
An Analysis of the Language of Suicidal Thoughts and Suicide Attempts on Social Media Platforms through the Lens of the ‘Interpersonal Theory of Suicide’

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Abstract

Language is an essential means to communicate and express how people think or feel. This study aimed to investigate if suicide-related behaviors can be evidenced by linguistic signs in posts on social media platforms. A total of 490 posts from 17 bloggers who had depressive episodes were analyzed. The analysis was based on Systemic Functional Linguistics (Halliday & Matthiessen, 2004) and the Interpersonal Theory of Suicide (Joiner, 2005) frameworks. According to the results, the presence of language related to perceived burdensomeness, thwarted belongingness, and acquired capability was found. Feelings of hopelessness, worthlessness, and emptiness were also reported in the data. These aspects were stated by bloggers in both explicit and implicit ways and could be identified using some linguistic indicators at word level, group level, and clause level. Three patterns of social media posts were revealed: stressed posting, triggering posting, and problem posting. Increased understanding of the language of suicidal thoughts and suicide attempts is helpful for family and friends as well as medical practitioners in detecting or in dealing with suicidal thoughts and/or behaviors, and in averting the occurrence and/or recurrence of suicide attempts.

Keywords: depression, major depressive disorder, suicidal behaviors, Interpersonal Theory of Suicide, social media

1. Introduction

Suicide is one of the silent killers that causes numerous deaths around the world. As estimated in 2019, more than 700,000 people take their lives every year (WHO, 2021). In other words, one person ends their life every 40 seconds. Suicide can occur in every level of society from those with low income to those who have a high income. According to *Suicide Worldwide in 2019: The Global Health Estimates Report* (WHO,

2021), suicide is one of the top four causes of death of those aged 15 to 29 years. However, males have a higher rate of suicide than females in this age group. For both genders, suicide was the fourth leading cause of death, after road injury, tuberculosis, and interpersonal violence.

Suicide may occur to anyone. The influential people in the world, celebrities, actors, singers, and the public can be victims of this silent killer. In December 2017, there was the tragic incident of Kim Jonghyun's suicide, a member of SHINee, a famous South Korean boy band. He was found unconscious in his apartment from carbon monoxide poisoning. He left a note revealing that he was broken from the inside and could not overcome his depression which had been slowly consuming him for a long time (Wang, 2017). One of the warning signs he gave before passing away was a tattoo that he posted on his Instagram account. The tattoo depicted a black dog sitting within a frame and the message: *"I have a black dog. If you touch, you'll get bitten!"* This tattoo was the most obvious sign of his mental state, because a black dog is widely known as a metaphor for depression. His fans felt guilty that they were unable to interpret Jonghyun's signs of sadness, even though he posted it on his social media account (Koreaboo, 2017).

Another case is the loss of Chester Bennington, the vocalist of the famous rock band Linkin Park, who was reported to have hung himself in his bedroom. A partially empty bottle of alcohol was found nearby (King, 2018). As reported by CNN, Bennington's wife mentioned that he gave her some warning signs such as self-isolated behavior, a sense of hopelessness, and alcohol addiction. However, she had not been educated to detect precursory signs of potential suicidal, so failed to notice.

Based on the above-mentioned cases, those who succeed in committing suicide give some indicators such as verbal expressions, images, and changes in their behavior. In this active area of research, several studies have concentrated on behaviors predicting suicide attempts. For example, a study by Joiner et al. (2009) disclosed that the presence of perceived burdensomeness and low sense of belongingness in text often resulted in suicidal ideation and the capability to take one's life. Van Orden et al. (2011) also revealed that perceived burdensomeness, thwarted belongingness, and hopelessness were sufficient for predicting potential suicide attempts. Another study by Selby et al. (2010) of US military personnel indicated that thwarted belongingness and acquired capability were necessary factors leading to suicide.

Aside from observing behaviors, Pompili et al. (2016) reported that half of all those who commit suicide express suicidal intentions before taking their life. Based on previous research, the number of studies about language relating to suicidal ideation or attempts remains inadequate. Results from the study by Wasserman et al. (2008) showed that the participants admitted that they felt they did not receive positive support from others. They also communicated their negative feelings before attempting suicide. Examples of their written expressions are: *"very sad"*, *"life is meaningless"*, and *"my death could free me from my terrible life"*. A more recent study by Angkapanichkit et al.

(2019) focused on the language used by university students with depression. The participants revealed that they felt terrible being in a depressed condition. They used particular groups of vocabulary to express their negative feelings such as self-blame, loneliness, worthlessness, and burdensomeness.

To investigate whether suicide ideations or attempts can be indicated by linguistic signs, the Interpersonal Theory of Suicide, proposed by Joiner (2005), was deployed as a theoretical framework to identify the language showing suicide-related behaviors, and syntactic analysis based on Systemic Functional Linguistics (SFL; Halliday & Matthiessen, 2004) was applied to extract the language displaying suicidal thoughts or behaviors.

2. Literature Review

2.1 Suicide

The word 'suicide' derives from the combination of two Latin bases, *sui* (= of oneself) and *caedere* (= to kill). This word was first introduced in the 17th century by Sir Thomas Browne, an English psychologist and philosopher, in the book named *Relegio Medici* (Karthick & Barwa, 2017). The Centers for Disease Control and Prevention (2021) in the USA defines suicide as a cause of death by harming oneself with an intention to die. The American Psychological Association (2021) states that suicide is a behavior to take one's life, mostly affected by depression and other psychiatric disorders. It can be concluded that suicide is an act of hurting oneself with the intention of fatal consequences.

The suicide process consists of thinking, planning, and completing. Castle and Kreipe (2007) proposed that there are three types of suicidal behaviors: suicidal ideation, suicide attempt, and completed suicide. Suicidal ideation is a repetitive thought of killing oneself. A suicide attempt is an action with the intent to die, but is unsuccessful. Completed suicide is an act where someone is successful in ending their life. This is similar to Castle and Kreipe (2007) and O' Connor and Nock (2014) who assert that suicidal behaviors are thoughts and behaviors related to the decision of ending one's life. It can be divided into two types. The first type is a suicidal plan – a plan that is created for ending their life. The second is a suicide attempt – a behavior of lethal self-harm.

Commonly, suicide involves three behaviors: suicidal thoughts, suicide attempt, and completed suicide. However, there is a misunderstanding between suicide attempts and self-harm. The major difference is that a suicide attempt is a behavior that someone does to end their life. On the other hand, self-harm is a behavior where someone harms themselves to help cope with poignant thoughts, feelings, or difficulties. Self-harm can be either minor or high-risk behaviors (Foye et al., 2019).

