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- Acceptance of Abstract: 4 Weeks after Submission
- Submission of Paper: **28 April 2025**

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The Evolved Self: Mapping an Understanding of the Self in Psychotherapy

By Lloyd Hawkeye Robertson & Teela Robertson[‡]*

This paper demonstrates how a self-referencing cognitive structure commonly called “the self” may be represented graphically. A psycho-historical account situates the self ontologically from the perspective of cultural evolution with the suggestion of inherent tension between individualist and collectivist impulses. It is argued that a capacity for objective observation and forward planning flows from the essential characteristics of this fully developed “modern” self. It is proposed that this method of self-mapping potentially benefits clients in planning and executing transformative change, and that the paradigm used is central to the practice of psychology.

Keywords: *The self, psychotherapy, collectivism, individualism, The Enlightenment*

Modern schools of psychotherapy start from the premise that the client is an individual with unique experiences, interpretations and social relations (Compas & Gotlib, 2002; David & Szentagotai, 2006; Hersoug et al., 2010; Pivato, 2016) with the self being core to such concepts as self-esteem (De Man & Gutierrez, 2002), self-actualization (McAdams, 2012) and self-efficacy (Lightsey et al., 2014). In psychotherapy, clients are empowered to make changes to their selves in keeping with their experiences and new evidence. It is our experience that this process is aided by the co-constructions of visual representations or maps of the clients’ selves, and we commend their use in psychotherapy. We begin by reviewing the concept of the self that is to be mapped.

The Self as a Cognitive Construct

The self is a culturally mediated mental representation that allows individuals to situate themselves in consciousness (Donald, 2001; Harre, 1984; Sun, 2017). Often we become conscious of having a self when invited to do something and we respond with “Yes, I would like that,” or “No, that is not who I am.” Such determinations require an existing idea as to who we are against which we measure opportunities and choices that arise. If we only reference our self when making such specific behavioural choices, then self-change is not likely. It is our experience that when clients see themselves represented in map form, and when those maps resonate with their sense of being, they will spontaneously engage in a process of self-change. We all may have a striving for perfection as was famously stated by Alfred Adler (1967), but we must first see our selves to be so inspired.

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The self is often presented as a cognitive project of self-definition - to be conscious requires that we have an idea as to who we are that is acting and is being acted upon. It may be viewed as theory constructed to explain who we are (Barresi, 2002; Harre, 1989). Our primate ancestors had developed a form of the self when they learned mirror recognition several million years ago. (Donald, 2001; Suddendorf & Collier-Baker, 2009). A more developed self was in evidence 50,000 years ago when our ancestors developed funeral rituals and art in the form of cave paintings. The consciousness that now forms part of our definition as the species *Homo Sapien* or “wise man” is an evolved capacity that includes the ability to have objective beliefs, is capable of internally consistent thought, and can take oneself as an object is a relatively recent development occurring among ancient Greeks and Egyptians (Johnson, 2003). In *The Evolved Self* (Robertson, 2020). It was argued that this “modern self” capable of individual volitional planning led to the “Axial Age” when most of the great religions of the world came into being (Jaspers, 1951; Mahoney, 1991). Since the capacity to project oneself into past remembered events and possible future ones is necessarily exercised individually, the resultant self represented a challenge to existing collective societies. The religious movements of the Axial Age, concerned with maintaining a collective identity, attempted to constrain the individualism inherent in having a volitional, constant and unique self (Robertson, 2017).

Child development recapitulates this cultural evolution of the self. Most children, cross-culturally, can share subjective experience around nine months of age. (Rowe, 2012). There are two transcendental moments along a child’s developmental road to consciousness. Between 3 and 7 years of age, children become competent at theory of mind skills and can explicitly take themselves as an object. We now teach our young to have selves through the same process that we use to teach language (Harter, 2012). Initially infants receive their culture from their family or other caregivers who attribute to their emotional displays to cause and motivation. In this way, children begin to develop ideas as to who they are and how they fit into the world. This is supplemented by their experiences within family, community and society. The interplay of genetic, cultural and experiential factors contributes in the construction of an implicit self. Psychotherapists seeking to make this self explicit would be aided by a process of visual representation which can be accomplished using the elemental units of culture from which the self is constructed.

