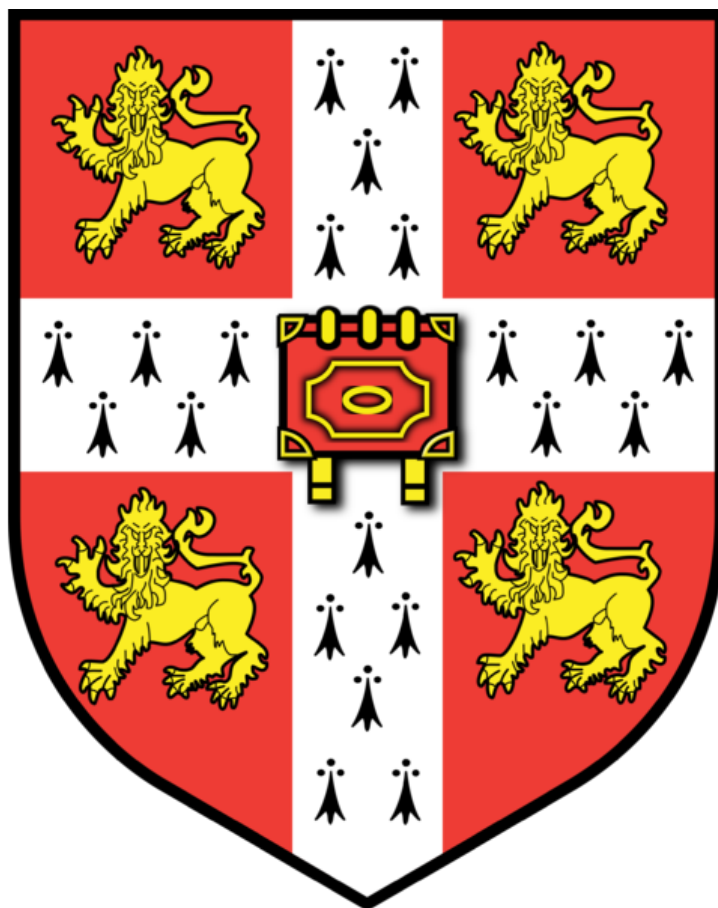


Understanding what people associate with subjective well-being using corpus-based discourse analysis

Zhilin Wang
University of Cambridge



For the partial fulfillment of the BA (Hons.)

Supervised by:
Lenka Janik Blaskova

Abstract

In addition to its intrinsic value for many people, subjective well-being (SWB) is also positively correlated with desirable outcomes such as creativity, increased engagement in learning and a greater willingness to develop new skills. Understanding what people associate with their SWB can be a first step in improving their SWB. However, existing methods of obtaining this information – interviews/focus groups and experiential sampling – have significant limitations. This study attempts to use corpus-based discourse analysis (CBDA) to study what people associate with their SWB, a novel approach that has not been previously used for this purpose. Specifically, this study investigates what Reddit users associate with the affective aspect of their SWB by looking into the words they most commonly use together with words indicating affective SWB, such as “happy” and “sad”. Findings indicate that Reddit users associate their affective SWB with words indicating Relationships, Strive for better (contrasted with Helplessness), Leisure and Health issues. Not only are these themes backed by theoretical perspectives on SWB, comparing these themes with findings of existing literature also suggests that the CBDA approach can overcome some limitations of existing approaches. Such promising findings indicate that with further validation, the CBDA approach used in this study might be useful in informing practice within and outside of the educational context. Teachers for instance can use information obtained from the CBDA approach to cater learning activities based on what their students associate with SWB, better engaging their students and supporting them to achieve more in their academics.

Acknowledgements

This dissertation would not have been possible without the kind and generous support of my supervisor, family and friends. Thank you!

Table of Contents

List of Figures	6
List of Tables.....	7
List of Abbreviations.....	8
1 Introduction	9
2 Literature Review	11
2.1 What is subjective well-being?	11
2.1.1 Hedonic approach.....	11
2.1.2 Eudemonic approach.....	12
2.1.3 Integrating hedonic and eudemonic approaches	12
2.2 How do researchers study what people associate with their subjective well-being?	14
2.2.1 Interviews and focus groups	14
2.2.2 Experiential sampling	16
2.2.3 Summary	18
3 Present study	19
4 Methods	20
4.1 Background on corpus-based discourse analysis	20
4.2 Data	21
4.3 Identifying words that indicate affective subjective well-being	23
4.4 Collocation with words indicating affective subjective well-being.....	25
4.5 Thematic analysis of words most collocated with affective subjective well-being	26
4.6 Ethics.....	26
5 Results.....	28
5.1 Relationships	29
5.2 Strive for better vs. Helplessness	32
5.3 Health issues	35
5.4 Leisure	37
5.5 Summary	38
6 Discussion	39
6.1 Relationships	40
6.2 Strive for better vs. Helplessness	41
6.3 Leisure	43

6.4	Health issues	43
6.5	Summary	44
6.6	Limitations.....	45
6.7	Future Work.....	47
7	Conclusion	49
	References.....	51
	Appendices.....	59
	Appendix A: Python programming script used to obtain descriptive statistics and plot histograms.....	59
	Appendix B: List of words considered for positive and negative affect	60
	Appendix C: Python programming script used to calculate co-occurrence of words with words relating to affective SWB.....	61
	Appendix D: Python programming script to identify examples that contain both word indicating affective SWB and the most collocated word.....	62
	Appendix E: Un-themed words most commonly used together with words indicating positive and negative ASWB	63
	Appendix F: Words under the theme of Relationships.....	66
	Appendix G: Words under the theme of Strive for better vs. Helplessness	68
	Appendix H: Words under the theme of Health Issues	69
	Appendix I: Words under the theme of Leisure.....	70

List of Figures

Figure 2.1 PERMA model (Seligman, 2011).....	13
Figure 4.1 Histogram showing number of words in Reddit posts	23
Figure 4.2 Word clouds of words indicating (a) positive and (b) negative affect.	24
Figure 5.1 Themes emerging from the analysis of the 500 words most commonly used together with words indicating negative and positive ASWB.	28
Figure 5.2 Number of words in each theme associated with negative and positive ASWB...	29
Figure 5.3 Number of words associated with positive ASWB in each subtheme under Relationships.....	30
Figure 5.4 Number of words associated with negative ASWB in each subtheme under Relationships.....	31
Figure 5.5 Excerpts of posts relating to Relationships as well as positive or negative ASWB.	32
Figure 5.6 Number of words associated with positive ASWB in each subtheme under Strive for better.....	33
Figure 5.7 Number of words associated with negative ASWB in each subtheme under Helplessness.....	34
Figure 5.8 Excerpts of posts relating to Strive for better vs. Helplessness as well as positive or negative ASWB.	35
Figure 5.9 Number of words associated with negative ASWB in each subtheme under Health issues.....	36
Figure 5.10 Excerpt of a post relating to Health issues and negative ASWB.....	36
Figure 5.11 Number of words associated with positive ASWB in each subtheme under Leisure.....	37
Figure 5.12 Excerpts of posts relating to Leisure and positive ASWB.	38
Figure 6.1 Excerpts of posts demonstrating limitations of the CBDA approach.....	46

List of Tables

Table 4.1 Descriptive statistics for number of words in Reddit posts.....	22
Table 6.1 Association of themes with components of key SWB theories	39

List of Abbreviations

ASWB: Affective subjective well-being

CBDA: Corpus-based discourse analysis

SWB: Subjective well-being

1 Introduction

Subjective well-being (SWB) refers to the extent to which a person believes or feels their life is going well (Diener, Lucas & Oishi, 2018). Beyond its intrinsic value to many people (Diener & Scollon, 2014), high SWB is also correlated with other desirable outcomes such as more creativity (Carr, 2004), better health (Huppert & So, 2013) and greater productivity at work (Argyle, 1999). Within educational settings, high SWB is also correlated with increased engagement in lessons (Heffner & Antaramian, 2016), a greater willingness to develop new skills (Fredrickson, 2004) and better academic performance (Ayyash-Abdo & Sánchez-Ruiz, 2012).

Understanding what people associate with their SWB can be a first step in improving their SWB. With information on what a person considers important for their SWB, family and friends can adapt the way they interact with the person in order to make these interactions more amicable (Downie, Mageau & Koestner, 2008). For teachers, this information can also allow them to cater learning activities based on what their students associate with SWB (Harackiewicz, Smith & Priniski, 2016). Not only can doing so improve their students' SWB, it can also better engage them in these activities, leading to better academic outcomes (Ayyash-Abdo & Sánchez-Ruiz, 2012; Heffner & Antaramian, 2016). This can be particularly helpful during the COVID-19 period in which many unexpected factors might be adversely affecting their students' SWB. Therefore, it is important to investigate what people associate with their SWB.

However, existing methods of determining what people associate with their SWB (such as interviews, focus groups and experiential sampling) require significant effort and time. Furthermore, these methods might not be able to accurately represent what a person associate with their SWB because these methods can be susceptible to biases such as recall bias, social desirability bias and selections bias. Therefore, this study aims to use corpus-based discourse analysis (CBDA) to investigate what people associate with their SWB. This approach identifies what people associate with their SWB by looking into the words they most commonly use together with words that indicate their SWB, such as “happy”. While CBDA is a promising approach, it has not yet been explored for the purpose of studying what people associate with their SWB.

The following literature review section will first discuss theories that define SWB and then evaluate the existing methods used to determine what people associate with their SWB.

2 Literature Review

2.1 What is subjective well-being?

For this study, SWB refers to any conceptualization of well-being that is judged subjectively, rather than a specific conceptualization of well-being that Diener et al. (2000) that has named similarly. While there is little consensus on what constitutes SWB, researchers in the field agree that SWB seeks to evaluate the quality of life from a person's own perspective (Diener et al., 2018; Seligman, 2011). Such an understanding of well-being is based on an interpretivist ontology (Saunders, Lewis, Thornhill & Bristow, 2015) since people can interpret identical external conditions differently to cause varying levels of SWB. In contrast, positivist definitions of well-being such as adequate psychosocial, cognitive and physical outcomes presume that well-being can be understood external to a person's perspective (Kerig, Ludlow & Wenar, 2012). It is important to distinguish well-being as grounded in these two contrasting ontologies since this study will subsequently discuss only well-being based on an interpretivist ontology, which focuses on an individual's subjective evaluation rather than objective outcomes. SWB research is commonly conceptualized through the hedonic (Diener, 1984) and eudemonic approaches (Ryan & Deci, 2001; Ryff, 1995).

2.1.1 Hedonic approach

The hedonic approach has its origins in Aristippus of Cyrene (Waterman, 1993) in Ancient Greece (c. 400 BCE) who believed that pleasure is the sole good in life. This developed into Bentham's (1789) Utilitarianism, which focuses on maximizing pleasure and minimizing pain (the opposite of pleasure).

In modern psychological research, Diener (1984) is a main proponent of this approach to SWB. Diener (1984) argues that SWB consists of high positive affect, low negative affect and high satisfaction with life, with positive and negative affect found to be relatively independent of each other. Each aspect can be measured on a self-reported questionnaire with Likert scale responses. Satisfaction with life is measured using questions such as "In most ways my life is close to my ideal" that probe how participants evaluate their lives (Diener, Emmons, Larsen & Griffin, 1985). On the other hand, positive and negative affect is measured through participants' rating of the frequency and intensity of experiencing

emotions such as “happy”, “sad” and “angry” (Diener et al., 2010; Watson, Clark & Tellegen, 1988). Together, experiences of SWB relating to positive affect and negative affect can be referred to as affective SWB (ASWB). Therefore hedonic SWB is characterized by high life satisfaction, frequent positive affect and rare negative affect.

2.1.2 Eudemonic approach

Conversely, the eudemonic approach has roots in Aristotle (1985) who believed that a good life is one that expresses virtues. Such virtues can allow a person to fulfil one’s potential and actualize one’s true-self, or ‘daemon’ (Norton, 1977), forming the intellectual roots of many modern eudemonic approaches to SWB discussed below.

Two common contemporary eudemonic approaches are the Six-Factor Model (Ryff, 1995) and the Self-Determination Theory (Deci & Ryan, 2008). The Six-Factor Model argues that eudemonic SWB is characterized by self-acceptance, purpose in life, personal growth, environmental mastery, positive relations with others and autonomy (Ryff, 1995).

Comparatively, the Self-Determination has only three elements: competence, autonomy and relatedness (Deci & Ryan, 2008). While the factors in both theories do not map exactly, there is clear overlap in the construct of some of their constituent factors. Furthermore, both the Six-Factor Model and Self-Determination Theory can be measured by Likert-scale responses to self-report questionnaires (Deci & Ryan, 2000; Ryff, 1995) through items like “I have confidence in my opinions, even if they are contrary to the general consensus “ and “I feel confident that I can do things well”. Therefore, eudemonic SWB is marked by success in various factors defined by each eudemonic SWB theory.

2.1.3 Integrating hedonic and eudemonic approaches

Other researchers (Nussbaum, 2003; Seligman, 2011) found it unsatisfactory to utilize either approaches in isolation, preferring to integrate them into a holistic approach towards SWB. Based in positive psychology, Seligman’s (2011) PERMA model, illustrated in Figure 2.1, is one such approach that is widely accepted. Instead of relying on any intellectual tradition exclusively, his model includes factors based on the criteria of a. Contributory to well-being, b. Pursued for its own sake and c. Defined and measured independently. Because the criterion

of “Contributory to well-being” does not restrict definitions of well-being a priori, both hedonic and eudemonic approaches can be included. As a result, the model includes Positive emotions, Engagement, Relationships, Meaning in life and Accomplishments. While each factor can be defined and measured independently, it is also critical to consider the intricate links that exist among them. Similar to both the hedonic and eudemonic approaches, PERMA can be measured using a self-reported questionnaire (Butler & Kern, 2016).

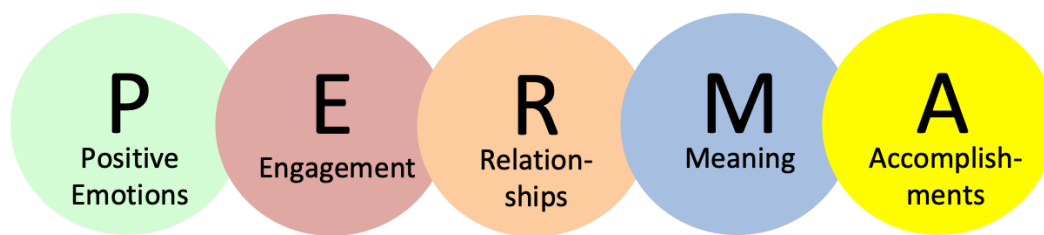


Figure 2.1 PERMA model (Seligman, 2011)

An alternative way of considering the relationship between the hedonic and the eudemonic approaches is that the eudemonic approaches specify what is needed to achieve hedonic SWB. For instance, the hedonic approach (Diener, 1984) only considers whether a person has frequent positive emotions but neglects what exactly led to such positive emotions. The eudemonic approaches substantiate this by proposing the relevant factors (such as autonomy and competence in activities that a person engages in) that can contribute to such positive emotions (Deci & Ryan, 2008; Ryff, 1995).

Finally, researchers outside of psychology have also considered integrated definitions of well-being. Instead of SWB, Nussbaum (2003), a philosopher, used the term “Human Capabilities”, which she defined as the “central requirements of a life with dignity” (Nussbaum, 2003, p.40). These capabilities include Emotions, Affiliation and Control over one’s Environment. Not only can such capabilities be determined subjectively as with SWB, the components of Human Capabilities also significantly overlap with the constituents of both hedonic and eudemonic SWB.

Examining the hedonic, eudemonic and intersectional definitions of SWB clarifies the psychological constructs that subsequent discussion will build upon. Next, this study will evaluate various research methods used to study what people associate with their SWB.