Van Orden and Cornwell (2011) suggest that there are six potential risk factors for suicide. These include: (1) psychiatric illnesses (e.g., dementia, depression, and mood disorder); (2) social disconnectedness; (3) physical illness and pain (e.g., malignancies, heart and lung diseases, and spinal cord injury); (4) functional impairment (e.g., fear of losing autonomy); (5) cognitive and neurobiological processes (e.g., a lack of executive functioning); and (6) personality and cultural factors (e.g., societal attitudes and cultural background). Selby et al. (2010) proposed that previous trauma, low family support, high family conflict, low cognitive ability, and personal and family psychopathological history are key risk factors for suicide. Other risk factors stated by other researchers are childhood physical abuse (Cero & Sifers, 2013; O' Connor & Nock, 2014), low levels of serotonin (Smith & Cukrowicz, 2010), and genetics (Smith & Cukrowicz, 2010).

According to the list of risk factors mentioned above, the predominant factor contributing to suicide is major depressive disorder or depression (Nock et al., 2009). It was reported that 60% of suicide attempts were made by those who have a major depressive disorder. Moreover, people who had depressive symptoms were more likely to commit suicide than the general population (U.S. Department of Health and Human Services, 2022). This is the reason why mental health issues, specifically depression (which is a common precursor to suicide), has been taken into consideration by many sectors of the medical institutions. Although several factors lead to an increase in near-lethal suicide attempts, it can be prevented by supportive relationships with friends, family, and community, accessibility to physical and mental health care, problem-solving skills, and limited access to lethal means (Centers for Disease Control and Prevention, 2021).

2.2 Interpersonal Theory of Suicide

The Interpersonal Theory of Suicide was proposed by Thomas Joiner (2005). This theory focuses on the elaboration of suicidal ideation and the progression from ideation to a suicide attempt. Through the lens of this theory, two interpersonal constructs that predict suicidal desire are 'perceived burdensomeness' and 'thwarted belongingness'. These two constructs may contribute to a person exhibiting in suicidal behaviors (Van Orden et al., 2011).

'Perceived burdensomeness' is conceptualized as a belief that the self is a burden on others. Joiner et al. (2009) asserted that individuals who experience perceived burdensomeness have the idea that "*my death will be worth more than my life to family, friends, society, etc., I should not have been born*". This interpersonal construct can be detected by statements such as "*I make things worse for the people in my life*" or "*I am useless*" or "*I hate myself*". Family conflict, incarceration, unemployment, physical illness, and homelessness are all potential factors contributing to increasing levels of perceived burdensomeness (Van Orden et al., 2011).

'Thwarted belongingness' is another indicator of a potential to commit suicide. In most cases, people who commit suicide fail to positively connect to others. When the

need for belonging is unmet, this is a state where thwarted belongingness is formed (Van Orden et al., 2011). Individuals who experience failed belongingness tend not to interact with others and isolate themselves from their friends, family, or community. They may feel unwanted, lonely, and out of place. Some of them may express their feelings by stating “*I am alone*” or “*I have no one to turn to.*”

‘Acquired capability’ is another key motivational construct contributing to suicide. It is the development of fearlessness and competence regarding suicide (Stellrecht et al., 2006). There are two dimensions of enacting lethal self-harm – an increased physical pain tolerance, and a lowered fear of death (Van Orden et al., 2011). Repeated intentional self-harm and painful activities can instill those two dimensions leading to a successful suicide. Those who have suicidal ideation use expressions such as “*I want to die*” or “*I want to kill myself.*”

According to previous studies, the three-way interaction of perceived burdensomeness, thwarted belongingness, and acquired capability is crucial and it is an indicator to predict whether or not individuals’ current suicidal crises involved suicide attempts as well as desire to commit suicide (Ribeiro & Joiner, 2009; Van Orden et al., 2011). Christensen et al. (2013) reports that the perception of burdensomeness and the absence of belongingness results in acquired capability. Moreover, feeling hopeless was also one of the potential factors leading to suicide.

Perceived burdensomeness, thwarted belongingness, and acquired capability are three significant components in the Interpersonal Theory of Suicide. These three constructs explain how suicidal ideation develops into suicide attempts and then successful suicide. This is the reason why this framework was adopted in this study, to determine if posts on social media also show the existence of suicidal ideations or suicidal behaviors, and then is used to identify which constructs are evident.

2.3 Systemic Functional Linguistics (SFL)

SFL was developed by M.A.K. Halliday in the 1960s. This theoretical framework explains how language functions and how language is deployed in different contexts. From the SFL viewpoint, language is composed of four strata which are context, semantics, lexicogrammar, and phonology-graphology. The focus of this study is on the system of wording or lexicogrammar level as the objective is to investigate if suicidal thoughts or suicide attempts can be evidenced by any linguistic signs in social media posts.

To analyze the data, the rank scale of the grammatical hierarchy is adopted (Thompson, 2004). This rank scale consists of morpheme level, word level, group/phrase level, and clause level as shown in Figure 1. This study only focused on three levels: the word level, the group/phrase level, and the clause level. The morpheme level was not included in this study because Thai is an isolating language. Morpheme usage is not a significant feature when compared to word usage. Thus, starting at the word level as an

entry point of discussion is appropriate. This theoretical concept will be helpful for extracting how the language of suicide is constructed in written material.

Figure 1

Rank Scale of Grammatical Hierarchy (Thompson, 2004)

<p>Clauses e.g., /// Computer facilities are free of charge /// <i>are made up of one or more</i></p>
<p>Groups/Phrases e.g., /// [computer facilities] [are] [free of charge] /// <i>are made up of one or more</i></p>
<p>Words e.g., [{computer} {facilities}] <i>are made up of one or more</i></p>
<p>Morphemes e.g., {<compute><er>} {<facility><s>}</p>

2.4 Social Media

Social media is computer-mediated communication. It is a type of digital communication occurring with the support of a computer, such as instant messaging, email, and video conferencing (Bohn, 2021). Kakkar (2020) suggests that there are eight types of social media:

- (1) social networks (e.g., Facebook, Twitter, LinkedIn),
- (2) media sharing networks (e.g., Youtube, Instagram, Snapchat),
- (3) discussion forums (e.g., Reddit, Quora),
- (4) bookmarking and content curation networks (e.g., Pinterest),
- (5) consumer review networks (e.g., TripAdvisor, Agoda),
- (6) blogging and publishing networks (e.g., WordPress, Tumblr, Medium),
- (7) social shopping networks (e.g., Etsy, Shein, Fancy), and
- (8) interest-based networks (e.g., Houzz, Goodreads).

The advantages of social media are on three principal levels: the personal level, the professional level, and the company level. On a personal level, social media is a means to communicate with others such as friends, family, and colleagues, as well as a way to learn new information, develop interests, and have enjoyment. On a professional level, social media can be used to build and broaden professional networks and expand knowledge in a particular field. On a company level, social media is beneficial for organizations to communicate with customers, gain feedback, and advertise their company (University of South Florida, 2021). Nevertheless, users should be aware that

personal information posted on social media is not safe. It can be shared, stolen, or sold for commercial purposes. Also, the information found in social media is not wholly reliable as it can be edited by anyone.

Social media use yields both positive and negative outcomes related to psychological distress and suicidal ideation (Daine et al., 2013; Radovic et al., 2017). Based on semi-structured interviews, Radovic et al. (2017: 5) reported both positive and negative use of social media: positive use included searching for positive content (e.g., for entertainment, humor, content creation) or for social connection; negative use included sharing risky behaviors, cyberbullying, and for making self-denigrating comparisons with others possible.

