Instagram vs. Reality: Risk Factors that Make an Adolescent more Vulnerable to Engage in an Upwards Social Comparison on Instagram, Resulting in Poorer Mental Health.

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Abstract

Aim

For the past two decades researchers have been trying to understand how social media is affecting an individual's mental health, however, social media platforms are rapidly changing, and new social media platforms are being developed and integrated into an adolescent's life at a rapid rate. Therefore, research is quickly becoming outdated with a significant lag between the literature and social media existing.

Instagram is an increasingly popular photo sharing social media application that offers individuals the opportunity to post photos of their lives. A consequence of Instagram being photo based is that users often apply impression management strategies, so that only the best parts of their life are presented. This creates a ripe environment for upwards social comparisons to occur, as the Instagram user compares their realities to the unrealistic images presented on Instagram. In particular, adolescents may be at risk of engaging in upwards social comparisons on Instagram, as they are the largest consumers of social media, and they are at a developmental period where social comparisons are crucial for constructing one's identity and navigating the social world. However, little is known about how the positively skewed Instagram environment is impacting an adolescent's mental health, which is concerning given the poor adolescent mental health statistics in New Zealand.

Preliminary research from Instagram and other social media platforms, suggests that when individuals engage in upwards social comparisons on social media, it can lead to psychological distress. However, research has also suggested a poor get poorer effect is occurring, meaning only individuals who have certain vulnerability factors are at risk of engaging in an upwards social comparison, and thus experiencing the adverse psychological outcomes. Therefore, scholars have called for research to identify these vulnerability factors to enable a more nuanced understanding to be established.

The aim of the current study was to focus on what vulnerability factors make an adolescent at risk of engaging in an upwards social comparison on Instagram, and subsequently experience depression and worry symptoms. The vulnerability factors that were of interest include: self-esteem, social comparison orientation, self-concept clarity, passive Instagram use, intensity of Instagram use and gender. This research hopes to provide mental health professionals with information regarding modern triggers that may be contributing to the high prevalence of youth depression and anxiety

disorders, in order to guide prevention measures and interventions.

Method

853 adolescents in Auckland, New Zealand, between the ages of 13 and 19 years old completed an online questionnaire. The questionnaire consisted of standardised scales to measure the constructs of interest, demographic questions and questions regarding Instagram use. Structural Equation Modelling was then utilised to test the hypotheses using a mediation model and a moderated mediation model, to determine whether the data corresponded well to the hypothesised models.

Results

The results offered evidence that supported the poor get poorer effect for personality factors only. As it was identified that adolescents who have the personality traits of: a tendency to compare their abilities with others and have a low self-concept clarity are more likely to engage in an upwards social comparison on Instagram, resulting in greater depression and worry symptoms. The Instagram usage variables of: passive Instagram use and using Instagram intensely were not identified as risk factors for engaging in an upwards social comparison on Instagram. When looking at the gender effects it was identified that vulnerable females experienced more dire outcomes than males, as comparing ones' abilities with others was only a risk factor for females and low self-concept clarity was a greater risk factor for females than males.

Conclusion

The current study supported the idea that the false positive impressions displayed on Instagram can be detrimental for some adolescents' psychological wellbeing and could possibly be contributing to New Zealand's poor adolescent mental health statistics. The current study highlights the negative psychological impact that Instagram can have on an adolescent's mental health, when they compare their realities to the positively skewed environment. This is concerning as social media is becoming deeply embedded into many adolescents' lives. Therefore, this research prompts future research to further identify adolescents who are considered at risk so public health messages and interventions can be targeted towards these individuals.

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Chapter One: Social Comparison

Social Comparison Theory

Social Comparison is a process derived from Leon Festinger's (1954) Theory of Social Comparison Processes. He stated that individuals are motivated to make self-evaluations of their opinions and abilities (opinion is defined as an individual's belief of the situation and an ability is their capability), to gauge whether their appraisals of their abilities or opinions are accurate. To make these self-evaluations, individuals engage in comparison processes. If there is an objective measure present (e.g. reaching 180cm in height) then a comparison will occur against this measure, however, in most situations when there is no objective measurement available, or there are no clear tests available (e.g. who is prettier) humans compare themselves against other humans (Festinger, 1954).

Festinger (1954) discussed that individuals do not tend to make comparisons against other individuals who are very different from themselves, as it does not offer an accurate measure, and therefore, the individual does not experience failure or success accordingly. As a result, Festinger (1954) hypothesised that individuals tend to compare themselves against others who have similar abilities and opinions as their own, so they can satisfy their need for self-evaluations. However, Festinger (1954) noted two situations where individuals compare themselves against others who are divergent from themselves, this is when the group of people is attractive to the individual, or when there are restraints (physical or psychological) in place to prevent the individual from "leaving".

Festinger (1954) stated that there is one significant difference between social comparisons processes of: opinions and abilities. When the individual is comparing their opinion to others and it is significantly different from a group of others, the group will respond by attempting to reach uniformity. This is often done by changing the opinion of those who hold opinions that are the most divergent from the group (Festinger, 1954). However, when an individual is comparing their abilities to others there is a unidirectional drive upwards to be superior, especially within western culture (Festinger, 1954). If the ability is of particular importance to the individual it will increase their drive for competition in order to be superior.

Festinger (1954) stated that if an individual compared themselves against someone who they considered superior to themselves it would result in feelings of failure and inadequacy of their ability, whilst they would feel better if they considered themselves to be superior to another. As a result, two directions of social comparisons emerged, an *upwards* and *downwards* social comparison (Wills, 1981). A downwards social comparison is defined as comparing yourself to someone you consider inferior to yourself (Wills, 1981). An upwards social comparison is conceptualised as comparing yourself to someone you consider to be superior to yourself. Research has found that both upwards and downwards social comparisons can trigger emotional consequences. Most research indicates that an upwards social comparison can have negative emotional responses of: greater depressive symptoms (Allan & Gilbert, 1995; Salovey & Rodin, 1984), negative self-evaluations (Collins, 1996), dissatisfaction with life (Emmons & Diener, 1985), jealousy (Salovey & Rodin, 1984) and hostility (Testa & Major, 1990). Whilst a downwards social comparison can have positive emotional consequences of: positive self-esteem (Aspinwall & Taylor, 1993; Collins, 1996) and greater positive affect (Wills, 1981).

Social Media

A significant change in the 21st century has been the introduction of Social Networking Sites (SNS). SNS have significantly changed the way humans interact. Evidently, it has also provided another platform for social comparisons to take place due to the extensive amount of self-relevant information provided (Haferkamp & Krämer, 2011). SNS are defined as technologies that facilitate user sharing, content creation and the exchange of information with online communities (Vincent, 2016). The most popular SNS in the Western world include: Youtube, Facebook, Instagram, Pinterest, Snapchat, LinkedIn, Twitter, WhatsApp (Smith & Anderson, 2018) and Tumblr.

Since the development of SNS it has gained exceptional growth, and it has grown faster than any other internet activity over the past decade, which has been facilitated by an increase in smart phone ownership (Lup et al., 2015). Smith and Anderson's (2018) Pew Research Centre study explored the prevalence rates of SNS use across different age groups of American adults. They found 88% of 18-19 year old's use SNS, 78% of 30-49 year old's, 64% of 50-64 year old's and 34% of

individuals aged 65 years and older. Whiting and William's (2013) study found that SNS use has rapidly increased in popularity due to the gratification it provides, prompting reoccurring use. In particular, they found the specific motives for using SNS that provide the user with gratification include: social interaction, seeking information, passing time, entertainment, relaxing, communicating and convenience (Whiting & Williams, 2013).

Social media can have positive and negative consequences on an individual's psychological wellbeing. Positive consequences include: social connectivity (Ellison et al., 2007), social bridging and capital (Ellison et al., 2007), decreased loneliness (Deters & Mehl, 2013), maintaining friendships, promoting wellbeing (Manago et al., 2012), social support (Nabi et al., 2013) and it provides a "safer" environment to refine one's social skills (Quinn & Oldmeadow, 2013). However, research has also found that these positive consequences are often mitigated by social comparison processes, and as a result negative psychological outcomes result (Mackson et al., 2019).

Social Comparisons on SNS

Scholars have argued that SNS offers an even more desirable platform than the physical environment for social comparisons to occur given its unique features. These features include: access to a significant quantity of peers providing extensive self-relevant information (Hafercamp & Krämer, 2011; Manago et al., 2012; Sherlock & Wagstaff, 2018), social comparisons require less effort as the information is displayed, so it does not require asking individuals for information (Liu et al., 2016), an individual is exposed to others who are similar to oneself (Jang et al., 2016), it provides individuals with insight into their peer's life that they usually would not have (Gerson et al., 2017) and there are constant updates of personal information (Ozimek & Bierhoff, 2016). As a result, the availability of SNS allows an individual to have instant access to others, enabling social comparisons to occur anytime and anywhere (Lup et al., 2015). Therefore, there are continuous opportunities for an individual to compare themselves with others on appearance, popularity and success (Feinstein et al., 2013).

Research has found that individuals engage in social comparisons on SNS for the purposes of: determining social and personal worth (Sherlock & Wagstaff, 2018), evaluating aspects of their lives, developing their identities and seeking normative standards of behaviour (Lee, 2014). For example, a 17-year-old girl might use SNS to

see what her peers are doing, she may be provided with photos of her peers spending time with friends or partying. This provides her with information that this is considered "normal" for a 17-year-old and she should be doing the same.

Prevalence of Social Comparisons on SNS

Research has found that the frequency of Facebook use is positively associated with social comparison frequency, indicating that social comparisons are a common activity on SNS (Lee, 2014). It has been suggested that when individuals are confronted with information on social media, they automatically relate the information to themselves (Liu et al., 2016). Multiple different pieces of information serve as comparison targets on SNS, such as: the number of likes or comments someone achieves on their post, number of followers someone has (Marwick, 2015), and photos that are posted (Steers et al., 2014). In terms of content, Krasnova et al.'s (2013) study found that individuals were most likely to envy posts of travel and leisure, social interactions and happiness on Facebook. This is problematic as given the use of impression management strategies SNS are littered with information that flaunts a positive, perfect and happy life.

Impression Management Strategies

Impression management strategies are techniques that are used to enable an individual to highlight their life to only capture the positive aspects in order to be seen as more desirable, leaving a better impression on others (Chou & Edge, 2012). In a face to face environment an individual's identity is often created using personal attributes that he/she projects, such as ethnicity or attractiveness, therefore, an individual's identity is often consistent with their personal traits (Mehdizadeh, 2010; Zhao et al., 2008). However, SNS offers the opportunity for an individual to carefully plan and craft the ideal identity they are wanting to portray to others (Mehdizadeh, 2010; Zhao et al., 2008). Research has found that on SNS individuals do present valid information about themselves, however, they filter out the negative aspects e.g. photos of hardship or when things did not go well, in order to portray a socially desirable identity that reflects what they aspire to achieve in their real life (Gonzales & Hancock, 2011; Zhao et al., 2008).

Impression Management Strategies and Upwards Social Comparisons on SNS

Given the extensive use of impression management strategies on social media, social comparisons are more likely to be in the upwards direction, as individuals compare their reality to the best parts of someone else's life. Chou and Edge's (2012) research focused on the use of impression management strategies and upwards social comparisons on Facebook. They found that upwards social comparisons were exacerbated on Facebook due to the two cognitive bias of: the availability heuristic and correspondence bias.

The availability heuristic refers to the tendency to base opinions of people on the last recalled information of them. Given the popularity of social media, it is likely that the last recalled information of an individual would be a positively skewed image on social media. The correspondence bias is the tendency to assume that one's behaviours are stable over time as opposed to in relation to situational cues (Tversky & Kahneman, 1973). Given the extensive use of impression management strategies the individual is more likely to think that the carefully curated SNS profile accurately represents an individual's reality. For example in keeping with the correspondence bias, a photo on SNS of a person smiling may lead people to infer that the person is always happy, and has a better life than themselves, rather than the person is having an enjoyable experience (Chou & Edge, 2012; Weinstein, 2017). Chou and Edge (2012) suggested that the availability heuristic and correspondence bias occur when the individual does not know the person, as they cannot incorporate any other information into this perception from personal experiences.

Therefore, despite the common knowledge of the use of impression management strategies on social media, this information is neglected when individuals are using SNS, as the positive image is believed to be an accurate representation of one's life, creating a fertile ground for upwards social comparisons to occur. This is problematic as upwards social comparisons on SNS can have adverse effects on mental health as discussed in chapter two.

Chapter Two: Instagram

One of the most popular SNS that provides a fertile ground for social comparisons to occur is Instagram. Instagram is a photo and video sharing SNS, that is deeply embedded into an individual's everyday life (Lup et al., 2015; Sheldon & Bryant, 2016). Instagram was launched in 2010 (Araujo et al., 2014), and bought by Facebook in 2012 (Constine, 2018). Since Instagram's development it has rapidly grown in popularity and it currently has 1 billion users (Constine, 2018), which is constantly rising, as Instagram is the fastest growing SNS globally (Wagner, 2015). The Pew Research's study in 2018 found that 35% of American adults were using Instagram. When breaking this down into age groups, they found 71% of 18-24 year old's used Instagram, 54% of 25-29 year old's, 40% of 30-49 year old's, 21% of 50-64 year old's and 10% of individuals aged 65 and older used Instagram (Smith & Anderson, 2018). Although adolescent statistics are often not reported, one study found that 52% of 13-17 year old's use Instagram (Lenhart, 2015). However, given that this study was from 2015, it is likely that these statistics have increased with the increasingly popularity of Instagram. Therefore, the trend is observed that heavier Instagram use is associated with younger age groups.

Upwards Social Comparisons and Instagram

Majority of the research on SNS and social comparison focuses on Facebook despite Instagram's increasing popularity. As mentioned in chapter one Chou and Edge's (2012) study found that upwards social comparisons were exacerbated on Facebook, due to the easy accessibility to stranger's content, and entrenched impression management strategies. This is concerning as the unique features of Instagram intensify impression management strategies and viewing stranger's content is encouraged. Therefore, scholars have argued that Instagram's is an even more attractive platform for upwards social comparisons to occur (Sherlock & Wagstaff, 2018). These unique features will be discussed in greater detail in the next two sections.

Access to Stranger's Content

There are a number of features on Instagram that give the Instagram user instant access to strangers such as: the explore newsfeed, the opportunity to form nonreciprocal relationships and the use of tags and hashtags.

The Explore Newsfeed. Instagram users are provided with two newsfeeds, a home newsfeed where the Instagram user can post photos they capture, and where they can view photos posted by the people who he/she has selected to follow. The other newsfeed is an explore newsfeed where Instagram users can scroll through friends of friends' photos or photos suggested by Instagram through an algorithm (e.g. based on the users search history; Sherlock & Wagstaff, 2018). In the explore newsfeed Instagram users are presented with photos of other Instagram users who have opted for their Instagram profile to be public as opposed to private (Sherlock & Wagstaff, 2018). Many Instagram users have public Instagram accounts; therefore, it allows anyone to follow their account and to view, like and comment on all of their photos or videos that they have posted (Lup et al., 2015; Ridgway & Clayton, 2016). Therefore, the explore newsfeed allows the individual to have instant access to stranger's content, broadening the number of comparison targets the individual is exposed to (Sherlock & Wagstaff, 2018), and as discussed in the section 'Instagram Influencer', a significant number of these strangers will be Instagram influencers who have mastered the art of impression management strategies.

The Opportunity to Form Nonreciprocal Relationships. Instead of forming reciprocal friendships like on other social media applications (e.g. Facebook), Instagram provides the opportunity to form non-reciprocal relationships (a person can follower another Instagram user without being followed back; Hu et al., 2014). Instagram has termed these non-reciprocal relationships *followers* (people who have selected to follow your account and receive your updates- they have subscribed to your updates) and *following* (people you have selected to follow their account and receive their updates- you have subscribed to their updates). For example, Sarah follows Kate, so all of Kate's photos are displayed on Sarah's home newsfeed (therefore Sarah is Kate's follower). However, Kate does not follow Sarah, therefore, Kate will not view Sarah's photos on her home newsfeed, and if Sarah selects for her profile to be private Kate cannot view Sarah's photos. Research has shown that the perceived benefits of SNS are reduced when the relationships are non-reciprocal (Baek et al., 2013).

The Use of Tags and Hashtags. On Instagram an individual can caption their photo, 'tag' friends, businesses and locations and add hashtags (a "#" followed by

words or phrases with no spaces e.g. #love; Moreno et al., 2016). Hashtags allow the photo to be linked to communities of other users who are also using the hashtag (Moreno et al., 2016), and it enables the photo to be accessed globally by other Instagram users searching the hashtag, provided that the individual has a public Instagram account (Lup et al., 2015; Sherlock & Wagstaff, 2019). Thus, an individual just needs to search a hashtag to have instant access to comparison targets of interest. For example, by searching the hashtag #fitspiration the individual has instant access to images of healthy food, attractive men and women in exercise gear and positive quotes of health and fitness (Tiggemann & Zaccardo, 2018).

The Culture of Impression Management Strategies

Common impression management strategies on Instagram include: enhancing the photo by using the editing tools that are provided by Instagram enabling the photos to be retouched to perfection (Kleemans et al., 2018; Lup et al., 2015; Ridgway & Clayton, 2016), deleting negative comments, removing photos with fewer likes (Li et al., 2018) and "unfollowing" accounts, as it is seen as more desirable to have a high ratio of followers to following (Moss, 2014). Instagram users also select photos or videos to be posted that emphasise the most positive aspects of their life or appearance (Lin & Utz, 2015). For example, an individual posting photos of their body when they have reached a fitness goal (Ridgway & Clayton, 2016), flexing their muscles or driving a new car (Manago et al., 2008).

Impression management strategies are heightened on Instagram, as through Instagram's unique features (likes, editing tools and Instagram influencers) it has created a homogenising effect of desirable standards that play a pivotal role in social and cultural conformity (Jong & Drummond, 2016). Therefore, individuals are becoming masters at displaying themselves positively online, and the desirable imagery is viewed as attainable given that the "ordinary" user is often considered similar to oneself (Manago et al., 2008), however, these standards are anything but ordinary (Marwick, 2015). For example, a recent successful company in Moscow hires out grounded private jets with a photographer, so that the "ordinary" person can take photos on the private jet to make their followers believe they are living a lifestyle of wealth and of celebrity status (Fitzmaurice, 2017).

Given the unique features of Instagram, it appears that impression management strategies are the norm as opposed to the exception. The extensive use of impression

management strategies on Instagram can make social comparisons problematic (Sherlock & Wagstaff, 2018). This is due to individuals posting photos which make them appear more socially desirable daily struggles are not exposed, therefore, providing limited opportunity for a downwards social comparison to occur (Steers et al., 2014), and increasing the likelihood and frequency of an upwards social comparison occurring. The specific unique features of Instagram that are contributing to this culture of polished perfection include: likes, editing tools provided by Instagram and Instagram influencers. Each will be discussed in turn.

Likes. Individuals respond to other's photos on Instagram by liking their photo or leaving a comment. As a result, more desirable photos achieve a greater number of likes. The likes achieved represent "popularity" and "status" among peers (Li et al., 2018; Sheldon & Bryant, 2016) and have a direct impact on an individual's self-worth and self-esteem (Li et al., 2018; Sheldon & Bryant, 2016). Therefore, the likes operate as an online poll providing information on what is deemed socially desirable influencing ideals, beliefs and perceptions (Jong & Drummond, 2016), and encouraging impression management strategies to be used by all, so they can also achieve a greater number of likes. The number of likes a photo receives used to be a tangible statistic located under the photo that anyone on Instagram following the user could view. However, since 2019 Instagram made an adaption which was trialled in New Zealand of only enabling the person who posted the photo to view the number of likes the photo receives.

Editing Tools. Instagram offers an array of editing tools that enable the photo to be edited to perfection before it is uploaded for others to view. These editing tools include: 24 aesthetically pleasing filters (Ferwerda et al., 2015) and other editing tools such as adjust, brightness, contrast, structure, warmth, saturation, colour, fade, highlights, shadows, vignette, tilt shift and sharpen. Instagram offers everyone the chance to edit their photos to achieve an ideal look before posting the photo (Brown & Tiggemann, 2016). Therefore, due to the simplicity and easy accessibility of these photo enhancing features it has created a culture of polishing and perfecting photos (Lup et al., 2015).

Instagram Influencers. The opportunity to form nonreciprocal relationships and easy access to stranger's photos through the explore newsfeed has given rise to a population known as Instagram influencers. Instagram influencers are "ordinary" individuals who are considered celebrities on Instagram due to their large following (Marwick, 2015). This large following is achieved by careful utilisation of impression management techniques, in order to create an ideal self of an "ordinary" person, often based on glamor, luxury, wealth, beauty and connections (Marwick, 2015). An Instagram influencer's photos are viewed by a significant number of people, which they capitalise off, as they receive more attention and feedback (e.g. likes) from other users, greater social capital, more followers, more engagement (likes and comments) and financial gains (as influencers often do paid advertising on their platform; Marwick, 2015). Instagram then rewards them by giving the influencer more visibility on the explore news feed via the algorithm (Cotter, 2019), creating a perpetuating cycle. This is problematic as Influencers are masters of impression management strategies and they are setting the standard for what is deemed desirable, which is worrisome given number of people who will view this image. An example of this is an influencer may start using a particular filter (a filter is superimposed on a photo altering its image) to enhance their image. Their followers will then view this and will also start using the filter, so they too can achieve this enhanced image. This then creates a follow-on effect, and consequently Instagram is full of photos with this image enhancing filter.

In summary, Instagram encourages the individual to be exposed to a greater amount of information about others (Sherlock & Wagstaff, 2018), which is worrisome given the extensive use of impression management strategies. As a result, upwards social comparisons are more likely to occur on Instagram.

The Psychological Impact of an Upwards Social Comparison on Instagram

Although the research on the psychological outcomes of using Instagram is limited, evidence is already starting to suggest that Instagram use has a negative impact on one's mood. In particular, research has shown that upwards social comparisons on Instagram results in depressive symptoms (Lup et al., 2015; Hwnag, 2019; Mackson et al., 2019; Sherlock & Wagstaff, 2018; Weinstein, 2017), lower self-esteem (Sherlock & Wagstaff, 2018; Stapleton et al., 2017), loneliness (Yang, 2016), body dissatisfaction (Brown & Tiggemann, 2016; Kleemans et al., 2018), lower positive affect (de Vries et al., 2018) and physical appearance anxiety (Sherlock & Wagstaff, 2019). However,

other studies have found that an upwards social comparison can result in motivational outcomes such as inspiration (Meier & Schäfer, 2018).

Interestingly, most of the above-mentioned studies have found that the negative outcomes were only experienced by individuals with certain personality traits or individuals who used Instagram in certain ways, which may explain the inconsistent findings. In the above mentioned studies those considered at risk are individuals who have a tendency to engage in social comparisons (de Vries et al., 2018; Kleemans et al., 2018; Mackson et al., 2019; Sherlock & Wagstaff, 2018; Yang, 2016), those who spent more time browsing Instagram (Weinstein, 2017) and those who followed a greater number of strangers (Lup et al., 2015).

This is consistent with findings from other SNS within the social comparison literature, which suggests a *poor get poorer effect*, meaning individuals with certain vulnerability factors are at risk when using Instagram (Underwood & Ehrenreich, 2017). Therefore, individual differences may make an individual more susceptible to engage in an upwards social comparison on social media or influence how the individual interprets the social comparison information (de Vries & Kühne, 2015; Lee, 2014; Lup et al., 2015), thus explaining why only some individuals experience the negative psychological consequences.

Due to the increasing evidence of the poor get poorer effect it has prompted scholars to call for future research to focus on vulnerability factors in the hope to provide meaningful insights into who is most at risk of engaging in upwards social comparisons on Instagram, and subsequently experiencing poor psychological outcomes (Burke et al., 2011; Frison & Eggermont, 2016; Gerson et al., 2017; Jang et al., 2016; Kalpidou et al., 2011; Lee., 2014; Mackson et al., 2019; Steers et al., 2014; Yang, 2016).

The current study hopes to help contribute to the literature by focusing on personality traits and patterns of Instagram use which may make an individual more susceptible to engage in an upwards social comparison on Instagram, resulting in poor psychological outcomes. The vulnerability factors that are of interest include:

Personality traits:

- Self-esteem

- The tendency to compare oneself against others (Social Comparison Orientation)
- The ability of an individual to understand their self-concept (Self Concept Clarity)

Instagram usage variables of:

- Passive Instagram use
- Intensity of Instagram use

Demographic variable of:

- Gender

These factors will all be discussed in greater detail in chapter four, five and six. Given that Instagram is a relatively understudied SNS, these vulnerability factors have been derived from previous research looking at social comparisons on other SNS, namely Facebook with a university sample. However, the current study hopes to add a somewhat novel contribution to the literature by looking at the vulnerability factors that make an adolescent at risk on Instagram.

Chapter Three: Adolescents

Adolescence is a developmental period where an individual is constructing their identity, and to do this they make social comparisons from social information, in order to learn about themselves, and establish norms and boundaries (Krayer et al., 2007). These social comparisons help: solidify and shape self-identities by developing a perception of oneself that is different to others (Cassidy et al., 2003), and evaluating themselves based on the perceived opinions of others (Blomfield Neira & Barber, 2014; Krayer et al., 2007). As a result, the feedback from the social environment has a significant importance in an adolescent's development. Adolescents of today are utilising SNS to navigate this developmental task, as on SNS they are provided with an indefinite amount of social information (Stapleton et al., 2017). Therefore, SNS has a significant importance in an adolescent's life, potentially more so than any other age group.

Social Media Use and Adolescents

Social media is used most heavily among adolescents (Perrin, 2015; Weinstein, 2017), as 90% of Australian adolescents (aged 12-17) use a SNS (AMCA, 2009), and by the time they were aged between 16-17 years old 97% were using at least one SNS (AMCA, 2009). It appears that the intensity and frequency of SNS use has increased as time progresses, as a 2015 study found that 71% of teenagers use more than one SNS, and 24% reported that they were connected to the internet "almost constantly" (Lenhart, 2015). This increase in SNS use has been accompanied by an increase in smartphone ownership (Lenhart, 2015). Instagram is one of the most popular SNS for adolescents, as 52% of adolescents are using Instagram (Anderson & Jiang, 2018). Underwood and Ehrenreich (2017) suggested that adolescents spend most of their time on Instagram scrolling through their newsfeeds of photos for the purposes of forming their identity, self-exploration and negotiation of social norms (Krayer et al., 2007). Therefore, the presence of SNS in an adolescent's life is deeply entrenched, and social rules for using Instagram are becoming engrained. As a result, Instagram is likely changing an adolescent's social environment, thus affecting their identity development and consolidation. However, the impact of Instagram on an adolescent's psychological wellbeing and adjustment is not well understood (Spies Shapiro & Margolin, 2014).

The Utilisation of Impression Management Strategies During Adolescence

Research has found that impression management strategies are used in the abundance throughout adolescence (Valkenburg et al., 2005). During the adolescence developmental period, an individual develops an increased awareness of the self, therefore, they tend to overestimate the extent that others are watching and evaluating them, often becoming preoccupied by how they are perceived by others (Valkenburg et al., 2006). Therefore, research has found that adolescents are using impression management strategies to ensure they are presented in a positive manner to others (Blomfield Neira & Barber, 2014). For example, in Frison and Eggermont's (2017) study they found that adolescents with depression posted more photos and videos. They suggested that this may be due to impression management strategies attracting youth with depression, because it provides them with an opportunity to present themselves in a more desirable manner, and to be rewarded by this in the form of likes and comments.

Research has found that adolescents place importance on the immediate feedback of likes and comments from their posts (Chua & Chang, 2016; Frison & Eggermont, 2017), and this feedback plays a critical role in the development of an individual's perception of themselves (Cassidy et al., 2003). A lack of feedback or negative feedback can have harmful consequences for the individual's psychological wellbeing (Jong & Drummond, 2016; Valkenburg et al., 2006). Therefore, the cycle of impression management strategies being positively reinforced by likes and comments is possibly intensified during adolescence, resulting in stricter conformity to unattainable standards (Jong & Drummond, 2016). As a result, adolescents may be inundated with the curation of excessively, and not very realistic positive images on Instagram.

Adolescence and Social Comparisons on SNS

Underwood and Ehrenreich (2017) suggested that when an adolescent is scrolling through their newsfeed they are likely paying attention to the number of likes others have achieved on their photos, who is doing what with whom, evidence of their friends spending time without them, and comparing their realities to other's posts on social media. This is problematic, as given the extensive use of impression management strategies an adolescent is likely to be confronted with a sea of positive imagery when they are on Instagram, as they are likely to be following their peers who will also be

using impression management strategies (adolescents following other adolescents). This results in less opportunity to engage in a downward social comparisons (Nesi & Prinstein, 2015), compared to other age groups.

Therefore, it is likely that that adolescents are at a greater risk of the negative psychological effects of an upwards social comparison on SNS (Frison & Eggermont, 2016). This was reflected in Sherlock and Wagstaff's (2018) study, as they found younger participants spent more time on Instagram, and engaged in greater social comparisons. Although Sherlock and Wagstaff's (2018) sample was aged between 18-35 years old, they suggested that adolescents were more likely to be at a greater risk of engaging in social comparisons on Instagram, and consequently suffering poor psychological outcomes.

To date little research has focused on the psychological impact of social comparison processes on SNS with adolescents. This is surprising, as adolescents are the largest consumers of social media (Perrin, 2015), they are at a developmental period where social comparisons are pertinent, and they are more likely to be confronted with images that have been manipulated with impression management strategies.

The Psychological Impact of an Adolescent Engaging in a Social Comparisons on SNS

The limited studies that have focused on adolescents and social comparisons on SNS have found that social comparisons on SNS have led to increased depressive symptoms (Nesi et al., 2017; Nesi & Prinstein, 2015), decreased in life satisfaction (Frison & Eggermont, 2017) and worse post browsing affect (Weinstein, 2017). Interestingly, in line with research from other age groups these studies found that these associations were moderated or mediated by other variables, such as browsing Instagram, gender and popularity. Therefore, research is starting to suggest that consistent with other age groups that the poor get poorer effect is also operating with adolescents (Underwood & Ehrenreich, 2017), as it was originally proposed. However, given the limited research there is little indication of what these vulnerability factors may be (Nesi et al., 2017). Therefore, guidance has to be taken from other populations to help identify vulnerability factors that may make an adolescent at greater risk of engaging in an upwards spiral of social comparisons on Instagram.

Mental Health and Adolescents

It is important that potential risk factors for adolescents are identified and the relationship between upwards social comparisons and poor psychological outcomes is understood, as an adolescent's mental health is particularly at risk at this stage of life (Hankin & Abramson, 2001). In New Zealand, there is a high prevalence of youth with anxiety disorders and depression (Mental Health Commission, 2011). New Zealand also has the highest youth suicide rates in the OECD (WHO mortality data base, 2015). Yet, despite these increasing statistics and the growing popularity of SNS like Instagram, it is unclear whether Instagram may be a contributing factor. Therefore, it is important that research starts to focus on the causes for poor mental health among adolescents in New Zealand, so appropriate interventions and prevention measures can be put in place.