2.2 How do researchers study what people associate with their subjective well-being?

Building upon the discussion on SWB constructs, this section will discuss how researchers study what people associate with their SWB. Studying what people associate with SWB is important as a first step to improving their SWB. While other research designs can inform how various factors such as health (Huppert & So, 2013; Steptoe, Deaton & Stone, 2015), social relationships (Argyle, 1999; Lucas & Dyrenforth, 2006) and employment (Carr, 2004; Lucas, Clark, Georgellis & Diener, 2004) can influence SWB, studying what people associate with their SWB can offer unique insights into the factors that can improve their SWB most significantly. This is especially important at a time when there are more than 170,000 articles and books on SWB, covering a plethora of factors that can influence SWB (Diener et al., 2018). Without understanding what people associate with their SWB, it might be difficult to determine which factors to focus on in designing interventions to improve their SWB. Furthermore, the subjective nature of SWB means that different factors matter to different extents for the SWB of various individuals (Seligman, 2011). Such differences can arise from differences in values, goals, personality, demographics and cultural background (Diener et al., 2018; Schimmack, Diener & Oishi, 2002). Investigating what a person or group of people with specific characteristics associate with their SWB can provide information on the factors that might be most effective in specifically improving their SWB. Therefore, studying what people associate with their SWB can contribute to improving their SWB. Two research methods that have been used to study what people associate with SWB are interviews/focus groups and experiential sampling.

2.2.1 Interviews and focus groups

Interviews and focus groups (Janik Blaskova & McLellan, 2018) can be used to understand the factors that individuals associate with SWB. Participants, either individually or in groups,

are invited to discuss what they consider to be good for their well-being using open-ended questions such as “What does it mean when you say ‘I had a good day at school?’” and “What makes you feel good at school?” Their responses are then inductively coded to reveal themes relating to SWB. In a study with adolescent students, Janik Blaskova and McLellan (2018, p.4) found “Finishing primary school, Academic achievement and support, Teachers’ approach and behaviour and Peer relationships” to be critical for their SWB. Under peer relationships, “Close and supportive friendships, Communication issues and Bullying” emerged as important categories (Janik Blaskova & McLellan, 2018, p.6-7). The ability to reveal such rich, open-ended insights into the factors that are associated with SWB is a core strength of this method.

However, the large amount of transcribed text that needs to be analysed and coded means that the number of participants included might be limited to around 20 (Janik Blaskova & McLellan, 2018). Because it is difficult to include a significant greater number of participants, the sample of participants might not be representative of a broader demographic and therefore findings might not be easily generalizable to a larger group beyond the participants.

Furthermore, findings from such research are likely to be affected by recall bias. This means that the factors that the participants mention are likely to be influenced by their current mood, beliefs about SWB and the ease of retrieving information relating to SWB experiences (Diener, Lucas & Oishi, 2005). For instance, when some information are made more salient by researchers, peers or teachers prior to asking participants about SWB, such information might be more associated with their SWB (Strack, Martin & Schwarz, 1988). Additionally, participants may not consider all of their experiences relating to SWB during an interview/focus group discussion (Robinson & Clore, 2002). Instead, they focus on recalling SWB experiences that are most intense or most recent and overlook other experiences (Fredrickson & Kahneman, 1993).

Additionally, findings are likely influenced by a social desirability bias (Holden & Passey, 2009) since participants may not be willing to inform the researcher of SWB-related experiences that are socially inappropriate. This is particularly in focus groups where participants may have only discussed ideas that fit with the opinions of their peers in order to preserve peer status (Snyder, 1979). Participants may also not have risked revealing SWB-

related experiences such as playing truant or copying a friend's homework for fear of social consequences, even after the researcher had indicated that this information will not be communicated to their teachers.

Overall, this means that the factors found to be associated with participants' SWB through interviews and focus groups may not accurately and completely represent the factors they associate with their SWB.

2.2.2 Experiential sampling

Experiential sampling is another method that can be used to understand what people associate with their SWB. Experiential sampling seeks to measure correlations between the experiences of individuals and their SWB longitudinally over short intervals (of up to a day). Experiential sampling can be used to establish associations with SWB because individuals typically can accurately indicate their current SWB, allowing a correlation between their current experiences and their current SWB over time to be made (Mehl & Conner, 2012). While experiential sampling is typically done in extremely short intervals of an hour or less (Mehl & Conner, 2012), experiential sampling in SWB research tends to be conducted at a daily interval (Kahneman, Krueger, Schkade, Schwarz & Stone, 2004; Reis, Sheldon, Gable, Roscoe & Ryan, 2000) to minimize intrusions into SWB-related activities, which might influence the experienced SWB. An example would be answering a long survey on their SWB while relaxing on the beach. Kahneman et al. (2004) conducted a study to ask 900 employed women to report activities they did (from a selection of activities) over 24 hours and their affective state during each activity (in terms of Likert scales on 12 pre-defined states). They found that these women experienced most positive ASWB while socializing or engaging in intimate relations. On the other hand, they experienced the most negative ASWB when working, commuting and taking care of children. Similarly, Reis et al. (2000) conducted a two-week structured diary study with university students, with daily intervals, and found that most positive ASWB was experienced when engaging in activities that made them feel competent about themselves or close to other people.

As an alternative, intrusions into SWB-related activities can be minimized by passively monitoring - instead of requiring participants to actively indicate - the activities that they are

engaged in. Sun, Schwartz, Son, Kern & Vazire (2020) achieved this by using an electronically activated recorder that took audio recordings of participants at regular intervals (of 10 minutes), with their permission. During some intervals, participants were also asked a single question of the extent of positive/negative affect that they were feeling. Sun et al. (2020) found that university students associate positive affective SWB with social engagements, entertainment and food while negative affective SWB is associated with academic work.

Relatively to interviews and focus groups, findings from experiential sampling are less affected by recall bias. This is because participants only need to recall recent SWB experiences instead of straining their memory on distant SWB experiences (Shiffman, Stone & Hufford, 2008). Because multiple measurements are made in this longitudinal design, the influence of current mood/mental state on reported SWB can be disentangled and minimized (Myin-Germeys et al., 2009). Furthermore, the longitudinal data collected can also be used to understand within-participant changes over time, such as the context under which certain factors become more associated with SWB (Reis et al., 2000; Sun et al., 2020)).

However, experience sampling is highly demanding for participants since it is necessary for them to participate continuously over a long period (such as daily over two weeks in Reis et al. (2000)). This might lead to a selection bias because agreeable and conscientious people or students who need to participate in exchange for class credits are more likely to participate (Scollon, Kim-Prieto & Diener, 2009). Furthermore, while experiential sampling can be used in inductive approaches (in which participants can associate their SWB with any factors), they are usually used in deductive approaches for SWB research, in which participants can associate their SWB with factors chosen from a pre-determined set. Experiential sampling is rarely used with inductive approaches because with this approach, each participant generates significant data over long periods of time meaning that a lot of effort to require to code findings from such data. An exception is Sun et al. (2020) whose team took two years to transcribe and code data that was created inductively – but the amount of effort/funding required for this may not be readily accessible to other research teams. Therefore, when feasibility is considered, the use of experiential sampling restricts the range of possible factors that can be associated with SWB since participants can only choose the factors they can associate with their SWB from a pre-determined set of factors.

Therefore, experiential sampling might demand significant efforts from participants and restrict what participants can associate with their SWB.

2.2.3 Summary

While interviews/focus groups and experiential sampling can be used to study what people associate with various definitions of SWB, the aforementioned studies mainly reveal associations with hedonic SWB (Janik Blaskova & McLellan, 2018; Kahneman et al., 2004; Reis et al., 2000; Sun et al., 2020) and focussed on affective SWB (Kahneman et al., 2004; Reis et al., 2000; Sun et al., 2020). More importantly, existing methods of determining what people associate with their SWB (e.g. interview/focus groups and experiential sampling) have severe limitations. First, they require significant time and effort. Second, findings derived from existing methods suffer from various biases (e.g. social desirability bias, recall bias and selection bias) and therefore might not accurately represent what a person associates with their SWB. Finally, existing methods might restrict the set of possible factors that participants can associate with their SWB.

Due to these limitations, there is a need for an alternative method of investigating what people associate with their SWB. The ideal method should have the strength of interviews/focus groups in avoiding restrictions on possible factors that can be associated with SWB as well as the relatively less severe biases of experiential sampling. Furthermore, the method should be applicable in studying larger groups by not being overly demanding on either the participants or researchers.

3 Present study

The present study investigates how corpus-based discourse analysis can be used to study the factors that people associate with their SWB, an approach that is promising yet hitherto unexplored for this purpose. In line with existing literature (Janik Blaskova & McLellan, 2018; Kahneman et al., 2004; Reis et al., 2000; Sun et al., 2020), this study focuses on investigating what people associate with their affective SWB (ASWB). The corpus-based discourse analysis approach investigates such associations by looking into the words that people – specifically, users of a popular online forum, Reddit (2020a) - commonly use together with words indicating affective aspects of their SWB such as “happy” and “sad”.

Research Question: What do Reddit users associate with the affective aspects of their subjective well-being?

Corpus-based discourse analysis is a promising approach because it can inductively draw open-ended associations with SWB instead of being restricted to a pre-determined set of possible associations (Baker, 2006). Findings from this approach are also free from recall bias because this approach does not require participants to recollect any of their SWB experiences – instead relying solely on text written during/shortly after their SWB experiences. Finally, this approach can include a large number of participants because it requires little effort from both participants and researchers. For participants, no additional data needs to be created since this approach only relies on writing that they have already done. For researchers, this approach is also less effortful compared to existing methods because the analysis can be partly automated.

4 Methods

This study uses corpus-based discourse analysis to understand what people associate with their affective SWB. This section first introduces background on corpus-based discourse analysis. This is followed by a description of the data used in this study, also known as the corpus. Next, words indicating affective SWB are identified. Then, based on the CBDA approach, words that are most commonly used together with words indicating ASWB are found. Finally, words most commonly used together with words indicating ASWB are analysed thematically.

4.1 Background on corpus-based discourse analysis

Discourse Analysis refers to the analysis of language used in context, beyond the level of the sentence (Schiffrin, Tannen & Hamilton, 2001; Slembrouck, 2005). Context can refer to the social situations that the language is used in, attributes of the discourse participants as well as interactions amongst the participants (Strauss & Feiz, 2014). Aspects of language that can be analysed include:

- **Vocabulary:** Words used
- **Grammar:** Syntactical and morphological features of words and phrases
- **Register:** Tone
- **Genre:** Abstract, socially recognized ways of using language (Hyland, 2002; Kress, 1989)
- **Modality:** Medium through which the discourse is undertaken
- **Intertextuality:** Relation of the text to past texts (Chouliaraki, 1998)

While there are multiple broad orientations to discourse analysis (Hodges, Kuper & Reeves, 2008), CBDA draws from empirical discourse analysis – a strand that focuses on studying how language is used empirically. This orientation is underpinned by a positivist ontology and a realist epistemology (Morgan, 2010). A positivist ontology asserts that reality exists outside of individual experiences while the complementary realist epistemology asserts that knowledge of such a reality can be obtained objectively (Carson, Gilmore, Perry &

Gronhaug, 2001). These assertions are necessary because the factors that people associate with SWB have to exist external to individual experiences and be knowable objectively for these factors to be identified for people in aggregate through CBDA.

Corpus-based discourse analysis (also known as corpus linguistics) is a specific form of empirical discourse analysis that focuses on deriving meaning primarily from text, also known as the corpus (Baker, 2006). Most commonly, it refers to the computer-aided analysis of vocabulary in quantities of text so large (typically over thousands of pages) that makes it impossible for the analysis to be done with human labour (Sinclair, 2004). A common technique, which is used in this study, is collocation. Collocation investigates which words are most commonly used together with certain words of interest (Baker et al., 2008).

Collocation is important in understanding what concepts are associated with certain words of interest because words that are used together have meanings that are related to one another (Harris, 1954). Sinclair (2004) supports this observation by arguing that words have both denotative and connotative meanings. The denotative meaning is the dictionary meaning of a word while the connotative meaning refers to a further shade of meaning that is only apparent in context (Hamilton, Adolphs & Nerlich, 2007). Because collocation directly studies the words that are used together with words of interest, collocation can be used to understand the connotative meaning of such words of interest. As an example to elucidate the utility of this approach, Sigley and Holmes (2002) studied the collocation of the terms “girls” and “boys” to understand attributes that are linked with each gender. Similarly, studying the collocation of terms related to ASWB such as “happy” can inform the concepts that are related to ASWB.

4.2 Data

The corpus used in this study comprises of posts from Reddit, specifically from OffMyChest, a forum within Reddit. Reddit is a popular forum website that is the 4th and 19th most visited website in the United Kingdom and World respectively (Alexa, 2020a). It is organized into forums (called subreddits) where users with the same interests can discuss such interests. Users on Reddit are only identified by their usernames instead of their real names and that provides some extent of anonymity from their real world family and friends. This study uses text from the OffMyChest forum, which is organized around a mutually supportive

community that encourages users to disclose deeply emotional things that they cannot share with people they know (Reddit, 2020a). Because of the forum's objective as well as the anonymity offered by Reddit, users are more willing to be frank in revealing their emotions and thoughts, making social desirability bias less of a concern (Holden & Passey, 2009). This is critical because this study seeks to discover all of the factors that people associate with SWB instead of only factors that are socially desirable to express.

To provide a better sense of the OffMyChest forum (Reddit, 2020a), the first sentences of some posts are:

1. I went for a run today. And I'm proud.
2. Something hit me hard today.
3. My boyfriend is a NEET (Not in Education, Employment or Training). I'm starting to resent him and it's turning me into the kind of girlfriend I don't want to be.
4. My mother's back surgery was a huge success!
5. I met the coolest guy in my class today and I honestly feel like my world got a little brighter.

Reddit provides data through the Pushshift Application Programming Interface (Pushshift, 2020). Using Pushshift (2020), all posts on the OffMyChest forum within a one-year period from 20 Feb 2019 to 19 Feb 2020 were downloaded.

Table 4.1 Descriptive statistics for number of words in Reddit posts

N	192031
Mean	319
Standard Deviation	380
Median	215
Bottom Quartile	98
Top Quartile	406

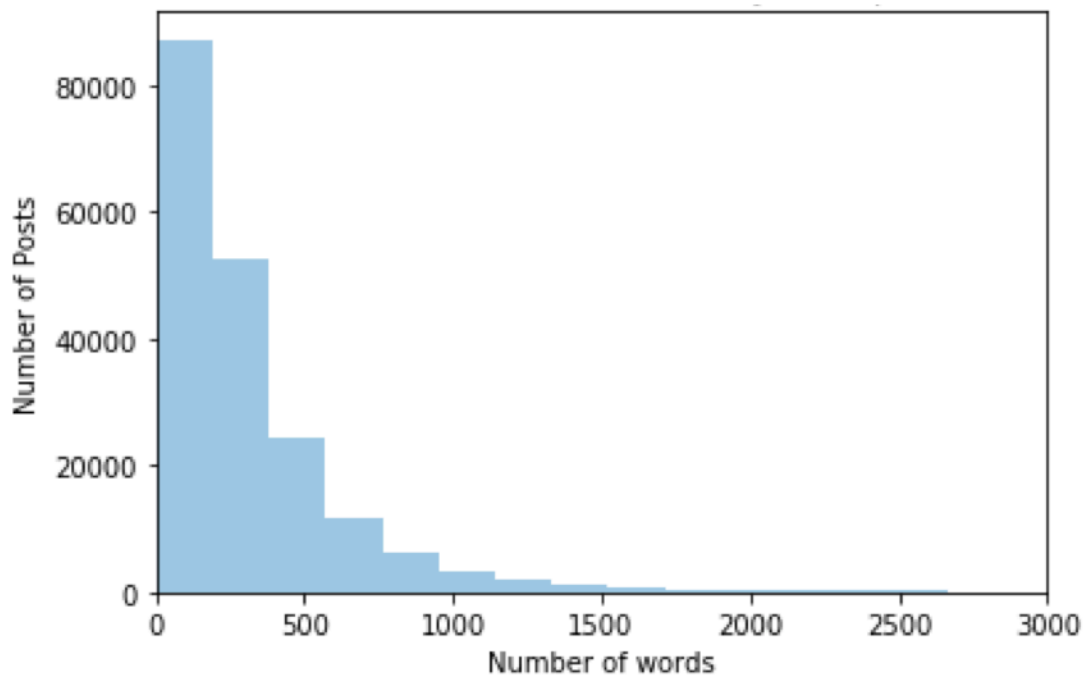


Figure 4.1 Histogram showing number of words in Reddit posts

Descriptive statistics relating to the number of words were calculated using a proprietary Python programming script in Appendix A. Descriptive statistics and the histogram relating to the number of words in each post are shown in Table 4.1 and Figure 4.1 respectively, demonstrating that the majority of posts have less than 500 words. The process of identifying words that indicate affective SWB will be described next.