Negative aspects of social media use include social media fatigue (Dhir et al., 2018), and significant reductions in loneliness and depression by limiting social media use (Hunt et al., 2018). Potential risks of problematic use of social media for well-being are reported on three main themes: (i) time spent and sleep quality (Brunborg & Andreas, 2019; Sampasa-Kanyinga & Lewis, 2015; Woods & Scott, 2016; Yan et al., 2017); (ii) Internet activity, namely passive and active Facebook use (Frison & Eggermont, 2016); and (iii) use of various social media platforms (Barry et al., 2017), including a wide range research on Internet addiction in various context (China: Wang et al., 2018; Korea: Kim et al., 2006; Taiwan: Lin et al., 2014; Thailand: Hanprathet et al., 2015; Turkey: Aydin et al., 2021).

In terms of self-harm and suicidal ideation, several studies have reported on constructive Internet use, namely seeking empathy and support, professional help-seeking, and coping strategies (Jones et al., 2011; Smithson et al., 2011). However, negative influences of Internet use have also been investigated by numerous scholars including cyberbullying (Hay & Meldrum, 2010; Hinduja & Patchin, 2010), depression (Barak & Dolev-Cohen, 2006; Park et al., 2013), increased risk of self-harm (Lam et al., 2009), and suicidal ideation (Katsumata et al., 2008).

3. Methodology

3.1 Data Collection

Social media data used in this study were collected from personal weblogs i.e., Storylog (<https://storylog.co>), Blogger (<http://depressedream.blogspot.com>), and Bloggang (<https://www.bloggang.com/viewdiary.php?id=panicattack&month=04-2017&group=1>). The posts were selected following a predetermined data selection criteria. The criteria contained five requirements as described below:

- (1) The posts were written in Thai to share the experience of being in a depressed mood or having major depressive disorder (MDD).
- (2) Keywords and metaphorical expressions related to depression and suicide were used to search for posts with depressed messages and suicidal behaviors. Examples of keywords include depressed, depression, MDD, failure, die, death, suicide, worthless, and loneliness. Instances of metaphorical expressions are black dog, black hole, trash, corpse, and alien.
- (3) As this study was a retrospective cohort study, the posts were published during the period 2015 to 2020, so that the development of depression and suicidal behaviors were presented over time.
- (4) The posts were written as either prose or poetry. However, the content had to be written by the bloggers. Lyrics, poems, or any piece of writing by others – and cited in any post – were excluded from the analysis in this study.
- (5) Each blog had at least 15 entries, with more than 60% of posts in each blog presenting ideas about a depressed mood, depression, self-harm, suicidal thoughts, and/or suicide attempt(s). The cutoff point of 15 post entries is in accordance with a definition of depressive episodes. That is, a person who experiences depressed mood (feeling sad, irritable, empty) or a loss of pleasure or interest in activities, for most of the day, nearly every day, for at least two weeks is diagnosed with depression (WHO, 2021).

After completing the data selection process, 490 posts from 17 bloggers were included in the study. There were 403,172 words in total. This study included five male bloggers and 12 females. All the posts were written in Thai. They were translated into English by the researchers and back-translated by an English native speaker to ensure the translation accuracy.

3.2 Data Analysis

Discourse analysis was applied as an interpretive method in this study. The identification of suicidal thoughts and suicide attempts were based on the Interpersonal Theory of Suicide (Joiner, 2005). In order to recognize language reflecting suicidal thoughts and suicide attempts, the data were analyzed using SFL. The deployment of syntactic analysis was set. The units of the analysis were on three levels of rank scale of grammatical hierarchy (i.e., word level, group/phrase level, and clause level). After reading the entire text, the data were extracted and analyzed, starting with word level, group/phrase level, and clause level, respectively. Lexical choices, phrases, and clauses displaying the feelings, thoughts, and actions related to perceived burdensomeness, thwarted belongingness, and acquired capability as reported by the bloggers were marked. To ensure a high accuracy rate, the data were individually double-checked by two coders who have expertise in counseling psychology and linguistics.

4. Results

The language used by the bloggers indicated suicidal thoughts, suicide attempts, and a desire to commit suicide. Of the bloggers, 71% (12 out of 17) indicated perceived burdensomeness. Twelve bloggers showed a sense of thwarted belongingness. Regarding acquired capability, the presence of acquired capability was found in the writing of 11 bloggers. Among them, seven bloggers (or 41%) expressed all three constructs of the Interpersonal Theory of Suicide through their text. The results also revealed that language signaling of perceived burdensomeness, thwarted belongingness, acquired capability, and other suicidal thoughts and behaviors could be detected by the linguistics indicators.

4.1 Word Level Analysis

At the word level, keywords and word frequency were extracted. The top 10 most frequent words are presented in Table 1.

Table 1

Top ten most frequent words

No.	Words	Instances	%	Word classes
1.	pronoun: I [เ​ร​า, ้​น]	4,923	2.74	Grammatical word
2.	relative pronoun [็​]	4,407	2.45	Grammatical word
3.	conjunction [็​]	3,178	1.77	Grammatical word
4.	aspect marker [็​]	2,982	1.66	Grammatical word
5.	negation [็​]	2,961	1.65	Grammatical word
6.	complementizer [็​]	2,712	1.51	Grammatical word
7.	auxiliary: future [็​]	2,344	1.31	Grammatical word
8.	pronoun: it [็​]	2,221	1.24	Grammatical word
9.	verb: go [็​]	2,221	1.24	Content word
10.	conjunction [็​]	2,032	1.13	Grammatical word

Among the 10 most frequent words, grammatical words were dominantly found (9 out of 10). The first-person pronoun and its variant as self-referencing verbal behavior (i.e., I [เ​ร​า and ้​น]) were ranked first. It is interesting to note that the sixth rank (็​) was classified as a complementizer linking between two clauses (i.e., projecting and projected clauses). The projecting clauses were expressed by verbs of sensing (e.g., *feel*, *think*, *be bored*, and *be afraid of*). Verbs of sensing projected another clause containing cognitive words of burdensomeness (e.g., *I feel that I am a burden on everyone*; *I am bored to be a burden on others*) and thwarted belongingness (e.g., *I feel like I am an alien*; *I feel that I am an unwanted person*; *When I am down, I feel like I am alone.*)

By qualitatively examining the data, it was found that language indicating perceived burdensomeness, thwarted belongingness, and acquired capability had both similarities and differences in language use at the word level of analysis. The obvious similarity among the texts was that they all used the first-person pronoun ‘I’ repeatedly throughout their blogs.

In terms of conjunctions, there was no specific use of this linguistic element. The use of conjunctions, such as *and*, *because*, *when*, and *if*, can be widely seen in the texts. The major differences in the language relating to the constructs of perceived burdensomeness, thwarted belongingness, and acquired capability was the content word. There was a range of keywords and lexical metaphors used by the bloggers to identify each concept.