Chapter Four: Personality Traits

Self-Esteem

Self-esteem is a personality trait that plays an important role in how the individual evaluates their competencies and views themselves (Rosenberg, 1965). A person who has high self-esteem views themselves as having value (Birkeland et al., 2012), whilst an individual with low self-esteem often has a negative self-concept and feels uncertain about themselves (Blaine & Crocker, 1993). Self-esteem can be conceptualised as trait self-esteem, which develops over time in relation to events, or state self-esteem which is fluid and impacted intermittently from reactions to life events (Heatherton & Polivy, 1991). Research has found that self-esteem is significantly affected by the feedback from the social environment, and it can influence how often the individual engages in a social comparison, and how the social comparison information is processed and interpreted (Lee, 2014; Liu et al., 2016). However, the effect of self-esteem and social comparison processes on SNS is heavily debated within the literature.

The literature has focused on both the impact on self-esteem after engaging in a social comparison on SNS (state self-esteem), and how individuals with either low self-esteem or high self-esteem feel after a social comparison has occurred (trait self-esteem). However, interestingly Vogel et al. (2014) found that chronic long-term use of Facebook impacted trait self-esteem negatively, whilst state self-esteem was impacted negatively after each use of Facebook. They suggested that this was due to individuals engaging in greater upwards social comparisons on SNS. Therefore, it appears that SNS use can create a vicious cycle, by injuring the state-esteem periodically and after a prolonged period of time it can create a cumulative effect, and negatively impact the individual's trait self-esteem (Vogel et al., 2014). Therefore, although the current research focuses on trait self-esteem it appears from Vogel et al.'s (2014) study that trait and state self-esteem are not mutually exclusive.

The inconsistencies in the literature will be discussed below, by first focusing on low self-esteem as a risk factor for engaging in upwards social comparison, then focusing on high self-esteem. Finally, this section will focus on research that suggests that both high self-esteem and low self-esteem are risk factors but there is a difference in motivation and social comparison target.

Low Trait Self-Esteem and Social Comparison on SNS

A number of studies have found that individuals with low self-esteem are more likely to engage in social comparisons on SNS (Cramer et al., 2016; Jang et al., 2016; Lee, 2014; Vogel et al., 2014). Scholars have argued that this could be due to a number of reasons; these include: for the purposes of seeking information about oneself (Wayment & Taylor, 1995) and to find social comparison targets who one considers inferior to themselves in order to experience a sense of self-enhancement (Wills, 1981). Others have suggested that low self-esteem individuals are more aware of themselves in the presence of others, therefore, they have a tendency to compare (Buunk & Gibbons, 2006). It has also been suggested that low self-esteem individuals rely more on the social information on social media to provide feedback about themselves to define their self-worth, whilst high self-esteem individuals do not use this strategy as they are more confident in themselves (Li et al., 2018).

Therefore, there appears to be a number of possible hypotheses explaining why low self-esteem individuals engage more frequently in social comparisons on SNS, compared to high self-esteem individuals. Jang et al.'s (2016) study expanded on this finding by suggesting that low self-esteem individuals engaged in greater social comparisons on Facebook, and as a result experienced worse mental health, whilst high self-esteem individuals were less likely to engage in social comparisons and experience adverse psychological consequences.

Furthermore, not only does research suggest that low self-esteem individuals are engaging in greater social comparisons and experiencing adverse psychological outcomes, there is also evidence to suggest that low self-esteem individuals are using SNS more frequently, thus putting themselves at greater risk of engaging in an upwards social comparison. Both Forest and Wood's (2012) and Kırcaburun's (2016) studies found that social media provides a social environment that is more favourable for an individual with low self-esteem, as there are less constraints in place (as usually low self-esteem individuals are sensitive to negative feedback), enabling them to act how they want. Therefore, individual's with low self-esteem use SNS to compensate for reduced social interactions offline (Valkenburg et al., 2006), and to learn about their peers by engaging in social comparisons (Cramer et al., 2016). Due to this false sense of security individuals with low self-esteem use SNS more frequently (Forest & Wood, 2012; Kalpidou et al., 2011; Kırcaburun, 2016), and consequently they are confronted

more frequently with the positively skewed information, overexposing themselves to the possibility of making upwards social comparison (Vogel et al., 2014).

In summary, these studies suggest that low self-esteem individuals engage in greater upwards social comparisons on SNS, which is problematic given the detrimental psychological impact they suffer compared to high self-esteem individuals (Blomfield Neira & Barber, 2014; Cramer et al., 2016; Jang et al., 2016), as high self-esteem acts as a psychological "buffer" (Haferkamp & Krämer, 2011; Li et al., 2018). It is particularly worrisome that low self-esteem individuals are confronted more often with negative feedback, as Jones and Buckingham (2005) suggested that individuals with low self-esteem suffer more psychologically after receiving unfavourable feedback due to overgeneralising the feedback, compared to individual's with high self-esteem.

High Trait Self-Esteem and Social Comparison on SNS

Liu et al. (2016) suggested that individuals with high self-esteem are more likely to engage in social comparisons on Facebook, and consequently suffer negative psychological outcomes compared to individuals with low self-esteem. In their study they found that high self-esteem individuals paid more attention to self-relevant information, therefore, engaged in greater upwards and downwards social comparisons, whilst, low self-esteem individuals engaged in a self-protective strategy by avoiding social comparison information (Liu et al., 2016). Furthermore, their study also found that the psychological impact of a social comparison is greater for an individual with high self-esteem, due to low self-esteem individuals avoiding engaging in social comparisons to protect themselves from the associated psychological suffering. However, Liu et al.'s (2016) research was conducted on Facebook and given that research suggests that impression management strategies and viewing stranger's content is heightened on Instagram, it may make the self-protection strategy difficult to use.

High Self-esteem and Low Self-esteem are Risk Factors for Engaging in Social Comparisons on SNS

Interestingly, other studies have found that both high self-esteem and low self-esteem individuals engage in social comparison processes, however they have different motivations and subsequently different targets. In Jones and Buckingham (2005) study they found that both high self-esteem and low self-esteem individuals engaged in social

comparisons to feel better about themselves (self-enhancement). However, high self-esteem individuals engaged in upwards social comparisons to achieve this, whilst low self-esteem individuals engaged in downwards social comparisons. In their study they also found that high self-esteem individuals experienced a poorer negative affect when engaging in a downwards social comparison (assimilation effect), whilst low self-esteem individuals experienced a poorer negative affect when engaging in an upwards social comparison. Therefore, consistent with other literature it suggests that individuals with low self-esteem favour downwards social comparisons for the purpose of self-enhancement, whilst high self-esteem individuals favour upwards social comparisons for the purposes of self-improvement (Aspinwall & Taylor, 1993; Jones & Buckingham, 2005; Wills, 1981). However, Jones and Buckingham's (2005) study was not conducted on social media, and given the use of impression management strategies on SNS, it may make upwards social comparisons almost impossible to avoid, and consequently make downwards social comparisons hard to achieve (Jang et al., 2016). Therefore, SNS likely creates a more advantageous environment for high self-esteem individuals, as low self-esteem individuals may have greater difficulty finding downwards social comparison targets, due to the stream of positively skewed information.

In support of this Cramer et al.'s (2016) study who also explored motivations for social comparisons for high self-esteem and low self-esteem individuals on Facebook, found that individuals with low self-esteem were more likely to compare themselves on Facebook for the motives of self-evaluation, self-enhancement, self-improvement and self-destruction (a desire to fulfil a negative prophecy about oneself), compared to individuals with high self-esteem, and as a result experienced greater Facebook fatigue. Furthermore, Cramer et al. (2016) also found that low self-esteem individuals experienced less positive affect when engaging social comparisons for the motive of self-improvement compared to people with high self-esteem. Whilst individuals with low self-esteem experienced greater positive affect when engaging in social comparisons for the purposes of self-enhancement. This is consistent with the studies mentioned previously that were not conducted on social media, who have identified that low self-esteem individuals engage in downwards social comparisons for the purposes of self-enhancement which elicits a positive affect, whilst high self-esteem individuals engage in upwards social comparisons for the purposes of self-

improvement, which produces a positive affect (Aspinwall & Taylor, 1993; Jones & Buckingham, 2005; Wills, 1981).

Interestingly, Cramer et al. (2016) found that individuals with low self-esteem perceived there to be greater social comparisons on SNS, they suggested that low self-esteem individuals were more sensitive to the positively skewed information, and thus more vulnerable to the negative psychological consequences. Therefore, despite research suggesting that individuals with low self-esteem engage in downwards social comparisons for the purpose of self-enhancement, this may be harder to achieve in a manipulated environment like Instagram (Jang et al., 2016).

Therefore, in summary low self-esteem has been shown to be a significant risk factor for depression (Sowislo & Orth, 2013), and although research suggests that both high self-esteem and low self-esteem individuals engage in social comparisons on SNS, the utilisation of impression management strategies make SNS a more advantageous environment for individuals with high self-esteem and consequently a less advantageous environment for low self-esteem individuals. All studies mentioned above used Facebook instead of Instagram, therefore given the positively skewed photo nature of Instagram it may create an even more unfavourable environment for low self-esteem individuals. This is concerning given the detrimental impact that an upwards social comparison can have on an individual's psychological wellbeing. Therefore, the following study hypothesises that engaging in an upwards social comparison on Instagram mediates the negative relationship between self-esteem and depression and worry symptoms, as represented in Figure 6.1.

Social Comparison Orientation

Social Comparison Orientation is a personality trait which refers to the individual having an inclination to compare themselves to others, and base their behaviour on how others behave (Gibbons & Buunk, 1999). This personality trait is derived from Festinger's (1954) Social Comparison Theory. Gibbons and Buunk (1999) suggested that social comparison orientation encompasses having an orientation towards comparing one's abilities and opinions with others. Individuals with social comparison orientation tendencies are said to have a higher activation of the self, have a greater interest in what others feel, usually have a greater negative affect, and they are more uncertain about themselves, thus often having low self-esteem and high

neuroticism (Bunnk & Gibbons, 2006). Gibbons and Buunk (1999) designed the INCOM scale to capture social comparison orientation, and since its development it has been widely accepted and utilised.

Social Comparison Orientation and Social Comparison on SNS

Lee (2014) and Vogel et al.'s (2015) studies both found that individuals with high social comparison orientation tendencies make a greater number of social comparisons on social media, and are more invested in social media, compared to individuals with low social comparison orientation tendencies. This provides two possibilities, first individuals with high social comparison orientation tendencies spend more time on SNS due to the multiple opportunities to engage in social comparisons (Lee, 2014; Vogel et al., 2015), or secondly, that more time on SNS causes people with social comparison orientation tendencies to engage in greater social comparisons, given the multitude of self-relevant information (Lee, 2014). Therefore, these studies suggest that the self-relevant information that is displayed on social media is particularly appealing to individuals with social comparison orientation tendencies (Yang, 2016), and when exposed to this information, they relate this to themselves, by engaging in social comparison processes, in order to reduce the uncertainty about their self-worth (Gibbons & Buunk, 1999; Wang et al., 2017).

It is unfortunate that individuals with high social comparison tendencies engage more frequently in social comparisons on SNS, as given the false positive perception that is displayed on social media, these social comparisons are more likely to be in the upwards direction. This was confirmed in Wang et al.'s (2017) study on Wechat and Qzone, as they found that social comparison orientation moderated the association between passive SNS use and engaging in upward social comparisons. Therefore, suggesting that individuals who have high social comparison orientation tendencies are more susceptible to the positively skewed information displayed on social media, and interpret social comparison information differently (compared to individuals with low social comparison orientation tendencies; Lee, 2014), and consequently they suffer more psychologically, once they are exposed to social comparison information (Vogel et al., 2015). Therefore, it is not surprising that research has found that individuals with high social comparison orientation tendencies experience poorer trait self-perceptions,

lower self-esteem, poorer affect (Vogel et al., 2015) and worse mental health (Jang et al., 2016) after using Facebook.

In summary, these studies have found that individuals with social comparison orientation tendencies engage in greater upwards social comparisons on SNS, resulting in poorer psychological outcomes. Therefore, these studies have identified social comparison orientation as a vulnerability factor for the negative consequences of SNS. However, both Lee (2014) and Vogel et al. (2015) used a Facebook population, whilst Wang et al. (2017) used a Wechat and Qzone population. Therefore, due to the differences between these SNS and Instagram there remains speculation as to whether the results would translate to an Instagram population.

Social Comparison Orientation on Instagram

Although the research is still in its infancy a small number of studies have looked at social comparison orientation as a vulnerability factor for engaging in social comparison processes on Instagram (de Vries et al., 2018; Mackson et al., 2019; Sherlock & Wagstaff, 2018; Yang, 2016). Yang's (2016) study looked at the relationship between individuals with social comparison orientation tendencies and the activities on Instagram of: interaction, browsing or broadcasting and loneliness. He found that having high social comparison orientation tendencies moderated the relationship between Instagram interaction and loneliness. In de Vries et al.'s (2018) study participants viewed positive or neutral photos of people or no photos, and rated their affect before and after. They found that individuals who had high social comparison orientation tendencies, and engaged in social comparisons, experienced a decrease in positive affect only after viewing the positive condition. Whilst, Mackson et al.'s (2019) survey study found that individuals with social comparison orientation tendencies, experienced greater depression symptoms, which they attributed to engaging in greater social comparison on Instagram. These studies provide both correlational and experimental support that suggests individuals with social comparison orientation tendencies experience poorer psychological outcomes, after using Instagram.

However, all studies mentioned in this section assumed that because individuals with high social comparison orientation tendencies have an inclination to engage in social comparisons, that this was occurring in their studies, thus providing an

explanation for why these individuals experienced poor psychological outcomes. However, regrettably no studies assessed the behaviour of engaging in a social comparison on Instagram. Therefore, although they provided a very plausible explanation, the construct of social comparison was not assessed, and therefore, it leaves open the possibility that other processes were responsible for the differences between high and low social comparison orientation individuals e.g. neuroticism (Vogel et al., 2015). Therefore, it is important for future research to assess the behaviour of engaging in a social comparison on Instagram, rather than to make the assumption from the personality trait of social comparison orientation.

Furthermore, all studies used a population aged between 18-48 years old, therefore, it is unknown whether these findings would translate to the largest consumers of social media; adolescents (Perrin, 2015). It is important that social comparison orientation is explored as a vulnerability factor for adolescents, as in Weinstein's (2017) study she focused on social comparisons on Instagram with adolescents and suggested that adolescents who are prone to making social comparisons may experience worse psychological outcomes when using Instagram. However, she did not formally assess social comparison orientation. Therefore, this research will formally assess social comparison orientation, and hypothesises that engaging in an upwards social comparison on Instagram mediates the positive relationship between social comparison orientation and depression and worry symptoms, as represented in Figure 6.1.

Self-Concept Clarity

Self-Concept Clarity is the ability of an individual to comprehensively understand who they are, to a point where it is consistent and stable over time (Campbell et al., 1996). Self-concept clarity is not widely studied as a vulnerability factor for engaging in social comparisons on social media. Individual's with low self-concept clarity have been found to spend more time engaging in self-analysis, which has found to impact their psychological development, indicating that this may be a risk factor for engaging in social comparison processes (Campbell et al., 1996). Low self-concept clarity and high social comparison orientation are negatively correlated constructs, as research has found that the more uncertain an individual is about various aspects of their life the more motivated they are to engage in social comparisons, in order to enhance their self-concept (Butzer & Kuiper, 2006; Gibbons & Buunk, 1999;

Lee, 2014).

Self-Concept Clarity and Social Comparison on SNS

Butzer and Kuiper's (2006) study found that individuals who had a poorer understanding of their self-concept engaged in greater upwards and general social comparisons. Furthermore, Butzer and Kuiper (2006) found that self-concept clarity mediated the relationship between upwards social comparisons and depression and anxiety. This suggests that individuals who are less certain about their self-concept feel more compelled to engage in social comparison processes, likely to reduce their uncertainty. However, their research did not use the context of social media, therefore, it is unknown whether the false positive perception and other unique features of social media would have strengthened or changed these associations.

The only study to date that has looked at self-concept clarity and social comparison frequency on SNS is Lee (2014). Lee (2014) found that individuals who have low self-concept clarity engaged in greater social comparisons on Facebook. The correlation coefficient from his study also suggested that the frequency of experiencing a negative feeling from engaging in a social comparison was negatively correlated to self-concept clarity. Lee (2014) hypothesised that this could either be due to a personality trait influencing the relationship, or the impression management strategies used on SNS make social comparisons almost unavoidable, (as people post more positive information than negative), resulting in negative feelings. However, to date no research has attempted to explore these hypotheses. Furthermore, Lee (2014) did not state what direction the social comparisons were in, and he used the SNS of Facebook, as opposed to Instagram. Therefore, it is unknown whether the unique features of Instagram, which provide a more favourable platform for social comparisons to occur (Sherlock & Wagstaff, 2018), create a perilous environment for individuals with low self-concept clarity.

Furthermore, Lee (2014) used a college student sample. No research to date has explored the association between self-concept clarity, engaging in a social comparison, and negative psychological outcomes with adolescents. This is surprising given that adolescents are at a developmental period where they possess a malleable sense of self, as they are attempting to develop a clear sense of self (Fullwood et al., 2016). Interestingly, Fullwood et al.'s (2016) study found that adolescents with low self-concept clarity used greater impression management strategies on Facebook. Thus, it

could be possible that by focusing more on the online image one presents to others, they are also more focused on the online image of others, making them more vulnerable to engage in social comparison processes. Therefore, it is important that future research assesses self-concept clarity as a risk factor, especially given that identity development is a salient task during adolescence (Nesi & Prinstein, 2015). The current study hypothesises that engaging in an upwards social comparison on Instagram mediates the negative relationship between self-concept clarity and depression and worry symptoms, as represented in Figure 6.1.

Chapter Five: Patterns of Instagram use

Passive Instagram Use

Research has found that different patterns of using SNS have varied psychological outcomes (Verduyn et al., 2015). Research has suggested that patterns of SNS use can be dichotomised into two categories of: *passive* and *active use* (Chen et al., 2016; Escobar-Viera et al., 2018; Verduyn et al., 2015). Passive use can also be termed social browsing, social searching and content consumption (Krasnova et al., 2013). All terms refer to activities that involve consuming or browsing an SNS without attempting to establish social interaction (Lup et al., 2015; Verduyn et al., 2015). Whilst active use encompasses activities on SNS that the individual engages in for the purposes of facilitating social connection with others (Verduyn et al., 2015).

It is important that research distinguishes between these two forms of social media use, as passive SNS use has been linked to resentment, envy (Verduyn et al., 2015), decreases in subjective wellbeing (Krasnova et al., 2013), social anxiety (Selfhout et al., 2009; Shaw et al., 2015) and depression (Selfhout et al., 2009). Whilst, active SNS use has been associated with increased social capital (Koroleva et al., 2011), emotional support (Koroleva et al., 2011) and less depressive symptoms (Selfhout et al., 2009). Therefore, given that the current study is only interested in risk factors for engaging in an upwards social comparison on Instagram only passive Instagram use is of interest.

Passive Use and Social Comparison

Passive activities on SNS include: scrolling through newsfeeds and viewing others posts/ photos (Chen et al., 2016; Verduyn et al., 2015). In Verduyn et al.'s (2015) study they found that individuals use SNS passively 50% more than actively (Verduyn et al., 2015). This is worrisome, as passive SNS use has been found to have a detrimental impact on an individual's psychological wellbeing (Krasnova et al., 2013; Wang et al., 2017). Research has found that when a SNS is used passively, the individual is exposed to a continuous stream of self-relevant information, therefore, they are more likely to view information that will elicit an upwards social comparison (Krasnova et al., 2013; Tandoc, 2015; Wang et al., 2017; Weinstein, 2017). Given the extensive use of impression management strategies on SNS, research suggests that it

makes upwards social comparisons impossible to avoid when using SNS passively, resulting in poor psychological outcomes (Wang et al., 2017; Weinstein, 2017).

This raises the question of why individuals continue to use SNS passively when it causes emotional harm. Verduyn et al. (2015) provided the explanations of: SNS having addictive properties (Ryan et al., 2014), the need for staying in touch could trump the negative psychological consequences (Ellison et al., 2007), and people may not have insight into the emotional harm of passive SNS. However, other research has suggested that passive SNS use may only be detrimental for individuals who engage in social comparisons when using social media (Vogel et al., 2015; Wang et al., 2017; Yang, 2016).

Passive Instagram Use

Interestingly, very few studies have looked at the psychological impact of passively using Instagram on an individual's mental health (de Vries et al., 2018; Lup et al., 2015; Weinstein, 2017; Yang, 2016). This creates a significant gap in the literature as Lup et al. (2015) suggested that Instagram offers an ideal setting for passive SNS use, due to the nonreciprocal relationships that are formed, and being picture orientated it does not entice social interaction (Lup et al., 2015; Weinstein, 2017). However, within the Instagram literature there are inconsistencies regarding whether passive use leads to poor mental health outcomes, as some researchers have found that this does not occur (Lup et al., 2015; Yang, 2016), whilst others have found the opposite results (de Vries et al., 2018; Weinstein, 2017). As a result, researchers have started to explore whether social comparison is influencing this relationship. Thus, whether engaging in social comparisons when using Instagram passively may be responsible for these inconsistent results.

In Weinstein's (2017) study she used an experimental method, where individuals either browsed a positive only newsfeed, a positive newsfeed with a prime reminding the individual of the positively skewed environment, and a balanced newsfeed. She found that individuals assigned to the positive newsfeed condition who engaged in greater social comparisons had poorer affective wellbeing. In de Vries et al.'s (2018) study they found that individuals with social comparison orientation tendencies who viewed positive posts experienced a decrease in positive effect. However, in contrast to these findings Yang (2016) who used a survey design found a null effect of social comparison orientation moderating the relationship between

browsing Instagram and loneliness. Thus Weinstein, (2017) and de Vries et al. (2018) concluded that individuals who used Instagram passively and compared themselves with others experienced poorer psychological outcomes, whilst Yang's (2016) study refutes these results.

Both Weinstein's (2017) and de Vries et al.'s (2018) studies employed an experimental design that focused on the immediate impact of passively using Instagram, whilst Yang (2016) used a survey design, thus capturing the global impact. Therefore, it could be possible that in Weinstein's (2017) and de Vries et al.'s (2018) studies only the most vulnerable individuals were captured, and possibly less vulnerable individuals also experienced the same outcomes, but may require greater passive consumption of Instagram. In support of this, prior research has found that individuals who used SNS passively did not experience any immediate change in their affective wellbeing, but when their affect was assessed at the end of the day they reported poorer psychological wellbeing (Verduyn et al., 2015).

de Vries et al. (2018) and Yang (2016) used the personality trait of social comparison orientation to measure whether the individual engaged in social comparisons on Instagram, as opposed to measuring the behaviour of engaging in a upwards social comparison. Therefore, as mentioned previously given that social comparison orientation is a personality trait there could be other variables that are influencing this association e.g. poorer self-perceptions (Vogel et al., 2015). Therefore, it is important that future research understands whether passive Instagram usage is an independent risk factor for engaging in an upwards social comparison on Instagram, resulting in poor psychological wellbeing.

All studies conducted on Instagram have focused on passive activities, such as browsing the newsfeed or asking individuals to scroll through the newsfeed in experimental studies (de Vries et al., 2018; Hwnag, 2019; Weinstein, 2017; Yang, 2016). However, research on other social media platforms suggests that passive social media is a much broader concept than just scrolling through a newsfeed, as it includes browsing, scrolling through newsfeeds, viewing friends content without commenting and interacting with friends (Verduyn et al., 2015). Therefore, it can be argued that the above studies have not captured the broader concept of passive Instagram use by focusing on specific activities nor have they focused on the different forms of content that can be browsed passively on Instagram (e.g. home newsfeed and explore newsfeed).

Furthermore, only Weinstein's (2017) study used an adolescent population, therefore, it is important that research continues to explore passive use as a risk factor for engaging in social comparisons, as prior research has indicated differences in the way generations use SNS passively (Escobar-Viera et al., 2018). Therefore, the current study hypothesises that engaging in an upwards social comparison on Instagram mediates the positive relationship between passive Instagram use and depression and worry, as represented in Figure 6.1.

Intensity of Instagram Use

Intensity of Instagram use is defined by attitudes reflecting emotional connectedness to the SNS, and how integrated Instagram is in one's life (Orosz et al., 2016). Orosz et al.'s (2016) study identified that intensity of Facebook use is comprised of four facets: persistence, boredom, overuse and self-expression. Persistence is defined as the emotional bond between Facebook and the individual user, often individuals who score high on this check Facebook before bed or actively hunt for an internet connection. Boredom refers to using Facebook to prevent boredom. Overuse is conceptualised as excessive use of Facebook at a level which could be considered addictive, and self-expression is defined as a persistent need for an individual to present themselves and their ideas to the world. Orosz et al. (2016) suggested that it is important for research to measure intensity of Facebook use using these four facets, as it allows for differentiation between problematic and non-problematic SNS use. Intensity of SNS use is particularly important to assess with adolescents, as research has found that social media is deeply embedded into an adolescent's life, and addiction levels are increasing among adolescents (Kırcaburun, 2016).

Intensity of SNS Use and Social Comparison

Blomfield Neira and Barber 's (2014) study found that high school students who were more invested in their social media account had lower self-esteem and were more likely to report having a depressed mood. The authors suggested that individuals who were more invested in social media were less able to distinguish between the false positive perception on social media and the reality of their online friends' lives. Therefore, they assumed that individuals who used Instagram intensely were more likely to engage in an upwards social comparison, resulting in depressive symptoms.

Consistent with Blomfield Neira and Barber's (2014) assumption, Tandoc et al. (2015) found that heavier Facebook use was associated with greater envy. They suggested that this was because heavier Facebook users were more likely to engage in activities that result in the individual consuming others information, thus increasing the number of social comparison targets one is exposed to. Lee (2014) and Vogel et al.'s (2015) studies both corroborate these assumptions, as they both found that the more intensely an individual used Facebook the more they engaged in social comparison processes. However, these studies used a Facebook population not a Instagram population.

Intensity of Instagram Use and Social Comparison

Only two studies to date have looked at the associated psychological outcomes of using Instagram intensely, and engaging in social comparisons (Sherlock & Wagstaff, 2019; Stapleton et al., 2017), and these studies have provided inconsistent results. In Sherlock and Wagstaff's (2018) study, it was found that social comparison orientation mediated the relationship between time spent on Instagram and depressive symptoms, general anxiety, physical appearance anxiety, self-esteem and body image disturbance. All associations were positive (negative for self-esteem), meaning the more time spent on Instagram was associated with greater social comparison orientation, and higher scores on the psychological outcome measures. In the second part of Sherlock and Wagstaff 's (2018) study they used an experimental design where participants viewed Instagram posts of travel, beauty and fitness or no images. They found that participants who were exposed to the beauty and fitness groups, and experienced greater changes in self-rated attractiveness also experienced more depressive symptoms, general anxiety, physical anxiety, body dissatisfaction and lower self-esteem. This study provides preliminary support that using Instagram intensely and engaging in social comparisons results in poor psychological outcomes. However, Sherlock and Wagstaff 's (2018) only measured time spent on Instagram, therefore, neglecting other aspects which contribute to using Instagram intensely e.g. persistence and boredom (Orosz et al., 2016). Blomfield Neira and Barber (2014) suggested that it is imperative that research distinguishes between frequency of use and investment, as in their study they found that frequency of use was not associated with poor psychological adjustment, whilst investment was. Furthermore, Sherlock and Wagstaff (2018) did not formally assess engaging in a social comparison on Instagram (as they

used social comparison orientation), therefore, they assumed their results could be explained by upwards social comparisons occurring.

Stapleton et al.'s (2017) study also looked at the psychological impact of using Instagram intensely and engaging in social comparisons on Instagram. Interestingly, they found that intensity of Instagram use was significantly associated with social comparison, and that social comparison significantly predicted self-esteem. However, the mediation of this relationship was not statistically supported, as intensity of Instagram use did not significantly predict self-esteem. Therefore, the authors concluded they could not proceed with their statistical analysis and assess for mediation.

In summary, the studies in this section provide preliminary support for Blomfield Neira and Barber's (2014) assumption, but regrettably they all used social comparison orientation to measure social comparison or they did not assess the direction of the social comparison (e.g., upwards or downwards). Due to the significant differences of the effect of an upwards and downwards social comparison, it is essential that future research is able to make this distinction. Furthermore, it is also important that future research uses a measure that captures engaging in a social comparison on Instagram, as opposed to the personality trait of social comparison orientation. The current study hypothesises that engaging in an upwards social comparison on Instagram mediates the positive relationship between intensity of Instagram use and depression and worry, as represented in Figure 6.1.

Chapter Six: Risk Factors Across Gender

As discussed in chapter two research has identified possible vulnerability factors that may make an individual who has these traits or uses Instagram in certain ways more vulnerable to engage in upwards social comparisons on Instagram. The current study wanted to assess whether there was any difference of the vulnerability factors between adolescent males and females.

Gender

Previous studies have identified distinct differences between male and female social media use. Such as women being more active on SNS and caring more about their SNS profile (Sheldon & Bryant, 2016), women having larger social networks (Acar, 2008), women engaging in higher levels of self-disclosure (Valkenburg et al., 2011) and males posting more desirable information in the written sections of SNS, whilst females post more self-promotional photos (Mehdizadeh, 2010). Interestingly, one study found that males are more likely to compare themselves on success, whilst females on beauty (Haferkamp & Krämer, 2011). Furthermore, it has also been found that females are more concerned about their appearance on social media, and spend more time using impression management strategies (McAndrew & Jeong, 2012). These studies lend support that there are distinct differences between male and female SNS use, however, surprisingly this is an understudied area, especially within the social comparison framework. It is important that the impact of gender is assessed on Instagram, as prior research has found that gender is the greatest predictor of Instagram use (Sheldon & Bryant, 2016).

Gender and Social Comparison on SNS

Nesi and Prinstein (2015) and the more recent study Nesi et al. (2017), both looked at the moderating role of gender on social comparison frequency and depressive symptoms, on Facebook with adolescents. Both studies found that gender played a critical role in whether the individual engaged in a social comparison on Facebook, leading to depressive symptoms. In both studies, they found that females engaged in greater social comparisons on Facebook, than males, and as a result they experienced greater depressive symptoms. Interestingly, in Nesi et al.'s (2017) study they found that adolescent males who had greater depressive symptoms engaged more frequently in

social comparisons a year later, thus providing inconsistent results.