The Self as a Complex of Memes

Richard Dawkins (1976) coined the term “meme” to represent an essential or elemental basis of a complex idea that can be transmitted from one brain to another, and he suggested that these memes exhibit forces of attraction and repulsion on each other. Dan Dennett (1991) defined the meme as “the smallest complex ideas capable of replicating themselves with reliability and fecundity” (p. 201). Blackmore (1999) said each self is a viral complex of memes that convince the bodies it infests that it has consciousness and free will so as to better replicate copies of itself. None of these writers suggested a means by which these memes attract or repel other units of culture or how they convince unconscious bodies that they have consciousness.

Although it is possible to mime portions of culture, for the most part memes are collections of words or words combined with visual representations. While such presentations can clearly affect a listener in some ways, it is not clear how they can affect each other independent of a human mediator. We need to consider that human beings are the creators of culture with the implication that it is impossible to divorce its units from the psychology of the creators. Any qualities possessed by memes would be assigned and maintained by human participants.

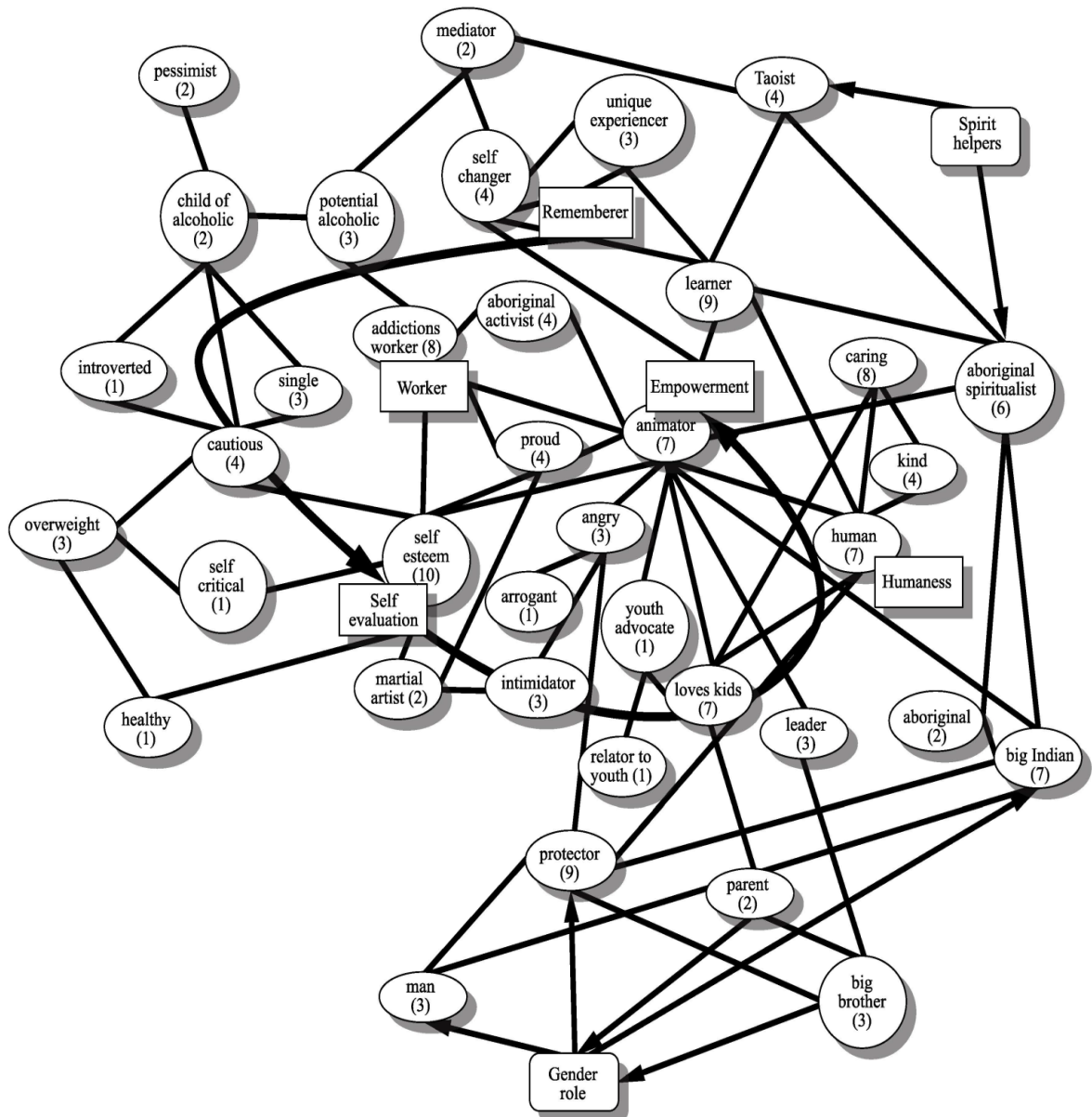
Memes have been described as having connotative and behavioural dimensions (Csikszentmihalyi, 1993; Dawkins, 1986; Robles-Diaz-de-Leon, 2003). Emotions play a role in maintaining the self (Damasio, 1999; Donald, 2001; Leary & Tangney, 2003), and emotional valence has been identified with respect to memes in urban legends (Heath et al., 2001) and negative reciprocity (Freidman & Sing, 2004). Connotative, affective and behavioural properties can mimic forces of attraction. If meme “x” connotes meme “y” or leads to behavior “z,” we can consider memes x, y and z to be linked. By defining a meme as the smallest unit of culture that exhibits referent, connotative, affective and behavioural components that may be transmitted from one person to another, we eliminate the tautology implied by Dawkins’ original definition while providing a mechanism for attraction and repulsion. The cost of this elaboration is that such a meme would rarely, if ever, be copied in its entirety from one mind to another.