4.3 Identifying words that indicate affective subjective well-being

To understand the concepts that Reddit users associate with their ASWB, this study investigates the words that they commonly use together with words indicating their ASWB. The affective aspect of SWB was found to be important by Diener (1984) who saw frequent positive affect and infrequent negative affect as two of the three components of SWB. Similarly, Seligman (2011) saw positive emotions as a critical element of SWB under his PERMA model. To identify words indicating ASWB, theories of emotion in Plutchik (2002) and Ekman (2007) are used. Plutchik (2002) includes 8 dimensions of emotions: joy, trust,

fear, surprise, sadness, anticipation, anger, and disgust while Ekman (2007) involves anger, disgust, fear, happiness, sadness and surprise. Amongst the two theories, only joy/happiness, anger, fear, sadness and disgust are shared and can be classified as either positive or negative affect. Therefore, only words indicating these emotions will be including in this study.



(a)



(b)

Figure 4.2 Word clouds of words indicating (a) positive and (b) negative affect.

To determine the words that are associated with each emotion, the most relevant synonyms of each adjective (joyful/happy, angry, afraid, sad and disgusted) based on Thesaurus.com

(2020) are included. In addition, the other forms of each included adjective (such as happy) are found such as noun (happiness), adverb (happily), comparative adjective (happier) and superlative adjective (happiest) are also included. Where applicable, both British and American spellings of each word were included. Finally, words relating to angry, afraid, sad and disgusted are then grouped together under negative affect since this study seeks to only understand how various concepts are related to SWB through positive and negative affect. Words indicating positive and negative affect are shown in Figure 4.2 while a full list of these words can be found in Appendix B.

4.4 Collocation with words indicating affective subjective well-being

The number of times that each word is used together with words related to positive and negative affects within each post is then computed using a proprietary Python programming script in Appendix C. Specifically, when at least one word indicating positive or negative ASWB is present in a post, the total collocation count of each word in the post is increased by the number of times each word appears in the post. Words that appeared less than 100 times in the entire corpus are filtered out since they are either rare or misspelled words. Then, the collocation counts of words are normalized by the overall number of time each word occurs in the corpus. This ensures that common words like “a”, “the”, “I” are not overrepresented and uncommon words that are often used together with words indicating ASWB are not under-represented.

Instead of studying only collocation of 4 to 5 words on the left and right of the word indicating ASWB, which is common in corpus-based discourse analysis (Baker, 2006; Holmes, 2001), the collocation distance was increased in this study to include all words in a post. This is helpful because related words may not be mentioned within such close proximity of the word indicating ASWB but still be related to the word indicating ASWB. For instance, in “... I obviously am not happy. Sometimes I want to reach ...”, a wider distance—sometimes the entire post—becomes necessary to capture the words that related to the word indicating ASWB.

4.5 Thematic analysis of words most collocated with affective subjective well-being

The 500 words most commonly used with words indicating positive and negative ASWB (after normalization) are manually inspected and inductively clustered through thematic analysis (Creswell, 2013). Individual words were semantically categorized (Braun & Clarke, 2006) based on their denotative (dictionary) meaning. When the semantic meaning of words was ambiguous, examples of their contextual use in posts were utilized to determine their connotative meaning before categorizing them accordingly (Sinclair, 2004). Then, categories (also known as subthemes) were further organized into overarching themes based on their internal homogeneity and external heterogeneity (Patton, 1990). Finally, headings and subheadings for themes and subthemes were determined based on commonalities among the words that they contain. To support subsequent discussion, examples that contain both the word indicating ASWB and the word commonly used together are identified using a Python script in Appendix D. The thematic analysis employed in this study is based on a positivist ontology and a realist epistemology (Morgan, 2010), in alignment with those that underpin the CBDA approach and hence have been previously justified under section 4.1.

4.6 Ethics

Ethical guidelines provided by the British Educational Research Association [BERA] (2018) and The British Psychological Society [BPS] (2014, 2018) were adhered to throughout this study. A possible source of concern was that some Reddit users might write about emotional disturbance, mental illness or harm either to themselves or to others, given the purpose of the OffMyChest forum as well as the anonymity afforded by Reddit. Because this research only concerns a secondary analysis of existing text data, it is not in a capacity to prevent or alleviate those issues. However, ample care has been taken by the OffMyChest forum moderators (Reddit, 2020a) to provide help when such content is mentioned.

Another potential cause of concern was whether consent had to be sought in utilizing posts that were written by authors on Reddit. According to BERA (2018), use of data that has been explicitly produced for public use (such as on online discussion forums) does not require consent. In a set of guidelines designed for internet-mediated research, BPS (2017) espoused

a similar stance towards data in the public domain. In this case, the public domain refers to public behaviour that ‘would be expected to be observed by strangers’ (BPS, 2014, p.25). Because posts on Reddit are freely accessible to anyone with an Internet connection, they unequivocally belong to the public domain.

As recommended by BPS (2017), the End User License Agreement (Reddit, 2020b) and Terms of Use for Developers (Reddit, 2020c) were also consulted. These documents indicate that Reddit Users provide consent for their post contents to be used by Reddit and its partners (including developers) when they sign up for the service. Furthermore, because Reddit data does not include information that can identify individuals, its use in this study is unaffected by the General Data Protection Regulation (GDPR). Finally, peer-reviewed research antecedents have made use of similar data (Gjurkovic & Šnajder, 2018; Shatz, 2017), confirming its ethical appropriateness.

5 Results

Overall, users on Reddit associate four themes with their affective subjective well-being (ASWB). As shown in Figure 5.1, the themes of Relationships and Strive for better vs. Helplessness are associated with both positive and negative ASWB. The theme of Leisure is associated only with positive ASWB while the theme of Health issues is associated only with negative ASWB.

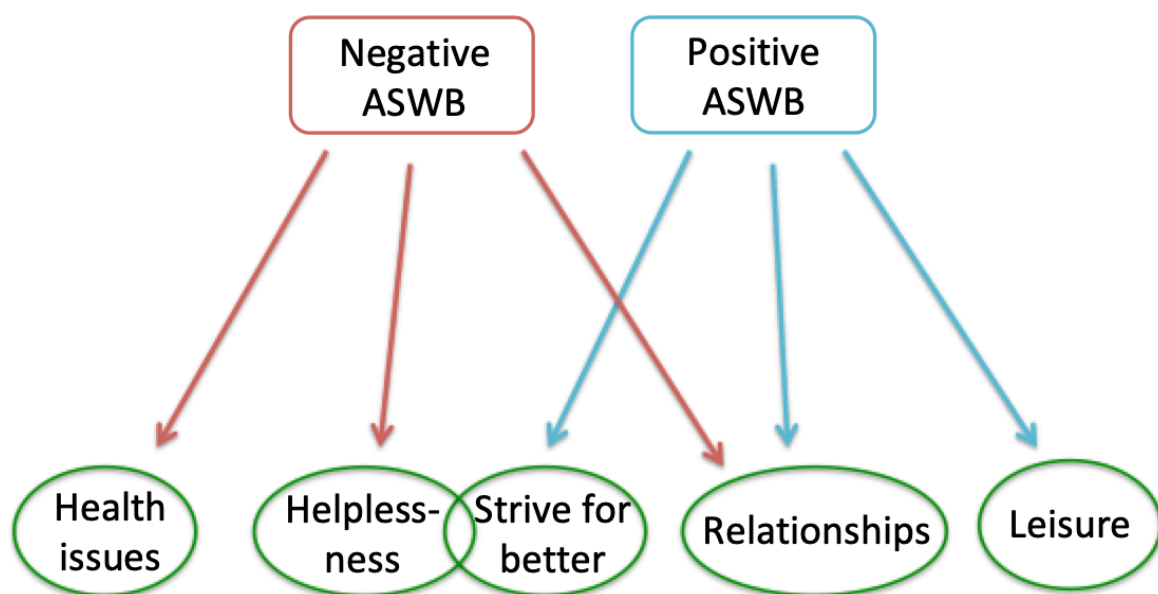


Figure 5.1 Themes emerging from the analysis of the 500 words most commonly used together with words indicating negative and positive ASWB.

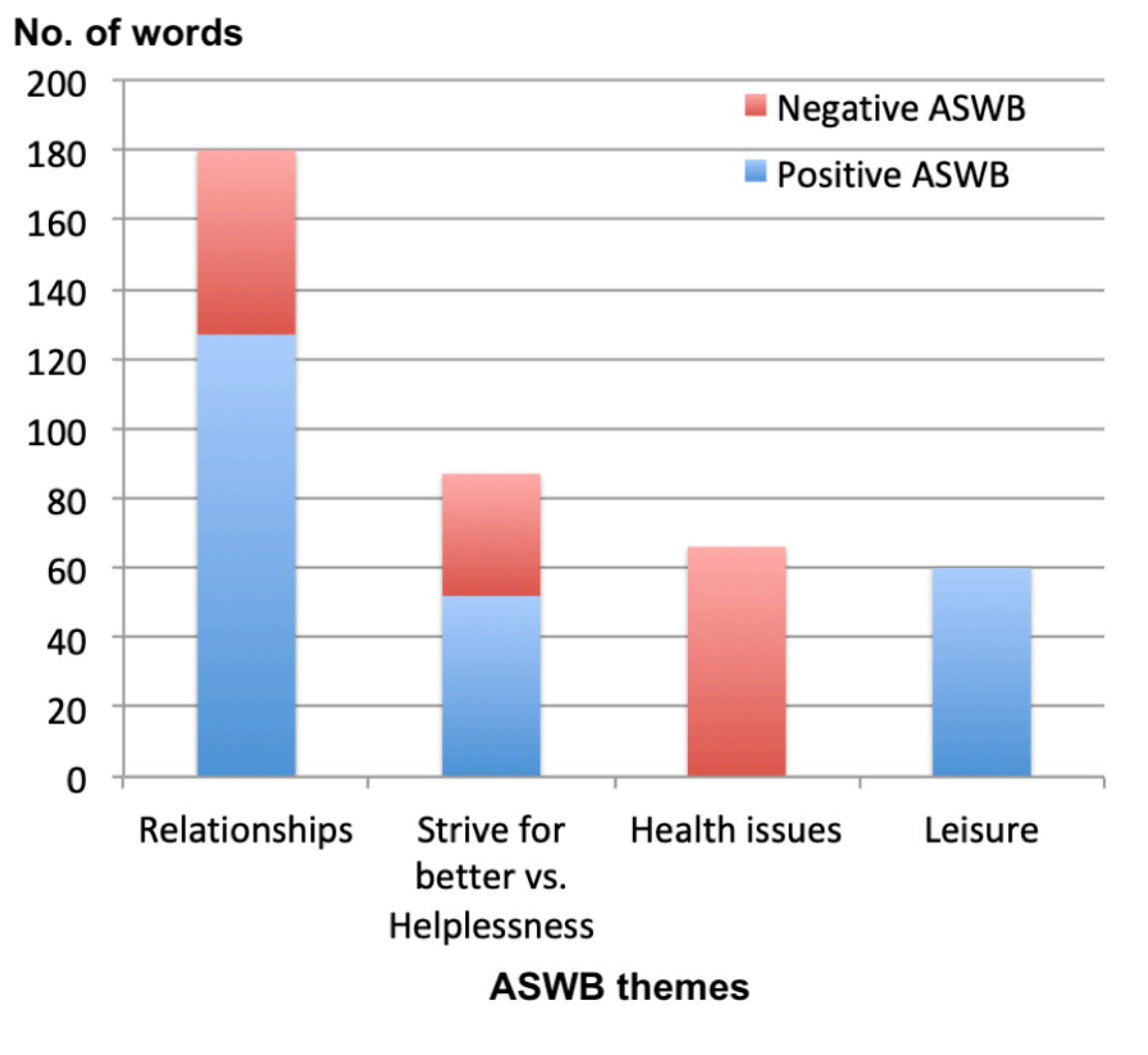


Figure 5.2 Number of words in each theme associated with negative and positive ASWB.

Themes will be presented based on the number of words contained in each theme in a descending order, as shown in Figure 5.2. 607 words were not found to be associated with any meaningful theme. These words largely consist of words with meanings that are closely related to positive affect (such as 'smiled') or negative affect (such as 'tantrums'), and are therefore not useful in answering the research question. A full list of these words is available in Appendix E.

5.1 Relationships

The theme of relationships comprises of the subthemes of social relationships (e.g. 'greeted' and 'hugged'), romantic relationships (e.g. 'cuddled' and 'lovers'), interpersonal disagreements

(e.g. ‘accuses’ and ‘bickering’) as well as celebrations (e.g. 'birthday' and 'festivals'), which are typically social events where relationships are made or strengthened. Within each subtheme, words are further divided into those that connote supportive relationships and others that connote unsupportive relationships. Because classification is performed at the level of individual words, words indicating supportive relationships (e.g. ‘cherished’ and ‘marry’) and unsupportive relationship (e.g. ‘disagree’ and ‘blames’) are mainly distinguished based on general connotation of the words. A full list of words in the Relationship theme can be found in Appendix F.

As illustrated in Figures 5.3 and 5.4, more words relating to relationships are found for positive ASWB (127 words) compared to negative ASWB (53 words). In particular, many more words indicating romantic relationships are associated with positive ASWB (57 words) than for negative ASWB (5 words).

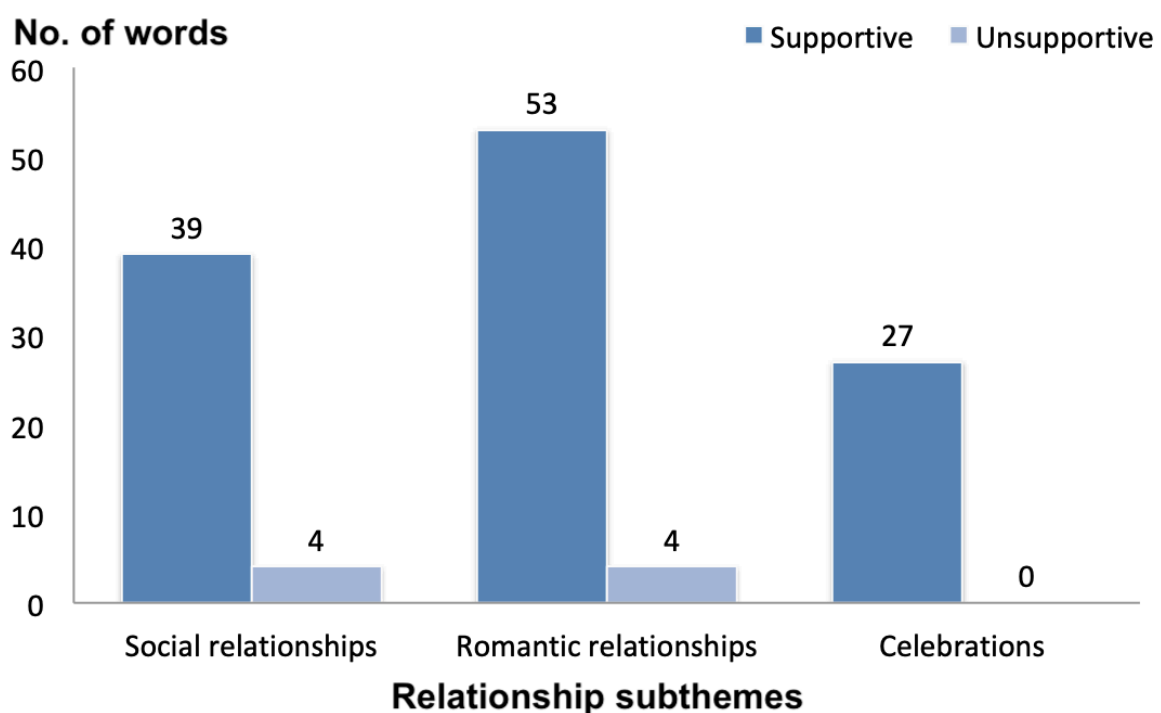


Figure 5.3 Number of words associated with positive ASWB in each subtheme under Relationships