The authors provided a number of explanations to describe their findings. For the Nesi and Prinstein (2015) study they suggested females are more likely to develop depressive symptoms via reassurance-feedback seeking processes, and due to the false positive perception, this is heightened on social media (Prinstein et al., 2005). They also suggested that females are more likely to focus their attention on information that is self-relevant, therefore, it is more likely to be threatening (Stefanone et al., 2011). Finally, they suggested that interpersonal stressors have a more detrimental effect on females (Rudolph, 2002), as females tend to respond with more rumination (Hankin & Abramson, 2001), therefore, it could be that social comparisons on social media constitute as being an interpersonal stress. However, in Nesi et al.'s (2017) study they provided the explanation of social comparison processes being more normal for females, as females often engage in more interpersonal responses to distress both on and off social media, compared to males. Therefore, they suggested that it could be that males who are experiencing psychological distress turn to social media for interpersonal responses, as it appears to be less threatening, however, because of the false positive perception this becomes problematic.

To date the only study that has looked at gender and social comparison on Instagram with adolescents was Weinstein's (2017) study. The bivariate correlation from her study suggested that females use Instagram more daily and report more negative social comparisons, and greater negative affect than males. However, regrettably Weinstein (2017) did not assess this as a mediation model, so it cannot be concluded that females are engaging in more negative comparisons, resulting in greater negative affect. Instead Weinstein (2017) used gender as a control variable rather than exploring the differences between gender.

From these studies it suggests that both males and females are at risk when engaging in social comparisons on social media, however, there may be distinct differences between gender. Interestingly, other studies have found that there are no differences between gender (Frison & Eggermont, 2016; Selfhout et al., 2009; Steers et al., 2014; Tandoc et al., 2015; Wang et al., 2017), with one study concluding that the gender differences of internet use are not as great as they once were (Selfhout et al., 2009). Another possible explanation for this that has not been rigorously examined is it may only be vulnerable females and males who engage in social comparisons and experience negative psychological outcomes (Underwood & Ehrenreich, 2017). It is

important that future research explores this possibility.

Personality Traits across Gender

There is very limited research exploring interpersonal vulnerability factors across gender, therefore, it is not surprising that the results are inconclusive. Blomfield Neira and Barber's (2014) study found that male youth with an SNS profile experienced a higher social self-concept and higher self-esteem than males without an SNS. Whilst, females with an SNS experienced a greater depressed mood and lower self-esteem than females without an SNS. Ozimek and Bierhoff's (2016) study found that males scored lower on a social comparison orientation measure than females, thus they concluded that males were less likely to compare their abilities and opinions on Facebook than females. Whilst, Wang et al. (2017) found no differences between males and females for self-esteem and social comparison orientation on WeChat. In summary, the findings provide weak evidence that females who have the vulnerability factors identified in chapter four and five may be at a greater risk of engaging in an upwards social comparison on social media, and subsequently experiencing poor psychological outcomes, compared to males. However, further research is needed to understand this better, and it needs to be explored within an Instagram context with adolescents. Therefore, the current study hypothesises that gender moderates the relationship between low self-esteem, high social comparison orientation and low self-concept clarity, engaging in an upwards social comparison on Instagram, and depression and worry, as this will be stronger for adolescent females than males, as represented in Figure 6.1.

Patterns of Instagram Use across Gender

Quinn and Oldmeadow's (2013) study found that intensity of SNS use was related to belongingness for males but not females, therefore, males experience greater benefits when using SNS more intensely than females. A possible explanation for this is prior research has found that males use SNS to improve and refine their social skills (Blomfield Neira & Barber, 2014; Quinn & Oldmeadow, 2013; Valkenburg et al., 2011), however, females do not use SNS to improve their communication skills, and instead use SNS to seek feedback from others about themselves (Li et al., 2018; Valkenburg et al., 2005).

This possible explanation is supported by Wang et al.'s (2017) study who found

that women engaged in greater passive use of SNS than males. Therefore, because interpersonal feedback (e.g. number of likes or comments) is publicly displayed on SNS (Valkenburg et al., 2006), by passively consuming SNS females are exposed to a greater number of social comparison targets, and when they relate this information to themselves it provides personal feedback. For example in Li et al.'s (2018) study they found that the number of likes a females achieves on their photo or the number of followers they have provides quantifiable feedback that is interpreted to reflect one's self-worth. Interestingly, Li et al. (2018) found that girls were not aiming for a set number instead they were comparing the number of likes or followers they have compared to their peers.

Therefore, it could be possible that when females are using SNS more intensely they are engaging in more passive activities (e.g. scrolling through their newsfeed), and potentially exposing themselves to a greater number of social comparison targets, and thus they are always going to find someone who has achieved a greater number of likes or who they perceive as prettier than themselves. Therefore, the current study hypothesises that gender moderates the relationship between high passive Instagram use and high intensity of Instagram use, engaging in an upwards social comparison on Instagram and depression and worry, as this will be stronger for adolescent females than males, as represented in Figure 6.1.

Chapter Seven: Overview of the Current Study

For the past two decades researchers have been trying to understand how social media is affecting an individual's mental health, however, social media platforms are rapidly changing and new SNS are being developed and integrated into an individual's life at a rapid rate. Therefore, research is quickly becoming outdated and a significant lag between the literature and SNS exists. As a result, most of the literature currently focuses on the social media platform of Facebook and neglects the more recent social media applications such as Instagram. This is concerning as Instagram is the fastest growing social media application and it is becoming deeply embedded into one's life (Perrin, 2015; Wagner, 2015). Therefore, the psychological impact of Instagram must be explored. Based on Instagram's unique features of entrenched impression management strategies and greater access to strangers, it suggests that Instagram provides an even more ideal platform for upwards social comparisons to occur. However, the literature is still in its infancy and more research is required to understand how Instagram is affecting an individual's psychological wellbeing.

Research from other social media platforms, namely Facebook, suggests that social media creates a ripe environment for upwards social comparisons to occur. However, research is starting to suggest that a poor get poorer effect is occurring (Underwood & Ehrenreich, 2017), meaning only certain individuals may be at risk of engaging in an upwards social comparison on social media. Prior research has asked for future research to focus on what factors make an individual vulnerable, so a more nuanced understanding can be obtained. Therefore, the current study sets out to answer this call.

The current study wanted to focus on the understudied population of adolescents for two reasons. First adolescents are an understudied population, as most research uses the convenience sample of university students, and secondly, in New Zealand we have a high prevalence of adolescents with anxiety disorders and depression, therefore, research needs to focus on modern triggers or perpetuating factors. Therefore, the current study chose to administer an online questionnaire, to adolescents from four secondary schools in Auckland. The schools were balanced in terms of gender, however, all schools that were originally interested were of a high decile, so another school from a different region and a lower decile was added to try and capture an adequate sample of New Zealand adolescents. However, as noted in the limitations that

the sample was not balanced in terms of decile.

By developing an understanding of the psychological impact of Instagram use with adolescents the current study hopes to aid other literature to enable development of interventions and prevention strategies for at-risk populations (Lin et al., 2016; Tsitsika et al., 2014).

Current Study's Hypotheses

In summary the aim of the current study was to focus on what vulnerability factors make an adolescent at risk of engaging in an upwards social comparison on Instagram, and subsequently experience depression and worry symptoms. The vulnerability factors that are of interest include: self-esteem, social comparison orientation, self-concept clarity, passive Instagram use, intensity of Instagram use and gender. The hypotheses as represented in Figure 6.1. Are the following:

Hypothesis One: Engaging in an upwards social comparison on Instagram partially mediates the negative relationship between self-esteem and depression and worry symptoms.

- Hypothesis 1a: Gender moderates the relationship between low self-esteem, engaging in an upwards social comparison on Instagram and depression and worry, as this will be stronger for adolescent females than adolescent males.

Hypothesis Two: Engaging in an upwards social comparison on Instagram partially mediates the positive relationship between social comparison orientation and depression and worry symptoms.

- Hypothesis 2a: Gender moderates the relationship between high social comparison orientation, engaging in an upwards social comparison on Instagram and depression and worry, as this will be stronger for adolescent females than males.

Hypothesis Three: Engaging in an upwards social comparison on Instagram partially mediates the negative relationship between self-concept clarity and depression and worry symptoms.

- Hypothesis 3a: Gender moderates the relationship between low self-concept clarity, engaging in an upwards social comparison on Instagram and depression and worry, as this will be stronger for adolescent females than males.

Hypothesis Four: Engaging in an upwards social comparison on Instagram mediates the positive relationship between passive Instagram use and depression and worry.

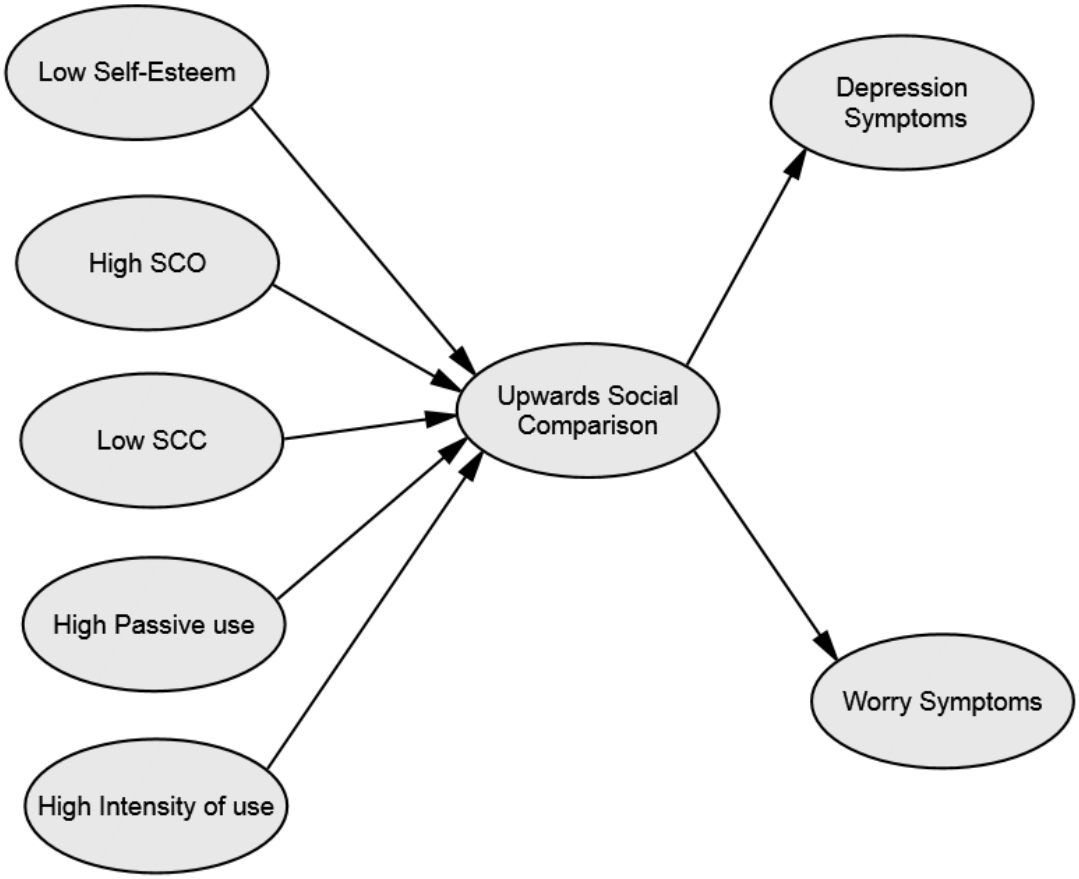
- Hypothesis 4a: Gender moderates the relationship between high passive Instagram use, engaging in an upwards social comparison on Instagram and depression and worry, as this will be stronger for adolescent females than males.

Hypothesis Five: Engaging in an upwards social comparison on Instagram mediates the positive relationship between Intensity of Instagram use and depression and worry.

- Hypothesis 5a: Gender moderates the relationship between high intensity of Instagram use, engaging in an upwards social comparison on Instagram and depression and worry, as this will be stronger for adolescent females than males.

Figure 6. 1

Hypotheses for the Current Study. Each Pathway was Assessed for Moderation Across Gender.



Chapter Eight: Method

Participants

Participants were recruited via an email with an attached letter that was sent to multiple secondary school principals within Auckland, New Zealand. From this approach four schools expressed their interest in the study. The schools were two co-educational secondary schools, one single sexed all girls secondary school, and one single sexed all boys secondary school. Both single sex schools were decile 9, one of the co-educational schools was a decile 10 and the other was a decile 2 (Ministry of Education, 2018). There was a total of 853 responses after the data had been screened (N=853; please refer to data screening).

Table 8. 1

Demographics of Participants

	Gender	Age	Ethnicity
Male	281 (32.94%)		
Female	565 (66.23%)		
Other	7 (0.82%)		
13 years old		104 (12.19%)	
14 years old		152 (17.78%)	
15 years old		191 (22.34%)	
16 years old		194 (22.70%)	
17 years old		149 (17.43%)	
18 years old		62 (7.25%)	
19 years old		1 (0.12%)	
New Zealand European			453 (53.1%)
Māori			49 (5.74%)
Pacific Islander			59 (6.9%)
Asian			209 (24.4%)
Other			83 (9.7%)

In the one of the co-educational schools, all years 9, 10 and 11 completed the questionnaire during their maths period, and a number of year 12 and 13 students completed the questionnaire during their study period, thereby, capturing the majority of the students within this school. In the single sexed girls' school, all students between the years of 9-13 were provided with the questionnaire link during their form time and were instructed to complete the questionnaire. In the single sex boys school students who had health class completed the questionnaire within this class. Finally, in the other

co-educational school all year 13 students completed the questionnaire and one year 9, 10, 11 and 12 class who were selected at random based on their teacher's availability also completed the questionnaire.

Participants who were under the age of 16 were required to get parental consent, using an opt out consent form, which along with an information sheet (see Appendix A) was sent home a few days prior to the individual completing the questionnaire (see Appendix B). All participants were required to provide their own consent before starting the questionnaire, by selecting 'yes' on a consent item located on the questionnaire. All participants were informed that the questionnaire was completely anonymous and that they could omit any items they wished. The schools involved in the study were provided with a result sheet of the main findings from the study, so that they could better inform their students.

Ethics

The participants in the current study were classified as "vulnerable" given that many of the participants were under the age of 16. Therefore, ethical approval from the Human Ethics Committee was sought. The study received ethical approval by the Massey University Human Ethics Committee application number NOR 18/12. Please see Appendix C.

The Questionnaire

The questionnaire was developed on the computer software Qualtrics (Qualtrics, 2018; see Appendix D). The questionnaire took each participant on average 20 minutes to complete. The demographic questions were located at the beginning, followed by the three most important scales: SCS, CES-DC and PSWQ-C. The reason these three scales were placed at the front was so they would be less affected by survey fatigue. The other scales were placed in an alternating pattern between personality scales and Instagram usage scales, to minimise survey fatigue. Please see Appendix E for further details of the questionnaire using the CHERRIES checklist (Eysenbach, 2004).

Demographic Questions

Participants were asked demographic questions of: their age, gender, ethnicity, what school they attend and whether they were currently feeling anxious, down or stressed about school or any personal problems.

Instagram Usage Questions

The participants answered Instagram usage questions of whether they had an Instagram account (if not they were taken an alternative pathway where they could answer the questionnaire using another social media or internet platform). Frequency of Instagram use was measured by the following items: 30+ times a day, 20-30 times a day, 10-19 times a day, 2- 9 times a day, once a day, once every 2-3 days, once every 4-5 days, once every 6-7 days, once every two weeks and once a month or more. Duration of time spent on Instagram each time they used it, was captured by the following items: less than a minute, 1-10 minutes, 11-20 minutes, 21-30 minutes, 31-40 minutes, 41-50 minutes, 51-60 minutes and more than an hour. Participants also answered a question regarding how many strangers they followed on Instagram (including: celebrities, Instagram celebrities, people they have never met and meme or video accounts). There were also two textbox entry questions of: "Are there times when you use Instagram that you feel better about yourself? If so, please provide examples" and "Are there times when you use Instagram that you feel worse about yourself? If so, please provide examples".

Measures

The Social Comparison Scale. Social Comparison was measured by The Social Comparison Scale (SCS; Allan & Gilbert, 1995). The SCS employs a semantic differential approach to assess upwards social comparisons (e.g. unattractive and inferior) and downwards social comparisons (e.g. attractive and superior).

The scale consists 11 items which are presented to the respondent with an incomplete sentence followed by 11 bipolar constructs, which the respondent rated on a 10-point Likert scale (e.g. insider- outsider and attractive- unattractive). In the present study we modified the incomplete sentence from "In relationship to others I generally feel" to *"When I compare myself to others on Instagram, I feel…"* so that the scale specifically measured social comparison on Instagram. These instructions were originally modified by Feinstein et al. (2013) to measure social comparison on

Facebook. The items on the SCS were reversed scored so that the SCS was a measure of an upwards social comparison, as opposed to downwards social comparison. Possible scores range from 11 to 110, with higher scores indicating that the individual is more likely to engage in an upwards social comparison on Instagram, and lower scores indicating a downwards social comparison on Instagram. Please refer to Appendix F for psychometric properties of the SCS.

Center for Epidemiological Studies- Depression Scale. Depressive symptomatology was measured by The Center for Epidemiological Studies-Depression Scale for Children (CES-DC; Weissman et al., 1980). The CES-DC is a 20 item self-report instrument that measures the emotional, cognitive and behaviour related symptoms of depression in community-based samples (Barkmann et al., 2008).

The CES-DC scale was developed from the adult depression scale of Centre for Epidemiological Studies- Depression scale (CES-D; Radloff, 1977) by Weissman et al. (1980). Weissman et al. (1980) modified the wording from the original scale so that it was developmentally appropriate for youth between the ages of 6-17 years old. For example, the item *"I could not get going"* was modified to "*It was hard to get started doing things this past week*". The CES-DC measures symptoms associated with depression that the individual experienced during the past week (Radloff, 1977). Respondents rated each item from 0= *Not At All*, 1= *A Little*, 2= *Some* and 3= *A Lot*. Once accounting for the four reversed scored items, possible scores range from 0 to 60. Higher scores indicated greater depressive symptomology, with a cut off score of >16 indicating significant levels of depressive symptomology (Fendrich et al., 1990).

The CES-D is a multidimensional instrument that measures depression with the factors of: *Somatic Complaints*, *Depressed Affect*, *Positive Affect* and *Interpersonal Problems*. This four-factor model was proposed by Radloff (1977) and has been shown to be replicated in the CES-DC (Fendrich et al., 1990). Research has found that the CES-DC is a valid measure of depressive symptoms for girls and boys aged between 12-18 years old (Fendrich et al. 1990), and it has been recommended for epidemiological research with adolescent populations (Faulstich et al., 1986). Please refer to Appendix F for psychometric properties of the CES-DC.

Penn State Worry Questionnaire for Children. Worry was measured by The Penn State Worry Questionnaire for Children (PSWQ-C; Chorpita et al., 1996). The PSWQ-C is a 14 item self-report measure that is designed to assess a child or adolescents' tendency to engage in excessive, generalised and uncontrollable worry (Chorpita et al., 1996). The PSWQ-C was developed by changing the wording of the items from the adult version of the PSWQ to be more developmentally appropriate for children. For example, *"I find it difficult to dismiss worrisome thoughts"* to *"I find it easy to stop worrying when I want"* (Chorpita et al., 1996; Meyer et al., 1990). The participants rated each item on a scale ranging from *Not At All True*= 0, *Sometimes True*= 1, *Often True* =2 and *Always True* =3 (Muris et al., 2004). Item scores are summed together once accounting for the reversed items. Possible total scores range from 0 to 42, with higher scores indicating that the individual has a greater tendency to worry.

Research has shown that the PSWQ-C preforms well in both clinical and non-clinical samples of children and adolescents between the ages of 7-18 years old. The PSWQ-C significantly correlated with multiple anxiety disorders (generalised anxiety disorder, social anxiety, panic/ somatic, school phobia; Muris et al., 2001; Pasarelu et al., 2017). This indicates the trans diagnostic nature of worry, and as a result the current study focused on *worry*, as opposed to specific anxiety disorders, in order to provide a broader approach which is more applicable within a community population. Please refer to Appendix F for psychometric properties of the PSWQ-C.

Passive and Active Facebook Use Measure- An Adapted Version for Instagram. Passive Instagram use was measured by an adapted version of the Passive and Active Facebook Use Measure (PAUM; Gerson et al., 2017). The original scale is a 13-item multidimensional measure, with items loading on the factors of Active Social, Active Non-Social and Passive. However, because of the distinct differences between Facebook and Instagram, the items were modified to an Instagram context. As noted below the modified scale consists of two factors: *passive use* and *active social use*, as research has shown it is important to distinguish between these two forms of SNS use. However, given that the current study is only focused on risk factors for engaging in an upwards social comparison, only the passive use items were utilised in the analysis.

Participants rated each of the items on a 5-point Likert scale from 1= *Never (0%)*, 2= *Rarely (25%)*, 3= *Sometimes (50%)*, 4= *Somewhat Frequently (75%)* and 5=

Very Frequently (100%), with greater scores indicating that the individual more frequently engages in that activity. Please refer to Appendix F for psychometric properties of the original PAUM.

Modifications of the PAUM. The instructions were modified from How frequently do you preform the following activity when you are on Facebook? (Note: Choosing "Very Frequently" means that about 100% of the time that you log on to Facebook, you preform that activity)" to: "How frequently do you preform the following activity when you are on Instagram? (Note: Choosing "Very Frequently" means that about 100% of the time that you log on to Instagram, you preform that activity).

Items Deleted on the PAUM. The Active Non-Social items from the original PAUM scale were removed (with the exception of item 9 which was modified) to create a two-dimensional measure of Active and Passive Instagram use. The reason for this was the Active Non-Social items did not translate well to the Instagram context. As Item 5 "Creating or RSVPing to events" is not an activity preformed on Instagram. Items 7 and 10 used the term "tagging", this term is too ambiguous, as on Instagram you can tag your friends in photos (when you upload a photo of them) and you can tag them in the comment section when commenting on other people's photos/videos. Item 1 and 2 were removed from the PAUM scale, despite the items loading on the Active Social factor. The reasons for this are posting status updates is not an activity performed on Instagram and commenting on statuses, wall posts and pictures etc. was already taken into account by the items regarding browsing the newsfeed actively (item 6). Item 8 was deleted from the PAUM, despite it loading on the Passive factor, as viewing photos was already taken into account by the browsing newsfeed passively items (item 4), as photos and videos are the only form of content on Instagram.

Items Modified on the PAUM. Item 9 was retained but modified so it would load on the Active Social factor, as Gerson et al. (2017) explained that posting videos loaded on the Active Non-Social factor, as Facebook users often post videos that are not their own content. Therefore, item 9 was modified to "Posting photos or videos that you've taken" so that it would more likely load on the Active Social factor. Item 13 "looking through my friends' profile" was modified to "looking through accounts of

people you do know". The reason for this is on Facebook the user creates a reciprocal relationship known as a friendship, however, on Instagram relationships are unidirectional and therefore friendships are not created.

Items Added. Two items were added to differentiate between the two different newsfeeds on Instagram: The Home Newsfeed and the Explore Newsfeed. The Home Newsfeed is where users view photos/ videos of people who they have selected to follow. The Explore Newsfeed is where users view photos/ videos based on an algorithm provided by Instagram. Therefore, the content displayed is very different between the two different newsfeeds, as on the Home Newsfeed the individual can control what content they are exposed to, whilst on the Explore Newsfeed Instagram controls what content the individual is exposed to via an algorithm. The item of "Looking through accounts of people you don't know (strangers)" was also added. The reason for this is on Instagram you are exposed more frequently to stranger's accounts (through the Explore Newsfeed). However, on Facebook this is less likely to happen as you have to physically search someone to find them. Therefore, looking through stranger's Instagram accounts is an important aspect to consider.

PAUM adapted for Instagram use.

1. Chatting on Instagram chat
2. Checking to see what someone is up to
3. Posting photos or videos that you've taken
4. Browsing your home newsfeed passively (the house icon; without liking or commenting on anything)
5. Browsing your explore newsfeed passively (the magnifying glass icon; without liking or commenting on anything)
6. Browsing your home newsfeed actively (the house icon; liking and commenting on photos and videos)
7. Browsing your explore newsfeed actively (the magnifying glass icon; liking and commenting on photos and videos)
8. Looking through accounts of people you do know
9. Looking through accounts of people you don't know (strangers).

Based on Gerson et al. (2017) PAUM scale the items for the Instagram adapted version were hypothesised to load on the following factors:
Passive use: 2, 4, 5, 8, 9
Active social use: 1, 3, 6, 7

Iowa- Netherlands Comparison Orientation Measure. Social comparison orientation was measured by the Iowa-Netherlands Comparison Orientation Measure (INCOM; Gibbons & Buunk, 1999). The INCOM is the only standardised measure of social comparison orientation and has been widely used within the social media literature. The INCOM is a multidimensional scale which measures social comparison orientation within the factors of *abilities* and *opinions*.

The INCOM is an 11-item self-report measure, sample items include *"I often compare how my loved ones (boy or girlfriend, family members, etc.) are doing with how others are doing"* and *"I often like to talk to others about mutual opinions and experiences"*. Items are rated on a 5-point Likert scale ranging from *I disagree strongly* to *I agree strongly*. In the current study scores ranged from 11-44 with higher scores indicating that the individual has a greater tendency to engage in a social comparison. However, in the current study the Likert scale was modified to a 4-point scale from a 5-point scale to remove the mid-point. The reason for this was to reduce satisficing behaviour, as due to the questionnaire being completed during school time, and the results having no direct benefit to the participants it is likely that satisficing will occur (Chyung et al., 2017). Please refer to Appendix F for psychometric properties of the INCOM.

Multidimensional Facebook Intensity Scale. Intensity of Instagram use was measured by the Multidimensional Facebook Intensity Scale (MFIS; Orosz et al., 2015) and two items from the Facebook Intensity Scale (FIS; Ellison et al., 2007). The MFIS is the only standardised multidimensional scale that measures how intensely an individual uses Facebook (Orosz et al., 2015). The MFIS was developed from the FIS. It is comprised of 13-items which measure Facebook intensity within the domains of: *Persistence, Boredom, Overuse* and *Self-Expression* (Orosz et al., 2015). To capture intensity of Instagram use rather than intensity of Facebook use, the word "Facebook" was replaced with "Instagram". For example, *"I feel bad if I don't check my Instagram daily"*. Respondents rated each item on a 4-point Likert scale ranging from *strongly*

disagree to *strongly agree*. The Likert scale was modified from a 5-point scale to a 4-point scale to reduce satisficing behaviour (Chyung et al., 2017), with higher scores indicating greater intensity of Instagram use. Please refer to Appendix F for psychometric properties of the MFIS**.**

Blomfield Neira and Barber (2014) suggested in their study with Australian secondary school students that the items from the FIS of: *"Facebook (Instagram) has become a part of my daily routine"* and *"I feel out of touch when I haven't logged onto Facebook (Instagram) in a while"* are a good measure of Facebook investment. Therefore, because these items from the FIS are the only two items that are suitable for the present study, and investment was not a domain measured by the MFIS, these two items were utilised in addition to the MFIS.

Rosenberg Self-Esteem Scale. Self-Esteem was measured by the Rosenberg Self-Esteem Scale (RSES; Rosenberg, 1965). The RSES is one of the most widely used measures of self-esteem in the social science literature (Sinclair et al., 2010). The RSES is a 10-item self-report measure that measures the individual's trait self-esteem. Sample items include *"On the whole, I am satisfied with myself"* and *"At times I think I am no good at all".* Respondents rated each item on a 4-point Likert scale ranging from *strongly agree* to *strongly disagree*. Total scores are summed together once accounting for the five reversed scored items. In the current study due to the Likert scale being in the opposite direction compared to the original scale items: 1, 3, 4, 7, 10 were reversed scored. Scores range between 10 and 40, with higher scores indicating that the individual has greater self-esteem. Please refer to Appendix F for psychometric properties of the RSES.

Self-Concept Clarity Scale. Self-concept clarity was measured by The Self Concept Clarity Scale (SCCS; Campbell et al., 1996). The SCCS is a 12-item scale measuring whether an individual's self-concept is clearly defined, internally consistent and stable over time (Campbell et al., 1996). A sample item from the SCCS is *"My beliefs about myself often conflict with one another"*. Respondents rated each item on a 5-point Likert scale that ranged from 1= *Strongly Disagree* to 5= *Strongly Agree*, with higher scores indicating that the individual has greater sense of self-concept unity. However, the 5-point scale was modified to a 4-point Likert scale to reduce satisficing behaviour (Chyung et al., 2017). In the current study the scores ranged from 12-48,

with higher scores indicating a greater self-concept clarity. The SCCS scale was developed with a population between the ages of 17-44 years old. However, the SCCS has been used extensively with adolescents in the literature and in similar studies to the present study (Appel et al., 2016; Fullwood et al., 2016). Furthermore, the German version of the SCCS found the SCCS has good internal consistency r=.77 in an adolescent population (Steffgen et al., 2007). Please refer to Appendix F for psychometric properties of the SCCS.

Procedure

Participants were seated as far apart as possible within the room and were instructed not to communicate when completing the questionnaire. The participants completed the questionnaire on individual electronic devices these ranged from smart phones, laptops and tablets. The link to the online questionnaire was emailed to each participant on the day they were to complete the questionnaire. Before the participants logged onto their emails and completed the questionnaire, they were briefed by either their teacher who read a set of instructions provided by the lead researcher (see Appendix G) or they were briefed by the lead researcher. A cookie function was utilised to prevent ballot stuffing (when participants complete the same questionnaire multiple times), so that participants could only complete the questionnaire once. At the end of the questionnaire participants were provided with Youthline's number and were encouraged to talk to their school guidance counsellor if they found any of the information distressing. Once the participants had completed and submitted the questionnaire, they were invited to enter a separate draw to win a pair of Beats by Dre wireless headphones.

Data Analysis

Structural Equation Modelling (SEM)

Structural Equation Modelling (SEM) was used on the computer software AMOS-25 graphics (Arbuckle, 2017). SEM was a good statistical technique to use, as it enables relationships between variables to be examined, it takes into account measurement error, and it enables both observed and unobserved variables to be measured simultaneously (Byrne, 2016).

SEM was used to determine whether the data corresponded well to the hypothesised models, thus allowing conclusions to be made regarding accepting and rejecting hypothesises. SEM was an appropriate method to use, for the current study's sample size, as research has found that the most commonly accepted criteria for determining an adequate sample size for SEM is a ratio of 10 participants to 1 item (Nunnally, 1967 as cited in Wang & Wang, 2020). The largest model in the current study has 56 items, thus, at least 560 participants are required, which was achieved. Therefore, the results will be less likely to be confounded with bias (Ding et al., 1995), and provide inaccurate error estimates for latent variables (Kline, 2015).