In contrast with Blackmore (1999) who imagined clusters of memes existing outside waiting to inhabit the individual, this definition offers insight on how the person constructs the self from available cultural units. Memes that are mutually attractive will form a stable self and it is that stability that gives the sense that a person exists over time (Damon & Hart, 1988; Louisy, 1996; Tippett et al., 2018).

The construction of the self is not purely an exercise in free will. Factors which are often not consciously understood by the individual including genetic predispositions, habitual emotions, hormonal change, or environmental variables influence perception and trigger sequences of behaviours, and these factors, even when the actor is not conscious of them, may be considered as part of the self (Quinn, 2006). A map outlining the self of which the client is conscious can be used by psychotherapists to identify that which the client needs to be made conscious so as to increase their potential for empowerment. The self that can be mapped at any given time should be thought of as a theory that we hold to be true with the provision that it can change over time as new information is learned.

The self has been mapped by setting memes against each other according to their connotative, affective and behavioural characteristics (Robertson, 2020; Robertson & McFadden, 2018). Figure 1 illustrates the initial self-map of a young Cree man that was prepared from a narrative, descriptive interview (Robertson, 2014). The two hour interview was then transcribed and segmented according to units of thought conveying a single idea. Those memes placed centrally were determined as being core to the self while peripheral memes were held more tentatively or were more recent additions to the self.

