		1.08	1.00		1.15	0.80		0.89	0.60
10r		0.94	0.66		0.83	0.83		0.77	0.73		0.67	0.71
Total		8.12	5.01		7.17	5.52		8.21	4.29		7.22	4.76
AE	.84			.93			.84			.92		
1		2.88	0.99		3.67	0.89		3.76	0.47		4.00	0.50
2		2.82	1.07		3.33	0.89		3.38	0.77		3.33	1.00
3		3.35	0.70		3.25	0.97		3.31	0.63		3.33	0.71
4		2.12	1.22		3.33	1.15		3.15	1.14		3.67	1.22
5		2.47	1.01		3.17	1.27		3.62	1.04		4.00	1.00
6r		2.88	1.05		3.67	0.98		3.23	1.01		3.78	1.09
7r		3.59	0.94		3.75	1.29		3.92	0.95		3.89	1.05
Total		20.12	5.01		24.17	6.26		24.37	4.48		26.00	5.55
AO	.82			.90			.88			.80		
1		4.18	0.88		4.17	0.72		4.22	0.64		4.33	0.50
2		4.41	0.80		4.50	0.67		4.42	0.51		4.56	0.53
3		3.65	0.93		3.25	1.06		3.08	1.00		3.00	0.50
4		3.18	1.07		3.00	1.13		2.64	1.28		3.00	0.87
5		3.41	0.87		3.42	0.90		3.25	0.87		3.33	0.71
6		3.24	1.09		3.00	1.13		2.83	1.27		2.56	1.13
7		3.59	1.00		3.42	0.90		3.22	0.95		3.56	0.88
8		3.88	0.86		4.00	0.85		3.67	0.78		4.11	0.60
9		3.82	0.88		3.58	0.90		3.58	1.00		3.67	0.71
10		3.29	0.99		3.50	1.09		3.17	1.11		3.56	1.01
11		4.47	0.80		4.33	0.78		4.08	0.67		4.11	0.78
12		3.65	0.86		3.67	0.78		3.50	1.00		3.44	1.01
Total		44.74	6.45		43.83	7.65		41.67	7.55		43.22	5.28

Table K5

HSCL-25 reliability analyses for the cosmetic group at each wave of data collection for the cosmetic group

	Wave 1 (*N*=17)			Wave 2 (*N*=12)			Wave 3 (*N*=13)			Wave 4 (*N*=12)		
	Alpha	Mean	SD	Alpha	Mean	SD	Alpha	Mean	SD	Alpha	Mean	SD
HSC	.94			.86			.83			.86		
1		1.53	0.87		1.08	0.29		1.07	0.29		1.22	0.44
2		1.71	0.92		1.08	0.29		1.08	0.29		1.22	0.44
3		1.12	0.33		1.33	0.49		1.25	0.62		1.56	0.73
4		1.65	0.86		1.33	0.65		1.25	0.45		1.44	0.53
5		1.29	0.59		1.17	0.39		1.25	0.45		1.33	0.71
6		1.16	0.36		1.08	0.29		1.08	0.29		1.11	0.33
7		1.76	0.97		1.50	0.67		1.58	0.90		1.56	0.73
8		1.88	0.78		1.58	0.51		1.67	0.78		1.56	0.53
9		1.38	0.73		1.12	0.29		1.08	0.29		1.11	0.33
10		2.06	1.09		1.75	0.62		1.58	1.00		1.22	0.44
11		2.00	1.06		1.75	0.62		1.50	0.67		1.56	0.53
12		1.50	0.82		1.17	0.39		1.42	0.51		1.33	0.50
13		1.53	1.01		1.33	0.49		1.75	0.97		1.44	0.73
14		1.76	1.15		1.58	1.00		2.00	1.21		1.78	1.09
15		1.53	0.94		1.25	0.45		1.33	0.65		1.22	0.44
16		2.24	1.03		2.08	0.90		1.58	0.90		1.67	0.50
17		1.59	0.87		1.33	0.49		1.25	0.45		1.33	0.50
18		1.53	0.80		1.33	0.49		1.50	0.52		1.33	0.50
19		1.41	0.71		1.25	0.45		1.17	0.39		1.11	0.33
20		1.24	0.56		1.08	0.29		1.08	0.29		1.11	0.33
21		1.47	0.94		1.25	0.45		1.08	0.29		1.22	0.44
22		2.18	1.07		1.67	0.65		1.75	0.62		1.67	0.71
23		1.47	0.80		1.33	0.49		1.17	0.39		1.22	0.44
24		1.53	0.72		1.50	0.52		1.25	0.45		1.33	0.50
25		1.29	0.59		1.17	0.39		1.25	0.45		1.11	0.33
Total		39.79	13.61		33.00	6.31		32.92	6.80		33.78	6.53

Table K6

BIQLI reliability analyses for the cosmetic group at each wave of data collection for the cosmetic group

	Wave 1 (*N*=17)			Wave 2 (*N*=12)			Wave 3 (*N*=13)			Wave 4 (*N*=12)		
	Alpha	Mean	SD	Alpha	Mean	SD	Alpha	Mean	SD	Alpha	Mean	SD
BIQLI	.98			.97			.96			.97		
1		0.25	1.57		0.75	1.42		0.55	1.37		0.56	1.59
2		-.031	1.62		1.17	1.47		1.00	1.26		0.78	1.20
3		-0.06	1.48		0.83	1.19		1.27	.90		0.00	1.32
4		-0.25	1.81		0.67	1.56		1.18	1.08		0.44	1.42
5		0.38	1.26		0.58	1.31		1.00	1.26		0.00	1.41
6		0.50	1.10		0.67	1.23		1.09	1.14		0.11	1.17
7		0.63	1.31		0.58	1.56		1.27	1.19		0.67	1.22
8		0.44	1.03		0.67	1.72		0.82	1.47		0.67	1.12
9		-0.19	1.28		0.50	1.38		0.64	1.43		0.56	1.51
10		-0.06	1.34		0.92	1.44		0.73	1.56		0.67	1.41
11		-1.0	1.83		1.08	1.16		0.55	1.69		0.56	1.24
12		-0.69	1.66		0.75	1.48		0.09	1.76		0.44	1.67
13		-0.38	1.50		0.33	1.61		-0.18	1.60		0.11	1.17
14		-0.31	1.54		0.17	1.75		0.27	1.68		0.00	1.22
15		0.25	1.06		0.58	1.08		0.73	1.10		0.56	1.24
16		-0.38	1.63		0.25	1.06		0.18	1.33		0.22	1.72
17		-0.06	1.39		0.58	1.24		0.73	1.27		0.56	1.01
18		-0.44	1.36		0.75	1.14		0.64	1.57		0.89	1.27
19		-0.06	1.18		0.92	1.16		0.91	1.58		0.78	1.30
Total		-1.75	22.92		12.75	20.66		13.45	19.94		8.56	20.35

Appendix L

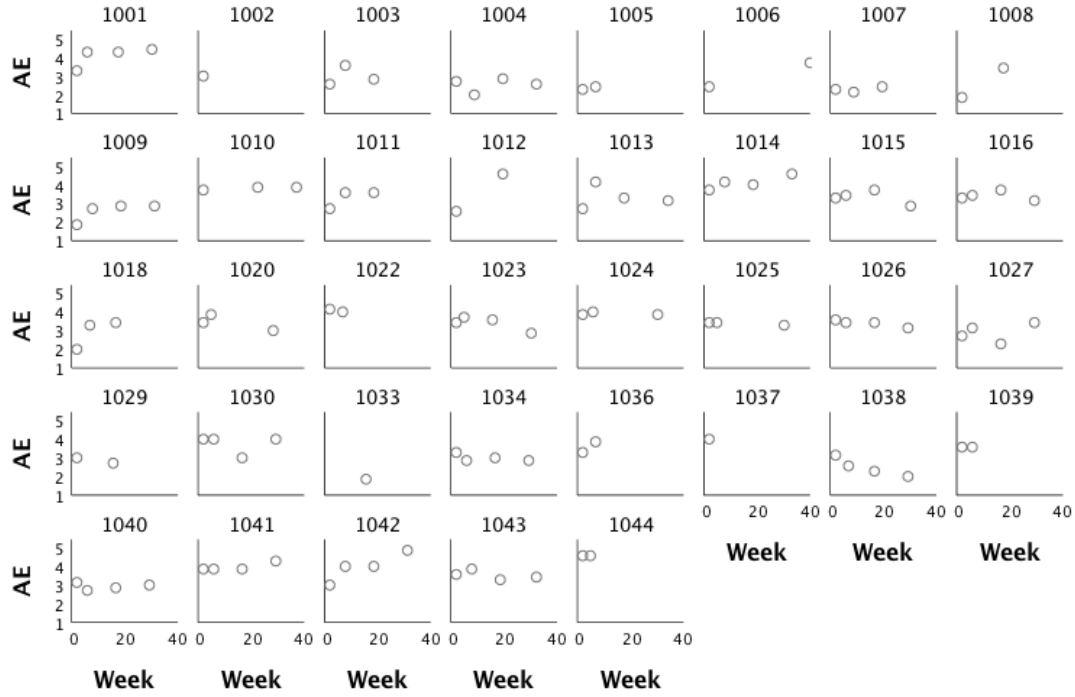


Figure L1. Empirical growth plots of individuals' MBSRQ-AE scores over time from week 0 to week 40 for the total sample (each plot represents one participant with their participant ID number displayed on top of the plots)

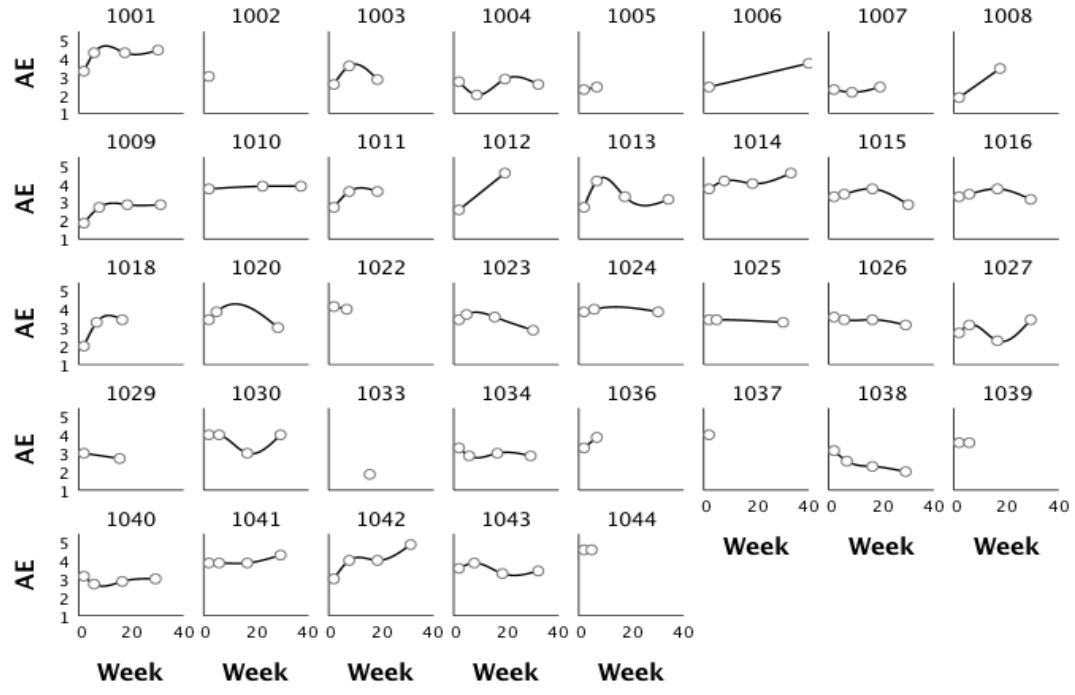


Figure L2. Smooth nonparametric trajectories superimposed on each individual empirical growth plot of MBSRQ-AE scores for the total sample