The first step in SEM is to test the underlying latent structures using baseline measurement models. This involves defining the latent constructs using the observed indicators that were provided by the scales original authors and evaluating the adequacy of scales in terms of how well they capture the latent constructs they are intended to represent in the current sample (Kline, 2015). The measurement modelling was conducted using a Confirmatory Factory Analysis (CFA) approach. A CFA approach was utilised as the scales were derived from the literature, therefore, there was evidence that the relationship between the observed variables and the latent factor exists and the factor structures had been validated (Byrne, 2016; Kline, 2015). The measurement model was then evaluated by assessing the adequacy of fit between the data and the model by examining the fit statistics and the standardised regression weights to ensure each item and subscale was contributing to the latent factor significantly (Byrne, 2016).

Fit Indices

To determine whether the data corresponded well to the model the goodness-of-fit indices of: the Bentler Comparative Fit Index (CFI; Bentler, 1990), Tucker Lewis Index (TLI; Tucker & Lewis, 1973) and the badness-of-fit indices of Root Mean Square Error of Approximation (RMSEA; Steiger & Lind, 1980) were examined. The CFI compares how much the model has deviated from a close fit compared to the null hypothesis model (Kline, 2015). The closer the CFI is to 1.0 the less deviation it has from a close fit (Kline, 2015). The TLI also provides a comparison of how much the model has deviated from a close fit compared to the null hypothesis model, however, it controls for the degrees of freedom of the model being tested and of the null hypothesis model (Kline, 2015). The RMSEA analyses the discrepancy of how well the

hypothesised model and a model with optimal parameter values fits the population covariance matrix (Byrne, 2016). The RMSEA is sensitive to model misspecification and it prevents over factorising (Hu & Bentler, 1999). Therefore, as recommended by West et al. (2012) these indices were selected to identify whether the models had an adequate fit, as the CFI, TLI and RMSEA are fit indices that are independent of sample size and are more easily interpreted.

Research has shown that ideally the CFI and TLI should be close to .95 and the RMSEA should be $\leq .06$ to show a good fit (Hu & Bentler, 1999). However, Marsh et al.'s (2004) research suggested that when using this stringent criteria proposed by Hu and Bentler (1999) the probability of rejecting mis-specified models decreased as the sample size increased (Marsh et al., 2004). Thus, many of the mis-specified models in Hu and Bentler's (1999) study were rejected when they had acceptable fit according to Marsh et al. (2004). Given the large population in the current study, and that as the complexity of the model increases it is difficult to achieve conventional levels of fit (Marsh et al., 2004), the traditional cut off of CFI and TLI >.90 was interpreted as a good fit (Bentler & Bonett, 1980). The traditional cut off of <.08 for the RMSEA was interpreted as an acceptable fit (Bentler & Bonett, 1980), .08-.10 indicated a mediocre fit, whilst values over .10 indicated a poor fit (MacCallum et al., 1996). However, as recommended by West et al. (2012) the proposed cut offs for the CFI, TLI and RMSEA were only considered rough guidelines for deciding overall fit of the model to the data, given that all baseline models are developed from theory, are well established in the literature.

The statistical significance of the regression paths between latent variables were based on the cut off of p <.05 and the critical ratio (C.R.) of > +/1.96 (Byrne, 2016). All models presented in the results chapter are the standardised models; therefore, all variables are converted to have a mean of 0 and a standard deviation of 1. This allows comparative judgements between the direct effects to be made.

Invariance

After the CFA measurement modelling for each baseline model was completed, the models were then assessed to understand whether the baseline model had good fit across gender. Gender was divided into male (N=281) and female (N=565), due to the small other gender population (N=7) the fit could not be determined for this population.

Invariance needed to be assessed for each baseline model across gender. Testing for factorial invariance across gender encompasses a number of hierarchical steps (Byrne, 2016). First, each baseline model needs to be assessed for fit for males and females separately. If the fit is satisfactory, each baseline model then needs to be tested for invariance to ensure each aspect of the scale (meaning of latent construct and factor loadings) is not significantly different across gender. This is done by constraining parameters across gender at each of the several increasingly stringent levels (Byrne, 2016). If the measurement models are equivalent across gender it can be confidently concluded that any difference between males and females when testing the proposed hypotheses for moderation are not biased due to group differences in measurement (Byrne, 2016).

Two types of invariances that were examined: Configural invariance and Metric Invariance. Metric invariance builds on configural invariance (e.g. you need to achieve configural invariance before achieving metric invariance), and is tested by adding more constraints on the model to achieve a stronger invariance (Bialosiewicz et al., 2013).

Configural Invariance. Configural invariance was examined to assess whether the latent constructs are interpreted the same across gender (Putnick & Bornstein, 2016). In the baseline configural invariance model, all of the models parameters are freely estimated, but items must load on the preassigned factors (Putnick & Bornstein, 2016). If configural invariance is achieved it suggests that the same indicators are measuring the same latent construct across gender (Bialosiewicz et al., 2013).

Metric Invariance. Metric invariance was examined to assess whether each indicator contributed to the latent construct similarly across gender (Putnick & Bornstein, 2016). This was determined by constraining factor loadings across gender to be equal forming the metric model and then comparing the metric model to the configural model (In AMOS this was the change in CFI between the measurement weights model and configural model; Putnick & Bornstein, 2016). If there is not a significant degradation between configural and metric models, then it was determined that metric invariance was achieved (Putnick & Bornstein, 2016). Metric invariance suggests that the factor loadings (the relationship between indicator and latent construct e.g. how highly an indicator loads onto a latent factor) are equivalent across males and

females, thus the factors have the same meaning across gender (Bialosiewicz et al., 2013).

Model Fit

To determine whether configural invariance was achieved the fit indices of: CFI, TLI and RMSEA of the configural model were examined (Putnick & Bornstein, 2016), using the thresholds stipulated above as guidelines (West et al., 2012). To determine whether metric invariance was achieved the guidelines provided by Cheung and Rensvold (2002) that were derived from their stimulation studies were used. Cheung and Rensvold (2002) stated that if the change in CFI (ΔCFI) between the configural and metric model (metric invariance) is less than or equal to -0.01 it indicates that the null hypothesis of invariance should not be rejected (Cheung & Rensvold, 2002). Cheung and Rensvold (2002) suggested that the ΔCFI is the most appropriate goodness-of-fit statistic to use as the ΔCFI is not correlated with other goodness-of-fit statistics for the overall model. Therefore, as more constraints are added to the model the model is not dependent on a less constrained model to achieve invariance (e.g. the metric model is not dependent on invariance of the configural model being achieved; Cheung & Rensvold, 2002). The ΔCFI is also independent of both model complexity and sample size.

Hypothesis Testing

If it was determined in baseline measurement modelling that the fit is satisfactory, the baseline models were then constructed into full structural SEM model, enabling the hypothesised relationships between latent variables to be assessed. The hypothesised model was then assessed for fit by examining the fit statistics of the CFI, TLI and RMSEA. To determine whether the relationships between latent variables were significant the statistical significance of the regression paths between latent variables were analysed based on the cut off of $p < .05$ and the critical ratio (C.R.) of $> +/1.96$ (Byrne, 2016).

Moderation across Hypothesised Models. Depending on the invariance achieved it determines what aspects of the model can be assessed for moderation across the possible moderator of gender for the full latent model. If metric invariance is

achieved the pathways between latent variables can be assessed for moderation (Dimitrov, 2010). Moderation is when a variable changes the relationship between two other variables, without being in the causal model (Baron & Kenny,1986).

To assess for moderation, an unconstrained model was compared to a model that has all pathway coefficients constrained to equality across gender (Hair et al., 2014). This was done using the multigroup analysis function on AMOS. A X^2 difference test was then conducted between males and females, if the X^2 test is significant at the .05 level it suggests the models are non-equivalent (they are different), therefore, indicating that moderation is occurring (Hair et al., 2014).

If the X^2 indicated non-equivalence across gender at the model level, then each pathway between latent factors was constrained to be equal across males and females in a sequential manner, whilst all other parameters in the model were estimated freely (Hair et al., 2014). A X^2 test was then conducted to determine whether there was a difference between males and females on the pathway of interest. If the X^2 was significant, it indicated non-equivalence of the path across gender (Hair et al., 2014). The standardised regression weights were then examined on the unconstrained model to identify which group the effect was stronger for.

Chapter Nine: Results

All data analyses were carried out using the software IBM SPSS-25 (IBM Corp, 2017) for MAC and AMOS-25 (Arbuckle, 2017) graphics for Windows.

Data Screening

The data set was screened by excluding responses that met the following criteria of:

- Participants who did not have an Instagram account (N=167).
- Participants who did not answer at least one entire scale (e.g. missing the RSES completely), as this resulted in over 5% of data missing from their overall response, which is considered problematic ((this is discussed in greater detail in missing data section) N=198; Kline, 2015).
- Genders that were sarcastic in nature e.g. attack helicopter (N=5).
- School names that were provided that were not included in the sample (N=11).
- An unlikely number of strangers reported (e.g. 1,000,000 and 70,000; N=2).
- People who answered the same number for each scale (N=2).
- One response was deleted as the participant stated in the textbox entry item that they just selected answers at random (N=1).

This reduced the initial sample from 1239 to a total sample 853 (N=853). Each participant was then assigned an identification number. Many of the scales in the questionnaire included reversed scored items (INCOM, SCCS, RSES, CES-DC, SCS and the PSWQ-C). Prior to data analysis these items were reversed scored. The demographic question of what school the individual attends was modified from a text entry to a numbered entry using a specified code for each school, omitting the only identifying information in the data set. Total scores for each scale were computed into a new variable by adding together all the items within that scale.

Missing Data

The responses that were deleted (as explained in data screening) due to missing values in at least one whole scale (at least 5% of the data, which is considered problematic; Kline, 2015) were missing data within the last few scales of the

questionnaire, therefore, it likely that the participant exited the questionnaire early or skipped ahead to the end. This could be attributed to a survey fatigue affect. Therefore, these values were Missing At Random (MAR), and as recommended by Hair et al. (2006) these cases were deleted from the analysis, so the extent of the missing data was low enough to allow for appropriate solutions to be applied without creating biases in the results.

Once this initial deletion had been completed a Missing Value Analysis was conducted on SPSS-25. The percentage of missing data for each scale was SCS .5%, CES-DC .4%, PSWQ-C .4%, Passive 0%, INCOM .1%, MFIS .7%, RSES .2% and SCCS 1.5%. To help with diagnosing the missing data, the missing data was then calculated per participant, it was identified that 3.8% (N=32) of participants were missing a response, however, the number of responses missed did not exceed 6 per participant. The missing data was then analysed by variable to detect any patterns, the largest percentage of missing data was located in the last 6 variables of the SCCS questionnaire (although the percentage of missing data is low as it ranged from 1.1%-1.2%) and again this could be attributed to survey fatigue.

Therefore, it was identified that the missing data remaining in the analysis is not exceptionally high or from particular participant or variable. It appeared that the missing data left in the analysis is mostly Missing Completely At Random (MCAR; Kline, 2015), apart from the last 6 variables where it is MAR (due to survey fatigue). Therefore, the missing data left in the analysis is of little concern, as it is less than 5% for each scale, variable and participant, therefore, it is not considered problematic as it will not bias the data set (Hair et al., 2014; Kline, 2015).

As a result, the missing values were left in the analysis, and means and intercepts were estimated using the theory-based full information maximum likelihood estimation (FIML) method. FIML was an appropriate method to use as the estimates are consistent, efficient, unbiased, yield standard error estimates, and it provides a method for testing hypothesises (Byrne, 2016).

Outliers

Outliers are defined as extreme responses that can occur when a participant provides a response that is significantly different from the population or when a response has been entered incorrectly (Tabachnick & Fidell, 2013).

Univariate Outliers

Univariate outliers are defined as an extreme score on one of the variables (Kline, 2015). Univariate outliers were detected by calculating the *z* score for each variable to identify any *z* scores that were above 3.29 or below -3.29 (Tabachnick & Fidell, 2013). It was identified that one score on the CES-DC was above this range, as it had a *z* score of 3.38. When examining this participant's response, they scored 60 on the CES-DC which is still within range. Furthermore, by visual inspection of box plots in SPSS-25 it was identified that this data point (nor any others) did not exceed the Inter Quartile Range (IQR) rule of 3 (Sarma & Vardhan, 2018). Therefore, given that this score was still within range for the CES-DC (thus not representative of outlier behaviour), with large data sets like the current study you would expect some *z* scores to exceed 3.29 (Tabachnick & Fidell, 2013) and this response was not considered extreme compared to the sample, this response was not deleted.

Multivariate Outliers

Multivariate outliers are defined as extreme scores on at least two variables or a pattern of scores that are considered atypical (Kline, 2015). In the current study multivariate outliers were identified by using the Mahalanobis distance (D^2). The D^2 measures the distance of variance between the profile of scores per respondent against the vector of sample means (Kline, 2015). This is calculated by dividing the D^2 by the degrees of freedom (number of independent variables). If the p-value is less than .001, the results suggest the presence of multivariate outliers (Kline, 2015; Tabachnick & Fidell, 2013). Using this method five participants were identified as multivariate outliers. However, these participants were not the participant identified to be an outlier at the univariate level. Therefore, these five participants did not provide extreme responses that were uncharacteristic of the population, and there were no obvious response patterns (e.g. providing the same number for each scale), as a result they were left in the sample as recommended by Hair et al. (2014).

Assumptions of Data Distribution

SEM operates under a number of assumptions which need to be assessed. These assumptions include: normality, linearity, homoscedasticity and the absence of multicollinearity (Kline, 2015). These will all be discussed in turn.

Normality

SEM requires the data to have achieved multivariate normality (Byrne, 2016; Kline, 2015). If normality is not achieved it suggests that the data that significantly departs from normality and it can affect the means, variance and covariance, and thus the SEM analysis (Byrne, 2016). To detect non-normality skew and kurtosis of each variable, subscale and scale were inspected, as represented in Table 9.1 (Byrne, 2016; Kline, 2015). Skew is a measure of the shape of the data and calculates how the data is distributed about its mean (Kline, 2015). Kurtosis is used to examine the height of the curve and how much this differs from a normal curve (Kline, 2015). West et al. (1995) suggested that the data is considered to be substantially non-normal at the univariate level if the skew is >2 or Kurtosis >7. As indicated in Table 9.1 all items, subscales and scales were below these thresholds, therefore, the data was not substantially skewed or kurtotic.

Linearity and Homoscedasticity

Linearity is when the dependent variable is linearly related to the independent variables and homoscedasticity is whether the error residuals are distributed equally across different values of the independent variables (Tabachnick & Fidell, 2013). Linearity and homoscedasticity were assessed by examining residual scatterplots which indicated these assumptions were satisfied.

Multicollinearity

Multicollinearity is when two of the independent variables are highly correlated; therefore, the independent variables are measuring the same latent construct, thus collecting redundant information (Tabachnick & Fidell, 2013). Multicollinearity was examined using the Variance Inflation Factor (VIF) and tolerance values. All VIF values were below 10 (maximum value: 1.743) and the tolerance values were greater than 0.1 (minimum value: .574), suggesting multicollinearity was not present (Kline, 2015).

Descriptive Statistics

A reliability analysis was conducted on all the items, subscales and scales within the questionnaire. Cronbach alpha was used to assess the reliability of each scale as noted in Table 9.1.

Table 9. 1

Descriptive Statistics for each Item, Subscale and Scale

Scale	Cronbach Alpha	Mean	Std. Deviation	Corrected Item- Total Correlation	Kurtosis	Skew
The Social Comparison Scale (SCS)	.946				.467	-.033
1.Inferior vs. Superior		5.97	1.80	.729	1.10	-.324
2. Incompetent vs. Competent		5.38	1.98	.733	.270	-.219
3.Unlikeable vs. Likeable		5.20	2.18	.795	-.219	.118
4. Left out vs Accepted		5.15	2.42	.770	-.596	.054
5. Different vs. Same		5.34	2.34	.617	-.461	-.106
6. Untalented vs. More Talented		5.75	2.01	.753	.162	-.177
7. Weaker vs. Stronger		5.51	1.94	.805	.431	-.038
8. Unconfident vs. Confident		5.60	2.19	.824	-.269	-.068
9. Undesirable vs. Desirable		5.86	2.05	.853	.167	-.086
10. Unattractive vs. More Attractive		6.02	2.19	.796	-.126	-.132
11. Outsider vs. Insider		5.52	2.13	.752	.167	-.021
Center for Epidemiological Studies- Depression Scale (CES-DC)	.913				-.059	.756
1. I was bothered by things that usually don't bother me.		.819	.878	.554	.021	.872
2. I did not feel like eating; I wasn't very hungry.		.733	.995	.429	-.271	1.04
3. I wasn't able to feel happy, even when my family or friends tried to help me feel better		.634	.933	.737	.049	1.12
4. I felt like I was just as good as other kids.		1.43	1.01	.242	-1.07	.146
5. I felt like I couldn't pay attention to what I was doing this week		1.15	1.02	.559	-1.00	.405
6. I felt down and unhappy this week		.977	.980	.791	-.510	.724
7. I felt like I was too tired to do things this past week.		1.43	1.05	.561	1.18	.174
8. I felt like something good was going to happen.		1.68	.938	.198	-.878	-.153
9. I felt like things I did before didn't work out right.		.981	.931	.579	-.549	.614

10. I felt scared this week.		.668	.968	.609	.275	1.24
11. I didn't sleep as well as I usually sleep this week.		.927	1.02	.455	-.608	.780
12. I was happy this week.		1.04	.875	.505	-.590	.446
13. I was more quiet than usual this week.		.762	.888	.505	-.076	.929
14. I felt lonely, like I didn't have any friends.		.619	.915	.638	.511	1.26
15. I felt like kids I knew were not friendly or that they didn't want to be with me.		.650	.931	.603	.427	1.26
16. I had a good time this week.		1.08	.887	.544	-.767	.446
17. I felt like crying this week.		.986	1.12	.682	-.956	.704
18. I felt sad.		1.03	1.02	.761	-.751	.638
19. I felt people didn't like me this week.		.724	.977	.663	.103	1.14
20. It was hard to get started doing things this week.		1.21	1.04	.592	-.995	.428
Somatic complaint		7.04	4.609		-.307	.510
Depression affect		5.93	5.33		-.165	.836
Positive affect		5.22	2.74		-.565	.190
Penn State Worry Questionnaire for Children (PSWQ-C)	.937				-.815	.252
1. My worries really bother me		1.44	.934	.718	-.832	.208
2. I don't really worry about things		2.05	.894	.557	-.640	-.540
3. Many things make me worry		1.34	1.01	.802	-.832	.208
4. I know I shouldn't worry, but I just can't help it		1.50	1.06	.785	-1.22	.049
5. When I am under pressure, I worry a lot		1.66	1.00	.702	-1.12	-0.70
6. I am always worrying about something		1.23	1.05	.790	-1.02	.205
7. I find it easy to stop worrying when I want		2.00	.915	.441	-.321	-.684
8. When I finish one thing, I start to worry about everything else		.946	.889	.714	-.241	.701
9. I never worry about anything		2.45	.814	.517	.961	-1.36

10. I've been a worrier all my life		.977	1.02	.652	-.614	.744
11. I notice that I have been worrying about things		1.39	.957	.742	-.874	.227
12. Once I start worrying, I can't stop		1.02	.979	.795	-.644	.624
13. I worry all the time		.958	1.02	.825	.-.732	.699
14. I worry about things until they are all done		1.55	1.02	.657	-1.12	.018
Passive use	.705				-.524	.104
2. Checking to see what someone is up to		2.97	1.10	.447	-747	.161
4. Browsing your home newsfeed passively (the house icon; without liking or commenting or anything)		2.98	1.26	.425	-1.00	.029
5. Browsing your explore newsfeed passively (the magnifying glass icon; without liking or commenting on anything)		2.91	1.31	.447	-1.10	.101
8. Looking through accounts of people you do know		2.94	1.04	.495	-.550	.139
9. Looking through accounts of people you don't know (strangers)		2.57	1.08	.515	-.493	.387
Iowa- Netherlands Comparison Orientation Measure (INCOM)	.766				-.259	-1.09
1. I often compare how my loved ones (boy or girlfriend, family members, etc.) are doing with how others are doing		1.96	.875	.386	-.314	.632
2. I always pay a lot of attention to how I do things compared with how others do things		2.40	.939	.619	-.883	.106
3. If I want to find out how well I have done something, I compare what I have done with how others have done		2.36	.990	.561	-1.05	.082

4. I often compare how I am doing socially (e.g. social skills, popularity) with other people		2.22	.981	.534	-.931	.313
5. I am not the type of person who compares often with others		2.68	.945	.243	-.805	-.281
6. I often compare myself with others with respect to what I have accomplished in life		2.44	.902	.343	-.778	.039
7. I often like to talk with others about mutual opinions and experiences		2.84	.890	.350	-.621	-.361
8. I often try to find out what others think who face similar problems as I face		2.51	.981	.512	-1.01	-.014
9. I always like to know what others in a similar situation would do		2.66	.934	.516	-.842	-.176
10. If I want to learn more about something, I try to find out what others think about it		2.60	.902	.493	-.756	-.120
11. I *never* consider my situation in life relative to that of other people		2.91	.838	-.001	-.209	-.519
Opinions		10.60	2.93		-.403	-.173
Abilities		27.39	7.06		-.456	-.027
Multidimensional Facebook Intensity Scale (MFIS)	.888				-.285	-.110
1. If I could visit only one site on the internet, it would be Instagram.		2.06	.889	.595	-.794	.350
2. Watching Instagram posts is good for overcoming boredom.		2.82	.804	.510	.039	-.549
3. I spend time on Instagram at the expense of my obligations.		2.24	.825	.594	-.646	.103
4. My Instagram profile is rather detailed.		1.82	.727	.464	-.036	.565
5. I feel bad if I don't check my Instagram daily.		1.74	.796	.505	-.328	.739
6. When I'm bored, I often go to Instagram.		2.94	.821	.677	.265	-.707
7. I spend more time on Instagram than I would like to.		2.44	.976	.620	-.994	.063

8. I like refining my Instagram profile.	2.09	.857	.508	-.687	.315
9. I often search for internet connection in order to visit Instagram.	2.06	.900	.635	-.831	.357
10. If I am bored, I open Instagram.	2.89	.782	.639	.708	-.825
11. It happens that I use Instagram instead of sleeping.	1.97	.905	.574	-.656	.540
12. It is important for me to update my Instagram profile regularly.	1.62	.734	.549	.616	1.03
13. Before going to sleep, I check Instagram once more.	2.29	.953	.645	1.04	.057
Persistence	8.15	2.65		-.534	.209
Boredom	8.64	2.04		.403	-.646
Overuse	6.64	2.16		-.566	.117
Self-Expression	5.53	1.87		.059	.497
Rosenberg Self-Esteem Scale (RSES)	.884			-.149	-.072
1. On the whole, I am satisfied with myself.	2.87	.827	.615	-.255	-.390
2. At times I think I am no good at all.	2.43	.908	.612	-.758	.155
3. I feel that I have a number of good qualities.	2.99	.720	.624	.282	-.481
4. I am able to do things as well as most other people.	2.91	.734	.621	.185	-.445
5. I feel I do not have much to be proud of.	2.74	.868	.617	-.609	-.244
6. I certainly feel useless at times.	2.24	.888	.651	-.572	.349
7. I feel that I'm a person of worth, at least on an equal plane with others.	2.94	.697	.525	.172	-.356
8. I wish I could have more respect for myself.	2.16	.853	.518	-.480	.350
9. All in all, I am inclined to feel that I am a failure.	2.82	.925	.714	-.769	-.332
10. I take a positive attitude toward myself.	2.88	.803	.660	-.255	-.390
Self-Concept Clarity Scale (SCCS)	.827			-.289	-.001

1. My beliefs about myself often conflict with one another.	2.64	.881	.540	-.678	-.155
2. On one day I might have one opinion of myself and on another day I might have a different opinion.	2.18	.906	.588	-.690	.344
3. I spend a lot of time wondering about what kind of person I really am	2.32	.961	.643	-.896	.214
4. Sometimes I feel that I am not really the person that I appear to be.	2.47	.959	.679	-.940	.044
5. When I think about the kind of person I have been in the past, I'm not sure what I was really like.	2.53	.899	.598	-.764	-.048
6. I seldom experience conflict between the different aspects of my personality.	2.30	.825	-.396	-.502	.174
7. Sometimes I think I know other people better than I know myself.	2.74	.920	.509	-.880	-.158
8. My beliefs about myself seem to change very frequently.	2.63	.884	.702	-.721	-.088
9. If I were asked to describe my personality, my description might end up being different from one day to another day.	2.58	.883	.644	-.692	-.104
10. Even if I wanted to, I don't think I would tell someone what I'm really like.	2.72	.954	.486	-.868	-.255
11. In general, I have a clear sense of who I am and what I am.	2.67	.826	.345	-.588	-.216
12. It is often hard for me to make up my mind about things because I don't really know what I want.	2.24	.901	.501	-.765	.225

Note. all figures are rounded to three significant figures

As represented in Table 9.1 all scales had good to moderate reliability ranging from r= .705- r=.946. This indicated that the scales were internally consistent at measuring the same latent construct. The inter-item correlations also suggested that each item within the each scale was measuring the same construct, with the exception of item 6 on the SCCS ("*I seldom experience conflict between the different aspects of my personality"*) and item 11 on the INCOM scale ("*I never consider my situation in life relative to that of other people"*), as both items had poor inter item correlations r=-.396 and r=-.001, respectively. Therefore, suggesting they were not measuring the same latent construct as the other items in their respective scales. After these items were checked to ensure that they were coded correctly these two items were deleted from their respective scales to improve the internal consistency of the measures. The reliability of the SCCS improved to .873 and the INCOM improved to .791.

CFA Measurement Modelling

Table 9.2 represents the fit statistics for each baseline model. All baseline models were considered to be adequate solutions, and it was determined they could be used in further statistical analysis with the exception of the RSES.

Table 9. 2

Fit Indices for all Baseline Models

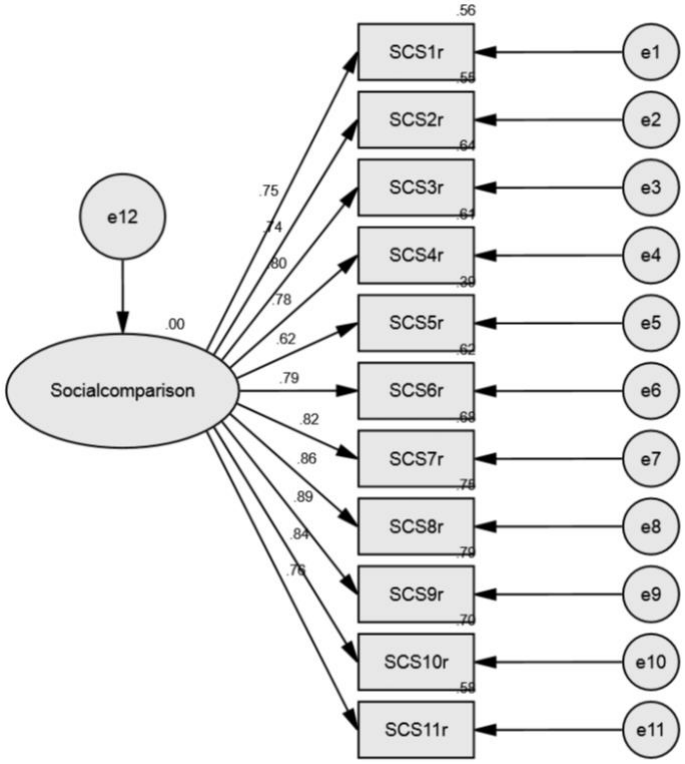
Model	X^2	Probability	CFI	TLI	RMSEA	DF
SCS	591.992	.000	.926	.889	.121	44
CES-DC	763.515	.000	.904	.877	.075	133
PSWQ-C	596.279	.000	.931	.906	.089	77
Passive	18.948	.001	.981	.954	.066	4
INCOM	181.659	.000	.940	.903	.071	34
MFIS	355.401	.000	.931	.897	.075	61
RSES	645.839	.000	.834	.740	.143	35
SCCS	249.415	.000	.937	.905	.074	44

SCS

The SCS was examined using a one factor solution, as represented in Figure 9.1. A total of 11 indicators (items) were used to measure the latent construct of *social comparison*. Item SCS1 (reference variable) was constrained to 1, this enabled the following indicators to be scaled to the explained variance between the reference variable and the associated factor (Kline, 2015), enabling the other indicators to be estimated in terms of their relation to the latent factor.

Figure 9. 1

Standardised Model of the One Factor Model of the SCS



As noted in Table 9.2 the CFI represented a good fit, as it is above the traditional cut off of >.900. When degrees of freedom are controlled for (TLI) the model suggested an acceptable fit. However, RMSEA suggested a poor fit. All standardised regression weights for the model were significant C.R. >+/- 1.96 $p < .001$. This suggests that the items significantly regressed onto the latent variable of *social comparison* at $p < .001$.

CES-DC

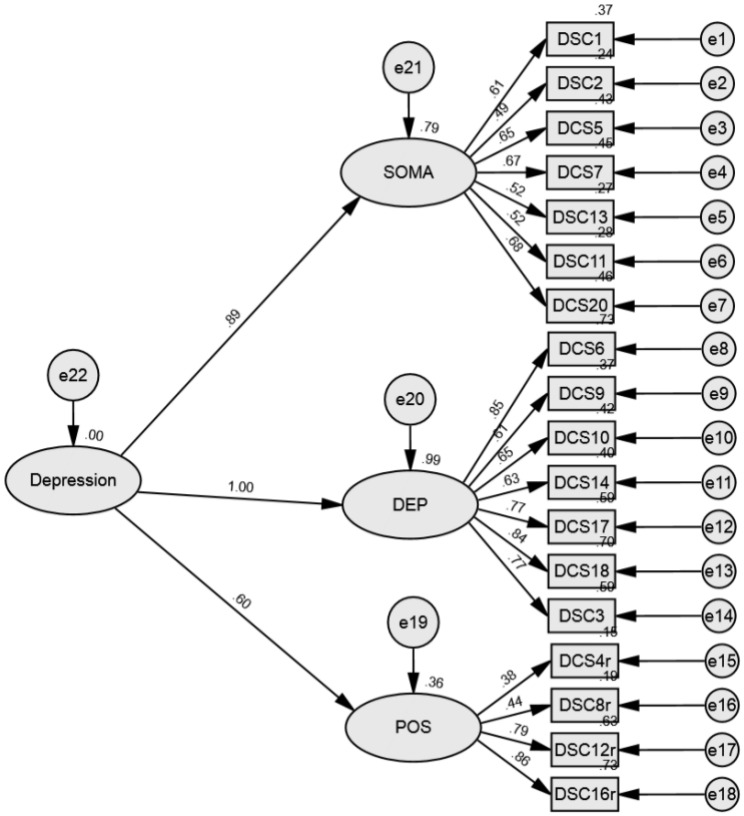
The CES-DC was examined using the four-factor solution proposed by Radloff (1977). However, the subscale of *Interpersonal Problems* was deleted as it only consisted of two indicators. The reason for this is research has shown that when two indicators are used to define a latent construct in CFA it can be problematic, as it leads improper solution problems (Ding et al.,1995), it can be difficult to estimate error correlations resulting in specification errors (Kline, 2015), and it is difficult to distinguish how much the latent construct is described by the two indicators (Little et al., 1999). Therefore, it is recommended that at least three indicators are used to define a common factor (Comrey, 1988; Ding et al. 1995).