Table 2

Linguistic realization of the three constructs of the Interpersonal Theory of Suicide

Realization Aspects	Explicit realization			Implicit realization
	Nouns	Verbs	Phrases and clauses	Metaphor & idiom
perceived burdensomeness	a burden, a problem, a mistake, a problem, a difficulty, and a trouble maker	burden	I am a burden. I am an onus. I am an obstruction to others. I am dependent. I am useless. I am weak. I should not be born. I waste of parent’s money. I make others in trouble. I make everyone fed up.	<u>metaphor</u> : trash, a retard lump <u>idiom</u> : a good for nothing
thwarted belongingness	disconnection, disassociation, and loneliness	disconnect, isolate	I am lonely. I am alone. No one cares, if I die. Among friends, I am not part of the group. I am different from others. I have no one understand me. I am lonely in the big world. I should not be alive in this universe. I lock myself in my gray world.	an alien, a monster, unwanted cells, gray world, Jupiter and Pluto, and dwarf planet

acquired capability	<u>nouns</u> : a cutter, a knife, a pair of scissors, a gun, a rope, a wire, filament stretch cords, and sleeping pills <u>place names</u> : a bridge, stairs, building, a dorm	self-cut, self-graze, tie, hang, overdose, and suicide	I increase taking sleeping pills. I have committed suicide, when there is no one at home.	—
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Table 2 presents linguistic resources expressing three aspects of the Interpersonal Theory of Suicide. The suicidal aspects are realized by content words (i.e., nouns and verbs), phrases, clauses, metaphors, and idioms.

The three constructs of the Interpersonal Theory of Suicide (i.e., perceived burdensomeness, thwarted belongingness, and acquired capability) were categorized based on Joiner et al.'s (2009) description as presented in Section 2.2 above. To provide more insight, the results are discussed relating to these three concepts in the following sections.

Perceived Burdensomeness

People who want to end their lives believe they are a burden on others. They think they are expendable members of their circle of friends, family, and community groups. The presence of language showing perceived burdensomeness was frequently found, with results similar to the previous research by Joiner et al. (2009), Van Orden et al. (2011), and Angkapanichkit et al. (2019). As shown in the data, the high use of the personal pronoun '*I*' was deployed to indicate that the bloggers were the narrator and also the agent of the actions mentioned in the posts. '*I*' often occurred with content words showing negative feelings about being a burden or trouble for the others (e.g., *burden*, *trouble*, *mistake*, *problem*, and *retardation*). Examples of the language expressing the perception of burdensomeness are as below:

- (1) "...It's hard to express my feelings. I get mixed up. Should I speak it out or keep it shut? I don't want to be a burden..." (DP05_04)
- (2) "...I feel that I am a burden. I am a trouble maker. I put others in a difficult situation..." (DP01_11)

The results also reveal that some bloggers use a lexical metaphor to explain how they view themselves. According to the data, the metaphor reflecting the sense of burdensomeness is the word ‘*trash*’.

(3)

“...I have no reason to live. I’m a burden. I’m trash that everyone doesn’t want. Everyone gets bored with me. They’re fed up with me...” (DP11_03)

This passage illustrates that the blogger uses the metaphorical word ‘*trash*’ to define herself as an unwanted thing. This metaphor also shows how the blogger perceives herself as undesirable and disgusting. Moreover, the metaphorical word ‘*trash*’ implies another dimension of perceived burdensomeness which is self-hatred.

In some cases, perceived burdensomeness cannot be detected by the given content words that the blogger has feelings of burdensomeness as they do not directly state that they are a burden or cause trouble to others. Instead, they explain how they feel about themselves. An example is provided below:

(4)

“...I don’t want anyone to worry about me. Because of that, I need to act like I’m okay, even if I’m sad or broken...” (DP03_02)

In passage (4), the blogger does not directly use any keywords relating to a sense of burdensomeness. However, the content words describe negative feelings (i.e., *worry*, *sad*, and *broken*). The blogger also uses a negative clause structure with the main verb ‘*want*’ to indicate something that she does not desire to happen. Furthermore, she uses a clause consisting of the word ‘*need*’ emphasizing necessity and the subordinating conjunction ‘*even if*’ to show the contradiction between her true feelings and what she has to do in order not to be a burden on others.

Thwarted Belongingness

In terms of thwarted belongingness, several posts showed that the bloggers were lonely and disconnected from family, friends, and community. The sense of failed belongingness often happens in a situation when a person believes that no one understands how they feel or gives them the support that they want. The language representing thwarted belongingness coincides with prior research by Wesserman et al. (2008), Joiner et al. (2009), Selby et al. (2010), Van Orden et al. (2011), and Angkapanichkit et al. (2019). The bloggers in this study expressed their feelings by using keywords such as *loneliness*, *lonely*, and *disconnect*. Some examples of text inferring unmet belongingness are provided below:

(5)

“...I think I’m used to being lonely because I’m the one who isolates myself from them. It seems like they are Jupiter, a gigantic planet surrounded by moons, while I’m just Pluto – a dwarf planet filled with sadness and grief. Pluto like me should be a friend with shadow. Perfect matching...”
(DP07_17)

The above-mentioned passage contains the keyword ‘*lonely*’ signifying the sense of failed belongingness. The word ‘*isolate*’ is also the indicator of thwarted belongingness as it is a verb describing the action of keeping oneself away from others. Furthermore, the blogger varies her lexical choices by deploying some metaphorical expressions, i.e., ‘*Jupiter*’, ‘*Pluto*’, and ‘*shadow*’ to elaborate on how she perceives loneliness and inferiority. According to the text, the blogger compares herself to a ‘*dwarf planet*’, while others in her life are ‘*Jupiter*’ with several moons nearby.

In some cases, the lack of belongingness is not explicitly stated, but it is presented in a way that explains why the bloggers feel excluded from family, friends, or community within which they are living. The examples of implicit language representing thwarted belongingness are as follows:

(6)

“...No one wants a gloomy person. I have decided to lock myself in my gray world – a world that nobody can experience and understand. Only sobbing and tears are with me...” (DP05_10)

In passage (6), the lexical choices show negative feelings. The attribute ‘*gloomy*’ is applied to describe the characteristics of the blogger as a depressed person. In addition, the word ‘*gray*’ is used to refer to several unpleasant feelings such as *sadness*, *melancholy*, and *joylessness*. It was observed that many bloggers metaphorically expressed their depressed feelings in terms of dull colors. This finding is in line with the results reported by Carruthers et al. (2010).

(7)

“...I have more than enough to get by. However, there are a few things that I’ve never had for 30 years, and I still haven’t found a way to get them. They’re the relationship, belongingness, acceptance, usefulness, and a sense of being loved by someone. I’ve never experienced them or even been in a relationship with a normal person who has good intentions...” (DP01_79)

(8)

“...I always wonder why I feel unfulfilled. I think it’s because I have not received enough love from my family. When I told others about this, most of them scolded me because they thought I was ungrateful for my parents...” (DP04_09)

Based on the passages above, the bloggers indirectly express that they feel different and do not belong to others. The negation ‘not’ is used with some verbs i.e., ‘have’ and ‘receive’ to explain the lack and unavailability of love, support, and understanding from those who are close to them. People should be cautious if there is an ongoing occurrence of these negative feelings because they can develop into chronic feelings of failed belongingness and loneliness, and possibly lead to self-harm or suicide if not resolved.