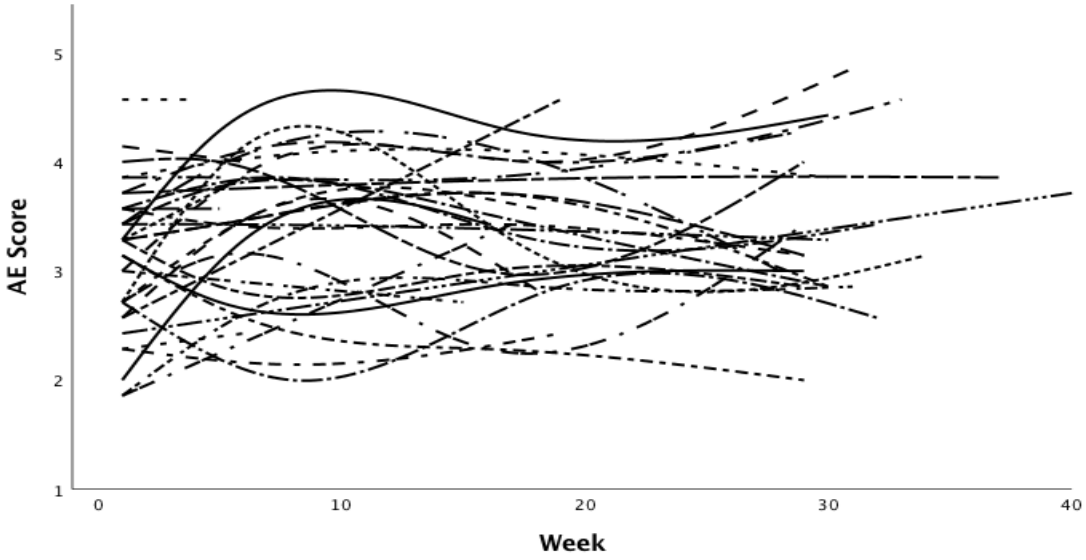


Figure L3. A group summary of nonparametric trajectories showing all 37 participants' MBSRQ-AE scores from week 0 to week 40

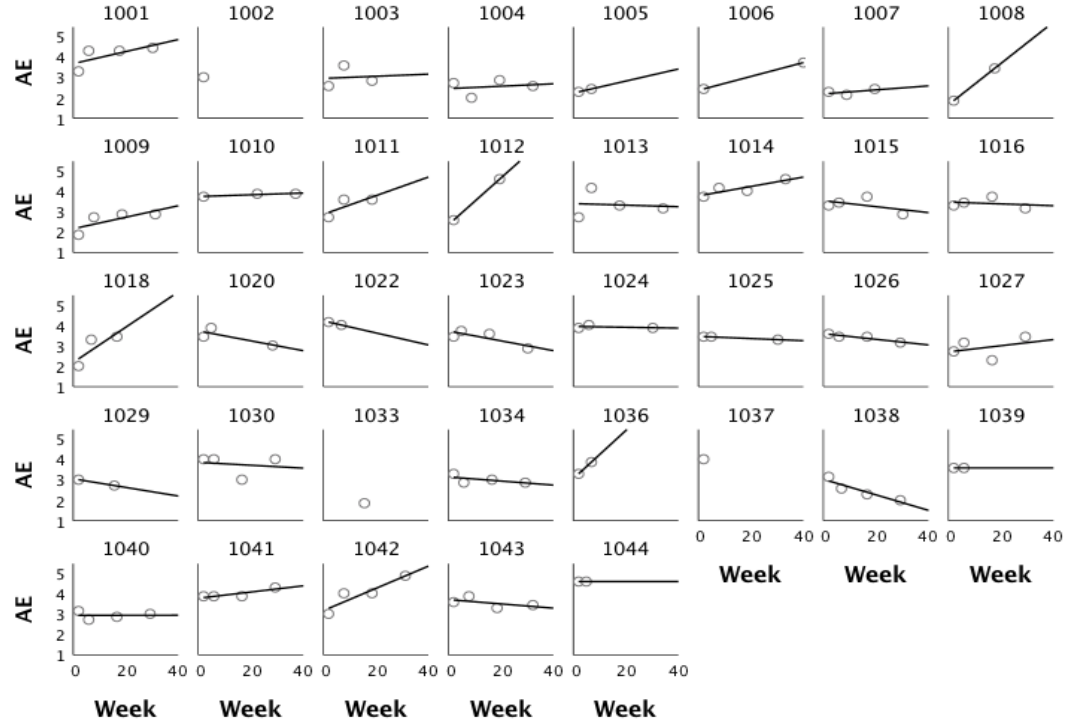


Figure L4. OLS trajectories superimposed on each individual empirical growth plot of MBSRQ-AE scores for the total sample

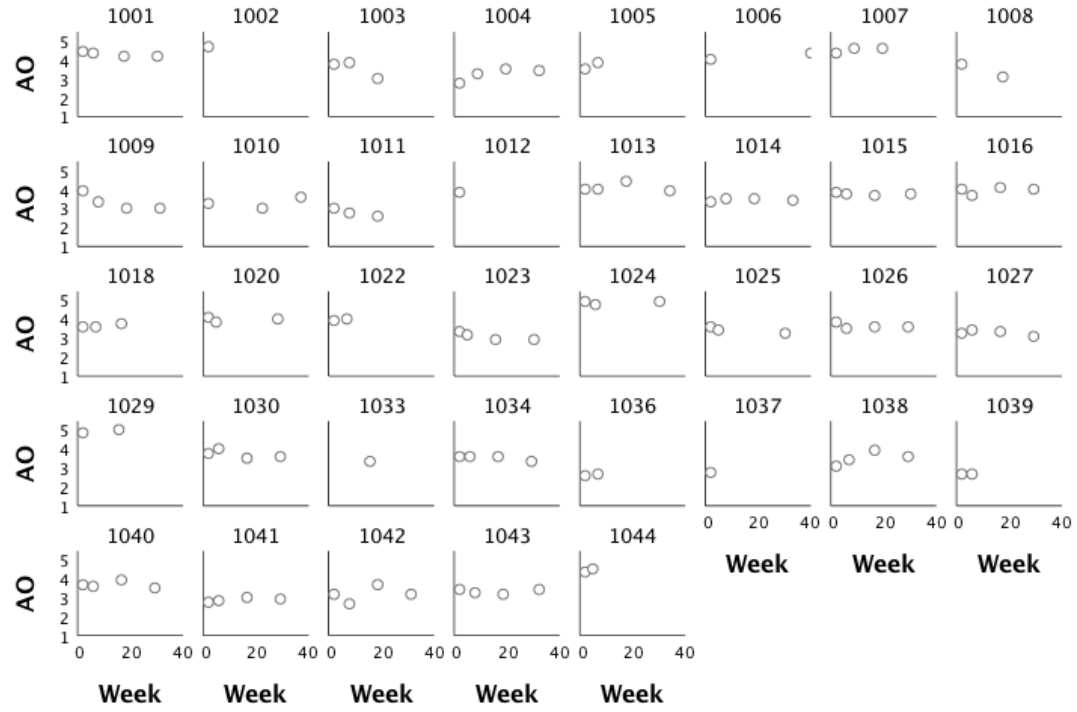


Figure L5. Empirical growth plots of individuals' MBSRQ-AO scores over time from week 0 to week 40 for the total sample

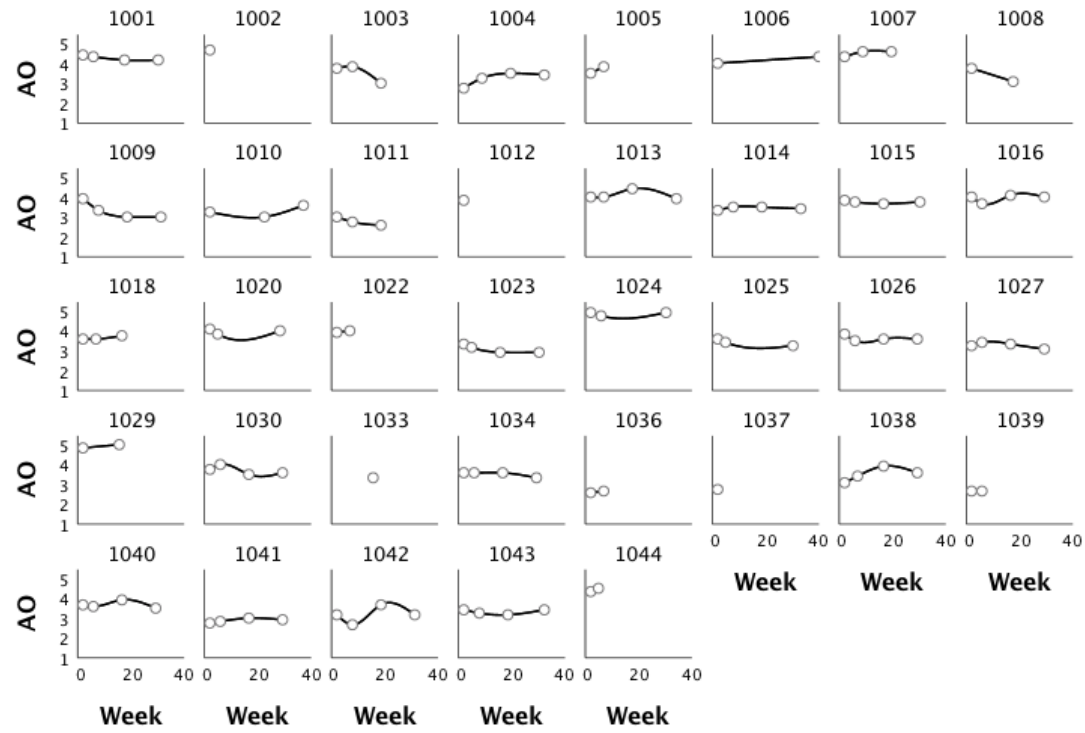


Figure L6. Smooth nonparametric trajectories superimposed on each individual empirical growth plot of MBSRQ-AO scores for the total sample

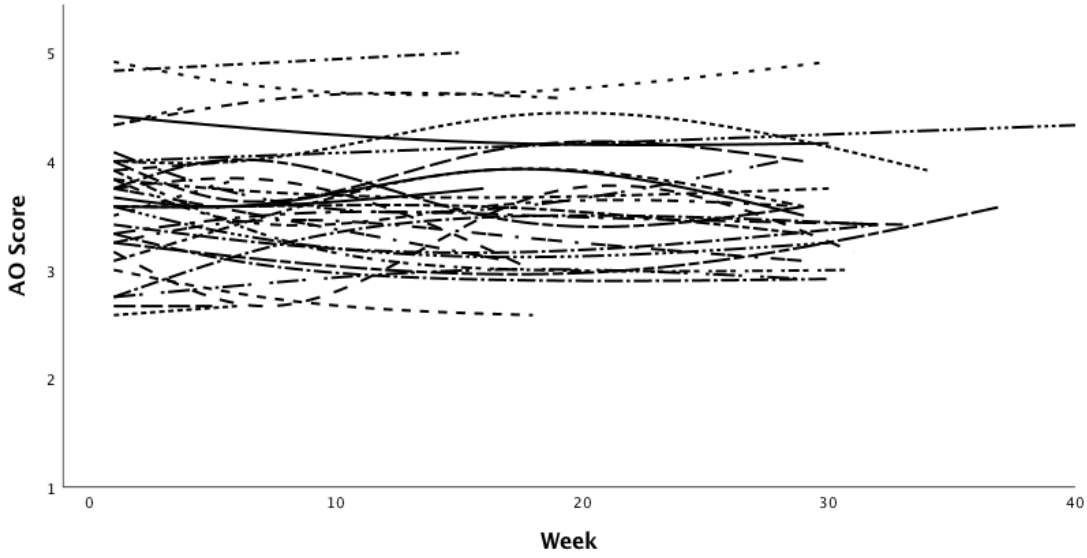


Figure L7. A group summary of nonparametric trajectories showing all 37 participants' MBSRQ-AO scores from week 0 to week 40