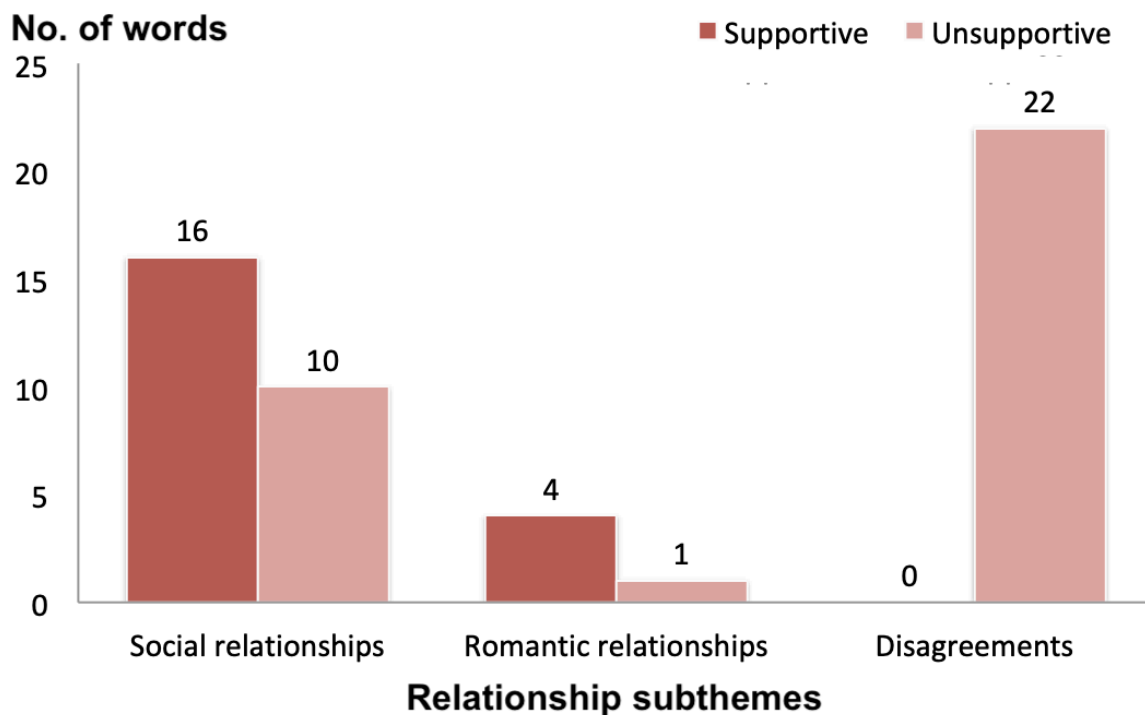


Figure 5.4 Number of words associated with negative ASWB in each subtheme under Relationships

Furthermore, more words indicating supportive relationships are associated with positive ASWB (119 words) than for negative ASWB (20 words). Taken as a proportion of Relationship words associated with positive and negative ASWB respectively, a large difference remains between words indicating supportive relationships that are associated with positive and negative ASWB respectively. 119 out of 127 (93.7%) relationship words associated with positive ASWB reflect supportive relationships while only 20 out of 53 (37.7%) relationship words associated with negative ASWB reflect supportive relationships.

Such trends are elucidated in the excerpts shown in Figure 5.5 – ‘happy’ (indicating positive ASWB) is used with ‘cherished’ and ‘marry’ (indicating supportive relationships) while ‘scared’ (indicating negative ASWB) is used with ‘disagree’ (indicating unsupportive relationships). Due to the anonymous nature of Reddit (2020a) - the source of these posts - these excerpts do not include the identity or demographic information of the posts’ authors.

Positive ASWB: I was so indescribably **happy** to be with her. I *cherished* every moment I spent with her. I want to hear her laugh and make her breakfast. I want to eventually *marry* this girl and give her my last name.

Negative ASWB: I can almost never *disagree* cause I'm **scared** when he raises his voice even a little even when he isn't in a bad mood.

Figure 5.5 Excerpts of posts relating to Relationships as well as positive or negative ASWB. Words indicating ASWB are in **bold** and the words related to Relationships are in *bold italics*.

Therefore, Reddit users associate the theme of Relationships with both positive and negative ASWB. More words relating to Relationships, especially romantic and supportive relationships, are associated with positive ASWB compared with negative ASWB.

5.2 Strive for better vs. Helplessness

The theme of Strive for better consists of the subthemes of positive attitudes (e.g. 'optimistic' and 'enthusiastic'), achievement (e.g. 'pursuit' and 'accomplish') and reflection (e.g. 'contemplated' and 'revelation'), which all demonstrate an intention to improve oneself. On the other hand, the theme of Helplessness consists of disempowerment (e.g. 'despair' and 'self-doubt'), difficulties (e.g. 'turmoil' and 'exhaustion') and intensity modifiers that stress the inability to overcome challenges (e.g. 'excessively' and 'worsening'). While the themes of Strive for better and Helplessness emerged for positive and negative ASWB respectively, they are presented together given their contrasting meanings. Such contrast is also observed at the sub-theme level: positive attitude vs. disempowerment; achievement vs. difficulties. The number of words in each subtheme is shown in Figure 5.6 and 5.7 while the full list of words is available in Appendix G.

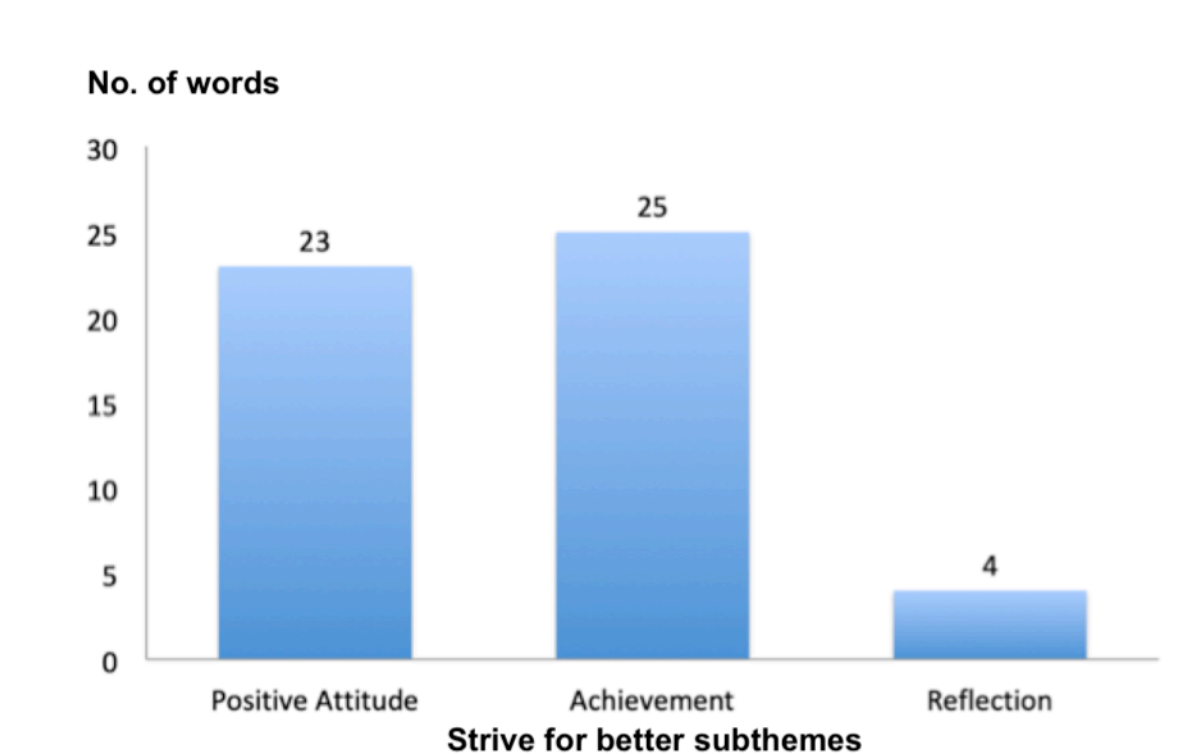


Figure 5.6 Number of words associated with positive ASWB in each subtheme under Strive for better.

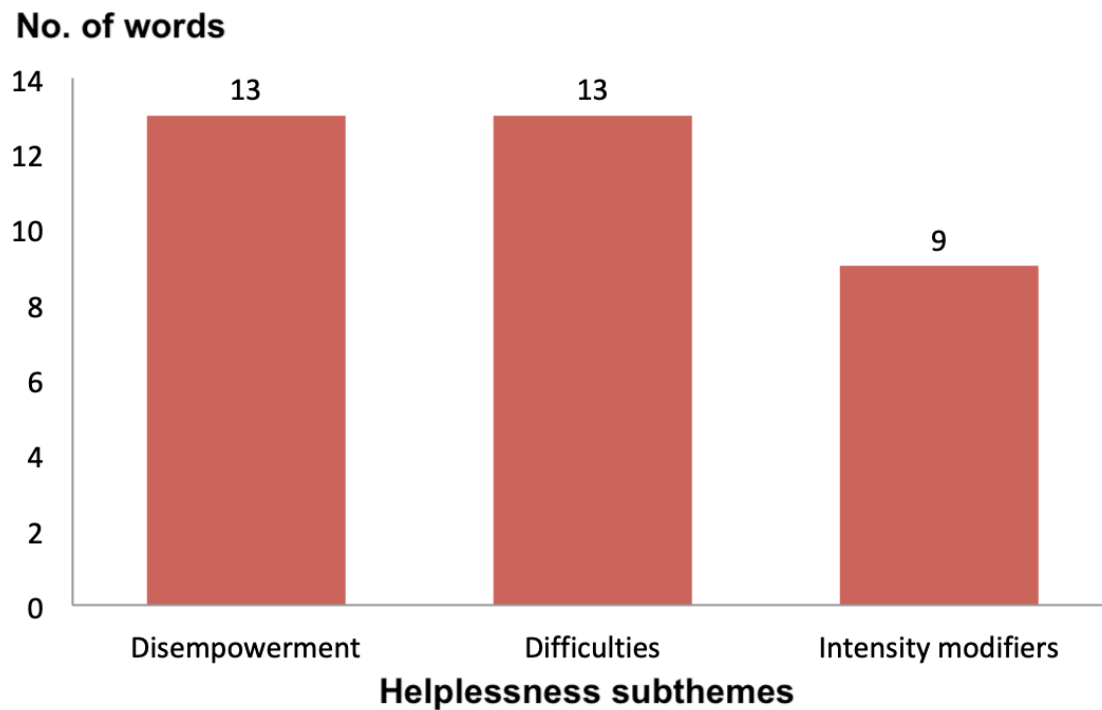


Figure 5.7 Number of words associated with negative ASWB in each subtheme under Helplessness.

The excerpts in Figure 5.8 demonstrate how contrasting attitudes (‘optimistic’ vs. ‘inferiority’) associated with positive (‘happy’) and negative (‘sad’) ASWB can be even though both excerpts mentioned the difficult situations that the authors faced.

Positive ASWB: I was **happy**. I had my moments of depressive episodes, but overall you could ask anyone and they would give you a glowing report of how **happy** and *optimistic* I was.

Negative ASWB: My life is currently defined by my loneliness, humiliation, sense of *inferiority*, dependence and uselessness. It's just so **sad** and painful and I can't see the point if things don't change and change soon.

Figure 5.8 Excerpts of posts relating to Strive for better vs. Helplessness as well as positive or negative ASWB. Words indicating ASWB are in **bold** and the words related to Strive for better or Helplessness are in *bold italics*.

Therefore, Strive for better is associated with positive ASWB while Helplessness is associated with negative ASWB.

5.3 Health issues

The theme of Health issues emerged for negative ASWB. This theme comprises of the subthemes of mental/physical conditions (e.g. 'depression' and 'disorder') and psychological therapy (e.g. 'counselling' and 'therapy'). A full list of words in this theme is available in Appendix H. While mental and physical conditions are often distinct, they are combined as a sub-theme in this study because some words (e.g. 'symptom' and 'ill') are associated with both types of conditions. As shown in Figure 5.9, most words in this theme indicate mental/physical conditions (59 words) while a small number of words (7 words) indicate psychological therapy.

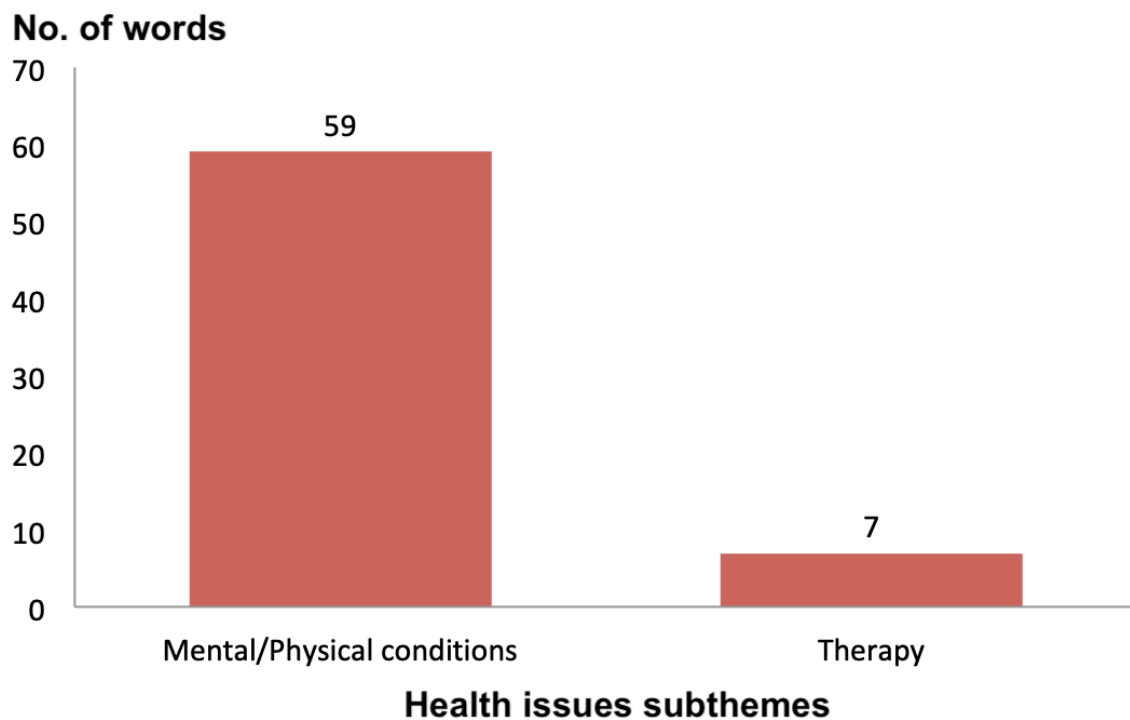


Figure 5.9 Number of words associated with negative ASWB in each subtheme under Health issues.

The excerpt in Figure 5.10 demonstrates that how negative ASWB (‘anxious’ and ‘sad’) might be associated with a health issue (depression as indicated by ‘antidepressants’).

Negative ASWB: I’m just **anxious** and **sad** all the time and I can’t help it. I’ve done ***antidepressants***, Sertraline and Lexapro, they both made me feel like a zombie.

Figure 5.10 Excerpt of a post relating to Health issues and negative ASWB. Words indicating ASWB are in **bold** and the words related to leisure are in ***bold italics***.

As a result, the theme of Health issues is associated with negative ASWB.

5.4 Leisure

Leisure activities involving hobbies (e.g. ‘guitar’ and ‘hockey’), nature (e.g. ‘shore’ and ‘sunshine’) and travel (e.g. ‘adventure’ and ‘motel’) emerged as a theme for positive ASWB, alongside calmness (e.g. ‘relaxed’ and ‘solace’) - a feeling that is commonly associated with leisure times. A full list of words in this theme is available in Appendix I. The number of words in each subtheme is shown in Figure 5.11, with hobbies being the major sub-theme within this theme.