The three-factor structure as represented in Figure 9.2 is a second order factor model. This indicates that the higher order factor of *depression* is made up of the three latent factors of: *somatic complaints*, *depressed affect* and *positive affect*, each factor had seven, seven and four indicators respectively. This model can be presented in two formats, a first order model where the latent factors are covaried or a hierarchical second order model. When testing both of these models there were no difference across fit statistics. However, given that our hypotheses focus on the impact of depressive symptoms as opposed to the different dimensions of depression it was more appropriate to use a hierarchical model. Previous research has also found that the correlations between the latent factors can be explained by a second order factor *depression* (Rhee et al. 1999).

The first order latent factor *somatic complaints* was constrained to 1, allowing the second order factor loadings to be freely estimated (Byrne, 2016). Items DCS1, DCS6 and DCS4r (reference variables) were constrained to 1, enabling the following indicators within each factor to be scaled to the explained variance (Kline, 2015).

Figure 9. 2

Standardised Second Order Three-Factor Model of the CES-DC



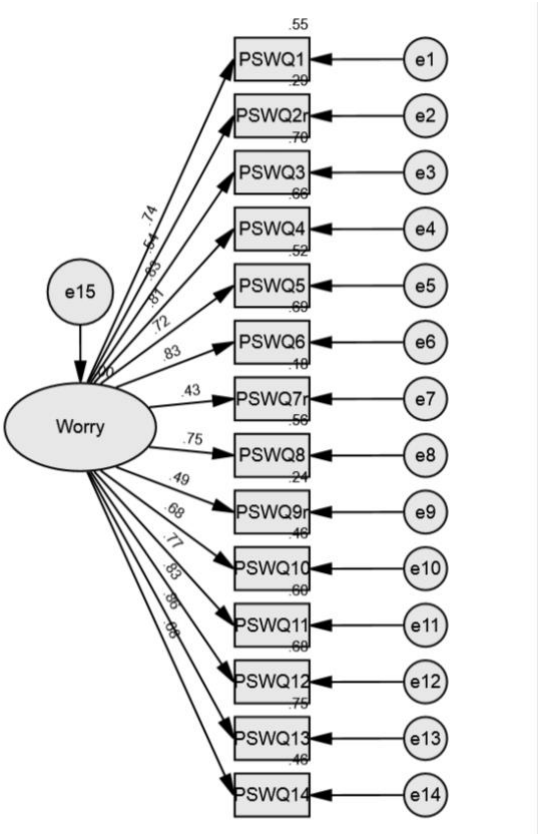
It was identified that e20 had a negative error variance of -.115, this is known as a Heywood case, and these are common in higher order models in a CFA. After checking that the CES-DC was specified correctly, the Heywood variable was remedied by the variance on the e20 being set to .005 (Bartholomew et al., 2011). This solution was chosen over constraining the regression paths to be equal, as to do this the second order factor *depression* needs to be constrained to 1, however, this is not an option in the current study, as in the full latent model the CES-DC is an endogenous variable. As noted by the fit indices in Table 9.2 the TLI suggested a marginal fit, whilst, the CFI and RMSEA represented a good fit. This is promising as the RMSEA is sensitive to model specification and complexity. All items significantly regressed onto the associated subscales, and each subscale significantly regressed onto the latent variable of *depression* $p < .001$. Therefore, the second order factor model with the fixed Heywood case was found to be an adequate solution and will be used in further analyses.

PSWQ-C

The PSWQ-C was examined using a one factor solution, as represented in Figure 9.3. A total of 14 indicators were used to measure the latent construct of *worry*.

Figure 9. 3

Standardised One Factor Model of the PSWQ-C



As noted in Table 9.2 the CFI, TLI and RMSEA suggested a good fit for the PSWQ-C. All items significantly regressed onto the latent variable of *worry* $p < .001$.

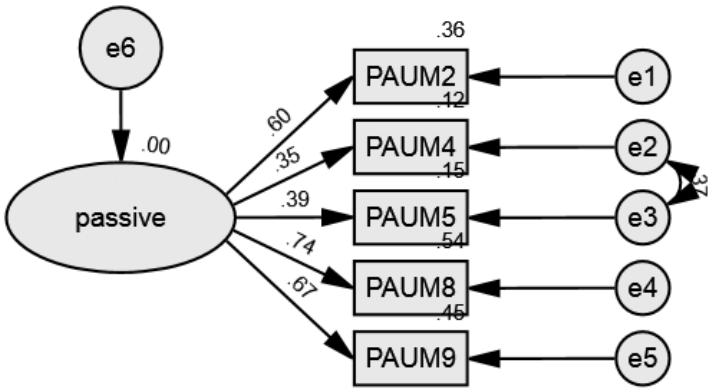
PAUM- Passive Factor Adapted for Instagram Use

A total of five indicators were used to measure the latent factor *passive use*. This provided poor fit as indicated by the fit statistics of the CFI=.849, TLI=.698 and RMSEA=.169. Given that this is not an established measure and it was designed for the purpose of this research the modification indices were then examined to see whether

there was misspecification within the model. A review of the modification indices revealed a high error correlation between "*browsing your home newsfeed passively"* and *"browsing your explore newsfeed passively"*. Due to the theoretical similarity between these items, as they are exactly the same activity completed on different newsfeeds, the correlated error was specified, and the resulting model is presented in Figure 9.4.

Figure 9. 4

Modified Standardised One Factor Model of Passive Instagram Use



As represented in Table 9.2 the CFI, TLI and RMSEA suggested a good fit. All items significantly regressed onto the latent variable of *passive* $p < .001$. It is important to mention that the excellent fitting statistics for the *passive use* scale likely represents bloated specifics; therefore, all items are measuring the same thing.

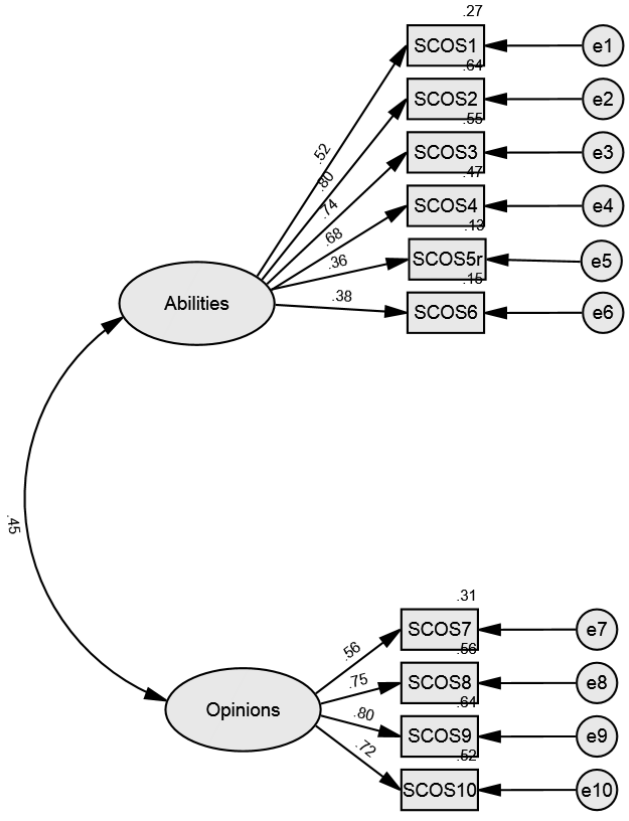
INCOM

The INCOM was examined initially using a one factor solution, which consisted of ten indicators (item 11 was deleted after the reliability analysis due poor to inter-item correlations) to measure the latent construct of *social comparison orientation*. However, this solution provided a poor fit, as noted by the fit indices of: CFI= .638, TLI = .457 and RMSEA= .157.

The INCOM was then examined using the two-factor solution proposed by Gibbons and Bunnk (1999). The two-factor structure that was employed by Gibbons and Bunnk (1999) suggested that *abilities* and *opinions* capture two separate factors. *Abilities* represents performance or ability-based comparisons, whilst *opinions* is the tendency of an individual to compare their opinions with others. The two-factor structure as represented in Figure 9.5 is made up of the two latent factors *abilities* which is measured by six indicators and *opinions* which is measured by four indicators. The two latent factors were covaried, allowing for statistical association between indicators and factors that are not directly linked (Kline, 2015).

Figure 9. 5

Two Factor Standardised Model of the INCOM



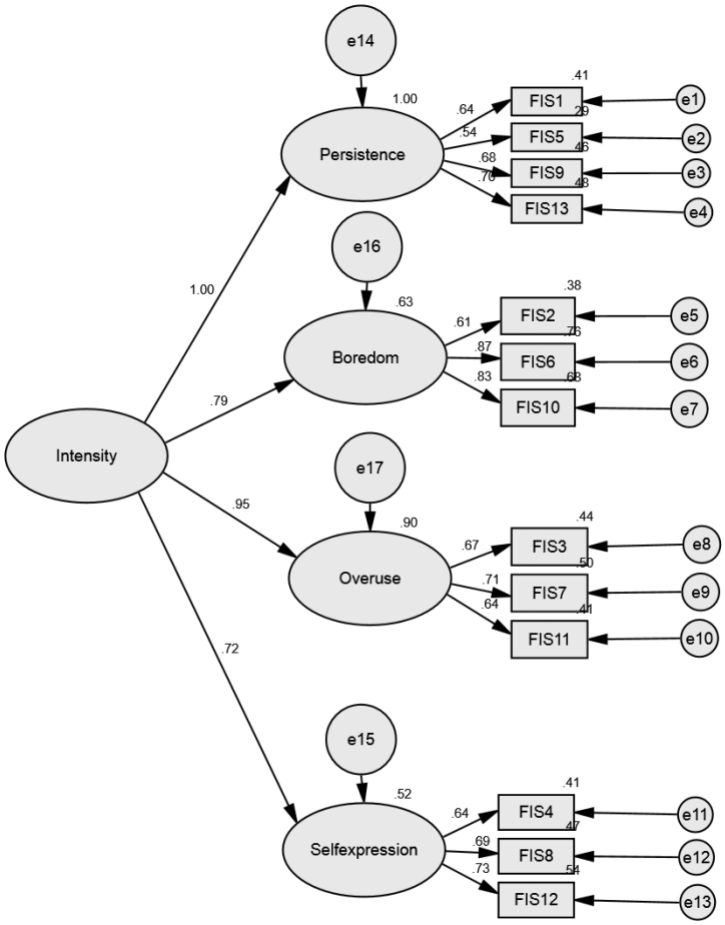
As noted in Table 9.2 the CFI, TLI and RMSEA represented a good fit. All items significantly regressed onto either the latent variable of *opinions* or *abilities* $p < .001$.

MFIS

The MFIS was examined using a second order four factor solution proposed by (Orosz et al., 2016). The first order latent factors were: *persistence*, which was measured by four indicators, *boredom* which was measured by three indicators, *overuse* which was measured by three indicators and *self-expression* which was measured by three indicators. These latent factors predicted the second order factor of *intensity*, as represented in Figure 9.6. The items added from Blomfield Neira and Barber (2014) study to capture the latent factor of *Investment* were not utilised, as there were only two indicators and three indicators are needed for a CFA (Ding et al., 1995).

Figure 9. 6

Second Order Four Factor Standardised Model of the MFIS Adapted for Instagram use



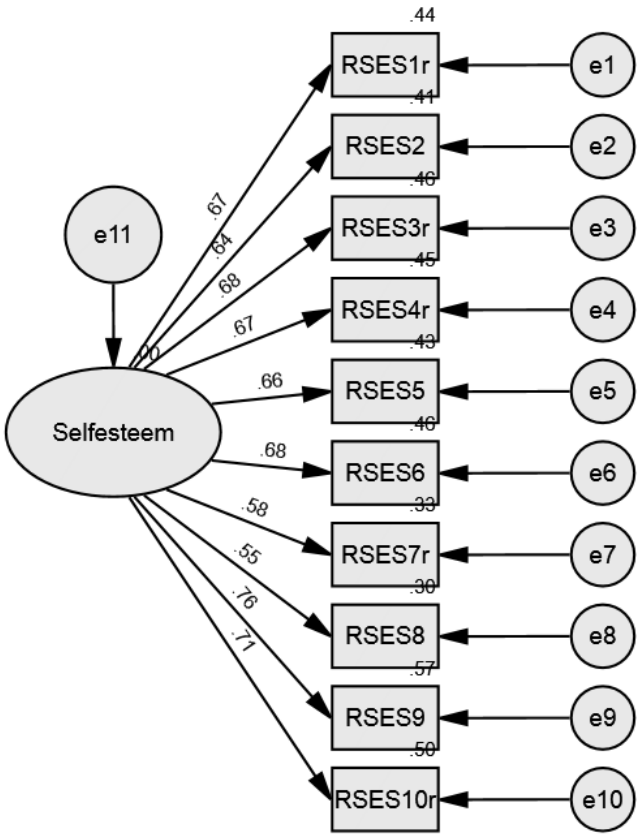
As noted in Table 9.2 the CFI, TLI and RMSEA suggested a good fit. All items significantly regressed onto the associated subscale, and each subscale significantly regressed onto the latent variable of *Intensity* $p < .001$.

RSES

The RSES was examined using a one factor solution (Rosenberg., 1965), all items loaded onto the latent factor *self-esteem*, as represented in Figure 9.7.

Figure 9. 7

Standardised One Factor Model of the RSES



As represented in Table 9.2 the CFI, TLI and RMSEA suggested a poor fit. As explained in the discussion the RSES was then calculated as a bifactor model in order to account for method effects. However, two items (RSES5 and RSES9) did not significantly regress onto the negative method factor $p<.05$. Therefore, despite trying

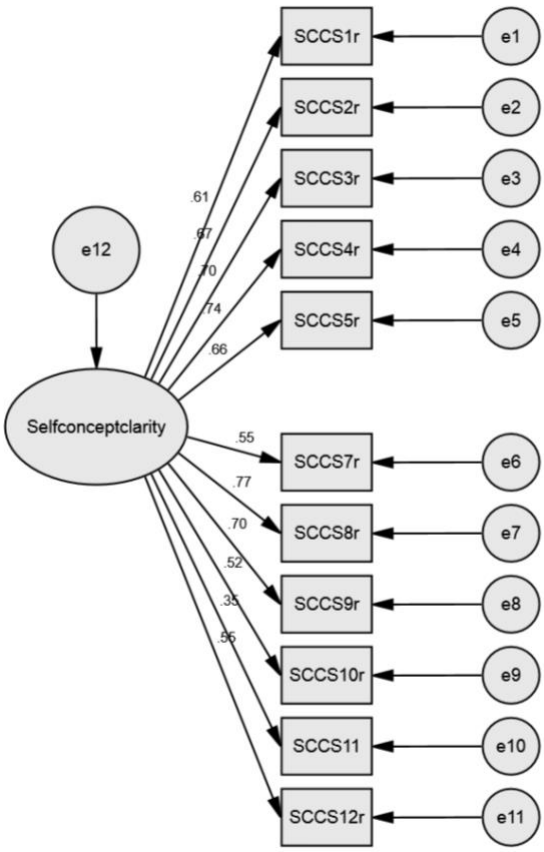
the RSES scale in multiple different formats, as guided by the literature, the RSES is not fitting the data accurately enough; therefore, it will be removed from further analyses.

SCCS

The SCCS was examined using a one factor solution (Campbell et al., 1996). A total of 11 indicators (item 6 was deleted after the reliability analysis due to poor factor loading) were used to measure the latent factor of *self-concept clarity*, as represented in Figure 9.8.

Figure 9. 8

Standardised One Factor Model of the SCCS



As noted in Table 9.2 the CFI, TLI and RMSEA suggested a good fit. All items significantly regressed onto the latent variable of *self-concept clarity* $p < .001$.

Correlation Between Scales

Table 9. 3

Raw Correlation Matrix of Each of the Scales

	SCS	CES-DC	PSWQ-C	Passive	INCOM	MFIS	RSES	SCCS
SCS	1							
CES-DC	.354**	1						
PSWQ-C	.282**	.642**	1					
Passive	.047	.273**	.242**	1				
INCOM	.176**	.416**	.498**	.231**	1			
MFIS	.049	.294**	.237**	.467**	.292**	1		
RSES	-.411**	-.613**	-.542**	-.145**	-.365**	-.150**	1	
SCCS	-.292**	-.556**	-.524**	-.198**	-.492**	-.222**	.559**	1

** $p < .001$
* $p < .05$

As represented in Table 9.3 a bivariate correlation between scales suggested that most scales of the latent variable constructs are related to each other at a $p < .001$ or $p < .05$ significance level. The INCOM and SCCS both had significant relationships with the mediator SCS and the outcome variables of CES-DC and PSWQ-C, providing initial support for mediation (Hair et al., 2014). However, of particular interest Passive and the MFIS did not significantly correlate with the mediator SCS. These findings will be further investigated in the section of hypothesis testing using SEM, which enables the hypothesised relationships to be examined simultaneously

Invariance Testing of Baseline Models Across Gender

Table 9. 4

Fit of Baseline Models Across Gender

	Model	X^2	Probability	CFI	TLI	RMSEA	DF
Males	SCS	270.315	.000	.924	.905	.136	44
Females	SCS	437.141	.000	.907	.860	.126	44
Males	CES-DC	426.512	.000	.849	.806	.089	133
Females	CES-DC	550.700	.000	.906	.879	.075	133
Males	PSWQ-C	226.536	.000	.920	.890	.083	77
Females	PSWQ-C	440.322	.000	.928	.901	.091	77
Males	Passive	2.060	.725	1.00	1.02	.000	4
Females	Passive	27.491	.000	.959	.896	.102	4
Males	INCOM	98.308	.000	.921	.895	.082	34
Females	INCOM	137.802	.000	.936	.897	.074	34
Males	MFIS	146.764	.000	.935	.904	.071	61
Females	MFIS	264.339	.000	.927	.891	.077	61
Males	SCCS	128.385	.000	.926	.889	.083	44
Females	SCCS	181.686	.000	.928	.892	.074	44

As represented in Table 9.4 the CFI suggested a good fit for all baseline models across gender and a slightly below adequate fit for males on the CES-DC. The TLI suggested a good fit across most baseline models, however, as noted in Table 9.4 some models achieved a marginal fit. The RMSEA suggested a good to moderate fit for all models, and a slightly higher than what is suggested of a good fit for the SCS and Passive for females. It is important to note that the passive scale for males suggested a perfect fit, again this could indicate bloated specifics in the measure. The fit statistics overall suggested that all baseline models can be used in further statistical analyses across gender.

Testing for Configural and Metric Invariance Across Gender

Table 9. 5

Fit Indices for the Configural and Metric Invariance for Each Baseline Model across Gender

Scale	Model	X^2	Probability	CFI	TLI	RMSEA	ΔCFI Metric-Configural
SCS							
	Configural	707.520	.000	.914	.871	.091	
	Metric	725.719	.000	.913	.882	.087	-0.001
CES-DC							
	Configural	977.395	.000	.889	.857	.056	
	Metric	1027.114	.000	.883	.858	.056	-0.006
PSWQ-C							
	Configural	666.868	.000	.925	.898	.063	
	Metric	712.847	.000	.921	.900	.062	-0.004
Passive							
	Configural	29.537	.000	.972	.931	.056	
	Metric	32.065	.001	.974	.957	.045	0.002
INCOM							
	Configural	236.146	.000	.931	.888	.054	
	Metric	249.451	.000	.929	.897	.052	-0.002
MFIS	Configural	411.181	.000	.930	.895	.053	
	Metric	416.554	.000	.930	.903	.051	0
SCCS	Configural	310.116	.000	.928	.891	.055	
	Metric	328.933	.000	.925	.899	.053	-0.003

Configural Invariance. As noted in Table 9.5 all baseline models achieved CFI and TLI values that suggested a good to mediocre fit. All baseline models also achieved an RMSEA suggestive of a good to moderate fit. It is important to note that the CES-DC was the only baseline model that achieved both a marginal fitting CFI and TLI values, however, the CES-DC achieved an RMSEA that suggested of a good fit. Overall, the fit statistics indicate that all baseline models achieved configural invariance. This suggests that the latent constructs being measured by each scale are

indicated by the same items across genders i.e. the latent factors are specified the same across both males and females (Bialosiewicz et al., 2013).

Metric Invariance. As noted in Table 9.5 the ΔCFI between the configural and metric model is less than -0.01 for all baseline models. Therefore, there is agreement across genders with regards to the factor loadings of each latent construct (Cheung & Rensvold, 2002). Therefore, the relationships between latent variables can be compared across gender (Dimitrov, 2010).

Table 9. 6

Summary of Invariance across Gender

	Gender	
	Configural Invariance	Metric Invariance
SCS	Y	Y
CES-DC	Y	Y
PSWQ-C	Y	Y
Passive	Y	Y
INCOM	Y	Y
MFIS	Y	Y
SCCS	Y	Y

Y= Achieved invariance

As represented in Table 9.6 the Multigroup CFA concludes that configural invariance was achieved for all baseline models across gender. Metric invariance was also achieved for all baseline models across gender. By achieving metric invariance it suggests that the correlations can be trusted between concepts (Dimitrov, 2010).

Hypothesis Testing of the Structural Model

Hypothesis four and five are represented fully mediated models, this means that as predicted by the hypothesis that *social comparison* completely mediates the relationship between the predictor variables and the outcome variables of *depression* and *worry*. The bidirectional arrows indicate co-varied error terms between the endogenous variables of depression and worry. These error terms were covaried to account for the unmeasured cause that depression and worry both share, based on the similarity in constructs (Kline, 2015).

Models of hypothesis two and three are represented partially mediated models; this means that there are additional relationships between the predictor (social comparison orientation and self-concept clarity) and the outcome variables of depression and worry. In these hypothesised models there are both direct and indirect effects (Hair et al., 2014). Each single headed arrow represents a direct effect of one variable influencing another, as determined by the theoretically informed hypothesis. The indirect effects are the effects of the predictor variable on the outcome variables of depression and worry, when influenced by the mediating latent variable of social comparison (Hair et al., 2014). The reason hypothesis two and three are represented by partially mediated models is there is extensive literature suggesting social comparison orientation and self-concept clarity predict depression and anxiety (Campbell et al., 1996; Chang, 2001; Gibbons & Buunk, 1999; Lee-Flynn et al., 2011), therefore, these relationships needed to be accounted for.

As noted previously all models achieved metric invariance, therefore, the relationships between latent variables can be assessed for moderation (Dimitrov, 2010). When determining moderation both the ΔCFI and X^2 values are reported, as it is considered best practice (Byrne, 2016). However, the X^2 test was used to determine whether the models were non-equivalent (thus whether there was any change in fit between the models after constraining a pathway between latent variables). The reason the X^2 test was used and not the ΔCFI, was because the X^2 is a statistically stringent test (Byrne, 2016), and it has been used more extensively in the literature.

Hypothesis Two

Hypothesis Two: Engaging in an upwards social comparison on Instagram mediates the positive relationship between social comparison orientation and depression and worry symptoms.

The model that represents hypothesis two is a partially mediated model (please note this is the modified model as discussed below). The predictor variable is the *abilities* (INCOM), the mediator *social comparison* (SCS) and the outcome variables of the *depression* (CES-DC) and *worry* (PSWQ-C), as represented in Figure 9.10.

Figure 9. 9

Standardised Modified Model of Hypothesis Two

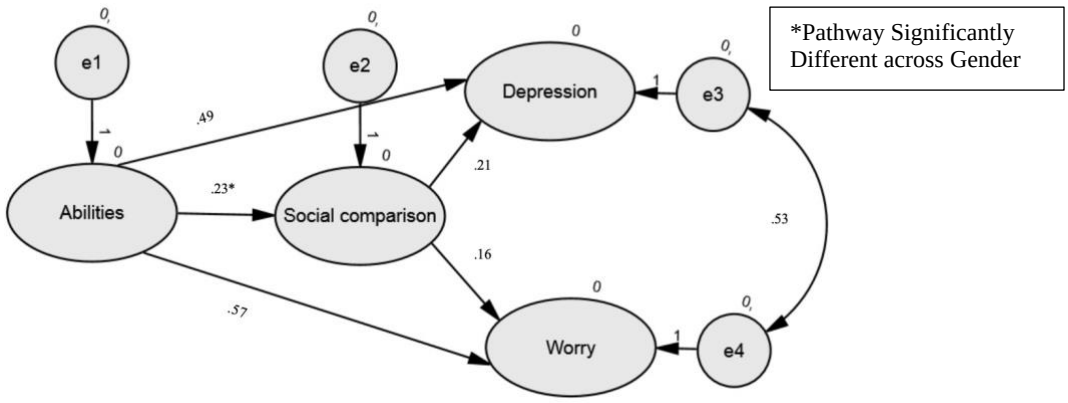


Table 9. 7

Fit Statistics for Hypothesis Two

	CFI	TLI	RMSEA	DF
Hypothesis Two	.900	.891	.048	1313
Modified Model of Hypothesis Two	.902	.893	.050	1119

As noted in Table 9.7 the fit statistics of CFI and RMSEA represented a good fit, and the TLI suggested an acceptable fit. The standardised regression weights indicated that the relationships between the latent constructs of *opinions* and *social comparison* (C.R.=-1.010 p=.313), *opinions* and *depression* (C.R.=.526 p=.599), and *opinions* and *worry* (C.R.=.389 p=.698), were insignificant at the p <.05 significance

level. Therefore, these relationships were not significantly contributing to the model and therefore were removed, as recommended by Byrne (2016).

The model was then modified and recalculated. In the modified model, as represented by Figure 9.9, *abilities* was the predictor, *social comparison* (SCS) was the mediator and *depression* (CES-DC) and *worry* (PSWQ-C) were the outcome variables. This improved the fit of the model, and the fit statistics suggested a good fitting model, as noted in Table 9.7. All relationships were also significant at $p < .001$, therefore, suggesting that engaging in an upwards social comparison on Instagram mediates the relationship between abilities and depression and worry. The direction of the data suggested that individuals who have the tendency to compare their abilities with others were more likely to engage in an upwards social comparison on Instagram, resulting in greater depressive and worry symptomology. The direction of the data is statistically significant and partially supports hypothesis two.

Moderation of Hypothesis Two across Gender. Hypothesis two was then assessed for moderation across gender. It was hypothesised that: gender moderates the relationship between high social comparison orientation, engaging in an upwards social comparison on Instagram and depression and worry, as this will be stronger for adolescent females than males (hypothesis 2a).

First it needed to be assessed whether the insignificant relationship in the unmodified model (with opinions and abilities) was due to moderation. It was found that the insignificant relationship was not due to moderation, as the relationship between *opinions* and *social comparison*, *depression* and *worry* were insignificant across males and females. Therefore, the modified model as represented in Figure 9.9 was retained.

The pathway between *abilities* and *social comparison* was insignificant for males (C.R.=.743 p=.457) but significant for females. All other pathways were significant. The X^2 test suggested non-equivalence of the pathways between *abilities* and *social comparison*, as indicated in Figure 9.9 (see Appendix H for technical information). This suggests that only females who have the tendency to compare their abilities with others engaged in an upwards social comparison on Instagram, resulting in greater depression and worry symptoms. Therefore, hypothesis 2a is supported.

Hypothesis Three

Hypothesis three: Engaging in an upwards social comparison on Instagram mediates the negative relationship between self-concept clarity and depression and worry symptoms

Hypothesis three is represented by a partially mediated model. The predictor variable is *self-concept clarity* (SCCS), the mediator of *social comparison* (SCS), and the two outcome variables of *depression* (CES-DC) and *worry* (PSWQ-C). The hypothesised model is represented in Figure 9.10.

Figure 9. 10

Standardised Model of Hypothesis Three

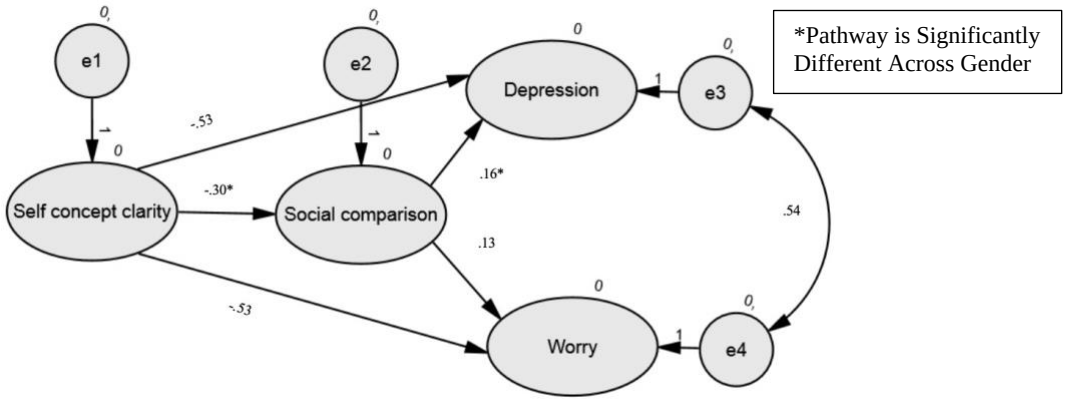


Table 9. 8

Fit Statistics for Hypothesis Three

	CFI	TLI	RMSEA	DF
Hypothesis Three	.899	.890	.048	1369

All relationships between latent variables were statistically significant at $p < .001$. Overall, the fit statistics noted in Table 9.8, suggested a relatively acceptable fit. Therefore, suggesting that engaging in an upwards social comparison on Instagram mediates the relationship between self-concept clarity, depression and worry. The

significant relationships between latent variables suggest that adolescents who have low in self-concept clarity engaged in greater upwards social comparisons on Instagram, resulting in greater depression and worry symptomology. Therefore, hypothesis three is supported.

Moderation of Hypothesis Three across Gender. Moderation of hypothesis three was then assessed across gender. It was hypothesised that: gender moderates the relationship between low self-concept clarity, engaging in an upwards social comparison on Instagram and depression and worry, as this will be stronger for adolescent females than males (hypothesis 3a).

All relationships between the latent variables were significant for females, however, the relationship between SCS and CES-DC was insignificant for males (C.R.= 1.524 p=.128). The X^2 test at the pathway level also identified non-equivalence of pathway between SCCS and SCS, as indicated in Figure 9.10 (see Appendix H for technical information), all other pathways were equivalent. Therefore, suggesting that both males and females who have low self-concept clarity engaged in upwards social comparisons on Instagram, however, this effect was stronger for females than males, and only females experienced depressive symptoms. Therefore, hypothesis 3a is partially supported.

Hypothesis Four

Hypothesis four: Engaging in an upwards social comparison on Instagram mediates the positive relationship between passive Instagram use and depression and worry.