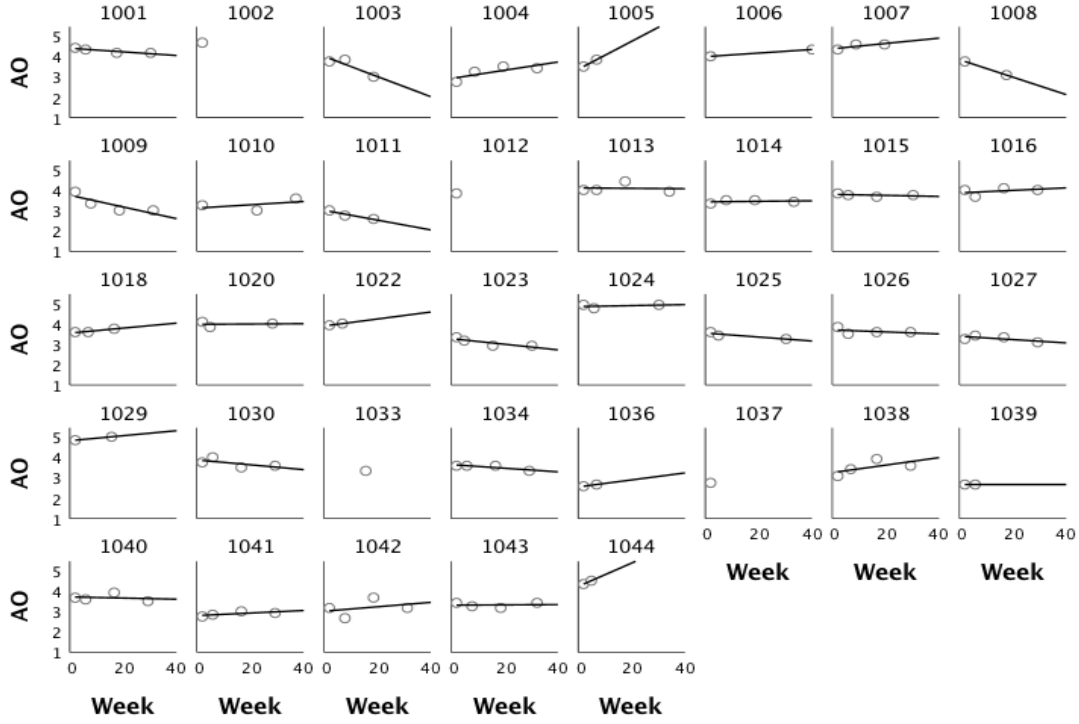


Figure L8. OLS trajectories superimposed on each individual empirical growth plot of MBSRQ-AO scores for the total sample

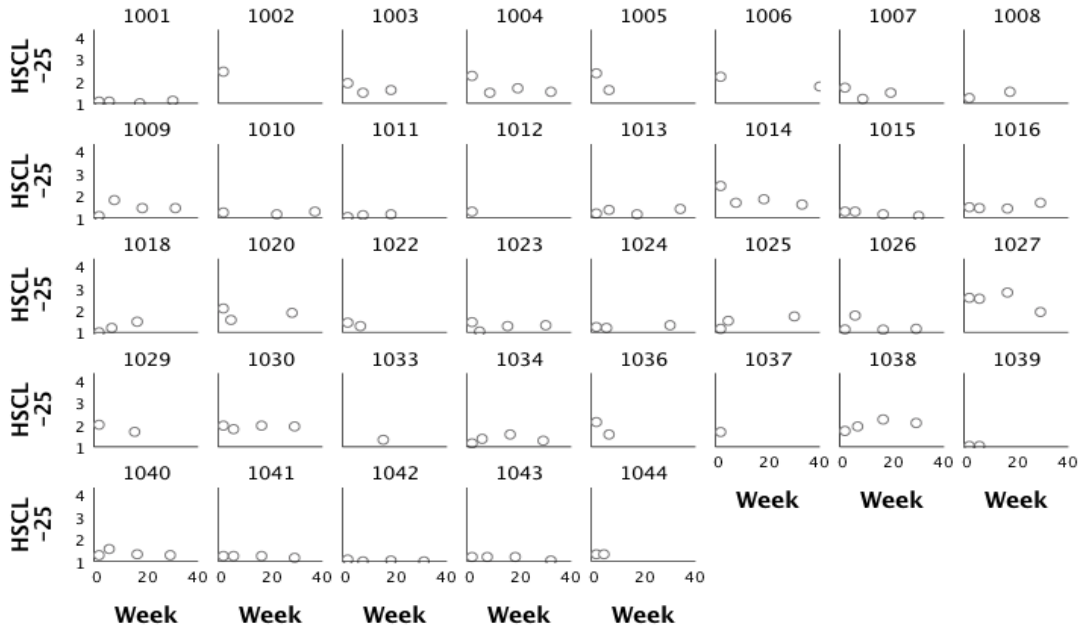


Figure L9. Empirical growth plots of individuals' HSCL-25 scores over time from week 0 to week 40 for the total sample

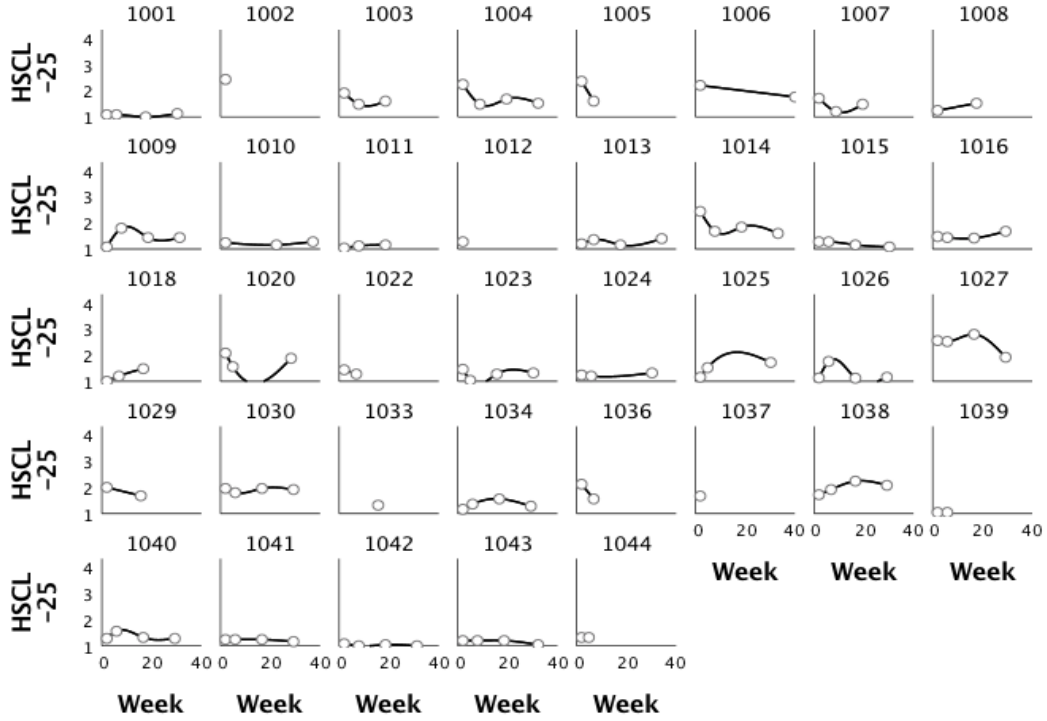


Figure L10. Smooth nonparametric trajectories superimposed on each individual empirical growth plot of HSCL-25 scores for the total sample

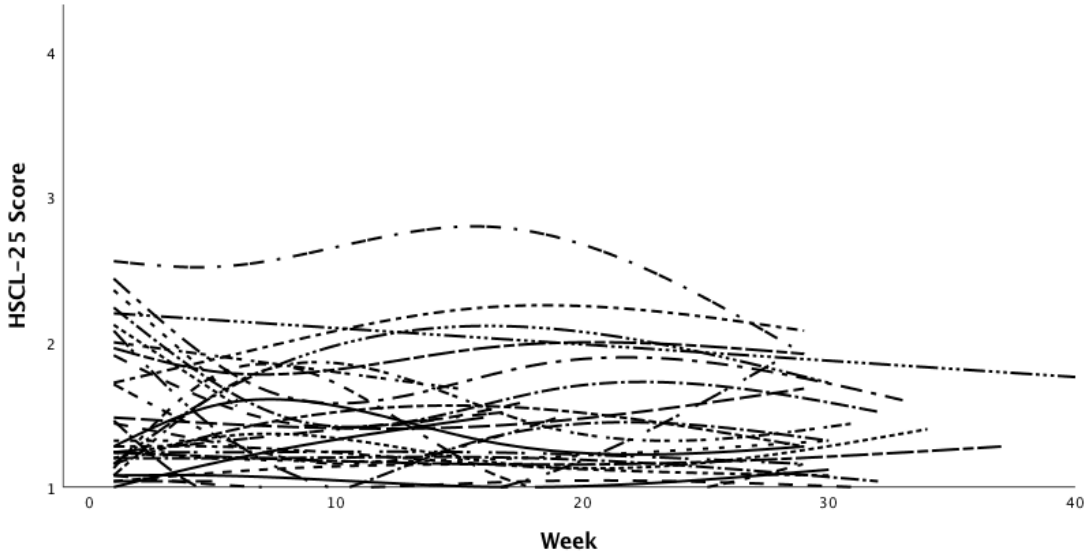


Figure L11. A group summary of nonparametric trajectories showing all 37 participants' HSCL-25 scores from week 0 to week 40

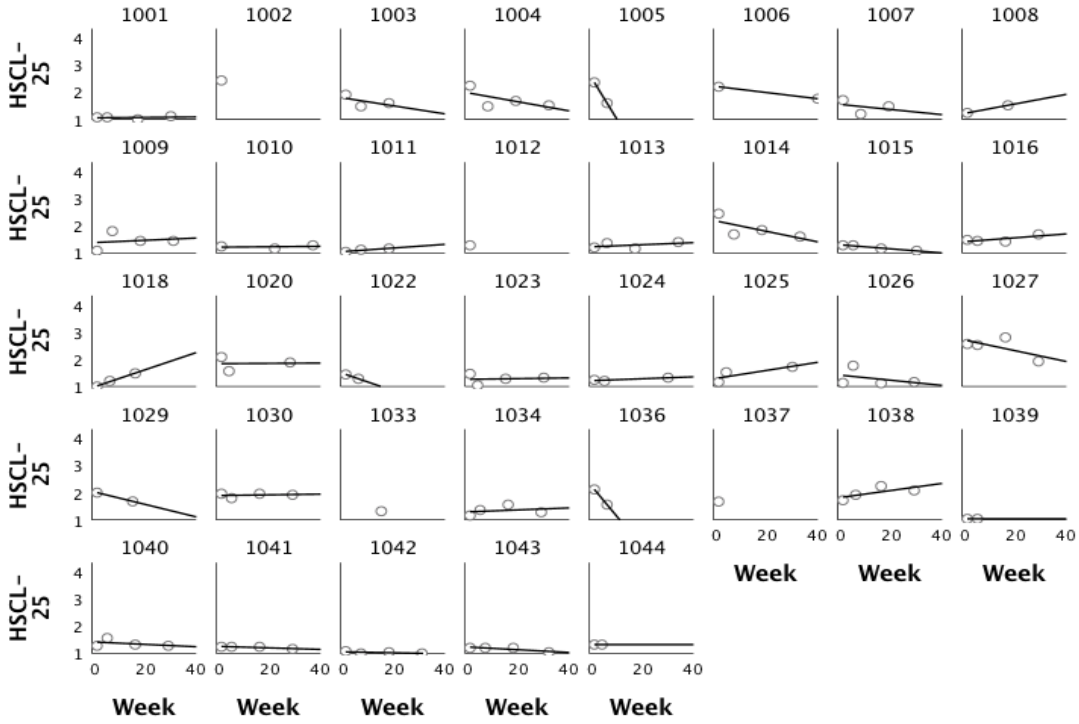


Figure L12. OLS trajectories superimposed on each individual empirical growth plot of HSCL-25 scores for the total sample