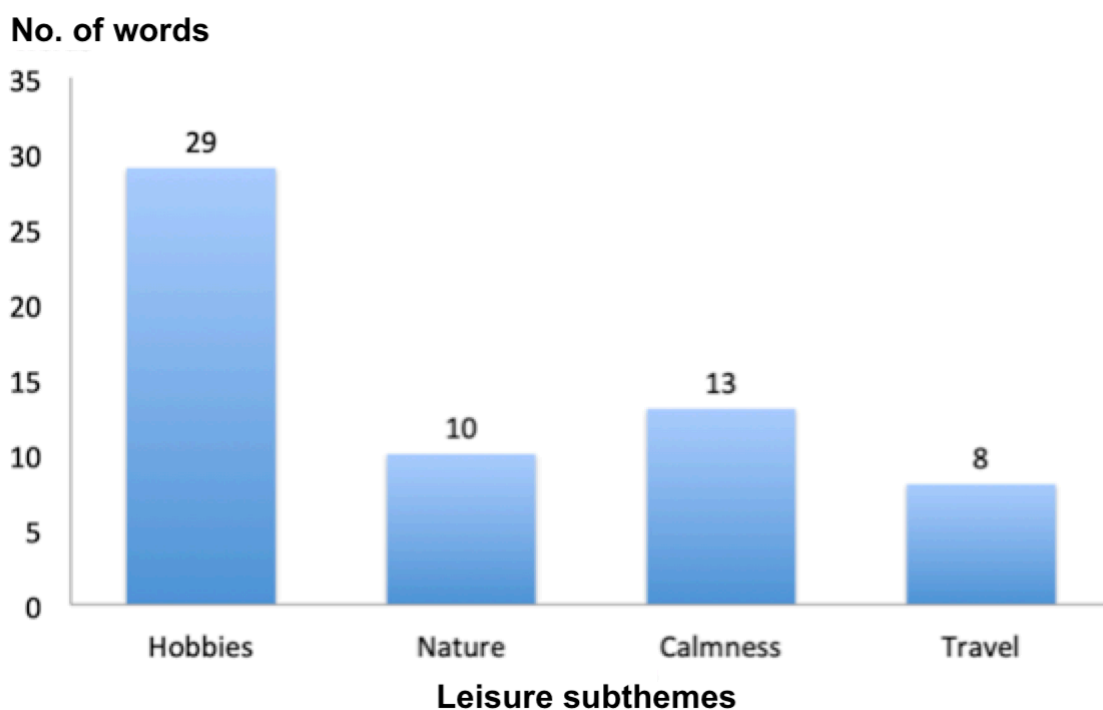


Figure 5.11 Number of words associated with positive ASWB in each subtheme under Leisure.

Excerpts in Figure 5.12 demonstrate how Leisure (‘dancing’ and ‘breeze’) can stimulate positive ASWB (‘happy’ and ‘enjoy’).

Positive ASWB: Nothing excites me and makes me **happy** like *dancing* does.

Positive ASWB: We would always take long walks in the fall and **enjoy** the smell of the fall *breeze*.

Figure 5.12 Excerpts of posts relating to Leisure and positive ASWB. Words indicating ASWB are in **bold** and the words related to leisure are in ***bold italics***.

Thus, the theme of Leisure is associated with positive ASWB.

5.5 Summary

This study was set to explore what Reddit users associate with their ASWB using corpus-based discourse analysis. Reddit users are found to associate four themes with their ASWB - Relationships, Strive for better vs. Helplessness, Health Issues and Leisure. Positive ASWB is found to be associated with Relationships (that tend to be supportive), Strive for better and Leisure while negative ASWB is found to be associated with Relationships (that tend to be unsupportive), Helplessness and Health issues. In the next section, these themes will be discussed in relation to empirical literature that investigates what people associate with their SWB and theoretical perspectives on SWB.

6 Discussion

In this section, each theme (Relationships, Strive for better vs. Helplessness, Health issues and Leisure) will be discussed in relation to other empirical studies that investigate what people associate with SWB as well as theories of SWB. Empirical studies with participants from similar backgrounds (Reddit users) could not be found. While the empirical studies discussed in this section have participants from different backgrounds as the participants in this study (Reddit users), these studies can still form meaningful comparisons to inform whether people from various backgrounds associate similar factors with their SWB. Such comparisons reveal that the themes identified in this study generally converge with the findings of empirical studies, which use existing methods of interviews/focus groups and experiential sampling to identify what people associate with their SWB.

Table 6.1 Association of themes with components of key SWB theories

Themes identified in this study	Key SWB theories		
	PERMA Model (Seligman, 2011)	Self-Determination Theory (Deci & Ryan, 2008)	Six Factor Model (Ryff, 1995)
Relationships	Relationships	Relatedness	Positive relations with others
Strive for better vs. Helplessness	Accomplishments	Competence	Environmental mastery, Purpose and Personal growth
Leisure	Engagement	Autonomy	Autonomy

These themes are then discussed in relation to key theories of SWB. In particular, theories involving eudemonic conceptions of SWB are discussed. This is because theories of SWB involving eudemonic SWB might specify what is needed to achieve affective SWB, as first suggested in section 2.1.3. Therefore, discussing the findings in light of theories of eudemonic SWB can explore the relationship between affective SWB and eudemonic SWB. With the exception of health issues, themes associated with ASWB have strong links with

various theories of SWB, as demonstrated in Table 6.1. Health issues do not correspond to any component within theories of eudemonic SWB likely because theories of eudemonic SWB do not account for the experience of those with clinical conditions (Greenspoon & Saklofske, 2001).

Next, individual themes will be discussed in relation to empirical studies that investigate what people associate with SWB and theories of SWB.

6.1 Relationships

The theme of Relationships was also found to be associated with SWB by Janik Blaskova and McLellan (2018) and Kahneman et al. (2004). Using interviews and focus groups with adolescents, Janik Blaskova and McLellan (2018) found that their participants view relationships with peers and teachers as important for their SWB. Similarly, Kahneman et al.'s (2004) experiential sampling approach revealed that employed women experienced the highest positive ASWB while socializing or engaging in intimate relations. This agreement suggests the importance of social relationships and romantic relationships, both subthemes of Relationships, for ASWB.

On the other hand, Sun et al. (2020) found that people associate social relationships but not romantic relationships with positive ASWB. This might be because Sun et al.'s (2020) method determines what participants are doing by taking audio recordings of them at regular intervals. Therefore, participants might not want to be recorded when talking about romantic relationships, particularly sexual aspects of romantic relationships out of concern for social desirability. In this study however, Reddit users are relatively anonymous and therefore more willing to discuss any topic relating to their ASWB, including topics (such as romantic relationships) that might otherwise not be considered socially desirable.

Relationships are an important component in multiple theories of SWB as shown in Table 6.1. While all three theories account for the role of Relationships, the Six Factor Model (Ryff, 1995) is most adequate in providing theoretical conceptualization for this theme. The corresponding component in Ryff (1995) – Positive relations with others – is defined as meaningful relationships that include mutual understanding, affection and intimacy. Within

this definition, mutual understanding is related to the opposite of the subtheme of Disagreements in relationships. Similarly, affection is associated with the subtheme of Celebrations (which can be seen as a social demonstration of affection) while intimacy can be related to the subthemes of romantic relationships and social relationships (such as close kinships and friendships). The specificity of the definition of Positive relations with others means that it is able to account for all subthemes within the theme of Relationships.

Relatedness in Deci & Ryan (2008) is defined less specifically as a sense of mutually caring relationships. While unable to account for all subthemes within relationships, the sense of care in Relatedness (Deci & Ryan, 2008) explains why supportive relationships are associated with positive ASWB, but unsupportive relationships are not. Relationships in the PERMA Model (Seligman, 2011) is defined most generally as interaction with other people. Unlike Ryff (1995) and Deci & Ryan (2008), Seligman (2011) does not explicitly make a distinction between how supportive and unsupportive relationships influence SWB differently. This lack of distinction means that Seligman (2011) cannot be used to understand why supportive and unsupportive relationships are associated with positive and negative ASWB respectively in this study. Therefore, while the Six Factor Model (Ryff, 1995) accounts most adequately for the theme of Relationships, the Self Determination Theory (Deci & Ryan, 2008) complements it in understanding the differing roles of supportive and unsupportive relationships.

6.2 Strive for better vs. Helplessness

The theme of Strive for better vs. Helplessness was also found to be associated with SWB by Janik Blaskova and McLellan (2018) and Reis et al. (2000). Janik Blaskova and McLellan (2018) found that students associate their SWB with academic achievement, corresponding to the achievement subtheme under Strive for better. Furthermore, Reis et al.'s (2000) experiential sampling approach revealed that university students' daily negative affect is positively correlated with a low sense of competence, corresponding to the subthemes of difficulties and disempowerment under Helplessness.

However, Kahneman et al. (2004) found that women associate working with low positive ASWB and high negative ASWB, contrary to the association of the subtheme of achievement

(often related to work) with positive ASWB in this study. This is likely because Kahneman et al. (2014) used a deductive approach with experiential sampling, meaning that the factors that participants associate with SWB could only be selected from a pre-determined set. Therefore, when only the factor of ‘working’ is included, participants are unable to independently associate their sense of achievement during parts of their work with positive ASWB while associating their day-to-day drudgery in other parts of their work with negative ASWB. On the other hand, this study uses an inductive approach in which participants can freely associate their SWB with any factor. This allows their sense of achievement (often related to work) to emerge independently as a subtheme that is associated with positive ASWB.

The theme of Strive for better vs. Helplessness is conceptualized in two distinct manners by the theories of SWB. The component of Accomplishments in Seligman (2011) focuses on the outcomes of success and mastery, which most directly correspond to the subtheme of achievement. On the other hand, the component of Competence in Deci & Ryan (2008) and the components of Environmental mastery, Purpose and Personal growth in Ryff (1995) focus on the process of achieving these outcomes. Competence (a sense of efficacy) in Deci & Ryan (2008) and Environmental mastery (managing environment to meet personal needs) in Ryff (1995) account for the subthemes of positive attitudes, disempowerment and difficulties. Personal growth in Ryff (1995) supports the understanding of the same subthemes as Environmental mastery in Ryff (1995) but also includes a temporal perspective in terms of how a person’s abilities develop over time. Finally, Purpose (strong goal orientation) in Ryff (1995) can be used to conceptualize the subtheme of achievement since individuals can orient to these achievements as their goals.

While the manners of explaining this theme have distinct foci on outcomes (Seligman, 2011) and processes (Deci & Ryan, 2008; Ryff, 1995) respectively, they are also intricately linked. Positive outcomes (success and mastery) can promote positive processes (positive attitudes/lack of disempowerment/perseverance in face of difficulties) while positive processes can also support the achievement of positive outcomes (Conversano et al., 2010). Therefore, the theme of Strive for better vs. Helplessness can best explained by considering the synergy between outcome-focussed and process-focussed perspectives presented by various theories of SWB.

6.3 Leisure

The theme of Leisure was also found to be associated with ASWB by Kahneman et al. (2004) and Sun et al. (2020). Kahneman et al. (2004) found that relaxing activities are associated with positive ASWB for employed women. This supports the subthemes of hobbies and calmness under the theme of Leisure. On the other hand, Sun et al. (2020) found that university students associate positive ASWB with entertainment (such as games), which corresponds to the subtheme of hobbies. Both Sun et al. (2020) and this study found specific activities (hobbies and games) that are associated with positive ASWB whereas Kahneman et al.'s (2004) association of positive ASWB with 'relaxing activities' is more general. This might be explained by the difference between the inductive approach used by Sun et al. (2020) and this study and the deductive approach used by Kahneman et al. (2004), as previously elaborated in section 6.2.

Leisure can also be related to all three theories of eudemonic SWB. Leisure is related to engagement in the PERMA model (Seligman, 2011) because leisure activities can put participants into a state of flow where they challenge their own limits to accomplish something that is meaningful for them (Csikszentmihalyi, 1992). In this state, they are focused on and excited about the leisure activity, which characterizes engagement. Furthermore, Leisure also corresponds to autonomy, defined as a sense of volition in one's life (Deci & Ryan, 2008; Ryff, 1995). This is because people can choose their own leisure activities, providing them intrinsic motivation to participate in activities that are rewarding in themselves. Autonomy (Deci & Ryan, 2008; Ryff, 1995) can also contribute to a sense of engagement (Seligman, 2011) because people are more likely to fully engage themselves in activities when they are able to choose their own activities based on intrinsic motivation (Ryan & Deci, 2000). Therefore the theme of Leisure can be understood through the complementary theoretical perspectives of engagement and autonomy in SWB theories.

6.4 Health issues

The theme of Health issues was also found to be associated with SWB by Reis et al. (2000), who showed that university students' daily negative affect is negatively correlated with their vitality, defined as how physically and mentally vigorous they felt (Ryan & Fredrick, 1997).

Since people will not feel vigorous when they are unwell, Reis et al. (2000) supports this study in associating Health issues with negative ASWB. Other studies did not find a similar association, possibly due to differences in research methods and contexts. Participants in Sun (2020) were required to record their ASWB every 10 minutes, resulting in a participant selection bias in that only people who are feeling well and able to do so can participate. Janik Blaskova and McLellan (2018) investigated what young people associate with SWB in the context of schools, where these students would not go to when they are ill. Finally, participants in Kahneman et al. (2004) were not able to associate their ASWB with health issues because the deductive approach used in the study excluded health issues as a possible option. This means that while all other studies excluded the possibility of finding associations between SWB and health issues a priori, the only study that did not exclude such possibilities found an association between SWB and Health issues, in line with this study.

Unlike other themes, the theme of Health issues is not explained by modern eudemonic SWB theories discussed in this study. Instead, it could have emerged because many mental health conditions involve emotional disturbances in sadness, anger or fear (American Psychiatric Association, 2013). While Maslow's (1954) hierarchy of needs accounted for Health issues under base-level physiological needs some 70 years ago, modern eudemonic SWB theories do not seek to consider the clinical population (particularly those with psychopathology) in deriving such theories (Greenspoon & Saklofske, 2001). Ignoring the perspective of those who are sick, in an age when health problems are increasingly common (James et al., 2018) might limit the relevance of these SWB theories for a rising proportion of the population. While there is research seeking to use eudemonic SWB theories to understand the experience of those with health issues (McComick & Cushman, 2019), more work should be done to develop SWB theories that consider their experiences in a prospective rather than retrospective manner.

6.5 Summary

In summary, all themes found to be associated with SWB in this study are supported by at least one other empirical study that uses existing methods (interviews/focus groups and experiential sampling) to investigate what people associate with their SWB. Furthermore, the themes identified in this study are shown to be less affected by the limitations of existing

methods in the forms of social desirability bias, selection bias and restrictions on possible factors that are associated with SWB. The demographics of participants in this study (Reddit users) are different from those in existing literature – adolescent students (Janik Blaskova & McLellan, 2018), employed women (Kahneman et al., 2004) and university students (Reis et al., 2000; Sun et al., 2020). Such convergence in what participants find to be associated with their SWB despite differences in participant demographics indicate that there might be universal commonalities in what people associate with SWB, although more work such as Tay and Diener (2011) and Steptoe et al. (2015) needs to be done to verify this indication.

Furthermore, themes identified in this study demonstrate significant links with multiple theories of SWB (Deci & Ryan, 2008; Ryff, 1995; Seligman, 2011). This is except for the theme of Health issues, which modern eudemonic SWB theories discussed in this study do not sufficiently account for. While certain theories are better at explaining certain themes, most themes are most suitably conceptualized using a combination of theoretical perspectives offered by various theories of SWB. This suggests the strong grounding of these themes on multiple theories of SWB. Overall, themes are well-supported by both empirical studies and theories of SWB, suggesting that corpus-based discourse analysis is a promising method of studying what people associate with their SWB.