Acquired Capability

Acquired capability is a feeling that one is already experiencing a sense of burdensomeness and an unmet need to belong until they cannot handle it anymore, hence, they decide to end all problems by taking their own life. Acquired capability is not only about having suicidal thoughts, but also risking repetitive non-lethal or lethal self-harm. Two core dimensions related to acquired capability are lowered fear of death and an elevated physical pain tolerance. Based on the results, the expressions of acquired capability are associated with a number of content words showing deleterious actions of harming oneself (e.g., *self-cutting*, *hanging*, and *jumping from high structures*) and some suicide-related vocabularies (e.g., *kill*, *overdose*, *death*, and *die*) which coincides with the findings on thwarted belongingness in the research by Wesserman et al. (2008), Joiner et al. (2009), Selby et al. (2010), Van Orden et al. (2011), and Angkapanichkit et al. (2019). Examples of language indicating the construct of acquired capability are given below:

(9)

“...Here we go again. While I’m typing this, I’m drinking beer and doing something that someone might think is horrifying. I’m experimenting on how long I can continue cutting my wrist without feeling pain...” (DP10_60)

(10)

“...I once attempted to end my life (I can’t even remember how many times I have done that). Since I was in grade 3, I’ve always had thoughts about killing myself. One day, I was in a car with my parents. I saw a wire. I picked it emotionlessly and tied it around my neck...” (DP03_17)

Bloggers express their behaviors showing acquired capability and clear methods used for hurting themselves through the text. The content words such as *cut*, *tie*, *end*, and *pain* are presented. In passage (9), the blogger directly says she cuts her wrist to see how long she can endure it. This behavior shows that she has a tolerance for pain, which is one of the factors leading to a capability of suicide. Another example is in passage (10) where the blogger uses a wire to bind herself. This indicates that the blogger has a lowered fear of death, which results in lethal self-harm.

Not only language showing the above-mentioned aspects but also language about the exposure to a weapon or suicidal methods provides the signs of near-lethal suicide attempts. According to the data, the most frequently reported methods of self-harm were cutting the wrist with cutters or scissors, jumping from bridges or high buildings, or taking a toxic amount of medicine, in that order. There were several content words specifying methods for hurting oneself, such as *car accidents*, *stabbing*, and *injections*. Some general nouns relating to means to commit suicide (e.g., *a cutter*, *a knife*, *a bridge*, *stairs*, *a building*, and *a dormitory*) were also indicators of language inferring acquired capability.

(11)

“...I cut my wrist for the first time. I just want to end it all...” (DP10_125)

(12)

“...I look at those pills in my hand and take them have it all at once (I hope I can fall asleep forever or die)...” (DP03_17)

Other Types of Language Representing Suicidal Thoughts and Attempts

When assessing suicide-related behaviors, language reporting a sense of worthlessness, hopelessness, and emptiness are also predictors of suicidal tendencies. These senses differ from that of the three aspects of suicidal behaviors in terms of their frequency and duration of occurrence. The bloggers who reported these feelings later described an attempt to hurt themselves in either non-lethal or lethal ways. Those who repeatedly feel worthless tend to think that they are unwanted, so they plan to end their lives. Regarding hopelessness, when bloggers asked for help and did not receive support from their friends, family, or community, they reported feeling hopeless. For those who showed a sense of emptiness, they disclosed that being empty made them lose their minds. To be able to pull themselves together, self-harm is a method that they often use to alleviate their emotional pain. The lexical choices specifying these negative feelings were *worthless*, *hopeless*, *empty*, and *nothing*. Examples of language indicating these feelings are provided below:

- (13)
“...I feel worthless because I cannot work properly. I also find my life worthless. There is no space for an incompetent person like me...” (DP10_12)
- (14)
“...I stop asking for help. It isn’t because I’m getting better. It’s because I feel hopeless...” (DP05_03)
- (15)
“...I think emptiness is scarier than sorrow. At least I feel sad when I’m sad but being empty is nothing, literally nothing. It’s a big hollow and it’s difficult to fill it up...” (DP10_120)

4.2 Group/Phrase Level Analysis

At the group/phrase level of analysis, the use of nominal group, verbal group, adverbial group, and preposition phrase were found in the language of the blogs, reflecting the tendency towards self-harm, suicidal ideation, and suicide attempt(s) of the bloggers. Generally, the nominal group and verbal group both contained keywords capturing unpleasant feelings, suicidal thoughts, and suicidal behaviors. In the nominal group, the keywords commonly served as both subject and object. The verbal group had a simple structure containing some predicator (e.g., *find*, *live*, *wake up*, and *tell*), aspect (e.g., *already* and *still*), and polarity (not) resources. The adverbial group frequently indicated how long the negative feelings, emotions, or events had occurred, and how often those feelings or events occurred (e.g., *all the time*, *these days*, *forever*, *every day*, and *every time*). There were only a few examples of the preposition phrase in this study, for example, a mention of the location (e.g., *in the room* and *at my dorm*) where the events occurred. Examples of these four groups are as follows:

Nominal Group

- (16)
“... Actually, I am addicted to emptiness. It hurts.” (DP09_12)
- (17)
“...Most of my body parts are full of wounds. It is an addiction. I self-cut when I have feelings of worthlessness and emptiness. This is the first door leading to death...” (DP09_12)

Verbal Group

(18)

“...I cannot find any reason to live in this fucking world. I have no feelings left. Sometimes, I wake up with emptiness...” (DP09_02)

(19)

“...I cannot tell anyone because no one understands me...” (DP06_33)

Adverbial Group

(20)

“...I don’t want anyone to be worried about me. Because of that, I need to act like I’m okay all the time, even if I’m sad or broken...” (DP03_02)

(21)

“...Every time I feel bad. Every time I feel worthless. I decide to hurt myself...” (DP09_3)

Preposition Phrase

(22)

“...I lock myself in my room. I shut myself away from everything. I’m drawn to the darkness. The room is so quiet that I can hear a whisper in my head...” (DP10_27)

(23)

“...When I arrived at my dorm, I decided to do something (that is cut my wrist). It’s not severe but it’s worse than the previous time...” (DP02_03)

4.3 Clause Level Analysis

Three clause types – declarative clause, interrogative clause, and imperative clause – appeared in this study. The examples of each clause type and how they were presented in the text are given below:

Declarative Clauses

Declarative clauses were the most common type of clause found in the corpus. This clause type was used to explain bloggers’ symptoms, emotions, feelings, and experiences. The following passages are the examples of how the bloggers applied these

types of clauses to express what they were thinking or feeling at that moment and to share their experience.