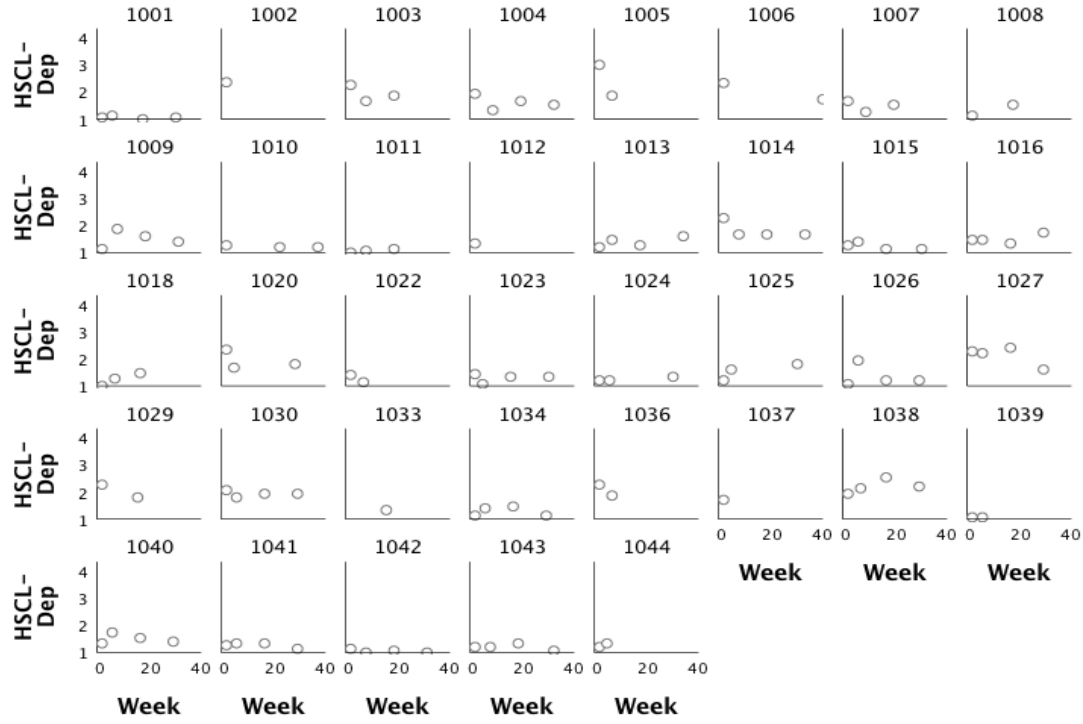


Figure L13. Empirical growth plots of individuals' HSCL depression scores over time from week 0 to week 40 for the total sample

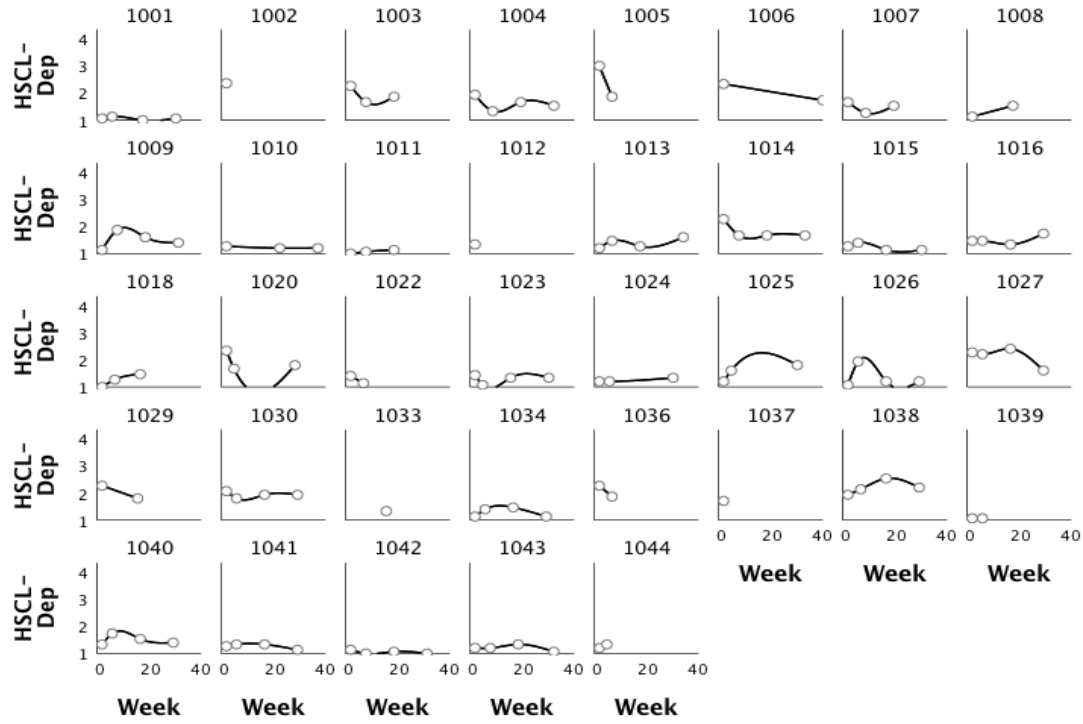


Figure L14. Smooth nonparametric trajectories superimposed on each individual empirical growth plot of HSCL depression scores for the total sample

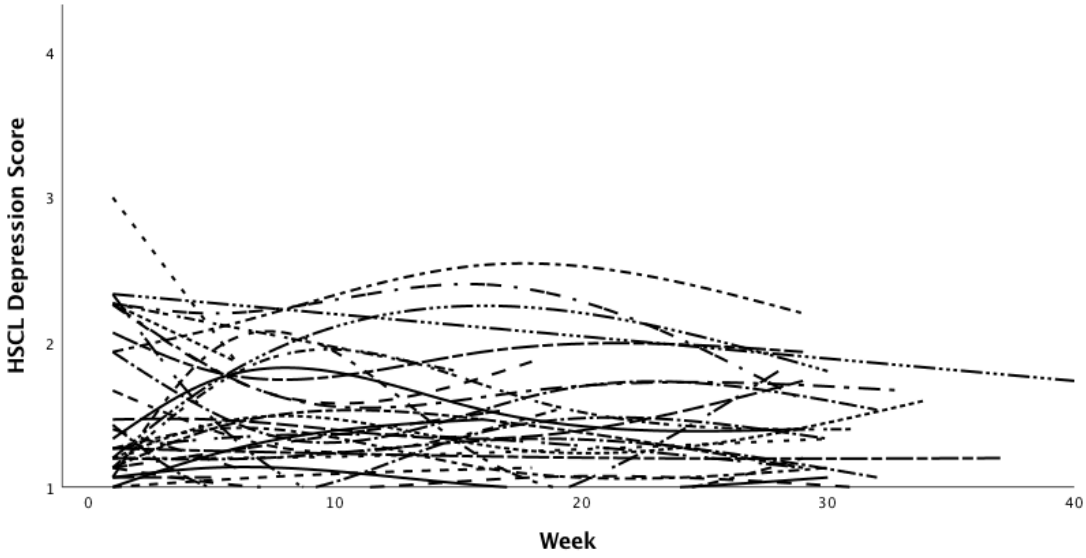


Figure L15. A group summary of nonparametric trajectories showing all 37 participants' HSCL depression scores from week 0 to week 40

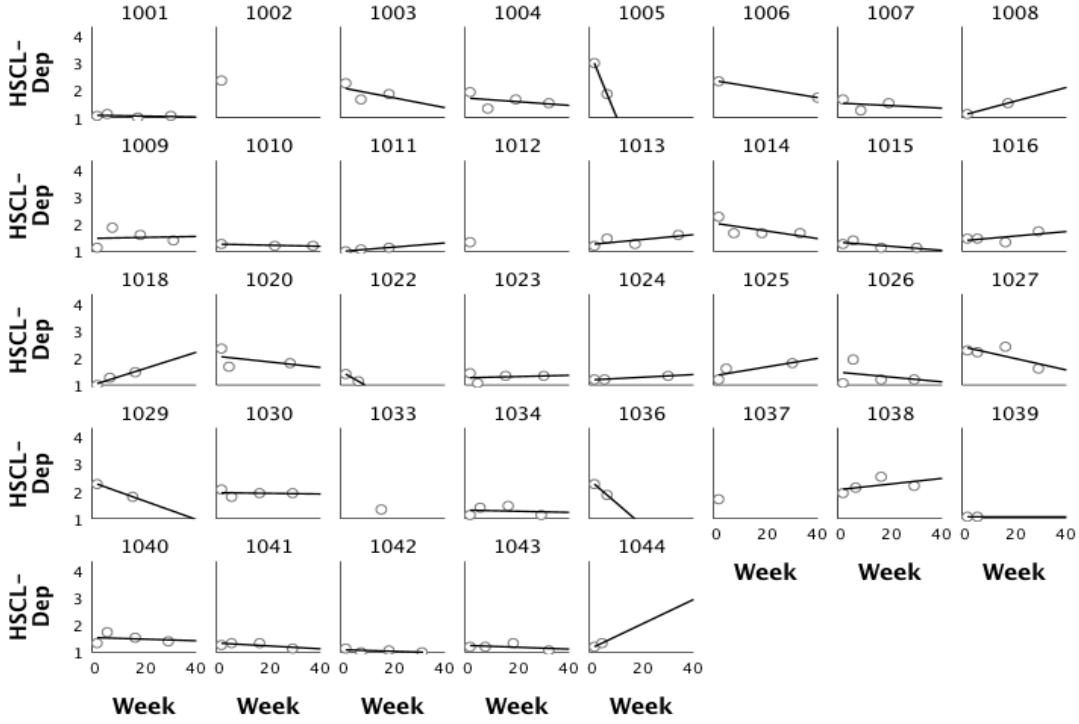


Figure L16. OLS trajectories superimposed on each individual empirical growth plot of HSCL depression scores for the total sample

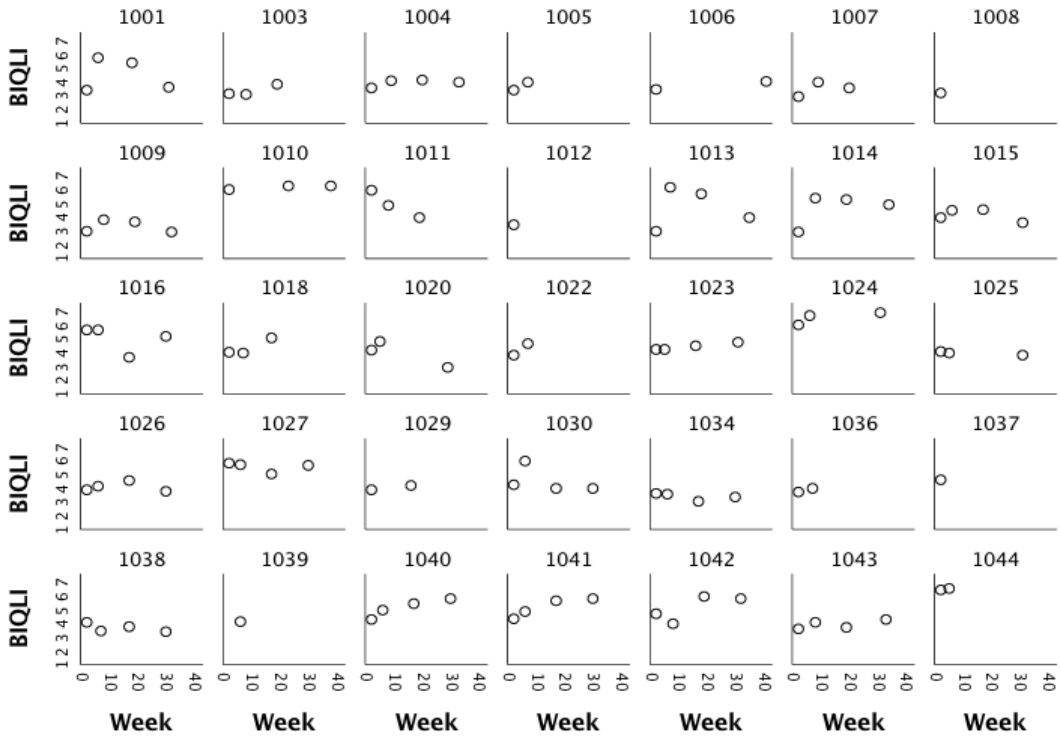


Figure L17. Empirical growth plots of individuals' BIQLI scores (recoded) over time from week 0 to week 40 for the total sample