6.6 Limitations

Corpus-based discourse analysis based on collocation may not allow for nuanced reading of the text in context (Baker, 2006) This might lead to inaccurate associations between words to be made. In excerpt 1 of Figure 6.1, words indicating both positive ASWB (happy and happiest) and negative ASWB (sadness) are present. However, the collocation method is unable to distinguish which parts of the paragraph concern positive ASWB and which concern negative ASWB. Instead, it relies on a naïve assumption that the every word in the excerpt is related to both positive and negative ASWB. This would lead to some mistaken associations such as between “dog” and “sadness”. Another source of inaccuracy lies in the inability of this approach to understand relationship between words. In excerpt 2 of Figure 6.1, the “should be” before “happy” indicates that the author is not happy. Therefore, words in excerpt 2 should not be associated with positive ASWB. However, because the CBDA approach is unable to interpret the meaning of “should be”, it makes the mistake of

associating words in excerpt 2 with positive ASWB. In addition, words were clustered into subthemes and themes mainly based on their denotative (dictionary) meaning. For instance, ‘disagrees’ is thought to be indicative of unsupportive relationships based on its general connotation. However, this approach does not take into account the context these words are used. Disagreeing with a partner might indicate being supportive in a relationship when disagreeing can encourage one’s partner to reconsider a bad decision.

Excerpt 1: “My dog makes the toughest days easier. Had a horrible day today. The *sadness* is overbearing. I came home and brought my dog inside for a bit. He makes me so **happy**. The **happiest**. I don’t know why would anyone be so **happy** to see me but he is.”

Excerpt 2: “My feelings of self-worth have plummeted. I don’t even have another friend to talk to about it. I’m so lonely and it’s Christmas. I should be **happy** or excited. But I cried myself to sleep last night.”

Figure 6.1 Excerpts of posts demonstrating limitations of the CBDA approach. Words indicating positive ASWB in **bold** and negative ASWB in *bold italics*

Furthermore, the themes associated with ASWB in this study might not easily generalize. Reddit users are likely to be young (aged 18-29) and predominantly males (Duggan & Smith, 2014). Furthermore, most Reddit users are based in the United States of America, Canada and the United Kingdom (Alexa, 2020b). This suggests that the associations with SWB found in this study overwhelmingly represent those held by young males in the English-speaking Western World, which might not represent what people from other backgrounds associate with SWB. For instance, the Chinese are more likely to see SWB as spiritual enrichment and harmony with others, while Americans focus on individual accomplishments, intense positive affects such as excitement (Lu & Gilmour, 2004) as well as the ability to proactively pursue one’s own goals (Kesebir & Diener, 2008). Additionally, the OffMyChest forum is designed for Reddit users to discuss mainly about deeply emotional issues (Reddit, 2020a). This means that the themes found in this study are associated mostly with extremely positive or negative ASWB, excluding those that are associated with moderate levels of ASWB. Together, this

could mean that the themes identified in this study might not easily generalize to other demographics and settings.

6.7 Future Work

To validate if the findings reflect what Reddit users associate with their ASWB, they could be sent a survey to write down words that represent what they associate with ASWB. Then, these words can be compared with the words that each Reddit user use most frequently with words indicating ASWB. Alternatively, the words that each Reddit user use most frequently with words indicating ASWB could be sent to them for member checking to determine if these are the words that they associate most with their ASWB (Patton, 1990). Furthermore, while the findings of this study may have limited generalizability, the CBDA approach proposed in this study can be easily applied to texts from other sources. In this way, this approach can be used to identify themes associated with SWB that would apply specifically to the authors of those texts, considering the context under which those texts were written. Additionally, a mobile/web application can be built to allow friends, family and teachers to effortlessly use the CBDA approach to identify what a person associates with their ASWB without needing technical knowledge related to this approach.

Finally, while this study has identified what Reddit users associate with their ASWB, more work can be done to better understand the nature of the association between the identified themes with their ASWB. Currently, it is unclear where the themes are merely correlated with positive/negative ASWB or whether they cause such positive/negative ASWB. For instance, one possible correlational mechanism that explains the association between supportive Relationships and positive ASWB is that they are both correlated with global personality factors. Individuals who are outgoing and agreeable might experience more positive ASWB and have more supportive relationships but it is not the supportive relationships that cause such positive ASWB (Siedlecki, Saltschlag, Oishi & Jeswani, 2014). Alternatively, a potential causal mechanism is that a person gains supportive relationships because of social circumstances (such as friendly peers), which directly causes the person to experience more positive ASWB (Williams, 2009). Differentiating a correlational association from a causal association is important because interventions that aim at factors that cause changes in ASWB might be more effective at improving SWB. Further literature

review/research can be performed to understand the nature of the association between themes and ASWB. In order to achieve a holistic understanding of such associations, a range of research designs such as longitudinal studies (Joshnloo, Sirgy, & Park, 2018), intervention-based studies (Sharma, Gupta, & Bijlani, 2008) and discordant monozygotic twins studies (Wootton, Davis, Mottershaw, Wang, & Haworth, 2017) should be included.

7 Conclusion

Not only is SWB seen as intrinsically valuable by many (Diener & Scollon, 2014), high SWB is also correlated with desirable outcomes such as more creativity (Carr, 2004), increased engagement in learning (Heffner & Antaramian, 2016) and a greater willingness to develop new skills (Fredrickson, 2004). Understanding what people associate with their SWB can be a first step in improving their SWB. However, existing methods of obtaining this information – interviews/focus groups and experiential sampling – have various limitations. These limitations include requiring significant time and effort, having biases relating to social desirability, recall and participant self-selection as well as having restrictions on the range of possible factors that participants can associate with their SWB. This study attempted to use corpus-based discourse analysis (CBDA) to study what people associate with their SWB, a novel approach that had not been previously used for this purpose. Specifically, this study investigated what Reddit users associate with their affective SWB by looking into the words they most commonly used together with words indicating affective SWB, such as “happy” and “sad”.

Findings demonstrate that Reddit users associate their affective SWB with the themes of Relationships, Strive for better vs. Helplessness, Leisure and Health issues. Not only are these themes generally supported by the findings of existing empirical literature, these themes are also grounded on theoretical perspectives on SWB. Furthermore, the comparison of these findings with existing literature suggests that the CBDA approach can overcome some of the limitations associated with existing approaches used to study what people associate with SWB. However, the validity of the CBDA approach needs to be further established using member checking and the application of the CBDA approach to diverse sources of text. With further validation, the CBDA approach used in this study can be used to inform practice within and outside of the educational context. Family and friends can obtain information on what a person considers important for their SWB and adapt the ways they interact with a person to make such interactions more amicable (Downie et al., 2008). Similarly, teachers can use this information to cater learning activities based what their students associate with their SWB (Harackiewicz et al., 2016), so that their students can be more engaged and achieve better academic outcomes (Ayyash-Abdo & Sánchez-Ruiz, 2012; Heffner & Antaramian, 2016). Building a mobile/web application in the future can allow family, friends

and teachers to access such information on what a person associates with their SWB without needing technical knowledge about the CBDA approach.

References

- Alexa. (2020a). Alexa - Top sites. Retrieved 22 February 2020, from <https://www.alexacom/topsites>
- Alexa. (2020b). Alexa – Reddit.com. Retrieved 22 February 2020, from <https://www.alexacom/siteinfo/reddit.com>
- American Psychiatric Association. (2013). *Diagnostic and statistical manual of mental disorders* (5th ed.). Washington, DC: Author.
- Argyle, M. (1999). Causes and correlates of happiness. In D. Kahneman, E. Diener, & N. Schwarz (Eds.), *Well-being: The foundations of hedonic psychology* (p. 353–373). New York, NY: Russell Sage Foundation.
- Aristotle (1985). *Nicomachean Ethics* (T. Irwin, Trans.). Indianapolis, IN: Hackett.
- Ayyash-Abdo, H., & Sánchez-Ruiz, M.-J. (2012). Subjective wellbeing and its relationship with academic achievement and multilinguality among Lebanese university students. *International Journal of Psychology*, 47(3), 192–202. <https://doi.org/10.1080/00207594.2011.614616>
- Baker, P. (2006). *Using corpora in discourse analysis*. London: Continuum.
- Baker, P., Gabrielatos, C., KhosraviNik, M., Krzyżanowski, M., McEnery, T., & Wodak, R. (2008). A useful methodological synergy? Combining critical discourse analysis and corpus linguistics to examine discourses of refugees and asylum seekers in the UK press. *Discourse & Society*, 19(3), 273–306. <https://doi.org/10.1177/0957926508088962>
- Bentham, J. (1789). *An introduction to the principles of morals and legislation*. London: Payne and Son.
- Braun, V., & Clarke, V. (2006). Using thematic analysis in psychology. *Qualitative Research in Psychology*, 3(2), 77–101. <https://doi.org/10.1191/1478088706qp063oa>
- British Educational Research Association (2018). *Ethical Guidelines for Educational Research* (4th ed., Rep.). London: Author.
- Butler, J., & Kern, M. L. (2016). The PERMA-Profil: A brief multidimensional measure of flourishing. *International Journal of Wellbeing*, 6(3), 1–48. <https://doi.org/10.5502/ijw.v6i3.526>
- Carr, A. (2004). *Positive Psychology: The Science of Happiness and Human Strength*. New York, NY: Brunner-Routledge.
- Carson, D., Gilmore, A., Perry, C., & Gronhaug, K. (2001). *Qualitative Marketing Research*. London: Sage.

- Chouliaraki, L. (1998). Regulation in 'Progressivist' Pedagogic Discourse: Individualized Teacher-Pupil Talk. *Discourse & Society*, 9(1), 5–32. <https://doi.org/10.1177/0957926598009001001>
- Conversano, C., Rotondo, A., Lensi, E., Della Vista, O., Arpone, F., & Reda, M. A. (2010). Optimism and its impact on mental and physical well-being. *Clinical practice and epidemiology in mental health*, 6, 25–29. <https://doi.org/10.2174/1745017901006010025>
- Creswell, J. W. (2013). *Qualitative Inquiry & Research Design: Choosing among Five Approaches* (3rd ed.). Thousand Oaks, CA: SAGE.
- Csikszentmihalyi, M. (1992). *Flow: The Psychology of Happiness*. London: Rider.
- Deci, E. L., & Ryan, R. M. (2008). Self-determination theory: A macrotheory of human motivation, development, and health. *Canadian Psychology*, 49(3), 182–185. <https://doi.org/10.1037/a0012801>
- Diener, E. (1984). Subjective well-being. *Psychological Bulletin*, 95(3), 542–575. <https://doi.org/10.1037/0033-2909.95.3.542>
- Diener, E. (2000). Subjective well-being: The science of happiness and a proposal for a national index. *American Psychologist*, 55(1), 34–43. <https://doi.org/10.1037/0003-066X.55.1.34>
- Diener, E., Emmons, R. A., Larsen, R. J., & Griffin, S. (1985). The Satisfaction With Life Scale. *Journal of Personality Assessment*, 49(1), 71–75. https://doi.org/10.1207/s15327752jpa4901_13
- Diener, E., Lucas, R. E., & Oishi, S. (2005). Subjective well-being: The science of happiness and life satisfaction. In C. R. Snyder & S. J. Lopez (Eds.), *Handbook of positive psychology* (2nd ed., pp. 63-73). Oxford: Oxford University Press.
- Diener, E., Lucas, R. E., & Oishi, S. (2018). Advances and Open Questions in the Science of Subjective Well-Being. *Collabra: Psychology*, 4(1), 15. <http://doi.org/10.1525/collabra.115>
- Diener, E., & Scollon, C. (2014). The what, why, when, and how of teaching the science of subjective well-being. *Teaching of Psychology*, 41, 175-183.
- Diener, E., Wirtz, D., Tov, W., Kim-Prieto, C., Choi, D., Oishi, S., & Biswas-Diener, R. (2010). New Well-being Measures: Short Scales to Assess Flourishing and Positive and Negative Feelings. *Social Indicators Research*, 97(2), 143–156. <https://doi.org/10.1007/s11205-009-9493-y>
- Downie, M., Mageau, G. A., & Koestner, R. (2008). What makes for a pleasant social interaction? Motivational dynamics of interpersonal relationships. *The Journal of Social Psychology*, 148(5), 523–534. <https://doi.org/10.3200/SOCP.148.5.523-534>

- Duggan, M. & Smith, A. (2014) Social Media Update 2013. Retrieved 23 February 2020, from <http://pewinternet.org/Reports/2013/Social-Media-Update.aspx>
- Ekman, P. (2007). *Emotions revealed*. New York, NY: St. Martin's Griffin.
- Fredrickson B. L. (2004). The broaden-and-build theory of positive emotions. *Philosophical transactions of the Royal Society of London. Series B, Biological sciences*, 359(1449), 1367–1378. <https://doi.org/10.1098/rstb.2004.1512>
- Fredrickson, B. L., & Kahneman, D. (1993). Duration neglect in retrospective evaluations of affective episodes. *Journal of Personality and Social Psychology*, 65(1), 45–55. <https://doi.org/10.1037/0022-3514.65.1.45>
- Gjurković, M., & Šnajder, J. (2018). Reddit: A Gold Mine for Personality Prediction. In *Proceedings of the Second Workshop on Computational Modeling of People's Opinions, Personality, and Emotions in Social Media* (pp. 87–97). New Orleans, LA: Association for Computational Linguistics. Retrieved from <https://www.aclweb.org/anthology/W18-1112/>
- Greenspoon, P. J., & Saklofske, D. H. (2001). Toward an Integration of Subjective Well-Being and Psychopathology. *Social Indicators Research*, 54(1), 81–108. <https://doi.org/10.1023/A:1007219227883>
- Hamilton, C., Adolphs, S., & Nerlich, B. (2007). The meanings of 'risk': A view from corpus linguistics. *Discourse & Society*, 18(2), 163–181.
- Harackiewicz, J. M., Smith, J. L., & Priniski, S. J. (2016). Interest Matters: The Importance of Promoting Interest in Education. *Policy insights from the behavioral and brain sciences*, 3(2), 220–227. <https://doi.org/10.1177/2372732216655542>
- Harris, Z. S. (1954). Distributional structure. *Word*, 10, 146–162. <https://doi.org/10.1080/00437956.1954.11659520>
- Heffner, A. L., & Antaramian, S. P. (2016). The role of life satisfaction in predicting student engagement and achievement. *Journal of Happiness Studies: An Interdisciplinary Forum on Subjective Well-Being*, 17(4), 1681–1701. <https://doi.org/10.1007/s10902-015-9665-1>
- Hodges, B., Kuper, A. & Reeves, S. (2008). Discourse analysis. *BMJ*, 337(7669), 1.
- Holden, R. R., & Passey, J. (2009). Social desirability. In M. R. Leary & R. H. Hoyle (Eds.), *Handbook of individual differences in social behavior* (pp. 441–454). New York, NY: Guilford Press.
- Holmes, J. (2001). *An introduction to sociolinguistics (2nd ed.)*. London: Longman.
- Huppert, F. A., & So, T. T. C. (2013). Flourishing across Europe: Application of a new conceptual framework for defining well-being. *Social Indicators Research*, 110(3), 837–861. <https://doi.org/10.1007/s11205-011-9966-7>

- Hyland, K. (2002). 6. Genre: Language, Context, and Literacy. *Annual Review of Applied Linguistics*, 22, 113-135. <https://doi.org/10.1017/S0267190502000065>
- James, S. L., Abate, D., Abate, K. H., Abay, S. M., Abbafati, C., Abbasi, N., ... Murray, C. J. L. (2018). Global, regional, and national incidence, prevalence, and years lived with disability for 354 diseases and injuries for 195 countries and territories, 1990–2013; 2017: a systematic analysis for the Global Burden of Disease Study 2017. *The Lancet*, 392(10159), 1789–1858. [https://doi.org/10.1016/S0140-6736\(18\)32279-7](https://doi.org/10.1016/S0140-6736(18)32279-7)
- Janik Blaskova, L., & McLellan, R. (2018). Young people's perceptions of wellbeing: The importance of peer relationships in Slovak schools. *International Journal of School & Educational Psychology*, 6(4), 279–291. <https://doi.org/10.1080/21683603.2017.1342579>
- Joshanloo, M., Sirgy, M. J., & Park, J. (2018). Directionality of the relationship between social well-being and subjective well-being: evidence from a 20-year longitudinal study. *Quality of Life Research : An International Journal of Quality of Life Aspects of Treatment, Care and Rehabilitation*, 27(8), 2137–2145. <https://doi.org/10.1007/s11136-018-1865-9>
- Kahneman, D., Krueger, A. B., Schkade, D. A., Schwarz, N., & Stone, A. A. (2004). A survey method for characterizing daily life experience: the day reconstruction method. *Science*, 306(5702), 1776–1780. <https://doi.org/10.1126/science.1103572>
- Kerig, P., Ludlow, A., & Wenar, C. (2012). *Developmental Psychopathology*. (6th ed.) New York, NY: McGraw-Hill.
- Kesebir, P., & Diener, E. (2008). In pursuit of happiness: Empirical answers to philosophical questions. *Perspectives on Psychological Science*, 3(2), 117–125. <https://doi.org/10.1111/j.1745-6916.2008.00069.x>
- Kress, G. (1989). *Linguistic Processes in Sociocultural Practice*. Oxford: Oxford University Press.
- Lu, L., & Gilmour, R. (2004). Culture and conceptions of happiness: individual oriented and social oriented SWB. *Journal of Happiness Studies*, 5(3), 269–291. <https://doi.org/10.1007/s10902-004-8789-5>
- Lucas, R. E., Clark, A. E., Georgellis, Y., & Diener, E. (2004). Unemployment alters the set point for life satisfaction. *Psychological Science*, 15(1), 8–13. <https://doi.org/10.1111/j.0963-7214.2004.01501002.x>
- Lucas, R. E., & Dyrenforth, P. S. (2006). Does the Existence of Social Relationships Matter for Subjective Well-Being? In K. D. Vohs & E. J. Finkel (Eds.), *Self and relationships: Connecting intrapersonal and interpersonal processes* (pp. 254–273). New York, NY: Guilford Press.
- Maslow, A. H. (1954). *Motivation and personality*. New York, NY: Harpers.