Declarative Clause: Expressing Feelings or Opinions

(24)

“...I prefer living alone. I have an idea to isolate myself from people. I can’t live with others...” (DP17_01)

(25)

“...I was so distressed. I suffered. Still, I tried to be happy. However, there was no way to make me happy...” (DP03_05)

Declarative Clause: Telling Experiences

(26)

“...When I think of killing myself, the beginning of it is the sadness that I have disappointed someone. I cause trouble and can’t solve it, so I blame myself...” (DP10_07)

(27)

“...Yesterday, I overdosed on two kinds of sleeping pills that the doctor gave me. This was my fourth attempt (but I never receive any treatment)...” (DP12_04)

Interrogative Clauses

According to the analysis, the identified interrogative clauses were wh-interrogative clauses. Wh-interrogative clauses can be realized by the use of wh-elements i.e., *why*, *what*, *when*, *where*, and *how*. The most frequently found element was the word ‘*why*’, as the bloggers tended to ask for a reason or an explanation for a particular feeling or situation that they were currently encountering. Also, the presence of the word ‘*what*’ was commonly used to ask about a method, ‘*how*’ was deployed to inquire about solutions to escape from mental crisis, yet, the words ‘*when*’ and ‘*where*’ seldom appeared in the data.

Why: Asking for a Reason of Loneliness and Meaning of Life

(28)

“...Life has both good and bad sides, but why.... Why do I have to be alone?...” (DP08_22)

(29)

“...I try to be patient in both study and family issues. I feel like it would be better if I died. I’ve suffered too much. Plus, I’m just a bad child. Why do I have to be alive?...”
(DP10_125)

What: Asking for a Method of Suicidal Act

(30) a burden on others

“...I am a burden on everyone. What can I do so I can disappear?...” (DP11_01)

When: Asking about Time of Being Recovered from Depressed Mood

(31)

“...I’m bored. When will I be normal? When will I stop being a trouble-maker? I’m too useless to be alive...”
(DP11_22)

What and How: Asking About Solutions and Where: Asking About Place

(32)

“...I ask myself repeatedly: what should I do? how must I do for those feelings to disappear, I don’t want to be like this. Shall I get a knife and stab myself, or should I take sleep pills and sleep for good? Where can I buy sleeping pills?”
(DP06_01)

Imperative Clause

Few imperative clauses were found in the data. The imperative clauses were the jussive imperative clause, where the bloggers asked someone to do something for them. For instance:

(33)

“...Don’t waste your time blaming me. Stab me. I want to die so I’m no longer a burden on others...” (DP10_76)

The passage above, contains two jussive imperative clauses. The first imperative clause is where the blogger orders their interlocutor to stop ‘*blaming me*’. The other clause is when the blogger orders the interlocutor to stab him so he could be freed from being a burden on others.

5. Discussion and Conclusion

This study aimed to examine posts on social media platforms to determine if suicidal thoughts and suicide attempts can be evidenced by linguistic elements used by the bloggers. Syntactic analysis and three constructs of the Interpersonal Theory of Suicide (i.e., perceived burdensomeness, thwarted belongingness, and acquired capability) were cooperatively applied to discover language showing suicidal thoughts and suicide attempts. Based on the three key motivational aspects of the model, there were no discernable differences in the expression of the three constructs for either the males or females.

The results are consistent with prior studies by Wesserman et al. (2008), Joiner et al. (2009), Selby et al. (2010), Van Orden et al. (2010), and Angkapanichkit et al. (2019). The analysis reveals that language signaling suicidal thoughts or suicide attempts can be evidenced by linguistic signs. At the word level, content words played a key role in assisting detection of suicidal thoughts and suicide attempts. There were several keywords indicating suicidal ideations and behaviors such as *burden*, *trouble*, *loneliness*, *death*, *helplessness*, and *worthless*. In some cases, suicidal thoughts or suicide attempts were implicitly stated by using metaphorical expressions such as *trash*, and a contrast between the planets *Pluto*, and *Jupiter*. Also, it was found that language representing worthlessness, hopelessness, and emptiness can be potential indicators for predicting suicidal thoughts and suicide attempts. In terms of pronouns, the personal pronoun ‘*I*’ was the most-used pronoun found in this study. This might be because the bloggers are the narrator and gave most attention to themselves which can be implied as a self-focused idea. At the group/phrase level, nominal group and verbal group mostly existed in association with negative keywords to convey the bloggers’ pessimistic thoughts or feelings. The adverbial group indicated how long the bloggers had had their negative feelings or symptoms. Concerning the location, the preposition phrase was found but it was rarely used in this corpus. At the clause level, three types of clauses were used by the bloggers: declarative clause, interrogative clause, and imperative clause. The declarative clause was widely used to report the bloggers’ experiences or actions and to convey feelings or thoughts. The second most frequently found clause in the data was the interrogative clause. Even though this clause type is normally used to indicate the question speech function, most interrogative clauses used by the bloggers in this study seemed to be a type of self-talk or rhetorical questions. The imperative clause was the least frequently used by the bloggers, where they gave a command and a suggestion to their interlocutor, how to deal with depression symptoms, negative mood, and a person in a depressed state.

Knowing how people communicate their suicidal thoughts and attempts at suicide is helpful for suicide surveillance. If someone conveys these types of communication, positive support from family, friends, or people in their community (e.g., paying more attention to them, standing by their side, listening to them without being judgmental, and

taking them to a therapist) should be provided. However, the results are still inconclusive and should be taken with caution.

Based on quantitative results, the first-person singular pronoun ‘I’ was predominantly used to express the bloggers as self-focus of attention and was one of the key linguistic indicators of depression. This finding is in line with previous studies affirming that frequent use of first person singular pronouns is associated with depressive symptoms (Angkapanichkit et al., 2019; Edwards & Holtzman, 2017; Jarrold et al., 2011; Rude et al., 2004; Sloan, 2005; Zimmermann et al., 2013; Zimmermann et al., 2017).

This current study provided a syntactical approach based on rank scale to detect online activity that contained suicide-related behavior messages. Three patterns of social media posting of depressed persons were observed: stressed posting, triggering posting, and problem posting. The first two patterns were detected and described by Radovic et al. (2017). Stressed posting is defined as sharing negative updates such as reactions to stress and depressed mood. Triggering posting is defined as sharing unpleasant content such as negative coping such as self-harm, disordered eating, alcohol drinking, and isolation. In this current study, problem posting refers to sharing problematic experiences such as in family relationships and expectations, personality and life skills, bullying, loss of a loved one, financial problems, and traumatic experiences. Observing these three posting themes can be used to detect suicide-related behaviors in social media platforms.

As this study has a limited size corpus, a larger corpus would provide more promising results and a greater dataset. Further studies focusing on analyzing the language of suicidal thoughts and suicide attempts in various sources of information is recommended. This would then provide a structure for characterizing the language representing suicidal thoughts and suicide attempts more accurately.