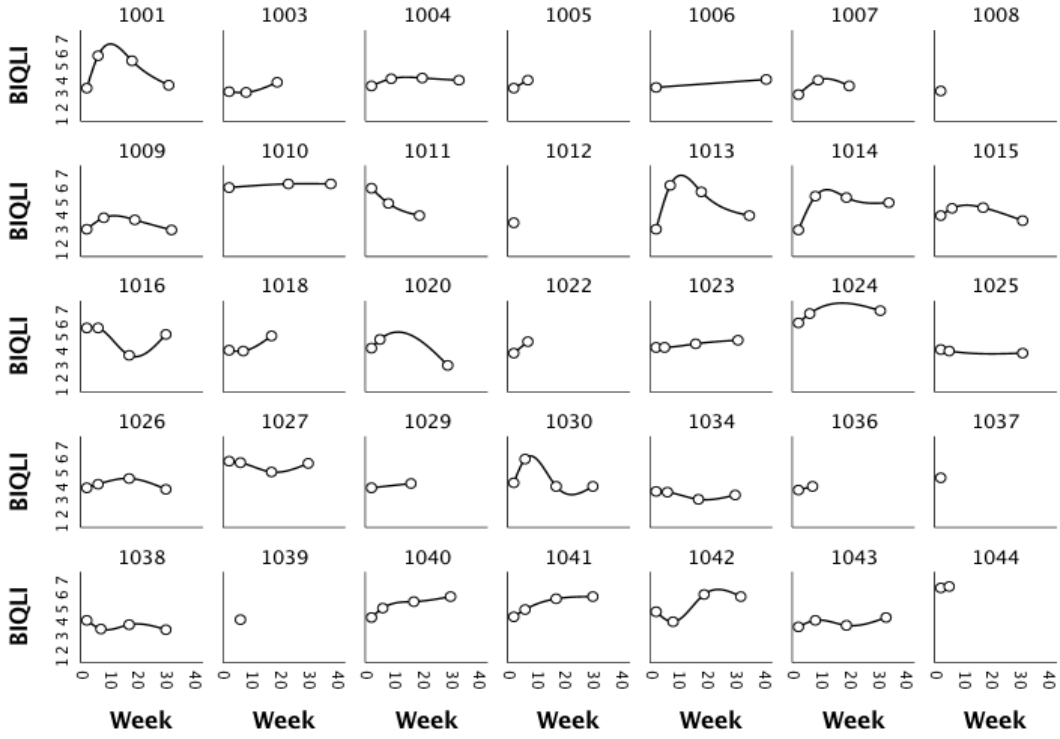


Figure L18. Smooth nonparametric trajectories superimposed on each individual empirical growth plot of BIQLI scores (recoded) for the total sample

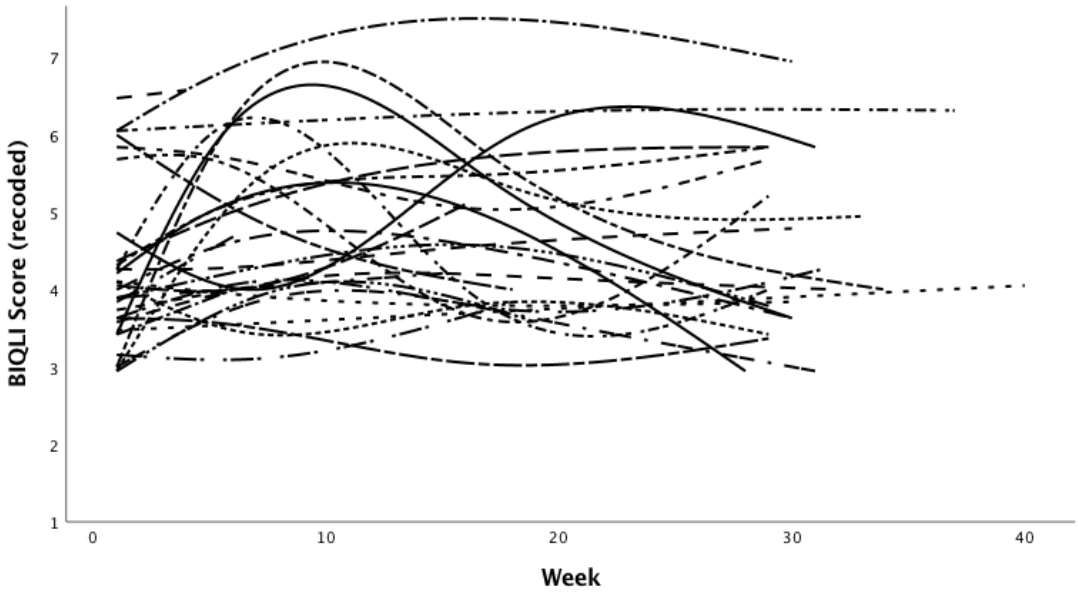


Figure L19. A summary of nonparametric trajectories showing all 35 participants' BIQLI scores (recoded) from week 0 to week 40

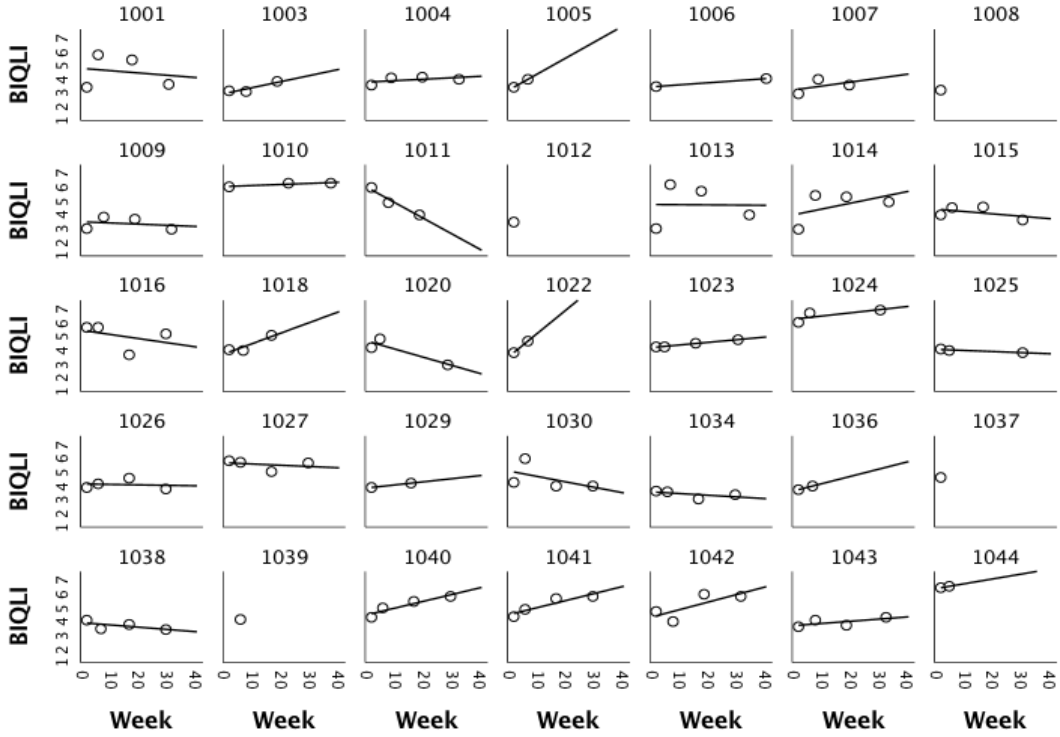


Figure L20. OLS trajectories superimposed on each individual empirical growth plot of BIQLI scores (recoded) for the total sample

Appendix M

Multilevel model building for the total sample
Model A and B

Table M1

The unconditional means model and the unconditional growth model for the total sample with MBSRQ-AE and -AO scores in each Modal A, and MBSRQ-AE and -AO scores with the time variable in each Model B

			AE estimate		AO estimate	
Level	Variable	Parameter	Model A	Model B	Model A	Model B
Fixed Effects						
Initial status	Intercept	Υ^{00}	3.30***	3.22***	3.62***	3.64***
			(0.09)	(0.10)	(0.09)	(0.10)
Rate of change	Intercept	Υ^{10}	-	0.01	-	-0.002
			-	(0.02)	-	(0.002)
Variance components						
Level 1	Within person	σ_ε^2	0.21***	0.16***	.05***	0.05***
			(0.04)	(0.04)	(.01)	(0.01)
Level 2	In initial status	σ_0^2	0.25***	0.28**	.30***	0.30***
			(0.08)	(0.10)	(.08)	(0.08)
	In rate of change	σ_1^2	-	0.00	-	0.00
			-	(0.00)	-	(0.00)
	Covariance	σ_{01}	-	0.00	-	0.00
			-	(0.00)	-	(0.00)

Note. ***$p < .001$; **$p < .01$; *$p < .05$

Table M2

The unconditional means model and the unconditional growth model for the total sample with HSCL-25 and HSCL depression scores in each Modal A, and HSCL-25 and HSCL depression scores with the time variable in each Model B

			HSCL-25		HSCL-Dep	
Level	Variable	Parameter	Model A	Model B	Model A	Model B
Fixed Effects						
Initial status	Intercept	Υ^{00}	1.50***	1.53***	1.54***	1.57***
			(0.06)	(0.07)	(0.06)	(0.07)
Rate of change	Intercept	Υ^{10}	-	-0.00	-	-0.00
			-	(0.00)	-	(0.00)
Variance components						
Level 1	Within person	σ_ε^2	0.05***	0.05***	0.06***	0.06***
			(0.01)	(0.01)	0.01	(0.01)
Level 2	In initial status	σ_0^2	0.11***	0.15**	0.12***	0.15***
			(0.03)	(0.04)	(0.03)	(0.05)
	In rate of change	σ_1^2	-	0.00	-	0.00
			-	(0.00)	-	(0.00)
	Covariance	σ_{01}	-	-0.002*	-	-0.002*
			-	(0.00)	-	(0.00)

Note. ***$p < .001$; **$p < .01$; *$p < .05$

Table M3

The unconditional means model and the unconditional growth model for the total sample with BIQLI scores in Modal A, and BIQLI scores with the time variable in Model B

			BIQLI estimate	
Level	Variable	Parameter	Model A	Model B
Fixed Effects				
Initial status	Intercept	Υ^{00}	4.44***	4.38***
			(0.14)	(0.15)
Rate of change	Intercept	Υ^{10}	-	0.01
			-	(0.01)
Variance components				
Level 1	Within person	σ^2_ε	0.50***	0.49***
			(0.08)	(0.08)
Level 2	In initial status	σ^2_0	0.54**	0.41*
			(0.18)	(0.19)
	In rate of change	σ^2_1	-	0.00
			-	(0.00)
	Covariance	σ_{01}	-	0.00
			-	(0.01)