- McCormick, M., & Cushman, G.K. (2019). Happiness When the Body Hurts: Achieving Well-Being in Chronic Health Conditions. *Child and adolescent psychiatric clinics of North America*, 28(2), 147-156. <https://doi.org/10.1016/j.chc.2018.11.008>
- Mehl, M. R., & Conner, T. S. (2012). *Handbook of research methods for studying daily life*. New York, NY: Guilford Press.
- Morgan, A. (2010). Discourse analysis: An overview for the Neophyte Researcher. *Journal of Health and Social Care Improvement*, 1, 1-7
- Myin-Germeys, I., Oorschot, M., Collip, D., Lataster, J., Delespaul, P., & van Os, J. (2009). Experience sampling research in psychopathology: opening the black box of daily life. *Psychological Medicine*, 39(9), 1533–1547. <https://doi.org/10.1017/S0033291708004947>
- Norton, D. L. (1977). *Personal Destinies: A Philosophy of Ethical Individualism*. Princeton, NJ: Princeton University Press
- Nussbaum, M. (2003). Capabilities as fundamental entities: Sen and social justice. *Feminist Economics*, 9(2), 33–59. <https://doi.org/10.1080/1354570022000077926>
- Patton, M. Q. (1990). *Qualitative evaluation and research methods* (2nd ed.). Beverly Hills, CA: Sage Publications.
- Plutchik, R. (2002). *Emotions and life*. Washington, DC: American Psychological Association.
- Pushshift. (2020). Reddit Statistics - Pushshift.io. Retrieved 24 February 2020, from <https://pushshift.io/>
- Reddit. (2020a). Off My Chest | What you've been holding in. Retrieved 22 February 2020, from <https://www.reddit.com/r/offmychest/>
- Reddit. (2020b). User Agreement. Retrieved 22 February 2020, from <https://www.redditinc.com/policies/user-agreement>
- Reddit. (2020c). API-terms. Retrieved 22 February 2020, from <https://www.reddit.com/wiki/api-terms>
- Reis, H. T., Sheldon, K. M., Gable, S. L., Roscoe, J., & Ryan, R. M. (2000). Daily well-being: The role of autonomy, competence, and relatedness. *Personality and Social Psychology Bulletin*, 26(4), 419–435. <https://doi.org/10.1177/0146167200266002>
- Robinson, M. D., & Clore, G. L. (2002). Belief and feeling: Evidence for an accessibility model of emotional self-report. *Psychological Bulletin*, 128(6), 934–960. <https://doi.org/10.1037/0033-2909.128.6.934>
- Ryan, R. M., & Deci, E. L. (2000). Self-determination theory and the facilitation of intrinsic motivation, social development, and well-being. *American Psychologist*, 55(1), 68–78. <https://doi.org/10.1037/0003-066X.55.1.68>

- Ryan, R. M., & Deci, E. L. (2001). On Happiness and Human Potentials: A Review of Research on Hedonic and Eudaimonic Well-Being. *Annual Review of Psychology*, 52(1), 141–166. <https://doi.org/10.1146/annurev.psych.52.1.141>
- Ryan, R. M., & Frederick, C. M. (1997). On energy, personality and health: Subjective vitality as a dynamic reflection of well-being. *Journal of Personality*, 65, 529-565.
- Ryff, C. D. (1995). Psychological Well-Being in Adult Life. *Current Directions in Psychological Science*, 4(4), 99–104. <https://doi.org/10.1111/1467-8721.ep10772395>
- Ryff, C. D., & Keyes, C. L. M. (1995). The structure of psychological well-being revisited. *Journal of Personality and Social Psychology*, 69(4), 719–727. <https://doi.org/10.1037/0022-3514.69.4.719>
- Saunders, M. N. K., Lewis, P., Thornhill, A., & Bristow, A. (2015). Understanding research philosophy and approaches to theory development. In M. N. K. Saunders, P. Lewis, & A. Thornhill (Eds.), *Research Methods for Business Students* (pp. 122–161). London: Pearson.
- Schiffrin, D., Tannen, D., & Hamilton, H. E. (2001). *The Handbook of Discourse Analysis*. Oxford: Blackwell Publishing
- Schimmack, U., Diener, E., & Oishi, S. (2002). Life-Satisfaction Is a Momentary Judgment and a Stable Personality Characteristic: The Use of Chronically Accessible and Stable Sources. *Journal of Personality*, 70(3), 345–384. <https://doi.org/10.1111/1467-6494.05008>
- Scollon, C. N., Kim-Prieto, C., & Diener, E. (2009). Experience sampling: Promises and pitfalls, strengths and weaknesses. In E. Diener (Ed.), *Social indicators research series: Vol. 39. Assessing well-being: The collected works of Ed Diener* (pp. 157–180). Berlin: Springer. https://doi.org/10.1007/978-90-481-2354-4_8
- Seligman, M. E. P. (2011). *Flourish: A visionary new understanding of happiness and well-being*. New York, NY: Free Press.
- Sharma, R., Gupta, N., & Bijlani, R. L. (2008). Effect of yoga based lifestyle intervention on subjective well-being. *Indian Journal of Physiology and Pharmacology*, 52(2), 123–131.
- Shatz, I. (2017). Fast, Free, and Targeted: Reddit as a Source for Recruiting Participants Online. *Social Science Computer Review*, 35(4), 537–549. <https://doi.org/10.1177/0894439316650163>
- Shiffman, S., Stone, A. A., & Hufford, M. R. (2008). Ecological momentary assessment. *Annual Review of Clinical Psychology*, 4, 1–32. <https://doi.org/10.1146/annurev.clinpsy.3.022806.091415>

- Siedlecki, K. L., Salthouse, T. A., Oishi, S., & Jeswani, S. (2014). The Relationship Between Social Support and Subjective Well-Being Across Age. *Social indicators research*, 117(2), 561–576. <https://doi.org/10.1007/s11205-013-0361-4>
- Sigley, R., & Holmes, J. (2002). Looking at girls in Corpora of English. *Journal of English Linguistics*, 30(2), 138–157. <https://doi.org/10.1177/007242030002004>
- Sinclair, J. (2004). *Trust the text: Language, corpus and discourse*. London: Routledge.
- Slembrouck, S. (2005). Discourse, critique and ethnography: Class-oriented coding in accounts of child protection. *Languages Sciences*, 27(6), 619–650. <https://doi.org/10.1016/j.langsci.2005.07.002>
- Snyder, M. (1979). Self-monitoring processes. *Advances in Experimental Social Psychology*, 12(C), 85–128. [https://doi.org/10.1016/S0065-2601\(08\)60260-9](https://doi.org/10.1016/S0065-2601(08)60260-9)
- Stephoe, A., Deaton, A., & Stone, A. A. (2015). Subjective wellbeing, health, and ageing. *Lancet*, 385(9968), 640–648. [https://doi.org/10.1016/S0140-6736\(13\)61489-0](https://doi.org/10.1016/S0140-6736(13)61489-0)
- Strack, F., Martin, L. L., & Schwarz, N. (1988). Priming and communication: Social determinants of information use in judgments of life satisfaction. *European Journal of Social Psychology*, 18(5), 429–442. <https://doi.org/10.1002/ejsp.2420180505>
- Strauss, S. & Feiz, P. (2014). *Discourse Analysis*. New York, NY: Routledge.
- Sun, J., Schwartz, H. A., Son, Y., Kern, M. L., & Vazire, S. (2020). The language of well-being: Tracking fluctuations in emotion experience through everyday speech. *Journal of Personality and Social Psychology*, 118(2), 364–387. <https://doi.org/10.1037/pspp0000244>
- Tay, L., & Diener, E. (2011). Needs and subjective well-being around the world. *Journal of Personality and Social Psychology*, 101(2), 354–365. <https://doi.org/10.1037/a0023779>
- The British Psychological Society. (2014). BPS Code of Human Research Ethics (2nd edition, 2014) | BPS. Retrieved 22 February 2020, from <https://www.bps.org.uk/news-and-policy/bps-code-human-research-ethics-2nd-edition-2014>
- The British Psychological Society. (2017). Ethics Guidelines for Internet-Mediated Research (2017) | BPS. Retrieved 22 February 2020, from <https://www.bps.org.uk/news-and-policy/ethics-guidelines-internet-mediated-research-2017>
- The British Psychological Society. (2018). Code of Ethics and Conduct (2018) | BPS. Retrieved 22 February 2020, from <https://www.bps.org.uk/news-and-policy/bps-code-ethics-and-conduct>
- Thesaurus.com. (2020). Synonyms and Antonyms of Words at Thesaurus.com Retrieved 22 February 2020, from <https://www.thesaurus.com/>

- Waterman, A. S. (1993). Two conceptions of happiness: Contrasts of personal expressiveness (eudaimonia) and hedonic enjoyment. *Journal of Personality and Social Psychology*, 64(4), 678–691. <https://doi.org/10.1037/0022-3514.64.4.678>
- Watson, D., Clark, L. A., & Tellegen, A. (1988). Development and validation of brief measures of positive and negative affect: The PANAS scales. *Journal of Personality and Social Psychology*, 54(6), 1063–1070. <https://doi.org/10.1037/0022-3514.54.6.1063>
- Williams, K. D. (2009). Ostracism: A temporal need-threat model. In M. Zanna (Ed.), *Advances in Experimental Psychology*, 41, (pp. 279-314). New York, NY: Academic Press.
- Wootton, R. E., Davis, O. S. P., Mottershaw, A. L., Wang, R. A. H., & Haworth, C. M. A. (2017). Genetic and environmental correlations between subjective wellbeing and experience of life events in adolescence. *European Child & Adolescent Psychiatry*, 26(9), 1119–1127. <https://doi.org/10.1007/s00787-017-0997-8>

Appendices

Appendix A: Python programming script used to obtain descriptive statistics and plot histograms

```
import numpy as np
from scipy.stats import kurtosis, skew
import statistics
import random
import seaborn as sns
from nltk.tokenize import word_tokenize

tokenized_data = [word_tokenize(i) for i in data]

def convert_str_to_word_count(some_list):
    return [len(i) for i in some_list]

def get_descriptive_stats(len_list):
    print("n = ", len(len_list))
    print("mean = ", np.mean(len_list))
    print("max = ", np.max(len_list))
    print("min = ", np.min(len_list))
    print("range = ", np.max(len_list)-np.min(len_list))
    print("std = ", np.std(len_list))
    print("kurtosis = ", kurtosis(len_list))
    print("skewness = ", skew(len_list))
    print("median = ", statistics.median(len_list))
    print("25th percentile = ", np.percentile(len_list, 25))
    print("75th percentile = ", np.percentile(len_list, 75))

def descriptive_stats():
    len_of_posts = convert_str_to_word_count(tokenized_data)
    get_descriptive_stats(len_of_posts)
    ax = sns.distplot(len_of_posts, kde=False)
    plot_title = "Number of words in each OffMyChest post"
    ax.set_title(plot_title)
    ax.set(xlim=(0,3000)) # optional
    ax.set(xlabel='Number of words', ylabel='Number of Posts')

descriptive_stats()
```

Appendix B: List of words considered for positive and negative affect

Affect	Emotion	Words considered
Positive	Happy/Joyful	cheerful cheerfully cheery contented delighted delightedly ecstatic ecstatically elated elatedly enjoy enjoyable enjoyably enjoyed enjoying festive festivity glad gladly happier happiest happily happiness happy hearten heartening hearteningly joy joyful joyfully joyfulness joyous jubilant jubilantly lighthearted lightheartedly liveliness lively merrily merry overjoyed peaceful peacefully pleasant pleasantly pleased pleasurable pleasure rapturous thrilled upbeat
Negative	Sad	bitter bitterly bitterness dismal dismally heartbroken heartbrokenly melancholic melancholy mourn mournful mournfully pessimism pessimistic pessimistically sad somber somberly sorrow sorrowful sorrowfully sorry wistful wistfully wistfulness
	Angry	anger angered angrier angrily angry annoyed bitter bitterly bitterness enraged exasperated exasperatedly furious furiousness fury heated impassionate impassioned indignant indignantly irate irately irritable irritated offend offended outraged rage resent resentful resentfully sullen sullenly uptight
	Afraid	afraid anxiety anxious anxiously apprehensive apprehensively fear fearfully frighten frightened nervous nervously scare scared shock shocked suspicion suspicious suspiciously timid timidity timidly
	Disgusted	appall appalled appalling disgusting disgusted outraged queasily queasiness queasy tired tiredly unhappily unhappy wearily weary

Appendix C: Python programming script used to calculate co-occurrence of words with words relating to affective SWB

```
from nltk.tokenize import word_tokenize
from collections import defaultdict, Counter

tokenized_data = [word_tokenize(i) for i in data]

all_words = defaultdict(int)

def counterized(one_tokenized_text):
    word_count = defaultdict(int)
    for i in one_tokenized_text:
        word_count[i.lower()] += 1
    for i in word_count:
        all_words[i] += word_count[i]
    return word_count

counterized_data = [counterized(i) for i in tokenized_data]

def get_absolute_co_occurrence(affect_words):
    total_co_occurrence = defaultdict(int)

    def get_co_occurrence(word_count, affect_words):
        for affect_word in affect_words:
            if affect_word in word_count:
                for i in word_count:
                    total_co_occurrence[i] += word_count[i]
                break

    for word_count in counterized_data:
        get_co_occurrence(word_count, affect_words)

    return total_co_occurrence

def get_relative_frequency(affect_words, top_n = 500):
    absolute_co_occurrence = get_absolute_co_occurrence(affect_words)
    relative_frequency = defaultdict(int)
    for i in absolute_co_occurrence:
        if all_words[i] > 100:
            relative_frequency[i] = absolute_co_occurrence[i] / all_words[i]
    relative_freq_counter = Counter(relative_frequency)
    return relative_freq_counter.most_common(top_n)

co_occur_with_positive = get_relative_frequency(list_of_positive_words)
co_occur_with_negative = get_relative_frequency(list_of_negative_words)
```

Appendix D: Python programming script to identify examples that contain both word indicating affective SWB and the most collocated word

```
def get_sentence_with_words(list_of_words):
    list_of_index = []
    for i in range(len(counterized_data)):
        found = [False] * len(list_of_words)
        for j in range(len(list_of_words)):
            word = list_of_words[j]
            if word in counterized_data[i]:
                found[j] = True
        if False not in found:
            list_of_index.append(i)
    sentences = []
    for i in list_of_index:
        sentences.append(data[i])
    return sentences

list_of_words = ["happy", "some-associated-word"]
get_sentence_with_words(list_of_words)
```

Appendix E: Un-themed words most commonly used together with words indicating positive and negative ASWB