The model that represents hypothesis four as represented in Figure 9.11 has the predictor variable of *passive use* (Passive), the mediator variable of *social comparison* (SCS) and the outcome variables of the *depression* (CES-DC) and *worry* (PSWQ-C).

Figure 9. 11

Standardised Model of Hypothesis Four

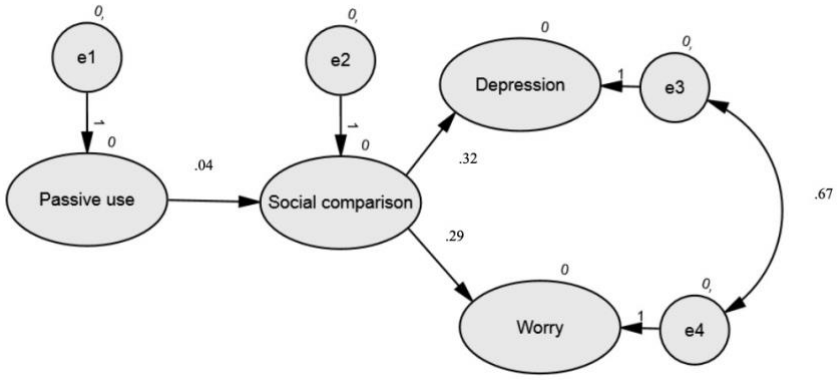


Table 9. 9

Fit Statistics for Hypothesis Four

	CFI	TLI	RMSEA	DF
Hypothesis Four	.902	.893	.050	1073

The relationship between the latent constructs of *passive use* and *social comparison* was not statistically significant (C.R.=.960 p=.337). This is consistent with the results found in the bivariate correlation (Table 9.3). Therefore, when all relationships were tested simultaneously it did not change the insignificant relationship between *passive use* and *social comparison*. This suggests that the relationship between *passive use* and *social comparison* is not important and is not significantly contributing to the model. Therefore, despite the fit statistics suggesting a good fit as noted in Table 9.9, the relationship between passive use and social comparison is insignificant. Therefore, engaging in an upwards social comparison on Instagram does not mediate the relationship between passive use and depression and worry, rejecting hypothesis four.

Moderation of Hypothesis Four across Gender. Hypothesis four was then assessed across the gender. It was hypothesised that: gender moderates the relationship between high passive Instagram use, engaging in an upwards social comparison on Instagram and depression and worry, as this will be stronger for adolescent females than males (hypothesis 4a).

The relationship between *passive use* and *social comparison* was insignificant for males (C.R.=-1.056 p=.291) and females (C.R.=1.040 p=.298). Therefore, passive Instagram use does not predict engaging in an upwards social comparison on Instagram for adolescent males or females, rejecting hypothesis 4a

Hypothesis Five

Hypothesis Five: Engaging in an upwards social comparison on Instagram mediates the positive relationship between intensity of Instagram use and depression and worry.

The model of hypothesis five as represented in Figure 9.12 is the predictor variable of *intensity* (MFIS), the mediating variable of *social comparison* (SCS) and the two outcome variables of the *depression* (CES-DC) and *worry* (PSWQ-C).

Figure 9. 12

Standardised Model of Hypothesis Five

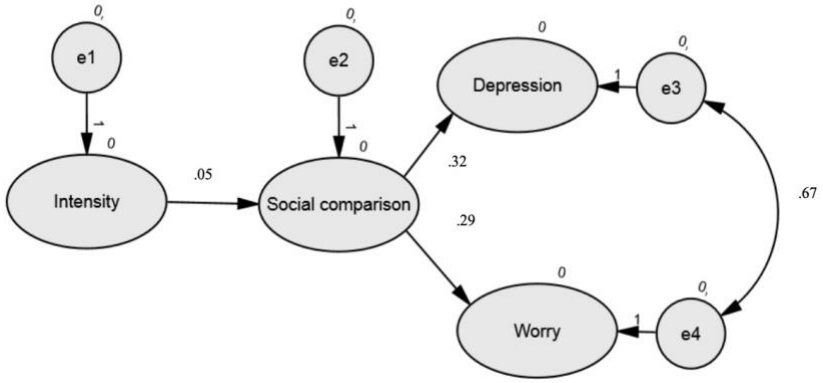


Table 9. 10

Fit Statistics for Hypothesis Five

	CFI	TLI	RMSEA	DF
Hypothesis Five	.899	.890	.047	1474

The model overall was an adequate fit, as indicated by the fit statistics in Table 9.10. However, the relationship between intensity and social comparison was insignificant (CR= 1.417 and p=.157), thus indicating that the relationship between *intensity* and *social comparison* is unimportant to the model and should be deleted (Byrne, 2016). This is consistent with the results found in the bivariate correlation (Table 9.3), therefore, when all relationships were tested simultaneously it did not change the insignificant relationship between *intensity* and *social comparison*. Therefore, engaging in an upwards social comparison on Instagram did not mediate the relationship between intensity, depression and worry, rejecting hypothesis five.

Moderation of Hypothesis Five across Gender. Moderation was assessed across the pathways between latent constructs to determine whether gender may be responsible for the insignificant relationship. It was hypothesised that: gender moderates the relationship between high intensity of Instagram use, engaging in an upwards social comparison on Instagram and depression and worry, as this will be stronger for adolescent females than males (hypothesis 5a).

The relationship between *intensity* and *social comparison* was insignificant for males (C.R.= -1.470 p=.142) and females (C.R.= 1.810 p=.070). This indicates that using Instagram intensely does not predict engaging in an upwards social comparison for males or females, rejecting hypothesis 5a.

Chapter Ten: Discussion

Overview

The current study sought to identify personality traits and certain patterns of Instagram use which put an adolescent at greater risk of engaging in an upwards social comparison on Instagram, and subsequently experiencing depressive and worry symptoms. Furthermore, the current study also set out to understand whether there were any gender differences within the risk factors. This chapter opens with a summary of the findings, followed by a more detailed discussion of each risk factor under the sections of: personality factors, patterns of Instagram use and risk factors across gender. The discussion of the findings is then followed by a discussion of potential limitations and directions for future research, and the clinical implications. Finally, the chapter concludes with an executive summary to capture what was attempted by this research, and to place this research in the context of the relevant literature.

Principle Findings

The current research has identified that exposure to the perfected photos on Instagram is associated with harmful effects on an adolescent's mental health, as vulnerable individuals are engaging in upwards social comparisons on Instagram. In particular, the current study identified that the personality traits of a tendency to compare one's abilities with others, and low self-concept clarity were risk factors for engaging in an upwards social comparison on Instagram, whilst the Instagram usage variables were not considered risk factors. Interestingly, when looking at the gender effects it was found that vulnerable females experienced more dire outcomes than males, as comparing one's abilities with others was only a risk factor for females, and low self-concept clarity was a greater risk factor for females than males. Overall, the study's findings support the poor get poorer hypothesis (Underwood & Ehrenreich, 2017); however, the current study extends prior research by finding support for this hypothesis with adolescents and on Instagram. Each of these findings will be discussed in turn.

Personality Traits

- High social comparison orientation (abilities only) was identified as a risk factor for engaging in an upwards social comparison on Instagram
- Low self-concept clarity was identified as a risk factor for engaging in an upwards social comparison on Instagram
- Self-Esteem was not able to be assessed

Social Comparison Orientation

The results from the current study indicate that adolescents who have a tendency to compare their abilities with others are at greater risk of engaging in upwards social comparison on Instagram, resulting in depression and worry symptoms, partially confirming hypothesis 2. However, although discussed in greater detail in the section risk factors across gender, it was identified that a moderation effect was occurring, as the tendency to compare one's abilities with others was only a risk factor for females and not males. This section will provide a general discussion on social comparison orientation (abilities only) as a risk factor, and the gender effects will be discussed later.

When Gibbons and Buunk, (1999) developed the INCOM scale they suggested that the INCOM scale comprises of two factors, abilities and opinions, which are derived from Festinger's (1954) Social Comparison Theory. However, despite the two factor model having better fit, Gibbons and Buunk, (1999) suggested that the one factor solution of social comparison orientation was just as viable, due to the high correlation between opinions and abilities. As a result, most of the literature has used the one factor structure. In the current study, the one factor solution had a poor fit, therefore the two factor structure was employed, which recent research argues is a better fit (Gerson et al., 2017). However, despite the measurement model of the two-factor structure achieving a good fit, in the full structural model opinions did not significantly predict engaging in an upwards social comparison. This is a novel finding, as by prior research using the one factor solution it does not enable abilities and opinions to be assessed separately. The finding that abilities significantly predicted engaging in an upwards social comparison and opinions does not, is consistent with Festinger's (1954) Social Comparison Theory.

Festinger (1954) proposed that there is a unidirectional drive for an individual to compare their abilities with others in the form of upwards social comparisons,

especially within western culture, given the value that is placed on doing better; there is a push to always compare and compete against others in order to keep performing better and better. However, when comparing one's opinions with others, there is no drive to be better, as one opinion is often not viewed as better than another opinion. Instead value is obtained by the opinion being perceived as valid and correct, therefore there is a drive to reach unity and social quiescence (Festinger, 1954). Therefore, the process of comparing opinions and abilities with others results in distinctly different behavioural outcomes.

Research that has used the INCOM in the social media context have assumed that individuals with high social comparison orientation must be engaging in social comparisons, rather than assessing the construct of social comparison (Mackson et al., 2019; Sherlock & Wagstaff, 2019; Vogel et al., 2015) As a result, the INCOM has been used as a behavioural measure of engaging in a social comparison, as opposed to a personality trait. For example in Yang's (2016) study it was found that social comparison orientation (as measured by the INCOM), moderated the relationship between Instagram interaction and loneliness. Therefore, they inferred from this that the benefit of Instagram interactions were supressed in individuals with high social comparison orientation tendencies, given that these individuals engaged in greater upwards social comparisons. In the current study, the INCOM was used purely as a measure of the personality trait social comparison orientation, and in addition the SCS was used as a behavioural measure of the activity of engaging in an upwards social comparison on Instagram. Therefore, given that Festinger (1954) suggested the behavioural differences between comparing one's abilities and opinions (abilities always having a drive to do better), it is not surprising that the current study found that having the tendency to compare one's abilities with others was associated with engaging in an upwards social comparison on Instagram, while opinions was not.

Therefore, by using the INCOM as a personality trait as opposed to a behavioural measure, the current study can confirm that high social comparison orientation (abilities only) adolescents do engage in greater upwards social comparisons on Instagram. This is consistent with prior research that has found that social comparison orientation tendencies are a risk factor for experiencing the harmful effects of social media (de Vries et al., 2018; Mackson et al., 2019; Sherlock & Wagstaff, 2018; Vogel et al., 2015; Yang, 2016). However, the current study adds a novel contribution by suggesting that this is only true for adolescents who have a

tendency to compare their abilities with others. Thus, these adolescents are using the positively skewed information on Instagram to evaluate themselves. As a result, they will always find others who they perceive to be doing better than oneself, thus providing endless opportunities for upwards social comparisons to occur. Therefore, the desire to do better is never achieved, and consequently depression and worry symptoms emerge. This was indicated in the current study by the significant positive relationships between engaging in an upwards social comparison on Instagram and depression and worry symptoms.

Self-Concept Clarity

Consistent with hypothesis 3, the results indicated that low self-concept clarity was a risk factor for adolescents when using Instagram, as adolescents with this trait are more likely to engage in upwards social comparisons and consequently experience greater depression and worry symptoms.

This finding is consistent with research that suggests individuals who do not have a clear sense of who they are, are more susceptible to social comparison information (Butzer & Kuiper, 2006; Morse & Gergen, 1970), and engage in social comparison processes to reduce this uncertainty and enhance their self-concept (Gibbons & Buunk, 1999). During the adolescence developmental period individuals are undergoing the salient task of developing their identity by comparing themselves against others. Given that the current study found that low self-concept clarity was a risk factor for males and females, it highlights that an integrated sense of self is unlikely to be achieved by adolescence (Steinberg & Cauffman, 1996; Strasburger et al., 2014). Therefore adolescents are more likely to experience fluctuations in their self-concept (Morse & Gergen, 1970), especially when they are provided with social comparison information which is in the abundance on Instagram.

As mentioned previously, only Lee's (2014) study has looked at self-concept clarity as a risk factor for engaging in social comparison processes on social media. The current study complimented Lee's (2014) finding that individuals with low self-concept clarity engaged in greater social comparisons, however, extended Lee's (2014) finding by suggesting these social comparisons are in the upwards direction. Lee (2014) did not use a mediation model; he provided a number of hypotheses to explain the negative correlation coefficient between low self-concept clarity and frequency of social

comparisons in his study, which the current study set out to assess. Lee's (2014) first hypothesis was that the relationship between social comparison frequency and experiencing a negative feeling from the comparison could be due to a personality trait influencing the relationship; this hypothesis was supported in the current study.

Our findings partially support Lee's (2014) second hypothesis, that the use of impression management strategies on social media make upwards social comparisons unavoidable, as we found that the social comparisons were in the upwards direction. However, this provides two possibilities; first that it is impossible for individuals with low self-concept clarity to engage in downwards social comparisons on Instagram, given the extensive use of impression management strategies. Secondly, individuals with low self-concept clarity are more inclined to make upwards social comparisons as opposed to downwards social comparisons. Given that Butzer & Kuiper's (2006) research suggested that individuals with low self-concept clarity were more likely to engage in upwards social comparisons, and their study was not conducted on social media, the latter is more plausible. However, the extensive use of impression management strategies on Instagram makes it a particularly perilous environment for adolescents with low self-concept clarity. Especially because adolescents are more likely to use impression management strategies (Fullwood et al., 2016), and comparisons occur against others who one considers similar to oneself (e.g. their peers; Festinger, 1954).

Self-Esteem

It was hypothesised that low self-esteem would be a risk factor for engaging in an upwards social comparison on Instagram, resulting in increased depression and worry symptoms. To measure self-esteem the RSES was used. However, despite the RSES being a well-established measure and used extensively within the self-esteem literature, in the current study the fit statistics suggested a poor fitting model. This suggests that the data collected in this study did not match the restricted structure of the RSES (Byrne, 2016).

It was a surprising finding that the RSES had poor fit statistics, as the literature suggests that this is a relatively robust measure (Hagbor, 1993; Rosenberg, 1965; Sinclair et al., 2010). One possible explanation for the poor fit statistics is recent research that suggests the one factor solution of the RSES is confounded with method

effects, due to having negatively and positively worded items on the same scale (Supple et al., 2013). In particular, it has been found that the method effects lie within the negatively worded items. This finding has sparked debate regarding what factor structure the RSES is best represented as. Some scholars argue that the RSES is better represented by a 2-factor solution of positive and negative self-esteem (Supple et al., 2013). However, although this improves multidimensionality of the scale, the concept of positive and negative self-esteem are relatively meaningless (McKay et al., 2014).

Therefore, recently scholars have tried to remedy this by suggesting the use of a bifactor model, where each indicator loads onto the general factor self-esteem and either a positive or negative method factor, depending on whether they were positively or negatively worded items (McKay et al., 2014). The positive and negative method factors represent common factors measured by the items that potentially explain variance that is not accounted for by the overall general factor self-esteem (e.g., the wording of the different items), but they are not a stable latent construct in their own right (McKay et al., 2014). The utilisation of the bifactor model was supported in McKay et al.'s (2014) study, as they compared a 1-factor model, a 2-factor model, a hierarchical model and a bifactor model of the RSES in a large group of adolescents. They found that the bifactor model had the best model fit, item loadings, reliability and correlations with external variables. They also suggested that a bifactor model was the most meaningful, as the RSES does not support a unidimensional model, but a multidimensional model is based on grouping factors e.g. phrasing of the items as opposed to latent constructs, therefore making the measure meaningless (McKay et al., 2014).

Therefore, the current study trialled the RSES using a bifactor factor structure to see whether the poor fit statistics could be explained by method factors in the negatively worded items. However it was found that the poor fit statistics were not due to method factors, as there were still problems with the model, as item 5 ("*I feel I do not have much to be proud of*") and item 9 ("*All in all, I am inclined to feel that I am a failure*") did not significantly load onto the negative method factor. This suggested that these items were unimportant to the model and should be deleted (Byrne, 2016). Therefore, in summary, despite trialling the RSES in multiple different formats, as guided by the literature, it was decided to remove the RSES from further analysis.

Patterns of Instagram Use

- High passive Instagram use was not a risk factor for engaging in an upwards social comparison on Instagram.
- High intensity of Instagram use was not a risk factor for engaging in an upwards social comparison on Instagram.

The current study found that passive Instagram use and using Instagram intensely were not risk factors for engaging in an upwards social comparison on Instagram, therefore rejecting hypothesis 4 and 5. Furthermore, the relationships between variables were not moderated by gender. Although this could suggest that passive Instagram use and intensity of Instagram use were not related to engaging an upwards social comparison at all, this null finding is inconsistent with prior research (Krasnova et al., 2013; Lee; 2014 Tandoc, 2015; Vogel 2014; Wang et al., 2017; Weinstein, 2017). Therefore, there are two possible explanations to describe these findings. First that passive use and intensity of Instagram use are risk factors for engaging in an upwards social comparison on Instagram, but our measurement strategies failed to capture this. Secondly, it could be that the way the social comparison information is interpreted, which is subjected to personality traits, is the most significant risk factor to predict engaging in an upwards social comparison on Instagram.

Measurement strategies.

Passive Instagram Use. Prior studies that have used an experimental method (where participants scrolled through Instagram newsfeeds to capture passive Instagram use), have found that passive Instagram use is associated with greater social comparisons (de Vries et al., 2018; Weinstein, 2017). However, survey designs like the current study have found no significant association between passive Instagram use and engaging in social comparisons (Yang, 2016). One possible limitation of survey design studies is that there are no standardised measures to assess passive Instagram use, however, there are standardised measures to assess passive Facebook use (Gerson et al., 2017). Therefore, survey methods such as those used in the current study, are having to adapt these measures to an Instagram setting or create their own measures. Due to the distinct differences between Facebook and Instagram, an adaptive measure may not accurately capture passive Instagram use.

The current study adapted the PAUM to capture passive Instagram use. However, the modification indices suggested that the items of "*Browsing your home newsfeed passively*" and "Brows*ing your explore newsfeed passively"* needed to be correlated due to being too similar, and as noted in the results there were bloated specifics in our statistics. Therefore, by the current study encompassing certain activities under the banner of passive use, based off a standardised Facebook measure, it may not have been an accurate measure of passive Instagram use due to the differences between Facebook and Instagram; and therefore, contributed to the insignificant finding. In comparison, when experimental studies are utilised, they focus on particular activities which may be a more accurate measure of passive use, until Instagram specific measures are developed.

Intensity of Instagram Use. The MFIS used in the current study was originally developed for measuring intensity of Facebook use (Orosz et al., 2015). The CFA in the current study suggested a good fitting model. However, it could be possible that although there are similarities between Facebook and Instagram there are also distinct differences (e.g. access to strangers or the culture of impression management strategies), and given these differences it could be that the adapted version of the MFIS was not sensitive to measuring intensity of Instagram use. This is consistent with Stapleton et al.'s (2017) study, as they adapted the Facebook Intensity Scale to an Instagram population and found an insignificant relationship between Intensity of Instagram use and self-esteem (between the predictor and criterion).

Personality Traits are the Most Significant Vulnerability Factor

It could be possible that an individual's personality traits have the most significant influence on how social comparison information is interpreted, as opposed to how Instagram is used. This explanation is consistent with other research (Lee, 2014, Stapleton et al., 2017; Weinstein, 2017) and compliments the other findings in this study, as the Instagram usage variables did not predict engaging in an upwards social comparison on Instagram, but the personality factors assessed did significantly predict engaging in an upwards social comparison on Instagram. Thus, implying that using Instagram passively or intensely may expose the individual to a greater number of social comparison targets, however, the positively skewed information by itself is not

enough to elicit an upwards social comparison. Instead the greater risk factors for engaging in an upwards social comparison, as shown in hypothesis two and three is how the social comparison information is processed and interpreted, which is subject to individual differences.

This is a plausible hypothesis as prior research that has looked at passive Instagram use have used social comparison orientation (de Vries et al., 2018; Yang, 2016) as a measure of engaging in a social comparison on Instagram, as opposed to a behavioural measure of explicitly engaging in an upwards social comparison on Instagram. Therefore, it could be that other aspects of this personality trait, such as having a poorer self-perception or higher uncertainty about oneself (Buunk & Gibbons, 2006), are impacting how the social comparison information is processed and interpreted. This is illustrated by other studies who found that it was not how the individual used Instagram or what content the individual was exposed to on Instagram that impacted their post browsing affect, instead it was the personality variables that impacted whether the individual engaged in a upwards social comparison (Stapleton et al., 2017; Weinstein, 2017). Thus, consistent with the results of this study, it suggests a susceptibility among adolescents based on personality traits, supporting the poor get poorer hypothesis (Underwood & Ehrenreich, 2017).

Gender

Risk factors for males:

- Low self-concept clarity

Risk factors for females:

- A tendency to compare one's abilities with others
- Low self-concept clarity

Overall, the results indicated more dire outcomes for females than males, confirming hypothesis 2a and 3a. The results suggested that the tendency to compare one's abilities with others was only a risk factor for females not males, and low self-concept clarity was a greater risk factor for females than males. Therefore, despite prior literature suggesting inconsistencies regarding whether there are gender effects (Frison & Eggermont, 2016; Nesi & Prinstein, 2015; Nesi et al., 2017; Selfhout et al., 2009; Steers et al., 2014; Tandoc et al., 2015; Wang et al., 2017), the current study identified

that there were distinct differences between males and females, and overall it was identified that vulnerable females suffer more. Therefore, the question needs to be asked, why does Instagram create a more perilous environment for vulnerable females than males?

Research has suggested that males are more inclined to compare themselves against others on success (often career focused), whilst females on beauty (Haferkamp & Krämer, 2011; McAndrew & Jeong, 2012). However, given the photo nature of Instagram and the extensive use impression management strategies, which encourage the perfection of beauty, there may be greater opportunities to compare oneself with others on physical appearance compared to success, especially as females are more likely to post photos compared to males (Nesi & Prinstein, 2015). Consistent with this, it has been found that males focus more on the portfolio section on SNS, whilst females focus on photos (Haferkamp & Krämer, 2011; Mehdizadeh, 2010). Therefore, males may be less likely to engage in social comparisons on Instagram, and may use other social media platforms, such as Facebook or LinkedIn, that offer a text-based medium that encourages greater sharing of success. However, further research is needed to assess this.

Furthermore, prior research has found that females are more likely to engage in social comparisons online (Nesi & Prinstein, 2015; Nesi et al., 2017; Weinstein, 2017) for the purposes seeking information about themselves regarding appearance, behaviours and social status compared to others (Haferkamp & Krämer, 2011; Nesi et al., 2017). Females also place more value on the feedback they receive from their peers (e.g. number of likes or comments; Li et al., 2018), and use impression management strategies more frequently than males (McAndrew & Jeong, 2012), likely to generate more feedback. Therefore, given the importance of being perceived in a certain light by their peers on Instagram, it could be possible that vulnerable females are engaging in more social comparisons, to ensure they are keeping up with current beauty ideals and normative standards of behaviour. As a result, vulnerable females are comparing themselves against other females who have likely manipulated their photos using impression management strategies. Therefore, as indicated in the current study the social comparisons are more likely to be in the upwards direction resulting in depression and worry symptoms. This is consistent with research that has found females are more inclined to compare themselves with targets that threaten their self-worth (Stefanone et al., 2011), and as a result ruminate on these comparisons (Hankin &

Abramson, 2001), resulting in interpersonal distress (Nesi & Prinstein, 2015; Nesi et al., 2017; Rudolph, 2002).

Study Limitations and Future Directions

Limitations

The current study fulfilled the research aims, however, there are a number of limitations, therefore the results need to be interpreted within the context of these limitations. This section summarises the potential limitations identified in this study whilst highlighting how future research can improve upon them.

Given that Instagram is a relatively new SNS, there is a significant lag between the research and technology development. As a result, there are no standardised scales to measure patterns of Instagram use. The current study attempted to remedy this by adapting Facebook measures (PAUM and MFIS), so they were applicable to an Instagram context. However, despite the original scales demonstrating appropriate reliability and validity, the adapted versions had neither been validated nor used in other studies. Given the popularity of Instagram future research should focus on developing and validating scales that capture patterns of Instagram use, such as intensity of Instagram use and passive Instagram use. This will ensure the construct of interest is captured adequately, and it will allow for the unique features of Instagram to be taken into account and conceptualised under these broad concepts. For example, Instagram intensity measures could incorporate the number of followers one has (Hwnag, 2019) or how many Instagram accounts the participant owns.

Secondly, although the current study intentionally focused on adolescents, the results cannot be generalised to other populations. The current study used a relatively homogenous sample of four secondary schools within the Auckland region. Three of these schools were decile 9-10 and were all located within close proximity to one another, and the demographics reflect students that come from high socio-economic backgrounds. Whilst we attempted to diversify the sample by also including a secondary school that was lower decile and located in another region of Auckland, the unique qualities of this school's demographics, such as cultures and socio-economic status were still in the minority. Therefore, readers have to be cautious not to over generalise these results, and it is important for future research to examine the impact of personality traits and Instagram usage patterns within a more diverse sample.

Thirdly, as mentioned previously, the RSES did not provide an adequate fit at the measurement level, despite trialling the RSES as a 1-factor model and as a bifactor model as guided by the literature. The RSES was not modified using modification indices as this would be data driven not theory driven (West et al., 2012). However, as a result the RSES was deleted from the analysis and self-esteem was not able to be assessed. As mentioned earlier this was unexpected given the RSES is a robust measure and has been validated with a New Zealand population (Rusticus et al., 2004), therefore this warrants further exploration.

Another limitation for the study was survey fatigue, as 198 responses were deleted from the analysis due to the participant missing at least one whole scale in the questionnaire. However, our sample was still considered large and still exceeded the value required to complete SEM; therefore, this is not considered a major limitation.

Future Directions

The results provided initial evidence that vulnerable adolescents are at a greater risk of engaging in an upwards social comparison on Instagram, an excellent next step would be to employ an experimental or longitudinal methodology to further develop this understanding. This could be done by using psychometric measures to identify personality traits of interest, then exposing participants to their Instagram newsfeed and comparing their post browsing affect to their pre browsing affect across groups (e.g. high vs. low self-concept clarity). In doing so, this would allow for causality to be confirmed between the variables of interest, as the design would not be cross-sectional in nature. Furthermore, by using an experimental or naturalistic method, participants would not have to rely on memory to recall how they felt after using Instagram, as the post browsing measures could be collected directly after the individual had been exposed to their Instagram newsfeed.

A question that naturally arises from this study is how can an adolescent's experience on Instagram be improved in order to benefit their mental health? Especially as Instagram is becoming more embedded into the lives of teenagers. Therefore, it would be beneficial for future research to focus specifically on what elicits an upwards social comparison to occur on Instagram (e.g. exposure to certain people or images) and how intervention measures can be implemented in order to benefit vulnerable adolescent's mental health when using Instagram. Weinstein's (2017) study started to

understand this by exploring whether a prompt to remind the individual that the photos on Instagram are manipulated using impression management strategies, improved their post browsing affect. However, she used simulated Instagram newsfeeds which may have not accurately captured the Instagram experience; therefore, it would be important for future research to utilise the individual's own Instagram. One particularly, important aspect that future research should also focus on is body image, as by Instagram being imaged based it is littered with photos of beautiful people, therefore, it would be important to understand the implications this may have on an adolescent's body image. Furthermore, it could also be fruitful to look at intervention strategies based on gender, given that the current study found distinct gender differences.

Clinical Implications

The findings of the current study should be of considerable interest to both clinicians and mental health practitioners, as it was identified that Instagram can be a particularly perilous environment for vulnerable adolescents, and it could be contributing to the increasingly poor mental health statistics within New Zealand's adolescents. Although we are restricted by the cross-sectional nature of the research design it does suggests that upwards social comparisons on Instagram are associated with depression and worry symptoms in adolescents, and as a result could be contributing to the development or maintenance of mood and anxiety disorders. Therefore, it is critical that research continues to understand how Instagram is impacting on an adolescent's mood, in order to help teens use social media in a way that reduces poor psychological outcomes and facilitates growth and positive developments (Lup et al., 2015).

However, given that the current research and prior research have all found that upwards social comparisons on social media can have adverse psychological outcomes, and as time progresses the popularity of Instagram grows (Lenhart, 2015), it is important that prevention measures are implemented. This could be actioned by teachers, parents, caregivers and other individuals who have adolescents in their life starting to educate and raise awareness regarding maladaptive behaviours on social media (Lin et al., 2016). This will help to better inform current and future users of social media applications. In particular, Weinstein's (2017) study identified that adolescents who understood that the information displayed on Instagram is only the tip of the ice

berg and it is often manipulated using impression management strategies were less susceptible to the negative influences of Instagram. Therefore, given that it is not realistic to expect adolescents to stop using Instagram, it could be a particularly useful intervention to educate adolescents on the use of impression management strategies on Instagram. Furthermore, Weinstein (2017) also proposed that encouraging adolescents to unfollow people that trigger an upwards social comparison could be a particularly useful individualised intervention, which the current study agrees with.

Lin et al. (2016) explained that some of the developers of social media applications are now recognising the psychological effects of the social media applications, and as a result, measures are starting to be put in place to offer support to those who are negatively impacted. For example, on Tumblr any "tags" that are detected that are associated with depression or suicide, the individual gets redirected to a self-help page (Lin et al., 2016). Recently, Instagram altered their platform by only allowing the individual who posted the photo to view how many likes their photo receives. By continuing research similar to the current study, more information will be able to be gathered regarding particular patterns of Instagram use that are considered problematic. This will allow social media developers to be provided with information that will assist them to alter or adapt certain aspects of their applications, in order to benefit their users' mental health.

Executive Summary

Prior literature identified that engaging in upwards social comparisons on social media had harmful psychological outcomes. However, prior research has identified that not all social media users were engaging in upwards social comparisons or experiencing the negative psychological consequences (de Vries et al., 2018; Kleemans et al., 2018; Lup et al., 2015; Mackson et al., 2019; Sherlock & Wagstaff, 2018; Weinstein, 2017; Yang, 2016). Therefore, previous research has attempted to explain these findings by adopting the poor get poorer hypothesis, and subsequently scholars have asked for more research to focus on vulnerability factors, so those at risk could be identified and appropriate interventions could be employed (Burke et al., 2011; Frison & Eggermont, 2016; Gerson et al., 2017; Jang et al., 2016; Kalpidou et al., 2011; Lee., 2014; Mackson et al., 2019; Steers et al., 2014; Yang, 2016). The current study focused on the popular SNS of Instagram, as prior research indicated that the culture of impression

management strategies and easy access to stranger's photos make Instagram a particularly ripe environment for engaging in upwards social comparisons (Chou & Edge, 2012). Furthermore, the current study focused on the understudied population of adolescents, given the poor mental health statistics for this demographic in New Zealand.