Note. ***p < .001; **p < .01; *p <.05

Appendix N

Multilevel model building for the cosmetic group
Model A and B

Table N1

The unconditional means model and the unconditional growth model for the cosmetic group with MBSRQ-AE and -AO scores in each Modal A, and MBSRQ-AE and -AO scores with the time variable in each Model B

			AE estimate		AO estimate	
Level	Variable	Parameter	Model A	Model B	Model A	Model B
Fixed Effects						
Initial status	Intercept	Υ^{00}	3.29***	3.03***	3.69***	3.71***
			(0.16)	(0.17)	(0.13)	(0.13)
Rate of change	Intercept	Υ^{10}	-	0.02**	-	-0.00
			-	(0.01)	-	(0.00)
Variance components						
Level 1	Within person	σ_ε^2	0.31***	0.21**	.08***	0.08**
			(0.07)	(0.07)	(.02)	(0.03)
Level 2	In initial status	σ_0^2	0.33*	0.35*	0.24**	0.25*
			(0.15)	(0.18)	(0.10)	(0.10)
	In rate of change	σ_1^2	-	0.00	-	0.00
			-	(0.00)	-	(0.00)
	Covariance	σ_{01}	-	-0.00	-	-0.00
			-	(0.00)	-	(0.00)

Note. ***$p < .001$; **$p < .01$; *$p < .05$

Table N2

The unconditional means model and the unconditional growth model for the cosmetic group with HSCL-25 and HSCL depression scores in each Modal A, and HSCL-25 and HSCL depression scores with the time variable in each Model B

			HSCL-25		HSCL-Dep	
Level	Variable	Parameter	Model A	Model B	Model A	Model B
Fixed Effects						
Initial status	Intercept	Υ^{00}	1.48***	1.54***	1.52***	1.57***
			(0.09)	(0.11)	(0.10)	(0.12)
Rate of change	Intercept	Υ^{10}	-	-0.01	-	-0.01
			-	(0.00)	-	(0.00)
Variance components						
Level 1	Within person	σ_ε^2	0.06***	0.06	0.06**	0.07**
			(0.01)	(0.05)	(0.02)	(0.03)
Level 2	In initial status	σ_0^2	0.11*	0.11	0.14*	0.19
			(0.05)	(0.19)	(0.06)	(0.11)
	In rate of change	σ_1^2	-	0.00	-	0.00
			-	(0.00)	-	(0.00)
	Covariance	σ_{01}	-	-0.00	-	-0.00
			-	(0.00)	-	(0.00)

Note. ***p < .001; **p < .01; *p <.05

Table N3

The unconditional means model and the unconditional growth model for the cosmetic group with BIQLI scores in Modal A, and BIQLI scores with the time variable in Model B

			BIQLI estimate	
Level	Variable	Parameter	Model A	Model B
Fixed Effects				
Initial status	Intercept	Υ^{00}	4.36***	4.23***
			(0.24)	(0.25)
Rate of change	Intercept	Υ^{10}	-	0.01
			-	(0.02)
Variance components				
Level 1	Within person	σ_{ε}^2	0.71***	0.90***
			(0.18)	(0.28)
Level 2	In initial status	σ_0^2	0.62	0.30
			(0.33)	(0.40)
	In rate of change	σ_1^2	-	0.00
			-	(0.00)
	Covariance	σ_{01}	-	0.03
			-	(0.00)

Note. ***$p < .001$; **$p < .01$; *$p < .05$

Appendix O

Multilevel model building for the cosmetic group

Model C

Table O1

A collection of Model C for the cosmetic group showing the effects of marital status ("Married") on each psychological measure

			Model C estimate					
	Parameter		RSES	AE	AO	HSCL-25	HSCL-Dep	BIQLI
Fixed Effects								
Initial status	Intercept	Υ^{00}	0.84***	2.93***	3.71***	1.59***	1.60***	4.16***
			(1.53)	(0.23)	(0.17)	(0.14)	(0.17)	(0.33)
	Married	Υ^{01}	-1.97	0.22	0.02	-0.12	-0.07	0.15
			(2.37)	(0.35)	(0.27)	(0.22)	(0.27)	(0.49)
Rate of change	Intercept	Υ^{10}	-0.00	0.03*	-0.01	-0.00	-0.00	0.00
			(0.03)	(0.01)	(0.01)	(0.00)	(0.01)	(0.03)
	Married	Υ^{11}	0.01	-0.01	-0.01	-0.01	-0.01	0.02
			(0.05)	(0.01)	(0.01)	(0.01)	(0.01)	(0.05)
Variance components								
Level 1	Within person	σ_ε^2	2.07**	0.20**	0.07**	0.05**	0.06***	0.90**
			(0.67)	(0.07)	0.02	(0.02)	(0.02)	(0.28)
Level 2	In initial status	σ_ε^2	21.66**	0.35*	0.24*	0.15**	0.00	0.28
			(7.96)	(0.018)	(0.10)	(0.05)	(0.00)	(0.40)
	In rate of change	σ_1^2	0.00	0.00	0.00	0.00	0.00	0.00
			(0.00)	(0.00)	(0.00)	(0.00)	0.00	(.00)
	Covariance	σ_{01}	-0.10	-0.00	-0.00	-0.00	-0.01***	.03
			(0.12)	(0.00)	(0.00)	(0.00)	0.00	(.00)

Note. ***p < .001; **p < .01; *p <.05; The *'Married'* variable consists of two dummy variables of married ('1') and not married ('0').

Table O2

A collection of Model C for the cosmetic group showing the effects of unrealistic expectation ("Unrealistic") on each psychological measure

			Model C estimate					
	Parameter		RSES	AE	AO	HSCL-25	HSCL-Dep	BIQLI
Fixed Effects								
Initial status	Intercept	Υ^{00}	9.21***	2.74***	3.52***	1.42***	1.39***	3.93***
			(2.03)	(0.28)	(0.21)	(0.18)	(0.19)	(0.33)
	Unrealistic	Υ^{01}	-1.78	0.41	0.38	0.23	0.32	0.32
			(2.57)	(0.35)	(0.26)	(0.22)	(0.24)	(0.42)
Rate of change	Intercept	Υ^{10}	0.01	0.02	-0.00	-0.00	-0.00	-0.01
			(0.04)	(0.01)	(0.01)	(0.00)	(0.01)	(0.11)
	Unrealistic	Υ^{11}	-0.01	0.01	-0.00	-0.00	-0.01	0.05
			(0.05)	(0.01)	(0.01)	(0.00)	(0.01)	(0.14)
Variance components								
Level 1	Within person	σ_ε^2	2.03**	0.23**	0.07**	0.06**	0.07***	0.80**
			(0.70)	(0.08)	(0.02)	(0.02)	(0.02)	(0.25)
Level 2	In initial status	σ_0^2	23.26**	0.30	0.21*	0.15	0.18*	0.03
			(8.78)	(0.17)	(0.09)	(0.08)	(0.08)	(0.43)
	In rate of change	σ_1^2	0.00	0.00	0.00	0.00	0.00	0.05
			(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
	Covariance	σ_{01}	-0.13	-0.00	-0.00	-0.00	-0.00	0.04
			(0.14)	(0.00)	(0.00)	(0.00)	(0.00)	(0.17)

Note. ***p < .001; **p < .01; *p <.05; The '*Unrealistic'* variable consists of two dummy variables of unrealistic expectation ("1") and no unrealistic expectation ("0").

Table O3

A collection of Model C for the cosmetic group showing the effects of age ("Age") on each psychological measure

			Model C estimate					
	Parameter		RSES	AE	AO	HSCL-25	HSCL-Dep	BIQLI
Fixed Effects								
Initial status	Intercept	Υ^{00}	10.66*	2.57***	3.75***	2.09***	2.02***	3.38***
			(4.02)	(0.59)	(0.46)	(0.34)	(0.39)	(0.85)
	Age	Υ^{01}	-0.08	0.01	-0.00	-0.02	-0.01	0.03
			(0.12)	(0.02)	(0.01)	(0.01)	(0.01)	(0.02)
Rate of change	Intercept	Υ^{10}	0.01	0.03	-0.00	-0.01	-0.00	0.03
			(0.08)	(0.02)	(0.01)	(0.01)	(0.01)	(0.08)
	Age	Υ^{11}	-0.00	-0.00	-0.00	0.00	-0.00	-0.00
			(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Variance components								
Level 1	Within person	σ_ε^2	2.07**	0.20**	0.08**	0.06**	0.06***	0.88**
			(0.67)	(0.07)	(0.03)	(0.02)	(0.02)	(0.27)
Level 2	In initial status	σ_0^2	21.95**	0.35*	0.24*	0.12**	0.18**	0.28
			(8.06)	(0.17)	(0.11)	(0.05)	(0.07)	(0.38)
	In rate of change	σ_1^2	0.00	0.00	0.00	0.00	0.00	0.00
			(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
	Covariance	σ_{01}	-0.11	-0.00	-0.00	-0.00	-0.00	0.03
			(0.12)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)

Note. ***p < .001; **p < .01; *p <.05; The '*Age'* variable was measured in years.

Appendix P

Internship Research Case Study

The Psychological Characteristics of Patients Undergoing Elective Cosmetic Surgery: A Preliminary Outcome

Candidate: **Mindy Hung**

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This case study represents the research of Mindy Hung during the first two years of the Doctor of Clinical Psychology program. This is a research case study presented in partial fulfilment of the requirements for the Doctor of Clinical Psychology course at Massey University, Albany, New Zealand.

Abstract

Despite the increasing interest in psychological research on elective cosmetic surgery, the psychological profiles of patients seeking elective cosmetic surgery and the actual psychological consequences remain unclear. The current study, which forms part of a larger longitudinal study that aims to examine the psychological effects of cosmetic surgery, firstly aimed to explore the psychological characteristics of patients undergoing elective cosmetic surgery and to compare the psychological characteristics with people who have no plans to undergoing such surgery. Results show significant differences between the cosmetic and comparison groups' quality of life in relation to body image and appearance evaluation, and no differences were found between other psychological characteristics. This suggests that prospective cosmetic surgery patients maybe more likely to have body-image experiences that negatively influenced different aspects of their lives compared with people who do not wish to undergo cosmetic surgery. Furthermore, prospective cosmetic surgery patients may be more likely to show a general unhappiness towards their physical body in terms of the levels of attractiveness and satisfaction compared with people who have no plans to undergo cosmetic surgery.

Literature review

The popularity of elective cosmetic surgeries has increased dramatically in the past two decades. The American Society for Aesthetic Plastic Surgery estimated around nine-hundred-thousand cosmetic surgical procedures were undertaken in 1997, which increased to nearly two million surgical procedures in 2016 (The American Society for Aesthetic Plastic Surgery [ASAPS], 2016). The purpose of elective cosmetic surgery typically is to enhance appearance, self-esteem and confidence, and hence has been referred as "a body image surgery" (Pruzinsky & Edgerton, 1990) or "a psychological intervention or, at a minimum, a surgical procedure with psychological consequences" (Sarwer, Wadden, Pertschuk, & Whitaker, 1998, p. 1). In general, the literature tends to suggest that the psychological profile of patients seeking elective cosmetic surgery is different from the general population, such that the majority of the patients are seen as having various degrees of psychopathology (Sarwer et al., 1998). Findings in earlier studies in particular seemed to suggest that almost all elective cosmetic surgery patients are likely to have serious psychological illnesses, and the effects of cosmetic surgical intervention were unclear (e.g. Linn & Goldman, 1949; Wright & Wright, 1975). Numerous methodological limitations have been identified in the earlier studies, where their findings seemed to have been determined by the choice of assessment methods such that psychodynamic interviews tends to result in a report of higher rates of psychological illnesses (reviewed by Sarwer & Crerand, 2004; Sarwer et al., 1998). The later and more recent studies have started to show findings that suggest elective cosmetic surgery patients are not as psychologically disturbed as previously reported, and the effects of cosmetic surgeries are likely to be positive and with improvement in various psychological and psychosocial aspects in life (e.g. Cash, Duel, & Perkins, 2002).