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References

- American Psychological Association. (2021). *Suicide*. Retrieved 12 December 2021, from <https://www.apa.org/topics/suicide>
- Angkapanichkit, J., Rochanahastin, A., & Intasian, S. (2019). *Language, communication, and depression: An exploration of Communicative practices about depression for sustainable quality of life of Thai adolescents* [in Thai]. Thammasat University, Thailand.
- Aydin, S., Kocak, O., Shaw, T. A., Buber, B., Akpınar, E. Z., & Younis, M. (2021). Investigation of the effect of social media addition on adults with depression. *Healthcare*, 9, 1-14.
- Barak, A., & Dolev-Cohen, M. (2006). Does activity level in online support groups for distressed adolescents determine emotional relief. *Counselling and Psychotherapy Research*, 6, 186-190.
- Barry, C. T., Sidoti, C. L., Briggs, S. M., Reiter, S. R., & Lindsey, R. A. (2017). Adolescent social media use and mental health from adolescent and parent perspectives. *Journal of Adolescence*, 61, 1-11.
- Bohn, K. (2021). *How social media is changing the way people get to know one another*. Retrieved 4 November 2021, from <https://www.psu.edu/news/research/story/how-social-media-changing-way-people-get-know-one-another/>
- Brunborg, G. S., & Andreas, J. B. (2019). Increase in time spent on social media is associated with modest increase in depression, conduct problems, and episodic heavy drinking. *Journal of Adolescence*, 74, 201-209.
- Carruthers, H. R., Morris, J., TARRIER, N., & Whorwell, P. J. (2010). The Manchester Color Wheel: Development of a novel way of identifying color choice and its validation in healthy, anxious and depressed individuals. *BMC Medical Research Methodology*, 10(12), 1-13.

- Castle, K., & Kriepe, R. (2007). Suicidal behavior. In C. G. Garfunkel, J. M. Kaczorowski, & C. Christy (Eds.). *Pediatric clinical advisor* (2nd ed.), (pp. 544-545). <https://doi.org/10.1016/B978-032303506-4.10315-3>.
- Centers for Disease Control and Prevention. (2021). *Risk and protective factors*. Retrieved 12 December 2021, from <https://www.cdc.gov/suicide/factors/index.html>
- Cero, I., & Sifers, S. (2013). Moderating factors in the path from physical abuse to attempted suicide in adolescents: application of the interpersonal-psychological theory of suicide. *Suicide and Life-Threatening Behavior*, 43(3), 296-304.
- Christensen, H., Batterham, P. J., Soubelet, A., & Mackinnon, A. J. (2013). A test of the Interpersonal Theory of Suicide in a large community-based cohort. *Journal of Affective Disorders*, 144(3), 225-234.
- Daine, K., Hawton, K., Singaravelu, V., Stewart, A., Simkin, S., & Montgomery, P. (2013). The power of the web: A systematic review of studies of the influence of the internet of self-harm and suicide in young people. *PLOS ONE*, 8(10), 1-6.
- Dhir, A., Yossatorn, Y., Kaur, P., & Chen, S. (2018). Online social media fatigue and psychological wellbeing: A study of compulsive use, fear of missing out, fatigue, anxiety and depression. *International Journal of Information Management*, 40, 141-152.
- Edwards, T., & Holtzman, N. S. (2017). A meta-analysis of correlations between depression and first person singular pronoun use. *Journal of Research in Personality*, 68, 63-68.
- Foye, U., Chakkalackal, L., Breedvelt, J., & Elliott, I. (2019). *The truth about self-harm for young people and their friends and families*. Mental Health Foundation, UK. Retrieved 12 December 2021, from <https://www.mentalhealth.org.uk/sites/default/files/Truth%20about%20self%20harm%20WEB%20FINAL.pdf>
- Frison, E., & Eggermont, S. (2016). Exploring the relationships between different types of Facebook use, perceived online social support, and adolescents' depressed mood. *Social Science Computer Review*, 34(2), 153-171.
- Halliday, M. A. K., & Matthiessen, C. M. I. M. (2004). *An Introduction to Functional Grammar* (3rd ed.). Edward Arnold.
- Hanprathet, N., Manwong, M., Khumsri, J., Yingyeun, R., & Phanasathit, M. (2015). Facebook addiction and its relationship with mental health among Thai high school students. *Journal of the Medical Association of Thailand*, 98, S81-S90.
- Hay, C., & Meldrum, R. (2010). Bullying victimization and adolescent self-harm: Testing hypotheses from general strain theory. *Journal of Youth Adolescence*, 39, 446-459.
- Hinduja, S., & Patchin, J. W. (2010). Bullying, cyberbullying, and suicide. *Archives of Suicide Research*, 14, 206-221.
- Hunt, M. G., Marx, R., Lipson, C., & Young, J. (2018). No more FOMO: Limiting social media decreases loneliness and depression. *Journal of Social and Clinical Psychology*, 37(10), 751-768.

- Jarrold, W., Javitz, H. S., Krasnow, R., Peintner, B., Yeh, E., Swan, G. E., & Mehl, M. (2011). Depression and self-focused language in structured interviews with older men. *Psychological Reports, 109*, 686-700.
- Joiner Jr, T. E., Van Orden, K. A., Witte, K. T., Selby, E. A., Ribeiro, J. D., Lewis, R., & Rudd, M. D. (2009). Main predictions of the interpersonal-psychological theory of suicidal behavior: Empirical tests in two samples of young adults. *Journal of Abnormal Psychology, 118*(3), 634-646.
- Joiner, T. (2005). *Why do people die by suicide?* Harvard University Press.
- Jones, R., Sharkey, S., Ford, T., Emmens, T., Hewis E., Smithson, J., Sheaves, B., & Owens, C. (2011). Online discussion forums for young people who self-harm: User views. *Psychiatrist, 35*(10), 364-368.
- Kakkar, G. (2020). *What are the different types of social media?* Engaging Ideas Pvt. Ltd. Retrieved 4 November 2021, from <https://www.digitalvidya.com/blog/types-of-social-media/>
- Karthick, S., & Barwa, S. (2017). A review on theoretical models of suicide. *International Journal of Advances in Scientific Research, 3*(9), 101-109.
- Katsumata, Y., Matsumoto, T., Kitani, M., & Takeshima, T. (2008). Electronic media use and suicidal ideation in Japanese adolescents. *Psychiatry and Clinical Neurosciences, 62*(6), 744-746.
- Kim, K., Ryu, E., Chon, M-Y., Yeun, E-J., Choi, S-Y., Seo, J-S., & Nam, B-W. (2006). Internet addiction in Korean adolescents and its relation to depression and suicidal ideation: A questionnaire survey. *International Journal of Nursing Studies, 43*(2), 185-192.
- King, A. (2018). *There were warning signs before Chester Bennington's suicide, the Linkin Park singer's widow says.* CNN, USA. Retrieved 4 November 2021, from <https://edition.cnn.com/2018/06/23/us/talinda-bennington-suicide-town-hall-cnntv/index.html>
- Koreaboo. (2017). *Fans realize Jonghyun had the symbol of depression tattooed on his body.* Koreaboo, Korea. Retrieved 4 November 2021, from <https://www.koreaboo.com/news/fans-realize-jonghyun-had-the-symbol-of-depression-tattooed-on-his-body/>
- Lam, L.T., Peng, Z., Mai, J., & Jing, J. (2009). The association between internet addiction and self-injurious behaviour among adolescents. *Injury Prevention, 15*(6), 403-408.
- Lin, I-H., Ko, C-H., Chang, Y-P., Liu, T-L., Wang, P-W., Lin, H-C., Huang, M-F., Yeh, Y-C., Chou, W-J., & Yen, C-F. (2014). The association between suicidality and Internet addiction and activities in Taiwanese adolescents. *Comprehensive Psychiatry, 55*, 504-510.
- Nock, M. K., Hwang, I., Sampson, N., Kessler, R. C., Angermeyer, M., & Beautrais, A. (2009). Cross-national analysis of the associations among mental disorders and suicidal behavior: Findings from the WHO World Mental Health Surveys. *PLOS*