Positive ASWB

Names	'aaron', 'adam', 'alice', 'andy', 'becky', 'brad', 'dan', 'dave', 'emma', 'eve', 'hannah', 'jacob', 'jan', 'jane', 'jeff', 'jen', 'jim', 'jon', 'kate', 'katie', 'kay', 'kelly', 'leo', 'lisa', 'lucy', 'luke', 'maria', 'mia', 'paul', 'peter', 'rick', 'sam', 'sarah', 'smith', 'tommy'
Close-synonyms of happiness	'amazing', 'beautifully', 'bittersweet', 'bliss', 'blissful', 'bubbly', 'carefree', 'cheer', 'cheered', 'cheering', 'content', 'cordial', 'ecstasy', 'energetic', 'enjoyment', 'enjoys', 'euphoria', 'excitedly', 'excitement', 'fondly', 'fulfilled', 'fulfilling', 'fulfillment', 'giddy', 'giggle', 'giggling', 'glowing', 'heartfelt', 'highlight', 'highlights', 'incredible', 'laughter', 'magical', 'perfection', 'pleasing', 'rewarding', 'satisfaction', 'satisfied', 'smile', 'smiled', 'smiles', 'smiling', 'stunning', 'sweetest', 'wonderful'
Close-antonyms of happiness	'anguish', 'apathy', 'bitterness', 'darn', 'despised', 'dissatisfied', 'emotionless', 'feared', 'hated', 'melancholy', 'resented', 'sadness', 'self-hatred', 'sorrow', 'unhappiness', 'unhappy', 'unsatisfied'
Drugs	'ecstasy', 'mdma', 'mushrooms', 'shrooms', 'stoner', 'substances'
Desire	'craved', 'desires', 'ideally', 'longed', 'longing', 'want', 'wished'
Difficulties	'anxieties', 'beatings', 'burdened', 'hollow', 'lows', 'plummeted', 'sacrifice', 'sacrificed', 'sacrificing', 'solitude', 'spiraled', 'storms', 'suffocated', 'tormented', 'tumultuous', 'weaknesses'
Unclassified words	'accepts', 'afar', 'agreed', 'alas', 'albeit', 'amazingly', 'amends', 'amplified', 'arranged', 'arrangement', 'atmosphere', 'became', 'began', 'belonged', 'bright', 'buckle', 'bursts', 'ceased', 'certainty', 'chapter', 'chore', 'coincidentally', 'convention', 'convey', 'day', 'deaf', 'deserved', 'destiny', 'devoid', 'discover', 'discovering', 'dissociate', 'downs', 'dreamed', 'dull', 'duration', 'dynamics', 'embraced', 'emotion', 'emphasis', 'ensued', 'eternally', 'eventually', 'exchanged', 'exchanging', 'exclusive', 'explored', 'exploring', 'faded', 'felt', 'fewer', 'fills', 'fleeting', 'frequency', 'fullest', 'funniest', 'gaze', 'greater', 'greener', 'grin', 'guarded', 'halls', 'hanged', 'healthier', 'heels', 'hosted', 'hypothetical', 'illusion', 'indefinitely', 'infinitely', 'insisted', 'intuition', 'journey', 'lacked', 'lasted', 'lengthy', 'loaded', 'madly', 'materialistic', 'mattered', 'merely', 'moments', 'neutral', 'nevertheless', 'newfound', 'niche', 'nodded', 'non-existent', 'noting', 'obliged', 'official', 'oftentimes', 'organise', 'outgoing', 'parade', 'parted', 'paths', 'pining', 'pleaded', 'poly', 'presence', 'priorities', 'programme', 'pure', 'quirks', 'recognised', 'reluctantly', 'repressing', 'respective', 'revolved', 'rocking', 'seemed', 'sensed', 'sensibleeternal', 'settled', 'shared', 'shortly', 'shred', 'smelly', 'sparked', 'spat', 'splitting', 'spontaneous', 'stuttering', 'sucker', 'suffice', 'suited', 'surprises', 'surround', 'sync', 'temporary', 'thoroughly', 'thriving', 'tolerable', 'transparent', 'treasure', 'unspoken', 'upgrade'

Negative ASWB

Names		'aaron', 'alice', 'andy', 'anna', 'ashley', 'becky', 'brad', 'brian', 'chris', 'dan', 'david', 'emily', 'emma', 'jacob', 'jared', 'jon', 'kate', 'kay', 'kelly', 'leo', 'lisa', 'lucy', 'luke', 'maria', 'matt', 'mia', 'mike', 'molly', 'nick', 'nicole', 'paul', 'peter', 'sam', 'sarah', 'smith', 'susan', 'tim', 'tommy'
Close-synonym to negative affect	Anger	'adrenaline', 'aggression', 'aggressively', 'agitated', 'assaults', 'attack', 'attacks', 'bark', 'barking', 'beatings', 'belittling', 'berating', 'blackmail', 'brunt', 'coerced', 'confrontation', 'cornered', 'cps', 'cussing', 'discharged', 'disrespecting', 'escalated', 'eviction', 'exploded', 'explosive', 'fights', 'fist', 'fists', 'forcefully', 'hatred', 'intrusive', 'knocks', 'lash', 'lashed', 'lashing', 'mistreated', 'mocked', 'outburst', 'outbursts', 'overreact', 'overreacted', 'pent', 'poked', 'punched', 'punching', 'raging', 'resented', 'resenting', 'resentment', 'sabotaged', 'scolded', 'shatter', 'shotgun', 'shouted', 'shouts', 'shoved', 'slapped', 'smashing', 'spat', 'spiteful', 'spitting', 'stern', 'stormed', 'swearing', 'tantrum', 'tantrums', 'temper', 'threaten', 'threatening', 'threats', 'violent', 'violently', 'volatile', 'wounded', 'yell', 'yelled', 'yelling'
	Sadness	'angst', 'angsty', 'anguish', 'berate', 'distress', 'distressed', 'moody', 'remorse', 'teared', 'wrongs'
	Fear	'agoraphobia', 'anxieties', 'apologetic', 'apologise', 'apologised', 'apologize', 'apologized', 'apologizes', 'apologizing', 'apology', 'appease', 'avoidant', 'chickened', 'crybaby', 'doormat', 'eggshells', 'feared', 'fearful', 'fearing', 'fears', 'flinch', 'frightening', 'froze', 'hid', 'horrified', 'horrifying', 'looming', 'nervousness', 'numbing', 'panic', 'panicked', 'panicky', 'paralyzed', 'petrified', 'phobia', 'pinned', 'pleading', 'racing', 'ramble', 'rambling', 'rambly', 'scares', 'scaring', 'scarred', 'scary', 'screamed', 'screaming', 'shaking', 'shaky', 'shells', 'shitless', 'shyness', 'startled', 'stunned', 'stutter', 'suffered', 'suffers', 'tense', 'terrified', 'terror', 'traumatised', 'traumatized', 'triggered', 'triggering', 'triggers', 'unsafe', 'whipped'
	Disgust	'discomfort', 'dizzy', 'hysterical', 'nausea',
Close antonyms to negative affect		'calm', 'calmed', 'calmly', 'cheerful', 'composed', 'composure', 'cordial', 'highlights', 'normalcy', 'unhappiness', 'unsatisfied'
Unclassified words		'accurately', 'acted', 'admits', 'alley', 'amplified', 'analyze', 'autonomy', 'bathtub', 'became', 'began', 'begged', 'begins', 'behaviours', 'blur', 'blurry', 'bragged', 'brunch', 'buckle', 'budge', 'cab', 'cafeteria', 'ceased', 'chad', 'clouded', 'contrary', 'crowded', 'dared', 'daylight', 'demeanor', 'demon', 'denies', 'depended', 'deserved', 'digress', 'disdain', 'displayed', 'distinctly', 'dragged', 'eighth', 'elder', 'emotionless', 'ensued', 'erratic', 'eventual', 'examination', 'explained', 'explanations', 'foggy', 'forgetful', 'format', 'formatting', 'fourteen', 'fox', 'fueled', 'generalized', 'ginger', 'grammar', 'grammatical', 'headlights', 'hopping', 'housework', 'husk', 'implies', 'incident', 'incidents', 'inherited', 'instilled', 'interpreted', 'joints', 'jumbled', 'knowingly', 'lectured',

	<p>'lengthy', 'littlest', 'locked', 'locking', 'manifested', 'mic', 'mobile', 'moods', 'moreover', 'mourning', 'native', 'navigate', 'ofcourse', 'operator', 'paragraphs', 'periodically', 'persisted', 'postpone', 'preparation', 'prisoner', 'projecting', 'prone', 'rapid', 'reacted', 'reacts', 'recall', 'recess', 'recognise', 'relentless', 'repaired', 'repercussions', 'revealed', 'revolved', 'risks', 'rumor', 'seeker', 'seventeen', 'shelters', 'sinks', 'sounded', 'spelling', 'spine', 'stemmed', 'steroids', 'straightforward', 'subsequent', 'summarize', 'survivors', 'swallowed', 'sweating', 'tangent', 'tended', 'tent', 'that.', 'thirteen', 'tiger', 'tmi', 'tolerable', 'truthful', 'typed', 'typos', 'underlying', 'understandably', 'unorganized', 'unpack', 'urged', 'verbally', 'visibly', 'waved', 'witnesses'</p>
--	---

Appendix F: Words under the theme of Relationships

Sub-themes	Positive ASWB words	Negative ASWB words
Social relationships (supportive)	'adorable', 'amicable', 'appreciates', 'appreciating', 'appreciative', 'bonding', 'bonds', 'chatted', 'cherish', 'cherished', 'companionship', 'depended', 'dependent', 'donor', 'embraced', 'endearing', 'engagement', 'frank', 'granny', 'greeted', 'hugged', 'kindest', 'loving', 'nurturing', 'platonic', 'pleaser', 'popularity', 'reconnected', 'salvage', 'solidified', 'step-dad', 'tended', 'thoughtful', 'traditions', 'unconditionally', 'warmed', 'warmth', 'welcoming', 'wholeheartedly'	'accompanied', 'advised', 'assured', 'breadwinner', 'confiding', 'empathize', 'fend', 'forgave', 'forgiving', 'groomed', 'nurturing', 'reassured', 'socialising', 'stepfather', 'sympathetic', 'trusts', 'unblocked'
Social relationships (unsupportive)	'bickering', 'distanced', 'downer', 'rift'	'abandonment', 'disappointed', 'friendless', 'isolate', 'manipulating', 'neglect', 'neglectful', 'rebel', 'rift', 'unforgivable'
Romantic relationships (supportive)	'admired', 'adores', 'bdsm' (Bondage, Discipline, Dominance, Submission, Sadism and Masochism), 'cartoons', 'cling', 'couples', 'cuddled', 'cuddling', 'darling', 'dedication', 'devote', 'devoted', 'engaged', 'fiancée', 'fling', 'flings', 'foreplay', 'gal', 'hentai', 'honeymoon', 'hugged', 'inseparable', 'kinks', 'long-distance', 'loved', 'lovers', 'loving', 'lube', 'marriages', 'marrying', 'monogamous', 'monogamy', 'orgasms', 'pda' (public display of affection), 'penetration', 'polyamorous', 'proposal', 'proposed', 'proposing', 'roleplay', 'romance', 'rose', 's.o' (significant other), 'sappy', 'sm' (Sadism and Masochism), 'smitten', 'soulmate', 'soulmates', 'sperm', 'sweetheart', 'unconditionally', 'wedding'	'housewife', 'martial', 'mistress', 'pda' (public display of affection)
Romantic relationships (unsupportive)	'break-up', 'ex-gf' (ex-girlfriend), 'ex-wife', 'infidelity'	'ex-gf' (ex-girlfriend)
Celebrations	'16th', '17th', '18th', '20th', 'baking', 'bday' (birthday), 'birthday', 'birthdays', 'celebrate', 'celebrated', 'celebration', 'christmas', 'congrats', 'congratulated',	

	'decorate', 'decorations', 'dj' (disk jockey), 'eighth', 'eve', 'farewell', 'festivals', 'fireworks', 'gifts', 'holidays', 'homecoming', 'interests', 'presents'	
Disagreements		'accuse', 'accuses', 'argued', 'arguments', 'bickering', 'blamed', 'blames', 'blaming', 'debated', 'defensive', 'disagreed', 'distrust', 'interrupting', 'invalidate', 'refusal', 'reluctant', 'reluctantly', 'repress', 'spat', 'suppressed', 'tricked', 'twisting'

Appendix G: Words under the theme of Strive for better vs. Helplessness

Strive for better

Sub-themes	Positive ASWB words
Positive attitude	'anticipation', 'determined', 'devote', 'devoted', 'eager', 'embraced', 'enthusiasm', 'enthusiastic', 'hoped', 'improved', 'improvements', 'independence', 'individually', 'initiated', 'inspire', 'optimism', 'optimistic', 'overcame', 'overcoming', 'persisted', 'positivity', 'rebuilding', 'self-confidence'
Achievement	'accomplish', 'accomplishing', 'achieved', 'ambitions', 'ambitious', 'aspirations', 'caved', 'creation', 'dedication', 'determined', 'devote', 'devoted', 'envious', 'envy', 'euros', 'honored', 'improved', 'pursuit', 'relentless', 'schoolwork', 'strive', 'successes', 'tournament', 'trophy', 'unfulfilled'
Reflection	'contemplated', 'nostalgia', 'reminiscing', 'revelation'

Helplessness

Sub-themes	Negative ASWB words
Disempowerment	'despair', 'disorganized', 'hesitated', 'hindsight', 'inability', 'inferiority', 'irrational', 'irrationally', 'overthink', 'self-doubt', 'self-pity', 'stuttering', 'uncontrollably'
Difficulties	'errors', 'exhaustion', 'fatigued', 'incoherent', 'injustice', 'instability', 'overworked', 'riddled', 'torment', 'tumultuous', 'turmoil', 'unpredictable', 'unstable',
Intensity modifiers	'exaggerating', 'excessively', 'intensely', 'profusely', 'relentlessly', 'severe', 'tremendously', 'worsened', 'worsening'

Appendix H: Words under the theme of Health Issues

Explanations of abbreviations are in parentheses.

Sub-theme	Negative ASWB words
Mental/Physical conditions	'antidepressants', 'asperger', 'batshit', 'bipolar', 'bouts', 'bpd' (Bipolar Personality Disorder), 'breakdown', 'breakdowns', 'clinically', 'crippling', 'depression', 'depression/anxiety', 'diagnose', 'disorder', 'dosage', 'epilepsy', 'episodes', 'fainted', 'gad', 'hallucinations', 'hyperventilating', 'ibs' (Irritable Bowel Syndrome), 'ill', 'illnesses', 'institute', 'invalid', 'lurker', 'maniac', 'medicated', 'medication', 'medications', 'medicines', 'meltdown', 'meltdowns', 'neurologist', 'ocd' (Obsessive Compulsive Disorder), 'paranoia', 'plagued', 'prescribed', 'prozac', 'psychiatrist', 'psychiatrists', 'psychologist', 'ptsd' (Post Traumatic Stress Disorder), 'ridden', 'seizures', 'self-harming', 'self-hatred', 'swings', 'symptom', 'symptoms', 'tablet', 'terminally', 'undiagnosed', 'unstable', 'untreated', 'unwell', 'xanax', 'zoloft'
Therapy	'alleviate', 'cbt' (Cognitive Behavioural Therapy), 'counseling', 'counselling', 'counsellor', 'counselor', 'therapy'

Appendix I: Words under the theme of Leisure

Sub-themes	Positive ASWB words
Hobbies	'animation', 'artistic', 'baking', 'ballet', 'bands', 'bench', 'choir', 'climbed', 'danced', 'dancing', 'explore', 'guitar', 'hike', 'hobbies', 'hobby', 'hockey', 'horses', 'karaoke', 'musicians', 'overwatch', 'passion', 'passions', 'piano', 'pokemon', 'pokémon', 'rhythm', 'runner', 'sang', 'singing'
Nature	'breeze', 'brighter', 'cloud', 'clouds', 'moon', 'ray', 'shore', 'storms', 'sunset', 'sunshine'
Calmness	'breeze', 'calming', 'chilled', 'comforts', 'counselling', 'normalcy', 'refreshing', 'relaxed', 'relieved', 'rested', 'shore', 'solace', 'therapeutic'
Travel	'adventure', 'adventures', 'airbnb', 'flew', 'hostel', 'motel', 'tent', 'traveled'