Despite the increasing interest in psychological research on elective cosmetic surgery, the psychological profiles of patients seeking elective cosmetic surgery remain unclear (Eriksen & Goering, 2011). One characteristic commonly seen among prospective cosmetic surgery patients is body dissatisfaction or poor body image. Body dissatisfaction was found to be the most influential predictor for the consideration of undergoing elective cosmetic surgery in numerous studies (Brown,

Furnham, Glanville, & Swami, 2007; Henderson-King & Henderson-King, 2005; Javo & Sørlie, 2010; Slevec & Tiggemann, 2010; Swami, 2009; Swami, Chamorro-Premuzic, Bridges, & Furnham, 2009). However, it should be noted that poor body image does not necessarily represent the psychological characteristic of cosmetic surgery patients, as individuals who are satisfied with their body may also consider cosmetic surgery beneficial (Slevec & Tiggemann, 2010).

In terms of psychopathology, research to date shows mixed results with a wide range and varying degrees of psychopathology among cosmetic surgery patients prior to their surgery. For example, Vargel and Ulusahin (2001) found no difference in the level of psychopathology between cosmetic surgery patients and the control patients who were undergoing general surgery. Other studies also found no difference in the levels of psychopathology and self-esteem between cosmetic surgery patients and control groups from the general population (Ferraro, Rossano, & D'Andrea, 2005; von Soest, Kvalem, Skolleborg, & Roald, 2009).

In contrast to the above findings, other studies have showed that cosmetic surgery patients were more psychologically disturbed compared with the relative control groups in the studies. For instance, cosmetic surgery patients were found to be more distressed and moderately impaired in psychosocial functioning compared with the general population norm and the control group, but were not as impaired as the clinical group with psychological disorders (Cook, Rosser, Toone, Ian James, & Salmon, 1997). In another study, cosmetic surgery patients were found to be more anxious and depressed when compared with the general population norms (Meningaud et al., 2003). A higher level of anxiety (Moss & Harris, 2009), lower self-esteem (Nikolic, Janjic, Marinkovic, Petrovic, & Bozic, 2013), and higher levels of depression, anxiety, deliberate self-harm and parasuicide (von Soest, Kvalem, & Wichstrøm, 2012) were also evident in prospective cosmetic surgery patients compared with the relative control groups. Golshani and colleagues (2016) examined 274 patients seeking cosmetic surgery and found that more than half of the patients were at some degree of risk for psychiatric disorders, as they presented with symptoms of hostility, anxiety, somatization and depression. However, some argued that a higher level of preoperative anxiety is associated with the fear of the surgical operation, as the anxiety often decreases significantly soon after the surgery (e.g.,

Pérez-San-Gregorio, Martín-Rodríguez, Arias-Moreno, Rincón-Fernández, & Ortega-Martínez, 2016).

A considerable amount of attention has also been given to body dysmorphic disorder (BDD) in the literature of cosmetic surgery psychology. BDD is a serious psychiatric disorder characterized by a preoccupation and excessive concern with a defect that is not observable or a slight physical anomaly in appearance, which causes clinically significant distress or impairment in many areas of functioning (American Psychiatric Association [APA], 2013). Given the characteristic of pathological preoccupation with appearance, patients with BDD frequently seek elective cosmetic procedures to 'fix' the perceived defects in their appearance (Crerand, Menard, & Phillips, 2010). The prevalence of BDD in the general population has been estimated at 0.7 % (Faravelli et al., 1997; Otto, Wilhelm, Cohen, & Harlow, 2001) and 6.3% to 9% in the cosmetic surgery population (Altamura, Paluello, Mundo, Medda, & Mannu, 2001; Aouizerate et al., 2003). In general, prospective study of elective cosmetic surgery patients with BDD is understudied (Phillips, Grant, Siniscalchi, & Albertini, 2001; Crerand, Phillips, Menard, & Fay, 2005), as it can be ethically challenging given BDD patients appear to rarely benefit from such surgical intervention (Crerand et al., 2005; Phillips 2009).

The current study presents the preliminary findings on the psychological characteristics of cosmetic surgery patients prior to their elective cosmetic surgery. In addition, the outcome was compared with a comparison group of participants who have no plans of undergoing cosmetic surgery. The main areas of interest in the study included the participants' psychological wellbeing (i.e. depressive, anxiety and BDD symptoms), body image, global self-esteem, and quality of life in relation to body image. This study is part of a longitudinal study that examined the pre- and post-operative psychological outcomes of elective cosmetic surgery, and the current presented findings are merely preliminary and are not conclusive without considering the analyses for the rest of the research.

Method

Participants

All participants in the current study were females. Seventeen participants aged 20 to 56 years (M = 31.29 years, SD = 9.87 years) in the cosmetic group were recruited via cosmetic surgeons who are currently practicing in New Zealand, and from an online cosmetic surgery forum based in Australia. The comparison group were recruited via public media advertisements, including Coffee News and Facebook. Twenty participants who have no plans to undergo cosmetic surgery aged 22 to 69 (M = 35.16 years, SD = 14.72 years) were recruited for the comparison group. There were no significant differences between the two groups in age and gender. The inclusion and exclusion criteria for the recruitment are presented in Table 1.

Data Collection

Participants in the cosmetic group who agreed to participate received an email with a link to the online survey approximately one month before their surgery (Week 1). Similarly, participants in the comparison group also received an email with a link to the same online survey. The online questionnaire included questions assessing the participants' demographic and surgery information, with five well established psychometrics that assess the participants' psychological wellbeing, global self-esteem, body image, and quality of life in relation to body image (see Measures section for more details). Participants in the comparison group were not required to answer questions that are related to surgery information.

Measures

Demographic and surgery information. Participants' age, sex, marital status, occupation and education level were obtained from the online questionnaire at Week 1. In addition, participants in the cosmetic group were asked to provide both qualitative and quantitative responses for questions relating to their surgery. These included the type(s) of surgery, previous cosmetic surgery experiences, the length of time they took to consider undergoing the surgery, and the reasons for their decision to undergo surgery.

Table 1
The inclusion and exclusion criteria for participants in the current study

Criteria for Elective Cosmetic Surgery Patient Group
Inclusion Criteria
1. Individuals aged 18 or over.
2. Surgeries driven by non-medical and purely aesthetic reasons.
3. Surgeries that require either local or general anaesthesia.
4. Surgeries that involve permanent alterations to physical appearance.
Exclusion Criteria
1. Individuals under age of 18.
2. Surgeries driven by or related to physiological, functional or medical reasons.
3. Surgeries applied to abnormal bodily features.
Criteria for Comparison Group
1. Individuals aged over 18.
2. Individuals who have not had previous elective aesthetic or reconstructive procedures, including both non-permanent (e.g., Botox) and permanent (e.g., breast augmentation) procedures.
3. Individuals who are not planning to undergo cosmetic procedures in the near future.

Psychological wellbeing. The current study focuses primarily in depressive and anxiety symptoms measured by The Hopkins Symptom Checklist-25 (HSCL-25), and possible BDD symptoms measured by The Body Dysmrorphic Disorder Questionnaire – Dermatology Version (BDDQ - DV). The HSCL-25 is derived from the Symptom Checklist – 90, which is a well-known screening instrument assessing common psychological symptoms with internal consistency reliability coefficients of .77 to .90, test-retest reliability of .78 to .90 (over 1 week), interrater reliability of .74

to .91, and convergent validity of .73 to .88 with measures of depression (Groth-Marnat, 2009). HSCL-25 has been translated into many different languages and high test-retest reliability and internal reliability were also found in several non-western clinical and non-clinical populations (e.g., Hollifield et al., 2002; Mollica, 2004). It consists of 10 items for anxiety symptoms and 15 for depressive symptoms where the items are measured on a four-point scale, ranging from '1 – not at all' to '4 – extremely' (Derogatis, Lipman, Rickels, Uhlenhuth, & Covi, 1974).

The BDDQ – DV consists of 10 questions and was included in the study to screen for possible symptoms of BDD and the impact of appearance dissatisfaction on life. The BDDQ – DV contains a mixture of different types of question, including dichotomous, scales, and qualitative questions, that make up the final outcome of the questionnaire. This questionnaire has demonstrated a good sensitivity (100%) and specificity (89%) in psychiatric setting, and a better sensitivity (100%) and specificity (92.3%) in cosmetic setting (Dufresne, Phillips, Vittorio, & Wilkel, 2001).

Global self-esteem. The level of self-esteem was measured by Rosenberg's Self-Esteem Scale (RSES). The RSES is a widely used 10-item scale for self-esteem with excellent internal consistency indicated by a Guttman scale coefficient of reproducibility of .92, and with excellent stability indicated by the test-retest reliability (over 2 weeks period) of .85 and .88. The RSES also correlates significantly with other self-esteem measures, as well as measures of depression and anxiety in the predicted direction, indicating good concurrent, predictive, and construct validity (Rosenberg, 1979).

Body image. The selected subscales from The Multidimensional Body-Self Relation Questionnaire – Appearance Scale (MBSRQ-AS) were used to assess participants' body image. The MBSRQ-AS is a self-report that consists of 5 subscales of Appearance Evaluation, Appearance Orientation, Overweight Preoccupation, Self-Classified Weight, and the Body Area Satisfaction Scale. Given that the current study aims to examine body image in particular, the 7-item Appearance Evaluation (AE) subscale and the 12-Item Appearance Orientation (AO) subscale from MBSRQ-AS were selected to measure the different dimensions of the participants' body image. The appearance evaluation measured by AE refers to the level of satisfaction toward

one's physical appearance, and the appearance orientation measured by AO refers to the amount of investment in one's physical appearance (Cash, 2000). Both AE and AO subscales endorse high internal consistency indicated by Cronbach's alpha ranging from .85 to .88, and 1-month test-retest reliability of .81 to .90 for a sample of 996 males and 1070 females aged 18 years or older from the U.S. national survey data (Cash, 2000).

Quality of life. Participants' quality of life in relation to body image was assessed with The Body Image Quality of Life Inventory (BIQLI). This is an important measure that assesses the positive and negative effects of body image on the individual's psychosocial quality of life. The high internal consistency of BIQLI is indicated by Cronbach's alpha of .95, with a good stability indicated by the test retest reliability of .79 (over 2 – 3 weeks) (Cash & Fleming, 2002). The BIQLI also correlates significantly with several body image related measures that indivates good convergent validity, where higher body image quality of life was significantly associated with lower body image dissatisfaction, fewer dysfunctional eating attitude, and lower dysfunctional investment in appearance (Cash & Fleming, 2002; Cash, Jakatdar, & Williams, 2004).

Data analysis. The current study employed exploratory descriptive analyses for the data collected in Week 1. Chi-square and independent sample *t* tests were carried out to measure the associations and differences between the cosmetic and comparison groups before the participants in cosmetic group underwent the surgery. Statistical Package for Social Science (SPSS) for Windows was used for all statistical analyses in this study. The statistical significance was tested at a $p < .05$ level.

Results

This section presents the descriptive analyses of the data collected at Week 1 (preoperative stage) of the study. The demographic information of both groups and surgery information of cosmetic group are presented in Table 2 and 3, respectively. A series of chi-square and independent sample *t* tests was carried out to compare the outcome variables (i.e. psychological wellbeing, self-esteem, body image and quality of life) between the cosmetic and comparison groups. A summary of the outcomes is shown in Table 4.

Demographic and Surgery Information

The majority of the participants in the cosmetic group identified as Australian (41.2%), followed by European/Caucasian (35.5%), Asian (11.8%), and New Zealand European/ Pakeha (5.9%). Most of the participants in the cosmetic group were either married (41.2%) or has a partner (41.2%), and 17.1% of the participants were not married or with no partner. In terms of the education level, 47.1 % of the participants have a tertiary certificate or diploma, followed by 17.6% with a bachelor's degree, 11.8% for both university entrance/NCEA level 3 and school certificate/NECA level 1, and 5.9% with a postgraduate degree. The demographic information of the cosmetic and comparison groups is presented in Table 2.