- Medicine*, 6(8):e1000123, Retrieved 4 December 2021, from <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2717212/>
- O' Connor, R., & Nock, M. K. (2014). The psychology of suicidal behavior. *Lancet Psychiatry*, 1(1), 73-85.
- Park, S., Hong, K. E. M., Park, E. J., Ha, K. S., & Yoo, H. J. (2013). The association between problematic internet use and depression, suicidal ideation and bipolar disorder symptoms in Korean adolescents. *Australian and New Zealand Journal of Psychiatry*, 47(2), 153-159.
- Pompili, M., Belvederi Murri, M., Patti, S., Innamorati, M., Lester, D., Girardi, P., & Amore, M. (2016). The communication of suicidal intentions: A meta-analysis. *Psychological Medicine*, 46(2), 2239-2253.
- Radovic, A., Gmelin, T., Stein, B. D., & Miller, E. (2017). Depressed adolescents' positive and negative use of social media. *Journal of Adolescence*, 55, 5-15.
- Ribeiro, J. D., & Joiner, T. E. (2009). The interpersonal-psychological theory of suicidal behavior: Current status and future directions. *Journal of Clinical Psychology*, 65(12), 1291-1299.
- Rude, S., Gortner, E., & Pennebaker, J. (2004). Language use of depressed and depression-vulnerable college students. *Cognition and Emotion*, 18, 1121-1133.
- Sampasa-Kanyinga, H., & Lewis, R. F. (2015). Frequent use of social networking sites is associated with poor psychological functioning among children and adolescents. *Cyberpsychology, Behavior, and Social Networking*, 18(7), 380-385.
- Selby, E. A., Anestis, M. D., Bender, W. T., Ribeiro, D. J., Nock, M. K., Rudd, M. D., Bryan, C. J., Lim, I. C., Baker, M. T., Gutierrez, P. M., & Joiner Jr., T. E. (2010). Overcoming the fear of lethal injury: Evaluating suicidal behavior in the military through the lens of the interpersonal-psychological theory of suicide. *Clinical Psychology Review*, 30(3), 298-307.
- Sloan, D. M. (2005). It's all about me: Self-focused attention and depressed mood. *Cognitive Therapy and Research*, 29, 279-288.
- Smith, P. N., & Cukrowicz, K. C. (2010). Capable of suicide: A functional model of the acquired capability component of the interpersonal-psychological theory of suicide. *Suicide and Life-Threatening Behavior*, 40(3), 266-275.
- Smithson, J., Sharkey, S., Hewis, E., Jones, R., Emmens, T., Ford, T., & Owens, C. (2011). Problem presentation and responses on an online forum for young people who self-harm. *Discourse Studies*, 13(4), 487-501.
- Stellrecht, N. E., Gordon, K. H., Van Orden, K., Witte, T. K., Wingate, L. R., Cukrowicz, K. C., Butler, M., Schmidt, N. B., Fitzpatrick, K. K., & Joiner Jr. T. E. (2006). Clinical applications of the interpersonal-psychological theory of attempted and completed suicide. *Journal of Clinical Psychology*, 62(2), 211-222.
- Thompson, G. (2004). *Introducing Functional Grammar* (2nd ed.). Routledge.
- University of South Florida. (2021). *Introduction to social media*. Retrieved 4 November 2021, from <https://www.usf.edu/ucm/marketing/intro-social-media.aspx>

- U.S. Department of Health and Human Services. (2022). Does depression increase the risk for suicide? HHS Headquarters. Retrieved 20 January 2022, from <https://www.hhs.gov/answers/mental-health-and-substance-abuse/does-depression-increase-risk-of-suicide/index.html>
- Van Orden, K. A., & Conwell, Y. (2011). Suicides in late life. *Current Psychiatry Reports, 13*(3), 234-241.
- Van Orden, K. A., Witte, K. T., Cukrowicz, K. C., Braithwaite, S., Selby, E. A., & Joiner Jr, T. E. (2011). The interpersonal theory of suicide. *Psychology Review, 117*(2), 575-600.
- Wang, A. B. (2017). *K-pop star's suicide note reveals pressures of fame, depression that 'consumed' him*. Washington Post, USA. Retrieved 4 November 2021, from <https://www.washingtonpost.com/news/worldviews/wp/2017/12/19/k-pop-stars-suicide-note-reveals-depression-that-consumed-him-pressures-of-fame/>
- Wang, P., Wang, X., Wu, Y., Xie, X., Wang, X., Zhao, F, Ouyang, M., & Lei, L. (2018). Social networking sites addiction and adolescent depression: A moderated mediation model of rumination and self-esteem. *Personality and Individual Differences, 127*, 162-167.
- Wasserman, D., Thanh, H. T. T., Minh, D. P. T., Goldstein, M., Nordenskiöld, A., & Wasserman, C. (2008). Suicidal process, suicidal communication and psychosocial situation of young suicide attempters in a rural Vietnamese community. *World Psychiatry, 7*(1), 47-53.
- Woods, H. C., & Scott, H. (2016). # Sleepyteens: Social media use in adolescence is associated with poor sleep quality, anxiety, depression and low self-esteem. *Journal of Adolescence, 51*, 41-49.
- World Health Organization. (2021). *Suicide worldwide in 2019: Global health estimates*. World Health Organization: Retrieved 12 December 2021, from <https://www.who.int/publications/i/item/9789240026643>
- Yan, H., Zhang, R., Oniffrey, T. M., Chen, G., Wang, Y., Wu, Y., Zhang, X., Wang, Q., Ma, L., Li, R., & Moore, J. B. (2017). Associations among screen time and unhealthy behaviors, academic performance, and well-being in Chinese adolescents. *International Journal of Environmental Research and Public Health, 14*, 1-15.
- Zimmermann, J., Wolf, M., Bock, A., Peham, D., & Benecke, C. (2013). The way we refer to ourselves reflects how we relate to others: Associations between first-person pronoun use and interpersonal problems. *Journal of Research in Personality, 47*, 218-225.
- Zimmermann, J., Brockmeyer, T., Hunn, M., Schauenburg, H., & Wolf, M. (2017). First-person pronoun use in spoken language as a predictor of future depressive symptoms: Preliminary evidence from a clinical sample of depressed patients. *Clinical Psychology and Psychotherapy, 24*, 384-391.