Consistent with prior research the current study supports the poor get poorer hypothesis (Underwood &Ehrenreich, 2017). In particular, we found that low self-concept clarity and the tendency to compare one's abilities with others were risk factors for adolescents when using Instagram, as these individuals are more likely to engage in an upward social comparison and experience depression and worry symptoms. When looking at the gender effects, it was found that vulnerable females experienced more dire outcomes than males, as comparing one's abilities with others was only a risk factor for females and low self-concept clarity was a greater risk factor for females than males. Therefore, suggesting that when these vulnerable individuals are exposed to the positively skewed environment of Instagram, they are inclined to compare their reality against someone else's highlight reel and thus experience depression and worry symptoms. It is concerning that social media applications like Instagram are becoming deeply embedded into an adolescent's life and are creating a homogenising culture of unrealistic beauty or lifestyle ideals (Jong & Drummond, 2016), that are viewed as realistic given that "ordinary" individuals are posting these photos.

The current study does provide initial evidence that Instagram use for particular adolescents is associated with depression and worry symptoms, which could be an indication of clinical depression and anxiety. This is concerning given the poor mental health statistics in New Zealand, therefore, this research prompts future research to continue to identify adolescents who are considered at risk, so that public health messages and interventions can be targeted towards these individuals.

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Appendix A : Information Sheet

MASSEY UNIVERSITY
TE KUNENGA KI PŪREHUROA

Adolescent Instagram Use and its Association with Wellbeing

Information for Parents/ Guardians/ Caregivers about the study

Your child has been invited to be apart of a Massey University research project, that focuses on adolescent Instagram use. This research is being conducted by Nicole Gifford, who is studying for a doctoral research degree at Massey University. She is supervised by Doctor Richard Fletcher and Professor James Liu. Please contact us if you have any questions about this study, our contact details are below:

Researcher
Nicole Gifford
Email: ngifford22@gmail.com

Research Supervisor 1
Dr. Richard Fletcher
Email: R.B.Fletcher@massey.ac.nz

Research Supervisor 2
Professor James Liu
Email: J.H.Liu@massey.ac.nz

What is this research about?
Instagram is a photo sharing social media application, that allows users to post photos online for others to view. However, often on Instagram users post only the good parts of their lives causing other users to compare themselves against unrealistic expectations. We want to explore what effects this false positive perception has on an adolescent's wellbeing.

Why is this research important?
There is a pressing need for research to look at the effect of social media. As social media is increasingly changing the social environment our youth are experiencing today and despite social media being an everyday activity in our youth's lives little is known about the effect it may have. This research hopes to shed light on this issue.

Who are we looking for?
We are looking for any adolescents between the ages of 13-18 who are Instagram users, can read English at a confident level and want to take part in the questionnaire.

What will happen?

Participating in this research will involve your child taking part in an online questionnaire. The questionnaire will include questions regarding Instagram use, wellbeing and personality factors. It will take approximately 10-15 minutes to complete. The questionnaire will be completed within school time, which has been negotiated with the school. Your child's answers are completely anonymous.

- **If your child would like to participate in the study and you give your consent then no further action is necessary.**

- **If your child would like to participate in the study but does not have an Instagram account he/she is invited to fill out the questionnaire in relation to the social media application or website they use the most frequently.**

- **If your child does not want to take part in the study or does not receive your permission to take part you will need to sign the consent form and send it back to the school. If the consent form is not returned we will consider this as you giving consent for your child to participate.**

Participant's rights
Your son or daughter has the right to not answer any questions on the questionnaire and to exit the questionnaire at any time.

Committee Approval Statement:
This project has been reviewed and approved by the Massey University Human Ethics Committee: Northern, Application NOR 18/12. If you have any concerns about the conduct of this research, please contact Associate Professor David Tappin (Chair), Massey University Human Ethics Committee: Northern, email humanethicsnorth@massey.ac.nz.

Thank you for considering your child's participation in this study!

Appendix B: Consent Form

MASSEY UNIVERSITY
TE KUNENGA KI PŪREHUROA

Adolescent Instagram Use and its Association with Wellbeing

If you have read the information sheet and prefer your child not to be involved, please fill out the form below before the _____2018.

Please send the form back to school with your child and hand the form to the receptionist at the office.

I _____(name) **DO NOT** give consent for my child

_____ (name of child) to participate in the study.

Signed: _____

Date: _____

Please be assured that it will not be made known to the other students that your son/ daugther is not completing the questionnaire. Instead during the class time when the questionnaire is being filled out your child will be able to have free time on the schools computers.

Kind Regards,

Nicole Gifford, Dr. Richard Fletcher and Professor James Liu

Appendix C: Ethics Consent

Date: 23 May 2018

Dear Nicole Gifford

Re: Ethics Notification - **NOR 18/12 - Adolescent Instagram Use and Its Association with Depression and Anxiety**

Thank you for the above application that was considered by the Massey University Human Ethics Committee: **Human Ethics Northern Committee** at their meeting held on **Wednesday, 23 May, 2018**.
On behalf of the Committee I am pleased to advise you that the ethics of your application are approved.

Approval is for three years. If this project has not been completed within three years from the date of this letter, reapproval must be requested.

If the nature, content, location, procedures or personnel of your approved application change, please advise the Secretary of the Committee.

Yours sincerely

Associate Professor Tracy Riley, Dean Research
Acting Director (Research Ethics)

Appendix D: Questionnaire

Nicole Gifford_2018

Start of Block: Information Page

InfoPg

Welcome to the Instagram and Wellbeing Questionnaire

Information Sheet

I hope I have explained the questionnaire well enough to you. If you have any questions regarding the questionnaire please put your hand up so I can answer them for you.

It is important that you understand that this questionnaire is completely private/anonymous. Your name and contact details are only required if you wish to enter a draw to win a set of Beats by Dre wireless headphones. Your name will be completely separate from your answers on the questionnaire therefore your answers are completely ANONYMOUS.

So that we can gather accurate data it is very important that you answer the questions TRUTHFULLY. If any of the questions make you feel uncomfortable or you do not think that you can answer them truthfully please exit the questionnaire.

If you feel uncomfortable about any of the questions and would like to talk to someone here is Youthline's number: 0800 376 633. Youthline's number will also be located at the bottom of the questionnaire or alternatively you could talk to your school guidance counsellor.

The questionnaire will take approximately 10-15 MINUTES to complete, feel free to take short breaks when needed. It would be nice if you could please take your time and read each question carefully. It is also important that you have your phone near you with access to your Instagram account as some of the questions require you to look at your account.

To thank you for taking your time to complete this questionnaire, as a gesture of gratitude each COMPLETED questionnaire will be one entry into the draw to win a pair of BEATS BY DRE WIRELESS HEADPHONES.

Contact information

If you have any questions or queries regarding this project, please don't hesitate to contact the following:

Researcher

Nicole Gifford
School of Psychology

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This project has been reviewed and approved by the Massey University Human Ethics Committee: Northern, Application 18/12. If you have any concerns about the conduct of the research, please contact Associate Professor David Tappin, Chair, Massey University Human Ethics Committee: Northern, email humanethicsnorth@massey.ac.nz.

End of Block: Information Page

Start of Block: Screening

Inst_Ac Do you have an Instagram account?

- ○ **Yes (1)**
- ○ **No (2)**

Display This Question:

If Do you have an Instagram account? = No

SocMedia If you do not have an Instagram account, please select the social media or website you spend the most amount of time on.
(please select one)

- ○ **Facebook (1)**
- ○ **Youtube (2)**
- ○ **Snapchat (3)**
- ○ **WhatsApp (4)**
- ○ **Tumblr (5)**
- ○ **Twitter (6)**
- ○ **Other (7) _____**

Page Break

Display This Question:

If Do you have an Instagram account? = No

SocMedia_inf If you **DO NOT** have an Instagram account please answer any questions on the questionnaire about Instagram using the social media/ website you have just selected. (ie. ${SocMedia/ChoiceGroup/SelectedChoices})

End of Block: Screening

Start of Block: Instructions

Instr_hdr Instructions

Instr_1 Thank you for participating in this study. Your data will be held in a secure file at Massey University for five years, after which it will be destroyed. The information you provide is an important contribution to help us understand the effect Instagram is having on adolescent wellbeing. Please complete all the sections below if possible. You have the right to not answer any particular question. **Thank you for taking your time to complete this questionnaire.**

End of Block: Instructions

Start of Block: Consent

Appr_hdr Respondent Consent

Consent I have read and understood the information sheet (first page of questionnaire) for this study and give my permission to take part.
(Please click on the 'Yes' choice if you wish to proceed.)

- ○ **Yes (1)**
- ○ **No (2)**

End of Block: Consent

Start of Block: Demographics

Dem_hdr Demographics

D1 How old are you?

▼ 12 or younger (12) ... 20 or older (20)

D2 What school do you go to?

_____

D3 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 (1)**
- **Māori (2)**
- **Pacific Islander (3)**
- **Asian (4)**
- **Other (5)**

D4 What is your gender?

- **Male (1)**
- **Female (2)**
- **Other (3)** _____

D5 Are you currently feeling anxious, down or stressed about any school work such as exams, an assignment or any events occurring in your personal life e.g. a break up with a significant other?

- ○ **Yes (1)**
- ○ **No (2)**

End of Block: Demographics

Start of Block: Instagram use

I_Use1 How often do you use Instagram?
(Please select ONE of the following answers.)

- ○ **30+ times a day (1)**
- ○ **20-30 times a day (2)**
- ○ **10-19 times a day (3)**
- ○ **2-9 times a day (4)**
- ○ **Once a day (5)**
- ○ **Once every 2-3 days (6)**
- ○ **Once every 4-5 days (7)**
- ○ **Once every 6-7 days (8)**
- ○ **Once every two weeks (9)**
- ○ **Once a month or more (10)**

I_Use2 How long do you roughly spend on Instagram **EACH TIME** you use it?
(Please select ONE of the following answers.)

- ○ **Less than a minute (1)**
- ○ **1-10 minutes (2)**
- ○ **11-20 minutes (3)**
- ○ **21-30 minutes (4)**
- ○ **31-40 minutes (5)**
- ○ **41-50 minutes (6)**
- ○ **51-60 minutes (7)**
- ○ **More than an hour (8)**

I_Use3 How many people do you follow on Instagram that you don't know personally (strangers)?
This includes *celebrities* (e.g. Kylie Jenner or Harry Styles), *Instagram celebrities/ influencers* (e.g. Shani Grimmond, Stephanie Claire Smith or Jess Conte; these are people who are only famous because of Instagram), *meme or video accounts* you follow, or people who you might *know by association but have never met* (e.g. your friend's friend).
Answer as a **number** that is your best approximation/ guess.

_____

End of Block: Instagram use

Start of Block: Social Comparison Scale

SCS When I compare myself to others on Instagram, I feel…

	1	2	3	4	5	6	7	8	9	10	

	1 (1)	2 (2)	3 (3)	4 (4)	5 (5)	6 (6)	7 (7)	8 (8)	9 (9)	10 (10)	
Inferior	(	(	(	(	(	(	(	(	(	◯	Superior
Incompetent	(	(	(	(	(	(	(	(	(	◯	Competent
Unlikeable	(	(	(	(	(	(	(	(	(	◯	Likeable
Left out	(	(	(	(	(	(	(	(	(	◯	Accepted
Different	(	(	(	(	(	(	(	(	(	◯	Same
Untalented	(	(	(	(	(	(	(	(	(	◯	More Talented
Weaker	(	(	(	(	(	(	(	(	(	◯	Stronger
Unconfident	(	(	(	(	(	(	(	(	(	◯	More Confident
Undesirable	(	(	(	(	(	(	(	(	(	◯	More Desirable
Unattractive	(	(	(	(	(	(	(	(	(	◯	More Attractive
Outsider	(	(	(	(	(	(	(	(	(	◯	Insider

End of Block: Social Comparison Scale

Start of Block: CES Depression Scale for Children

DSCa Below is a list of the ways you might have felt or behaved. Please tell me how often you have felt this way during the **past week**.

	Not at all (0)	A little (1)	Some (2)	A lot (3)
I was bothered by things that usually don't bother me. (DSC_1)	○	○	○	○
I did not feel like eating; I wasn't very hungry. (DSC_2)	○	○	○	○
I wasn't able to feel happy, even when my family or friends tried to help me feel better. (DSC_3)	○	○	○	○
I felt like I was just as good as other kids. (DSC_4)	○	○	○	○
I felt like I couldn't pay attention to what I was doing this week. (DSC_5)	○	○	○	○
I felt down and unhappy this week. (DSC_6)	○	○	○	○
I felt like I was too tired to do things this past week. (DSC_7)	○	○	○	○
I felt like something good was going to happen. (DSC_8)	○	○	○	○

I felt like things I did before didn't work out right. (DSC_9)	○	○	○	○
I felt scared this week. (DSC_10)	○	○	○	○

Page Break

DSCb Below is a list of the ways you might have felt or behaved. Please tell me how often you have felt this way during the **past week**.

	Not at all (0)	A little (1)	Some (2)	A lot (3)
I didn’t sleep as well as I usually sleep this week. (DSC_11)	○	○	○	○
I was happy this week. (DSC_12)	○	○	○	○
I was more quiet than usual this week. (DSC_13)	○	○	○	○
I felt lonely, like I didn’t have any friends. (DSC_14)	○	○	○	○
I felt like kids I knew were not friendly or that they didn’t want to be with me. (DSC_15)	○	○	○	○
I had a good time this week. (DSC_16)	○	○	○	○
I felt like crying this week. (DSC_17)	○	○	○	○
I felt sad. (DSC_18)	○	○	○	○
I felt people didn’t like me this week. (DSC_19)	○	○	○	○
It was hard to get started doing things this week. (DSC_20)	○	○	○	○

PSWQa
This form is about worrying. Worrying happens when you are scared about something and you think about it a lot. People sometimes worry about school, their family, their health, things coming up future, or other kinds of things.

For each sentence that you read, select the answer that best tells how true that sentence is about you.

	Not at all true (0)	Sometimes true (1)	Often true (2)	Always true (3)
My worries really bother me (PSWQ_1)	○	○	○	○
I don't really worry about things (PSWQ_2)	○	○	○	○
Many things make me worry (PSWQ_3)	○	○	○	○
I know I shouldn't worry, but I just cant help it (PSWQ_4)	○	○	○	○
When I am under pressure, I worry a lot (PSWQ_5)	○	○	○	○
I am always worrying about something (PSWQ_6)	○	○	○	○
I find it easy to stop worrying when I want (PSWQ_7)	○	○	○	○

Page Break

PSWQb This form is about worrying. Worrying happens when you are scared about something and you think about it a lot. People sometimes worry about school, their family, their health, things coming up future, or other kinds of things.

For each sentence that you read, select the answer that best tells how true that sentence is about you.

	Not at all true (0)	Sometimes true (1)	Often true (2)	Always true (3)
When I finish one thing, I start to worry about everything else (PSWQ_8)	○	○	○	○
I never worry about anything (PSWQ_9)	○	○	○	○
I've been a worrier all my life (PSWQ_10)	○	○	○	○
I notice that I have been worrying about things (PSWQ_11)	○	○	○	○
Once I start worrying, I can't stop (PSWQ_12)	○	○	○	○
I worry all the time (PSWQ_13)	○	○	○	○
I worry about things until they are all done (PSWQ_14)	○	○	○	○

PAUM How frequently do you preform the following activities when you are on Instagram?*(Note: Choosing "Very frequently" means that about 100% of the time that you log on to Instagram, you perform that activity)*

	Never (0%) (1)	Rarely (25%) (2)	Sometimes (50%) (3)	Somewhat frequently (75%) (4)	Very frequently (100%) (5)
Chatting on Instagram chat (direct messaging) (PAUM_1)	○	○	○	○	○
Checking to see what someone is up to (PAUM_2)	○	○	○	○	○
Posting photos or videos that you've taken (PAUM_3)	○	○	○	○	○
Browsing your home newsfeed **passively** (the house icon; without liking or commenting on anything) (PAUM_4)	○	○	○	○	○
Browsing your explore newsfeed **passively** (the magnifying glass icon; without liking or commenting on anything) (PAUM_5)	○	○	○	○	○

Browsing your home newsfeed **actively** (the house icon; liking and commenting on photos and videos) (PAUM_6)	○	○	○	○	○
Browsing your explore newsfeed **actively** (the magnifying glass icon; liking and commenting on photos and videos) (PAUM_7)	○	○	○	○	○
Looking through accounts of people you do know (PAUM_8)	○	○	○	○	○
Looking through accounts of people you don’t know (strangers) (PAUM_9)	○	○	○	○	○

SCOS_inf Most people compare themselves from time to time with others. For example, they may compare the way they feel, their opinions, their abilities, and/or their situation with those of other people. There is nothing particularly 'good' or 'bad' about this type of comparison, and some people do it more than others.
We would like to find out how often you compare yourself with other people. To do that we would like to ask you to indicate how much you agree with *each* statement below, by using the following scale.

	I disagree strongly 1 (1)	2 (2)	3 (3)	I agree strongly 4 (4)
I often compare how my loved ones (boy or girlfriend, family members, etc.) are doing with how others are doing (SCOS_1)	○	○	○	○
I always pay a lot of attention to how I do things compared with how others do things (SCOS_2)	○	○	○	○
If I want to find out how well I have done something, I compare what I have done with how others have done (SCOS_3)	○	○	○	○
I often compare how I am doing socially (e.g. social skills, popularity) with other people (SCOS_4)	○	○	○	○
I am not the type of person who compares often with others (SCOS_5)	○	○	○	○

I often compare myself with others with respect to what I have accomplished in life (SCOS_6)	○	○	○	○
I often like to talk with others about mutual opinions and experiences (SCOS_7)	○	○	○	○
I often try to find out what others think who face similar problems as I face (SCOS_8)	○	○	○	○
I always like to know what others in a similar situation would do (SCOS_9)	○	○	○	○
If I want to learn more about something, I try to find out what others think about it (SCOS_10)	○	○	○	○
I *never* consider my situation in life relative to that of other people (SCOS_11)	○	○	○	○

End of Block: Social comparison orientation scale

Start of Block: Facebook intensity scale

FISa Below are a list of statements about your Instagram use.
Please indicate how strongly you disagree or agree with each statement.

	Strongly disagree (1)	Disagree (2)	Agree (3)	Strongly agree (4)
If I could visit only one site on the internet, it would be Instagram. (FIS_1)	○	○	○	○
Watching Instagram posts is good for overcoming boredom. (FIS_2)	○	○	○	○
I spend time on Instagram at the expense of my obligations. (FIS_3)	○	○	○	○
My Instagram profile is rather detailed. (FIS_4)	○	○	○	○
I feel bad if I don’t check my Instagram daily. (FIS_5)	○	○	○	○
When I’m bored, I often go to Instagram. (FIS_6)	○	○	○	○
I spend more time on Instagram than I would like to. (FIS_7)	○	○	○	○
I like refining my Instagram profile. (FIS_8)	○	○	○	○

FISb Below are a list of statements about your Instagram use.
Please indicate how strongly you disagree or agree with each statement.

	Strongly disagree (1)	Disagree (2)	Agree (3)	Strongly agree (4)
I often search for internet connection in order to visit Instagram. (FIS_9)	○	○	○	○
If I am bored, I open Instagram. (FIS_10)	○	○	○	○
It happens that I use Instagram instead of sleeping. (FIS_11)	○	○	○	○
It is important for me to update my Instagram profile regularly. (FIS_12)	○	○	○	○
Before going to sleep, I check Instagram once more. (FIS_13)	○	○	○	○
Instagram has become part of my daily routine. (FIS_14)	○	○	○	○
I feel out of touch when I haven't logged onto Instagram for a while. (FIS_15)	○	○	○	○

RSES Below is a list of statements dealing with your general feelings about yourself. Please indicate how strongly you agree or disagree with each statement.

	Strongly agree (1)	Agree (2)	Disagree (3)	Strongly disagree (4)
On the whole, I am satisfied with myself. (RSES_1)	○	○	○	○
At times I think I am no good at all. (RSES_2)	○	○	○	○
I feel that I have a number of good qualities. (RSES_3)	○	○	○	○
I am able to do things as well as most other people. (RSES_4)	○	○	○	○
I feel I do not have much to be proud of. (RSES_5)	○	○	○	○
I certainly feel useless at times. (RSES_6)	○	○	○	○
I feel that I am a person of worth, at least on an equal plane with others. (RSES_7)	○	○	○	○
I wish I could have more respect for myself. (RSES_8)	○	○	○	○

All in all, I am inclined to feel that I am a failure. (RSES_9)	○	○	○	○
I take a positive attitude toward myself. (RSES_10)	○	○	○	○

SCCSa Please indicate how strongly you disagree or agree with each of the following statements.

	Strongly disagree 1 (1)	2 (2)	3 (3)	Strongly agree 4 (4)
My beliefs about myself often conflict with one another. (SCCS_1)	○	○	○	○
On one day I might have one opinion of myself and on another day I might have a different opinion. (SCCS_2)	○	○	○	○
I spend a lot of time wondering about what kind of person I really am. (SCCS_3)	○	○	○	○
Sometimes I feel that I am not really the person that I appear to be. (SCCS_4)	○	○	○	○
When I think about the kind of person I have been in the past, I'm not sure what I was really like. (SCCS_5)	○	○	○	○
I seldom experience conflict between the different aspects of my personality. (SCCS_6)	○	○	○	○

SCCSb Please indicate how much you disagree or agree with each of the following statements.

	Strongly disagree 1 (1)	2 (2)	3 (3)	Strongly agree 4 (4)
Sometimes I think I know other people better than I know myself. (SCCS_7)	○	○	○	○
My beliefs about myself seem to change very frequently. (SCCS_8)	○	○	○	○
If I were asked to describe my personality, my description might end up being different from one day to another day. (SCCS_9)	○	○	○	○
Even if I wanted to, I don’t think I would tell someone what I’m really like. (SCCS_10)	○	○	○	○
In general, I have a clear sense of who I am and what I am. (SCCS_11)	○	○	○	○
It is often hard for me to make up my mind about things because I don’t really know what I want. (SCCS_12)	○	○	○	○

Comment_1 Are there times when you use Instagram that you feel BETTER about yourself? If so, please provide examples.

_____

_____

_____

_____

_____

Comment_2 Are there times when you use Instagram that you feel WORSE about yourself? If so, please provide examples.

_____

_____

_____

_____

_____

Support If any of the questions were upsetting and you would like to talk to someone here is Youthline's number: 0800 376 633. Alternatively you could also talk to your school counsellor.

End Once you click on the 'Submit' button, you will be transferred to a separate survey, where you can go into a draw to win a pair of Beats by Dre wireless headphones. The contact details you provide will not be linked to the answers you have already provided, which will remain anonymous.

Thank you again for taking your time to complete the questionnaire.
Your time and effort has been very much appreciated. The information you have provided is an important contribution to help us to understand the effect Instagram is having on adolescent wellbeing.

Appendix E: Additional Information about the Questionnaire using the CHERRIES Checklist.

Please note that only additional information that is not included in the main text of the thesis or in the questionnaire is presented here.

Ethics Review

- Data protection: no personal identifying information was stored.

Development and Pretesting

- Development and Testing: before the questionnaire was administered a small sample completed the questionnaire to check that the wording was appropriate for the target audience. These participants were not included in the final sample, as they did not belong to the schools in the sample.

Survey Administration

- Web/email: the participants entered the questionnaire through a link that was sent to their school email address. The data was captured on an SPSS file.
- Mandatory/Voluntary: the questionnaire was not mandatory, if the participants did not provide their consent they were exited out of the questionnaire. They were also informed that they could omit any items they wished.
- Incentives: at the end of the questionnaire the participants could enter a draw to win a set of Beat by Dre Headphones. This draw was completely separate to the questionnaire so that the answers from the questionnaire had no identifying information attached.
- Timeframe: the data was collected between July 2018 and October 2018
- Completeness check: if a participant missed an item between screens, they were presented with a message stating: “There is 1 unanswered question on this page. Would you like to continue?” and the response options of: “continue without answering” “answer the question”.
- Review step: there was no review step in the questionnaire.

Response Rate

- Unique visitor: A cookie function was utilised to ensure the participant only completed the questionnaire once
- Completion rate: 78.36% (as taken from the last scale in the questionnaire the SCCS)

Analysis

- Timestamp: No time limit was utilised
- Statistical correction: weighting of items or propensity scores were not utilised.

Appendix F: Psychometric Properties of Scales

Psychometric Properties of the SCS

The SCS was standardised using a clinical and nonclinical sample (Allan & Gilbert, 1995). The nonclinical sample consisted of university students with the mean age of 23.4 years. The SCS in a community sample yielded a Cronbach's alpha of r=.91, indicating that the SCS has good internal consistency (Allan & Gilbert, 1995). The SCS also had positive inter-item correlations at the .05 significance level, suggesting that the measured domains of social comparison scale are differentially associated (Allan & Gilbert, 1995). The SCS was found to be significantly correlated with the internal entrapment r= -.46 p<.001, external entrapment r=-.47 p<.001 and defeat scales r=-.59 p<.001 of the Entrapment and defeat scale (Gilbert & Allan, 1998). It was negatively correlated to the Submissive Behaviour Scale r= -.50 and negatively correlated to the depression scales of: Center of Epidemiological Studies Depression Scale r=-.43 p <.001, The Beck Depression Inventory r=-.65 p <.001 and The Beck Hopelessness Scale r=-.56 p<.001 (Gilbert & Allan, 1998).

In a nonclinical adolescent population, the SCS had excellent internal consistency of r= .87-.92 p= .001 (Buunk et al., 2016; Cotier & Toulopoulou, 2017; Murphy et al., 2015; Roitman & Gilboa- Schechtman, 2014). Furthermore, the SCS was translated into Italian where its psychometric properties with an adolescent population were further developed (Giacolini et al., 2013). In the nonclinical sample the SCS had a Cronbach's alpha of r=.878 and satisfactory test retest reliability r= .631 after four weeks. It was significantly negatively correlated with the Submissive Behaviour Scale r= -.312 p=<.001 and with all subscales on the Symptom Checklist 90 Revised (SCL-90-R) at the .001 significance level (Giacolini et al., 2013).

Psychometric Properties of the CES-DC

The CES-DC has an alpha coefficient of r=.86 - .89 indicating that it has excellent internal consistency (Faulstich et al., 1986; Fendrich et al., 1990). The CES-DC has moderate test retest reliability of r=.69 for adolescents, measured at two weeks (Faulstich et al. 1986). It has good concurrent validity as the items correspond to the DSM-III, meaning that the CES-DC is specific to the diagnosis criteria of depression and therefore the CES-DC can be used as an adequate screen for depression (Fendrich et al., 1990). Children with Major Depressive Disorder or Dysthymia as defined by the

DSM-III scored higher on the CES-DC compared to all other respondents (Fendrich et al., 1990). The CES-DC is also significantly correlated to the Child Depression Inventory (CDI) r= .58-.61 (Doerfler et al., 1988; Faulstich et al., 1986) and the Beck's Depression Inventory-Child Version r= .81 (BDI-C; Olsson & Von Knorring, 1997) further establishing its concurrent validity. There are mixed findings regarding the sensitivity and specificity of the CES-DC (Fendisch et al., 1990), however, this is not a concern for the current study as it focuses on 'greater depressive symptomology' as opposed to diagnosing depression.

Psychometric Properties of the PSWQ-C

The internal consistency yielded a Cronbach's alpha of r= .90 - .91, with item-total correlations ranging between r=.38 - .68 (Chorpita et al. 1996; Pestle et al., 2008). The PSWQ-C has excellent test retest reliability after 1-week r= .92 (Chorpita et al., 1996). The PSWQ-C has sufficient concurrent validity as it significantly correlated with the Revised Children's Manifest Anxiety Scale (RCMAS; especially on the worry/oversensitivity scale r=.71), the Revised Children's Anxiety and Depression Scales (RCADS) r=.48 p= <.001 (Pestle et al., 2008), the CDI r=.52 (Chorpita et al., 1996), the Screen for Child Anxiety Related Emotional Disorders (SCARED) and the SCARED total score r= .65 (Muris et al., 2001). The PSWQ-C was also found to have sufficient discriminate validity as it was able to discriminate between children with a diagnosis of Generalised Anxiety Disorder (GAD), those meeting the criteria for any other DSM-IV anxiety disorder and those not meeting the criteria for an anxiety or mood disorder at a clinical level (Chorpita et al., 1996). The scale's original authors (Chorpita et al., 1996) conducted a confirmatory factor analysis on the PSWQ-C and found across children between the ages of 7-18 the PSWQ-C yielded fit statistics of: RMSEA= 0.073 and CFI= 0.92. These fit statistics suggest moderate to good fit (Chorpita et al., 1997).

Psychometric Properties of the original PAUM Scale

The PAUM was standardised on individuals between the ages of 19-71. It has not been used within an adolescent population, but it is still appropriate to use in the current study, as it is the only standardised scale that has been developed to measure Passive and Active social media use (Gerson et al., 2017).

The Cronbach's alphas for the Active Social factor was r=.80 and for the Passive factor it was r=.70, indicating that the measure is internally consistent (Gerson et al., 2017). The PAUM had adequate test retest reliability, Active Social r=.75-.76 and Passive r=.65- .69. The PAUM was correlated against the Satisfaction with Life scale, Eudaimonic Well-Being Questionnaire, Positive Affect Scale, Negative Affect Scale, and the Multidimensional Facebook Intensity Scale and was found to have satisfactory discriminant validity (Gerson et al., 2017). The construct validity of the PAUM could not be established as there are no other validated measures that measure passive and active Facebook use. The original authors (Gerson et al., 2017) conducted a confirmatory factor analysis on the PAUM, and found the scale yielded fit statistics of RMSEA= 0.08 and CFI= 0.89, suggesting adequate fit.

Psychometric Properties of the INCOM.

The INCOM was standardised using both an American and Netherlands population of older adolescents and college students. The INCOM has good internal consistency as it has a Cronbach alpha ranging between r=.78 to .85 across American and Dutch samples (Gibbons & Buunk, 1999). The INCOM also has reasonable temporal stability r=.71 after 3-4 weeks and r=.60 after a year. The INCOM was found to have adequate convergent validity as it was found to correlate with the Attention to Social Comparison Information Scale r=.47 p<.001 (American sample). Gibbons and Buunk (1990) reported that the INCOM had adequate discriminate validity, as the INCOM did not correlate with Life satisfaction r= -.13 to .03 p<.05 (American sample). Gibbons and Bunnk (1990) reported that the INCOM has adequate criterion validity as in each of the four experimental studies that were conducted it was found that individuals who scored higher on INCOM also engaged in more social comparisons compared to those who scored lower on the INCOM.

Psychometric Properties of the MFIS.