All participants in cosmetic groups underwent breast surgeries, including breast augmentation (76.5 %), breast life and augmentation (17.6%), and breast reduction for pure aesthetic reason (5.9%). The majority of the participants indicated that they have never had a cosmetic surgery before (88.2%), with 11.8% indicated that they have had prior cosmetic surgery experiences. The majority of the cosmetic surgery participants also reported feeling very dissatisfied (41.2 %) or moderately dissatisfied (47.1%) towards the body part that is about to undergo surgery. All participants (100%) indicated that body dissatisfaction as one of the main reasons for undergoing cosmetic surgery. This is followed by an expectation that cosmetic surgery can make life better (70.6%), primarily through improving confidence and self-esteem, as indicated in the optional comment box attached in the questionnaire. The surgery-related information of the cosmetic group is presented in Table 3.

Table 2

Demographic information of cosmetic and comparison group

	Cosmetic group		Comparison group	
	N	(%)	N	(%)
Ethnicity				
Australian	7	41.2	-	-
European/Caucasian	6	35.3	3	15.8
Asian	2	11.8	1	5.3
New Zealand European/ Pakeha	1	5.9	12	63.2
New Zealand Maori	-	-	1	5.3
Other	1	5.9	2	10.5
Marital status				
Married	7	41.2	6	31.6
Has a partner	7	41.2	8	42.1
No partner/not married	3	17.1	5	26.3
Education level				
Postgraduate	1	5.9	4	21.1
Bachelor's degree	3	17.6	9	47.4
Tertiary certificate/diploma	8	47.1	4	21.1
University entrance/NCEA level 3	2	11.8	-	-
School certificate/ NCEA level 1	2	11.8	2	10.5

Note. The total percentages may not add up to 100% due to rounding.

Table 3

Surgery-related information of the cosmetic group

	N	(%)
Types of surgeries		
Breast augmentation	13	76.5
Breast lift and augmentation	3	17.6
Breast reduction	1	5.9
History of previous cosmetic surgery		
Yes	2	11.8
No	15	88.2
Reasons for surgery		
Dissatisfaction towards the body part	17	100
Surgery can make life better	12	70.6
Surgeon can make the exact appearance desired	10	58.8
Recommended by friends	2	11.8
No reason	2	11.8
Requested by others	0	0
None of the above	3	17.6
Level of preoperative satisfaction towards the body part undergoing surgery		
Very dissatisfied	7	41.2
Moderately dissatisfied	8	47.1
Moderately satisfied	1	5.9
Very satisfied	1	5.9

Note. The total percentages may not add up to 100% due to rounding or multiple selections of answer to one question.

Psychological Wellbeing

The conventional cut-off point of 1.75 in HSCL-25 was used to indicate clinical emotional distress of unspecified diagnosis (Mollica, 2004). A number of participants in the cosmetic group (35.3%) and comparison group (22.2%) had HSCL-25 scores above the cut of point indicating 'clinical unspecific emotional distress' that involves both depressive and anxiety symptoms. The independent sample *t* test suggests that there is no significant difference between the two groups in terms of their level of clinical emotional distress. The mean scores for HSCL-25 were 1.59 (*SD* = 0.54) and 1.53 (*SD* =0.44) for the cosmetic and comparison groups, respectively. The average scores for the depression items were 1.62 (*SD* = 0.61) for the cosmetic group and 1.56 (*SD* = 0.47) for the comparison group. The independent sample *t* tests for the mean scores for HSCL-25 and depression items suggest that there were no significant differences between the two groups at Week 1.

In terms of the BDDQ – DV outcome, 29.4% of the participants in the cosmetic group and 15.8% in comparison group were screened positive for possible symptoms of BBD based on the presence of preoccupation and concern about the appearance of body, with at least a moderate level of distress associated with the concerned body part or interference/impairment in important areas of functioning. A chi-square test suggests no significant relationship between the two groups and the possible symptoms of BDD at Week 1 of the study.

Self-Esteem and Body Image

Participants' level of self-esteem was measured by RSES. Higher RSES score indicates higher self-esteem and there is no cut-off point for this instrument. The average RSES score for participants in the cosmetic group was 21.88 (*SD* = 5.01), and 23.33 (*SD* = 4.78) for the comparison group. The independent sample *t* test indicates no significant difference between the mean scores of the two groups.

The independent sample *t* test suggests that the mean score for appearance evaluation, as measured by AE, in cosmetic group (*M* = 2.87, *SD* = 0.72) was significantly lower compared to the comparison group (*M* = 3.39, *SD* = 0.50; $t(34) = -2.53$, $p < .05$). There was no significant difference between the mean scores for appearance orientation, as measured by AO, in the cosmetic (*M* = 3.73, *SD* = 0.54) and comparison groups (*M* = 3.58, *SD* = 0.65).

Table 4

A summary of chi-square and independent sample t test outcomes

	Cosmetic group			Comparison group			*t* test	χ^2 test
	(%)	*M*	*SD*	(%)	*M*	*SD*	*p*	*p*
RSES	-	21.88	5.01	-	23.33	4.78	>.05	-
MBSRQ - AE	-	2.87	0.72	-	3.39	0.50	<.05*	-
MBSRQ - AO	-	3.73	0.54	-	3.58	0.65	>.05	-
HSCL-25 (unspecified emotional distress)	-	1.59	0.54	-	1.53	0.44	>.05	-
HSCL-Dep	-	1.62	0.61	-	1.56	0.47	>.05	-
HSCL-25 (clinical unspecified emotional distress)	35.3	-	-	22.2	-	-	-	>.05
BDDQ-DV (positive screening)	29.4	-	-	15.8	-	-	-	>.05
BIQLI	-	-0.09	1.2	-	0.38	0.72	>.05	-
BIQLI (negative effects on life)	75	-	-	27.8	-	-	-	<.05*

Note. *p<.05

Quality of Life in Relation to Body Image

The mean scores of BIQLI were -0.09 (*SD* = 1.2) for the cosmetic group and 0.38 (*SD* = .72) for the comparison group. Seventy-five precent and 27.8% of the participants in the cosmetic and comparison groups respectively indicated that their body image has a negative effect on their lives. A chi-square test of independence was performed to examine the relation between the cosmetic and comparison groups and how their body image affects their quality of life. The relation between the groups and their quality of life in relation to body image was statistically significant, χ^2 (1, *N*=34) = 7.792, $p < .05$, where the body image of participants in the cosmetic group were more likely to have negative effects on their quality of life compared to the comparison group.

Discussion

The current study, which forms part of a larger longitudinal study that aims to examine the psychological effects of cosmetic surgery, firstly aimed to explore the psychological characteristics of prospective cosmetic surgery patients and to compare their psychological characteristics with people who have no plan of undergoing such surgery.

Dissatisfaction toward the specific body part was reported by all the cosmetic surgery participants as one of the reasons for undergoing surgery. The majority of the cosmetic surgery participants also endorsed an expectation that the surgery can make their life better mostly through improving their confidence and self-esteem via appearance change. These findings lend support to previous studies where appearance dissatisfaction is the most common reason for women to consider undergoing cosmetic surgery (Brown et al., 2007; Cash & Fleming, 2002; Henderson-King & Henderson-King, 2005; Solvi et al., 2010). Expectations that the surgery can improve one's confidence and self-esteem were also found to be an important motivation for women who underwent cosmetic breast surgeries (Adams, 2010; Klassen, Pusic, Scott, Klok, & Cano, 2009; Solvi et al., 2010).

More than half of the cosmetic surgery participants reported that they believe the surgeons can make the exact appearance they desire, which may suggest a somewhat unrealistic expectation towards the surgery held by the cosmetic surgery participants. Unrealistic expectations for cosmetic surgery have been reported to have an association with poor psychological or negative outcomes (Brunton et al., 2014; Herruer, Prins, van Heerbeek, Verhage-Damen, & Ingels, 2015; Sarwer 2006), where preoperative assessment for cosmetic surgery patients routinely screens for unrealistic expectations (Paraskeva, Clarke, & Rumsey, 2014). The somewhat high rate of cosmetic surgery participants with probable unrealistic expectation towards surgery in the current study highlights the importance of incorporating routine screening for such expectation.

In general, the cosmetic surgery participants in the current study appeared to be slightly more emotionally distressed, endorse more depressive and BDD symptoms, and have poorer self-esteem compared with the comparison group. However, the differences were non-significant, suggesting that prospective cosmetic surgery patients were not different to people who are not planning to undergo

cosmetic surgery in terms of their levels of psychological distress and self-esteem. This finding also supports the later proposal that cosmetic surgery patients may not be as psychologically disturbed as it has been reported by earlier studies (Cash et al., 2002), and is in line with a number of studies that have suggested no such difference between prospective cosmetic surgery patients and the general population (e.g. Ferraro, Rossano, & D'Andrea, 2005; von Soest, Kvalem, Roald, & Skolleborg, 2009).

Significant differences were found between the cosmetic and comparison groups' quality of life in relation to body image and appearance evaluation. This suggests that cosmetic surgery patients are more likely to have body-image experiences that negatively influenced different aspects of their lives compared with people who have no plans for cosmetic surgery. Furthermore, patients who request to undergo cosmetic surgery may be more likely to show a general unhappiness towards their physical body in terms of the levels of attractiveness and satisfaction compared with the comparison group. However, no difference was found in the appearance orientation between the two groups suggesting that both groups have similar level of investment in their physical appearances, including the levels of importance and attention given to their appearances, and the amount of effort they expend to "look good" (e.g. grooming). These findings tentatively suggest that one's subjective level of body satisfaction that negatively impacted on life may have more influence to one's decision of undertaking cosmetic surgery than the level of importance the person gives to his/her appearance. This finding supports the previous research where general body image dissatisfaction was found to be a significant predictor for the actual pursuit of cosmetic surgery (e.g. Henderson-King & Henderson-King, 2005; Slevec & Tiggemann, 2010). However, it is suggested that the overall body image does not inform individuals' general views of the surgery as it is possible that individuals who are dissatisfied with their appearance may still disregard cosmetic surgery as an option to improve their level of body image and vice versa (Slevec & Tiggemann, 2010).

The current preliminary findings provide a tentative initial impression that patients who decided to pursue cosmetic surgery may present with probable unrealistic expectations for the surgery outcome, though they do not differ much to those who are not interested in cosmetic surgery in terms of their levels of psychological distress, self-esteem, and the level of importance they give to their

physical appearances. The subjective level of satisfaction toward one's physical body, and the quality of life in relation to body image seemed to be important factors that differ cosmetic surgery patients to those who do not seek cosmetic surgery. The current research has important implications in clinical psychology given that elective cosmetic surgery has been considered a surgical intervention that aims to improve psychological wellbeing (Sarwer et al., 1998). Like all other anaesthetic surgeries, elective cosmetic surgery is associated with a higher risk of surgical complications such as infections, cardiac infarction, and hematoma compared to nonsurgical procedures (Hawn et al., 2011). Furthermore, it has been suggested that psychological complications (i.e. dissatisfaction, poor psychosocial outcome and suicide) are more common than surgical complications in the cosmetic surgery population (Borah, Rankin, & Wey, 1999). This highlighted the importance of understanding the psychological characteristics of cosmetic surgery patients and whether the surgical intervention in fact leads to the desired psychological and psychosocial outcomes.

A number of limitations in the current study need to be addressed. The small sample size may have limited the power to detect statistical significance and the ability to generalise the data to the cosmetic population. Given the exploratory nature of the current study, there is a lack of questions that investigate specific areas in depth (e.g. reasons for undergoing cosmetic surgery) and the qualitative information were heavily relied on participants' volunteering responses which may lead to volunteer bias.

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