The MFIS was standardised using individuals between the ages of 18 and 62 years old. All four factors on the MFIS have good test retest reliability over a four-week period: Persistence r=.87, Boredom r=.80, Overuse r=.80 and Self-Expression r= .82 (Orosz et al., 2015). All four factors also had adequate internal consistency: Persistence r=.75, Boredom r=.81, Overuse r=.72 and Self- Expression r= .80 (Orosz et al., 2015). The 13 items loaded onto the 4 factors without any high cross loadings supporting the

multidimensional nature of the measure (Orosz et al., 2015). The target coefficient was .946 indicating that the MFIS measured the main construct of Facebook Intensity but also measured the second order factors of Persistence, Boredom, Overuse and Self-Expression (Orosz et al., 2015). The MFIS correlated with the Bergen Facebook Addiction Scale, Online Sociability Scale, Facebook Passion Scale and monetary value of Facebook (Orosz et al., 2015; Sigerson & Cheng, 2018), suggesting that the criterion and convergent validity were both supported by significant positive associations (Orosz et al., 2015; Sigerson & Cheng, 2018). Discriminant validity was also supported as the associations with Facebook behaviours did not exceed Brown's cut off (Orosz et al., 2015; Sigerson & Cheng, 2018). The original authors (Orosz et al., 2016) also conducted a confirmatory factor analysis on the MFIS, and found that the second order four factor MFIS yielded fit statistics of RMSEA=.06, CFI=.96, TLI=.96, suggesting adequate fit.

The MFIS has not yet been used within an adolescent population, unlike the FIS. However, the MFIS is a better fit than the FIS for the current study for a number of reasons. These include:

- The FIS is 11 years old, therefore it does not accurately capture Facebook use today.
- A recent study found that despite the FIS's widespread use there has been no systematic effort to validate the scale, whilst the MFIS has been systematically validated (Sigerson & Cheng, 2018).
- The MFIS has shown to measure a different construct to the PAUM scale, which is important, as both scales were utilised in the current study to measure Instagram use (Gerson et al., 2017).
- The FIS is comprised of 8 items; however, a number of the items were not a good fit for the current study. These included: "How many total Facebook friends do you have", this does not apply to Instagram as reciprocal relationships aren't formed. Secondly, according to Orosz et al. (2015) the item "I feel like I'm part of the Facebook community" is now considered outdated due to the widespread use of Facebook/ Instagram. Thirdly, Blomfield Neira and Barber (2014) that three of the items measure Facebook usage, and like Neira and Barber (2014) we also wanted to measure usage as a separate entity.

Psychometric Properties of the RSES

The RSES was standardised on 5024 secondary school students from 10 different public schools within New York city. Rosenberg (1965) stated that the RSES is internally reliable, uni-dimensional and appears to have good face validity as individuals who were depressed as measured by nurses using the Leary scale also had low self-esteem (Rosenberg, 1965). Sinclair et al. (2010) found in their study with a community sample of American adults that the RSES had satisfactory convergent validity and discriminant validity (against the participation measure for post-acute care and Social Relationships scale). The convergent validity of the RSES was also supported by Hagbor's (1993) as he found that the RSES was significantly correlated to the Self-Perception Profile for Adolescents subscale of global self-esteem r=.76.

Psychometric Properties of the SCCS

In the original sample of individuals between the ages of 17 and 44 years old, the SCCS yielded a Cronbach's alpha of r=.86 indicating that the SCCS has good internal consistency (Campbell et al., 1996). The inter item correlations ranged from r=.35 to r= .66 with an average correlation of r=.52 (Campbell et al., 1996) suggesting that the items were all measuring the same construct, Self-Concept Clarity (Campbell et al., 1996). The SCCS also has good retest reliability after four months r=.79 and after five months r=.70 (Campbell et al., 1996). To measure the SCCS convergent validity the authors correlated the scale with other scales that have a similar underlying construct. They found that the SCCS correlated with self-esteem r=.61 enabling the authors to conclude that this provided evidence of construct validity for the SCCS (Campbell et al., 1996). However, it is still a distinct measure from self-esteem as it exhibited a consistent pattern of correlations with other measures and the SCCS predicted a unique variance when controlling for self-esteem, therefore concluding that self- concept clarity and self-esteem are distinct constructs (Campbell et al., 1996).

Appendix G: Instructions Read to Respondents Before Completing the Questionnaire

This questionnaire is about Instagram use and wellbeing. If you do not have an Instagram account that is okay, the questionnaire will ask you what social media or website you use most frequently. Then any of the following questions about Instagram on the questionnaire please answer them in relation to the social media or website that you have stated you use most frequently.

Your answers on the questionnaire are completely anonymous this means that no one will know what questionnaire yours is. It is also important that you do not look at each other's computer screens or talk when filling out the questionnaire. The only time you are required to provide your name is if you wish to enter the draw to win a set of 'Beats by Dre' wireless headphones at the end of the questionnaire. However, this draw is completely separate to the questionnaire about Instagram use and wellbeing so your name will not be linked to your answers.

It is important that you answer each question truthfully as this will help us capture accurate data. Also please read each question carefully as some questions may have a reversed meaning. Therefore, if you select 'strongly agree' for each question it may have the opposite meaning than what you intend it to. If you do not think you can answer the questionnaire truthfully please exit the questionnaire.

If you do not know the meaning of some of the words on the questionnaire can you, please Google definitions or put your hand up so I can help you.

If you are using a smart phone to complete the questionnaire on the question 'when I compare myself to others on Instagram, I feel' this is a 10-point scale so you will have to scroll to the right to see the entire scale. This question is located near the start of the questionnaire.

It would be great if you could please try and answer each question if you can.

Please do not talk when you are doing the questionnaire. It's important that we have test conditions until everyone finishes the questionnaire.

You will know when you're finished as there will be a big blue 'thank you'. Before this comes up there is black writing saying 'thank you for your answers' this is not the end of the questionnaire as there is still the draw to win the Beats by Dre wireless headphones.

Thank You

Appendix H: Technical Information for Hypothesis Testing

Hypothesis Two

Table H.1

X^2 Test at Model Level across Gender

Moderator	Model	X^2	P value	DF	CFI	X^2 test p value	Equivalent
Gender	Unconstrained	4998.231	.000	2238	.881		
	Structural weights	5463.154	.000	2337	.866	.000	No

Table H.2

X^2 Test across Pathways Between Latent Variables of Hypothesis Two

Moderator	Pathway	X^2 difference between unconstrained and constrained	P value	DF	Equivalent
Gender	Abilities→ SCS	9.660	.002	1	No
	SCS→CES-DC	1.239	.266	1	Yes
	SCS→ PSWQ-C	.302	.582	1	Yes

Table H.3

Standardised Regression Weights of Non-Equivalent Pathways of Hypothesis Two

Moderator	Pathway	Standardised estimates
Males	Abilities→SCS	Insignificant
Females	Abilities→SCS	.31

Hypothesis Three

Table H.4

X^2 Test at Model Level across Gender for Hypothesis Two

Moderator	Model	X^2	P value	DF	CFI	X^2 test p value	Equivalent

Gender	Unconstrained	5849.651	.000	2738	.877		
	Structural weights	6343.682	.000	2847	.862	.000	No

Table H.5

X^2 Test across Pathways Between Latent Variables of Hypothesis Three

Moderator	Pathway	X^2 difference between unconstrained and constrained	P value	DF	Equivalent
Gender	SCCS→SCS	2.736	.098	1	No
	SCS→CES-DC	2.209	.137	1	Yes
	SCS→PSWQ-C	.012	.913	1	Yes

Table H.6

Standardised Regression Weights of Non-Equivalent Pathways of Hypothesis Three

Moderator	Pathway	Standardised estimates for each pathway
Males	SCCS→SCS	-.15
Females	SCCS→SCS	-.35

Appendix I: Research Case Study

Abstract

Instagram is an increasingly popular photo sharing social media application that offers users the opportunity to post photos of their lives. A consequence of Instagram being photo based is that users often apply impression management strategies so only the best parts of their life are presented. Research has found that on the wider social media context this causes the individual to engage in upwards social comparisons, leading to negative psychological outcomes. Limited research has been conducted on Instagram despite its increasing popularity. In the current study 853 adolescent participants from four different secondary schools in Auckland completed an online questionnaire. This case study focuses on one opened ended question on the questionnaire of "*Are there times when you use Instagram that you feel worse about yourself? If so please provide examples*". Using Thematic Analysis it was found that the most commonly endorsed theme was engaging in an upward social comparison. This case study focuses on exploring this theme to understand what content causes the user to engage in an upwards social comparison. The case study then concludes with a reflection of how my thesis has contributed to my clinical practice during my internship at Mental Health Services for Older Adults (MHSOA).

Literature Review

Festinger's (1954) Social Comparison Theory states that all humans have an innate drive to compare themselves and when there is no objective measurement or standard to compare themselves against, humans compare themselves against other humans (Festinger, 1954). Festinger (1954) stated that individuals are more likely to compare themselves against others who are similar to oneself, as this comparison offers the most information. Individuals engage in social comparisons as it provides them with the opportunity to make positive or negative judgments about themselves (Festinger, 1954). Social comparisons can occur in one of two directions, either *upwards* or *downwards*. An upwards social comparison is when the individual compares themselves to others who they consider to be superior to themselves (Wills, 1981). A downwards social comparison is when an individual compares themselves to others who they consider to be inferior to themselves (Wills, 1981). Festinger (1954) suggested that people have a tendency to be more likely to engage in an upwards social comparison, as elite individuals are seen as more desirable, causing people to compare themselves against standards which are often unrealistic. An upwards social comparison has been shown to have a negative impact on mental wellbeing, whilst a downwards social comparison has shown to have the opposite effect (Wills, 1981).

A significant change in the 21st century has been the introduction and growing popularity of social media. Before social media was available individual's used to engage in social comparisons with peers who they came into contact with. However, with social media the opportunity for social comparisons to take place has significantly increased, as now an individual just needs to use their smart phone to have instant access to others, allowing social comparisons to occur anytime anywhere (Lup et al., 2015). As a result social media offers numerous opportunities for the individual to compare themselves with others on appearance, popularity and success (Feinstein et al., 2013). One popular social media application that offers this opportunity is Instagram. Instagram is a photo sharing social media application, that is designed so users can instantly share photos to their "*followers*" (Sheldon & Byrant, 2016), whilst also being able to view photos from other users who they "*follow*".

Social comparisons on social media are problematic, as individuals on social media often portray a false reality of their life or appearance, as impression management strategies are often applied by users (Chou & Edge, 2012). Impression

management strategies are techniques an individual uses to present themselves in an optimal way, by highlighting one's life to only capture the positive aspects, in order to be seen as more desirable (Chou & Edge, 2012) e.g. emphasising their positive attributes or carefully selecting photos (Ellison et al., 2006). Impression management strategies are encouraged by Instagram, as Instagram offers 24 aesthetically pleasing filters and other editing tools to enable photos to be edited to perfection before they are uploaded for others to view (Frewerda et al., 2015). As a result the photos that the individual is confronted with on social media are usually edited to present a perfected perception of the individual. Therefore, an upwards social comparison is more likely to occur (Nesi & Prinstein, 2015), resulting in negative judgements about oneself (Festinger, 1954). These judgments have been found to play a pivotal role in the individual's identity development and consolidation (Stapleton et al., 2017). This is particularly prominent in adolescence, as it is a developmental period where individuals are forming their identities and understanding who they are (Harter, 2012), as a result they are more susceptible to peer influence (Jang et al., 2016).

An upwards social comparison on social media has been found to be associated with lower life satisfaction (Krasnova et al., 2013), increased rumination, depressive symptoms (Feinstein et al, 2013), poorer self-perceptions, lower self-esteem (Vogel et al., 2015), loneliness (Yang, 2016), poor mental health (Jang et al., 2016), negative feelings (Hafercamp & Kramer, 2011) and anxiety symptoms (Butzer & Kuiper, 2006; Jang et al., 2016). These findings are from the wider context of social media, and limited research is available on the affect Instagram has on mental health. Furthermore, research is not able to find a direct relationship between engaging in a upwards social comparison on social media and negative psychological outcomes, or explain why only some individuals experience poor psychological outcomes when using social media.

There is a pressing need for research to explore this as Instagram's popularity is rapidly increasing (grew from 600 million active monthly users to 700 million active monthly users in just over 4 months; Dunn, 2017) and social rules for using Instagram are becoming deeply engrained, especially among adolescents. As a result Instagram is likely changing an adolescent's social environment, thus affecting their identity development and consolidation. This case study is a part of a larger research project which set out to identify vulnerability factors that are associated with an adolescent being more likely to engage in an upwards social comparison on Instagram, impacting

their mental health. This case study looks at one theme that was identified, namely upwards social comparison.

Method

Participants

Participants were recruited via an email with an attached letter that was sent to multiple secondary school principals within Auckland, New Zealand. From this approach four secondary schools expressed their interest in the study. The schools were two co-educational schools, one single sexed all-girls school and one single sexed all boys school. Both single sex schools were decile 9, one of the co-educational schools was a decile 10 and the other was a decile 2 (Ministry of Education, 2018). There were a total of 853 participants after the data had been cleaned (N=853).

Table 1. *Demographics of participants*

	Gender	Age	Ethnicity
Male	281 (32.94%)		
Female	565 (66.23%)		
Other	7 (0.82%)		
13 years old		104 (12.19%)	
14 years old		152 (17.78%)	
15 years old		191 (22.34%)	
16 years old		194 (22.70%)	
17 years old		149 (17.43%)	
18 years old		62 (7.25%)	
19 years old		1 (0.12%)	
New Zealand European			453 (53.1%)
Māori			49(5.74%)
Pacific Islander			59 (6.9%)
Asian			209 (24.4%)
Other			83 (9.7%)

In the one of the co-educational schools, all years 9, 10 and 11 completed the questionnaire during their maths period and a number of year 12 and 13 students completed the questionnaire during their study period. Therefore, capturing majority of the students within this school. In the single sexed girls school all students between the years of 9-13 were provided with the questionnaire link during their form time and were instructed to complete the questionnaire. In the single sex boys school students who had health class completed the questionnaire within this class. Finally, in the other co-educational school all year 13 students completed the questionnaire and one year 9, 10,

11 and 12 class who were selected at random based on their teacher's availability also completed the questionnaire.

The questionnaire was developed on the computer software Qualtrics (Qualtrics, 2018). The questionnaire took each participant on average 20 minutes to complete. The questionnaire consisted of demographic questions, Instagram usage questions, eight standardised scales and two open ended questions. This case study will focus on the open ended question of "*Are there times when you use Instagram that you feel worse about yourself? If so, please provide examples*" with a textbox response.

Procedure

Participants were seated as far apart as possible within the room and were instructed not to communicate when completing the questionnaire. The participants completed the questionnaire on individual electronic devices; these ranged from smart phones, laptops and tablets. The link to the online questionnaire was emailed to each participant on the day they were to complete the questionnaire. Before the participants logged onto their emails and completed the questionnaire they were briefed by either their teacher who read a set of instructions provided by the lead researcher or by the lead researcher. A cookie function was utilised to prevent ballot stuffing (when participants complete the same survey multiple times), so that participants could only complete the questionnaire once. At the end of the questionnaire participants were provided with Youthline's number and were encouraged to talk to their school guidance counsellor if they found any of the questions distressing.

Thematic Analysis

The opened question "*Are there times when you use Instagram that you feel worse about yourself? If so, please provide examples*" was analysed using Thematic Analysis (TA) with the guidelines provided by Braun and Clarke (2006). A theoretical (as the analysis was based off a specific research question), Semantic (themes were identified in the data and are not beyond anything the participants said) and Essentialist/Realist (meanings were interpreted in a straight forward manner and not within a social context) approach was used when analysing the data.

The data corpus which included 689 responses was read multiple times in an active manner to enable the lead researcher to become immersed within the data, as suggested by (Braun & Clark, 2006). From this initial reading of the data corpus 36

ideas of potential codes were jotted down. The data corpus was then colour coded into 19 different codes.

Once all the data had been colour coded and collated to identify each group of different codes the data was then analysed to start identifying overarching broader themes from the codes. Eight themes were identified. The themes were then refined to ensure that that each theme contributed to the over analysis in a meaningful way and there were clear distinctions between each theme (Braun & Clark, 2006). It was also ensured that each data extract fitted appropriately into each of the defined themes.

The themes were then further refined into subthemes, by coding themes that were identified within the main theme. This helped give structure to the theme and to demonstrate the levels and depth of findings within each theme, as suggested by Braun and Clarke (2006). For the theme of *upwards social comparison*, 4 subthemes were identified.

The data was then analysed within each theme to form percentages to determine how many people were identified endorsing each theme. To ensure that the percentages were calculated correctly, it was important that the whole data corpus was accounted for, so the percentages would be a reflection of the whole population. The same analysis was done for the subthemes in the theme of *upwards social comparison*. The percentages were calculated by dividing the number of participants in a subtheme by the total number of participants in the *upwards social comparison* theme.

Results

Initially the question of "Are there times when you use Instagram that you feel worse about yourself? If so please provide examples" was coded into a 'yes' or 'no' response format. From this initial coding 54.96% of the participants reported that there were times when they used Instagram that they felt worse about themselves. Of the 8 themes that were identified the most commonly endorsed theme was engaging in an upwards social comparison, as 37.63% of the participants who stated that at times Instagram does make them feel worse about themselves, reported that this was due to engaging in an upwards social comparison against other Instagram users.

Within the theme of engaging in an upwards social comparison, the data was then coded to identify subthemes. This provided information on what particular content

on Instagram participants compared themselves negatively to, resulting in them feeling worse about themselves. The subthemes which were identified as the most common across participants included: *Upwards Social Comparisons of: Physical Appearance, Lifestyle, Achievements and Number of Likes, Comments and Followers.*

Subtheme 1. Upwards Social Comparison of Physical Appearance

52.30% of the participants who reported that they engage in an upwards social comparison resulting in them feeling worse about themselves, provided the example, that this usually occurs when they compare their physical appearance to other Instagram users. Research has found that Instagram users tweak their photos to present an image that is a refined version of themselves that are in line with current social standards of beauty (Brown & Tiggerman, 2016; Chua & Chang, 2015). This emulates Chua & Chang's (2015) finding that when users are confronted with these refined photos they are prone to making upwards social comparisons, which can lead to dissatisfaction with their own bodies and doubts about their self-worth.

> *"Yes, most of the time going on Instagram I always have this kind of sick feeling and I really don't enjoy it. This is usually from a multitude of things but primarily I have this bad habit to compare myself to others on Instagram, usually based on physical appearance"- Participant 401*

> *"Seeing people who look better than me as it decreases my self-esteem"- Participant 430*

In particular respondents reported other Instagram users as being "skinner", "prettier" and "more beautiful" than themselves. Therefore, the participants were comparing themselves in terms of body image and the media ideal of beauty. This is consistent with Chua and Chang's (2015) study that found Instagram users are using this platform to define beauty and assess their perception of their own beauty to these tweaked images.

> *"When I see pretty skinny people on Instagram it makes me feel bad about my body and that I need to lose weight"- Participant 183*

"Yes! It's mainly when I see a girl I think's prettier than me, with a perfect tan and perfect body and perfect clear skin. That gets me upset sometimes".- Participant 499

The Social Comparison Theory states that there will be greater social comparisons with similar targets, namely peers (Festinger, 1954), however, it appears that in this study that majority of the participants stated that comparing themselves to celebrities, models or influencers made them feel worse about themselves.

"yes, when I see good looking models and then I look in the mirror or camera and see myself to be ugly compared to the models"- Participant 184

Brown & Tiggerman's (2016) study also found this surprising finding that is inconsistent with the Social Comparison Theory. They suggested that this could be due to Instagram providing an equal platform that celebrities and non-celebrities can both post information from their day to day lives, in doing so, the individual perceives the celebrity to be more similar to themselves resulting in social comparison processes taking place.

A number of the participants reported comparing themselves against others and models on Instagram, despite being aware that the photos are edited. Therefore, regardless if the individual is aware that the photo is enhanced and not realistic, it does not stop comparison processes from occurring.

"If I am on my explore page or looking at celebrities, there are often extremely staged and photoshopped images. I know that these are fake but I can't help thinking; "could I look like that?" etc."-Participant 457

Subtheme 2. Upwards Social Comparison of Lifestyle

31.80% of participants who reported that they engage in an upwards social comparison resulting in them feeling worse about themselves, provided the example, that this usually occurs when they compare their lifestyle to others. Many of the participants, like participant 476 reported that others have the "perfect life".

"that they have a picture-perfect lifestyle. They usually post about their life and so I sometimes feel a bit pressured by others and I also feel bad and almost regretful that I'm not like that".- Participant 476

Sherlock (2018) reported that because of the idealised images presented on social media that individuals may feel they are "missing out" or "everyone is doing better" than themselves. Of the participants who provided examples of what a "perfect life" entailed, the two prominent lifestyle factors that emerged were "travel" and others having a perceived "better social life".

"When i see people accomplishing great things or travelling overseas and all I'm doing is sitting at home scrolling through Instagram"- Participant 2

"People generally use Instagram to post all the good and happy things in their life and looking at that, when I'm at home, alone on a Friday night. Whilst everyone else is out having a great time with all their friends it is very disheartening and makes me feel very lonely. when I look at specific peoples profiles it makes me very jealous and envy what they have, the people or friends that they have or the clothes that they wear".- Participant 44

Interestingly, most participants reported these comparisons were against "people" (thus assuming they were not known to the participant) or celebrities. Chou and Edge's research (2012) found a similar result, that individuals are more likely to consider people they do not know to have better and happier lives than themselves. They suggested that a correspondence bias was occurring, in that users were more likely think that the photos presented on social media are an accurate reflection of one's life, as opposed to being situationally bound. Therefore, as demonstrated by participant 505's response, most of the participants compared their reality to someone else's highlights of their life and neglected the information that these are refined photos of someone's best parts of their life. This is likely occurring because they aren't given any negative information of the person to incorporate into their perception (Chou & Edge, 2012).

"When I used to scroll down and compare other people's lives with mine, it made me feel a little worse about myself".- Participant 336

"Sometimes if I see someone's life so happy and mine isn't always the same". -Participant 505

Subtheme 3. Upwards Social Comparison of Achievements

13.39% of participants who reported that they engage in an upwards social comparison resulting in them feeling worse about themselves, provided the example, that this usually occurs when they compare their achievements to others.

"Sometimes, I sometimes see other people and their successes and a I can get a little jealous (well not jealous but wishing I could skip this part in life)"- Participant 91

Majority of the respondents provided specific examples of comparing their achievements to others in areas where they have a particular interest, such as sports, hobbies and school grades.

"Of course, instagram gives you access to so many talented people, especially young people, for example, I ride horses so I am always looking at other riders feeds, if they're young than me and I feel they've accomplished more, or they're competing at a higher level that's when I often feel that I'm pretty mediocre"- Participant 1

"I follow a lot of ballet and dance accounts of famous ballerinas and dancers (because I do ballet and dance) and watching professionals posting videos of how good they are, although it is inspiring and I enjoy admiring and watching them, they also sometimes make me wish that I was that good too".- Participant 432

A number of participants reported that after an upwards social comparison has occurred it elevated their own expectations of where they should be, as a result they reported a 'need' to worker harder to obtain these higher standards others have achieved.

"Only when I see others who are my age get and do everything I am still fighting to achieve, makes me feel as though I am running out of time. I need to be quicker, work harder".- Participant 452

"When I see people achieving their goals and dreams, it causes a kind of self-conflict about myself, because at times I am unmotivated to do my obligations and work (studying), but also at those times I know that I need to be doing things to achieve what I want and to feel better, but my body ends up. refusing to do it, then when time goes by, procrastinating I start to feel bad, regretting what I did earlier and wanting to do better, and disciplining myself".- Participant 611

Whilst others reported never being able to achieve the standards that others have achieved, resulting in feelings of being "talentless", "inferior" or "bad".

"Yes. For example when I see people and their successes I feel worse because I compare myself and what I have done to what they have done and I feel inferior"- Participant 237

"Looking at other peoples photos, that are more successful and prettier than me makes me upset. I feel talentless and knowing that I'll never reach their standards/ level of wealth makes me upset".- Participant 312

Subtheme 4. Upwards Social Comparison of the number of Likes, Comments and Followers

10.46% of participants who reported that they engage in an upwards social comparison, resulting in them feeling worse about themselves, provided the example, that this usually occurs when they compare the number of likes, comments and followers they have compared to others.

It was more common for participants to report comparing against others in terms of likes and comments as opposed to 'followers'. Li et al. (2018) discussed how the number of likes provides a quantifiable form of feedback for the individual's photo. These statistics are easily observed by others, as a result it can lead to upwards social comparisons based on numbers (Li et al., 2018). Research has found that a lack of feedback can have negative consequences on an individual's wellbeing and can result in a depressed mood (Jong & Drummond, 2016). This was observed in the current study

as participants reported that they feel worse when they receive less likes, comments or followers compared to others.

> **"***when comparing myself to all of the people i am following or when i see how many likes and comments they have compared to myself."- Participant 2*

> *"There are heaps of times when I feel worse about myself when I use instagram. I feel worse when I don't get the amount of likes on a post I wanted. Or when not as much people who have viewed my story. Sometimes I also feel worse when someone else is getting more recognition than me or their post has more likes than mine. I sometimes feel worse when I compare the number of followers with someone I know or within my school"- Participant 202*

Chua and Chang (2016) discussed that the number of likes and comments that the individual receives provides a tangible statistic representing peer validation of beauty and popularity, thus individuals are relying on an external contingency to evaluate their self-worth (Li et al., 2018). This was true for a small number of participants who stated that not receiving enough likes or comments on their photo causes them to have negative perceptions of their own beauty.

> *"The part of Instagram that makes me feel worse about myself is when people I know or follow post photos of themselves looking beautiful and get 100's of likes, it sometimes makes me feel ugly and inferior"- Participant 20*

Interestingly, all the participants reported the number of likes, comments and followers made them feel worse about themselves when they compared the number they have to others, as opposed to obtaining a set number. This in line with other research suggesting that by observing other's number of comments, likes and followers it sets a baseline for themselves (Chua & Chang, 2016), thus using their peers performance to assess their own (Li et al., 2018).

Social Comparison

Prior to starting my internship at MHSOA, I had read a significant portion of the social comparison literature and how this is a reoccurring process on social media, and its impact on the mental health of adolescents. I had also read a lot about how social comparison processes occur in abundance in adolescence, due to being at the developmental age where he/she is developing their identity. However, what surprised me when I started my internship was the reoccurring theme of social comparisons taking place in an older adult population, as many of my clients would say to me "they are lucky because their husband is alive" or "I wish I had a sister like my friends". However, one similarity between older adults and adolescents which forms the foundation for social comparisons to take place, is they are both constantly surrounded by their peers. Adolescents observe their peers on social media and within the school grounds and a large population of older adults are living with their peers in rest homes and retirement villages. Therefore, both age groups are given a constant opportunity to engage in social comparisons, which as research has found it ultimately effects their mental health. Therefore, during my internship I learnt the importance of providing psychoeducation of social comparisons and normalising that we all have "ups" and "downs" in life.

Another social comparison process that I had to be mindful of was social comparisons occurring in the therapy room. Due to the significant age gap between myself and my clients, a social comparison between myself and them was very unlikely (based on the Social Comparison Theory). However, one social comparison that may have taken place would be a social comparison between myself and their family members who are of a similar age to myself. Therefore, I had to be very mindful of any self-disclosure and the purpose of it and how might it be perceived by the client. In my internship I did have one experience where a client was making social comparisons of myself to their younger self, which resulted in countertransference, that had to be processed in supervision. This taught me the importance of being mindful of social comparisons that may be occurring in the room and how they may be impacting the therapeutic relationship.

Impression Management

Like adolescents applying impression management strategies on social media, this same strategy is occurring in older adults due to the stigma associated with mental health. It is in recent times that mental health is now more commonly talked about and influential people are providing their personal accounts of mental illness. This has started to create a movement towards mental health being normalised. However, unfortunately in the average older adults' life time, mental health was considered a significant burden and families did not talk about it. Most of my clients reported that they weren't sure if their parents had a mental illness often providing statements such as "dad was a bit odd" or "mum was always angry", as it was not talked about. Therefore, the information about mental illness did not appear to be transferred from generation to generation, which is a disadvantage given genetic predispositions of mental illness. As a result clients often did not have insight that they were experiencing a mental illness or knowledge of what a mental illness was. This demonstrated to me as a clinician the importance of psychoeducation. Through my clinical training I learnt the importance of providing psychoeducation, however, what my internship taught me was the importance of using language the individual can understand when providing psychoeducation. At the start of my internship I used language I understood to explain a mental illness after training for 6 years. However, this was often antitherapeutic as most older adults have very limited psychological literacy, which possibly stems from the stigma of mental health. Therefore, I had to learn how to change the process of how I provide psychoeducation and use language the individual understood.

The impression management strategy of "being okay" was very engrained, as a lot of my clients reported that nobody talks about how they are actually doing. As a result most of the clients I worked with often said that they felt very alone in their illness, especially when they had very limited support or their loved ones had passed. One particular client that I worked with opened my eyes to this, as before each session she would ask for feedback on the previous session to assess whether I thought any less of her by her sharing more of her mental health journey. As clinicians talking about mental health is very normalised, as it is a day to day activity, this normalisation increasingly grew at my time at MHSOA, as I became privileged to the fact that this normalisation does not occur in other environments, such as in a retirement village. Therefore, normalising the client's presentation is something that can be easily overlooked, especially as we provide a diagnosis to pathologise an individual's internal experience. These experiences taught me the importance of normalising mental health

for all clients, especially older adults. When I started to do this it appeared to have a therapeutic effect, as common responses were “so I’m not going crazy?” or “ you’ve really seen this before?” and in doing so it started the road to recovery.

One personal experience that I had of impression management was at the beginning of my internship. I became aware that I was trying to manage my own impression as a clinician to my clients, by ensuring that I came across competent so my clients could trust my abilities. Despite internally feeling incompetent, confused and out of place. During one of my first supervision sessions I explained this to my supervisor, and he identified that I was experiencing ‘imposter syndrome’ and he normalised the experience for me. This was a significant learning curve in my internship, as I learnt a number of valuable skills such as:

- That it’s okay to say that you’re not sure and you’ll get back to the client, as this shows greater competence and expresses that you care and you’re ensuring the client is getting the best treatment possible.
- If appropriate this is a great time to use socratic questioning to elicit from the client what they think, as they are the experts of their story.
- That it is important to know the limits of your competence.

Over the time of my internship I became more confident in defining the limits of my knowledge and expressing to the client that I would need to seek advice and bring it back with me the following week.

Research- Practitioner model

When completing my thesis it was important that I reviewed the literature in order to understand the research and allow the gaps in the current research to inform my thesis. This was an important skill I learnt and one I have taken with me into my internship. During the process of working with a client I am mindful to constantly read the research in the area of interest so that I can be informed and implement an evidence base approach, by using skills and models that research has shown to be effective. This allows each client to be provided with therapy that is evidence based. However, during my internship I also learnt that there is a craft to providing evidence based therapy, as often the research is not targeted at older adults. Therefore, I had to learn under supervision how to make adaptions as required to suit the older adult client.

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