Figure 1. *Self-map of a Young Aboriginal Man showing Self-defining Memes, Themes, Linkages between Memes, and Directional Flow*

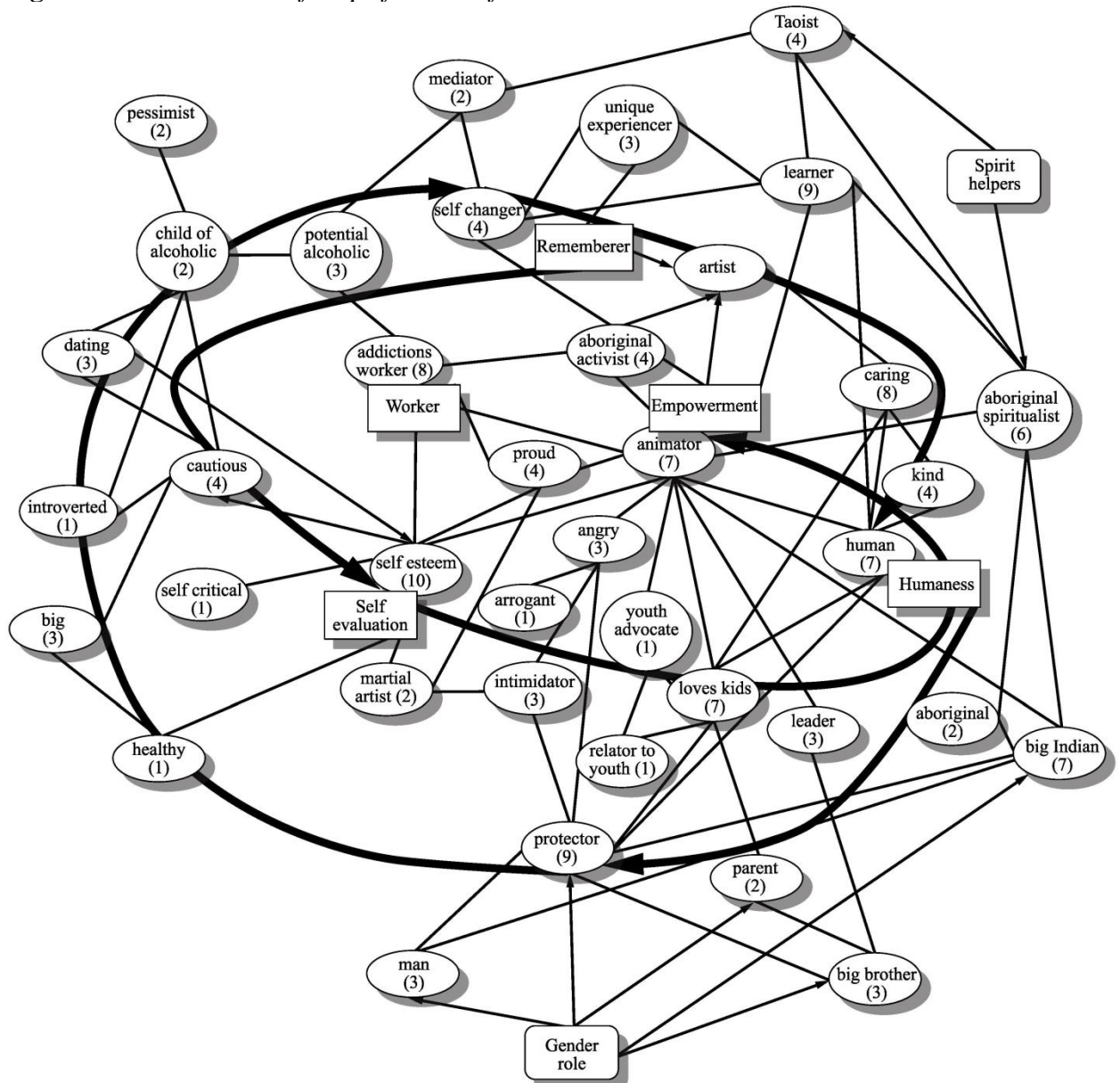


Elemental units of culture containing affective, connotative and associated behaviours were declared memes and each meme was given a referent name that appears within ovals. Numbers within the ovals indicate the number of segments coded for the meme from the transcript and may indicate relative importance. Words within rectangles indicate themes formed by clusters of memes. Directional arrows indicate the flow of the narrative; and lines without arrows indicate memes linked by connotation, affect or behaviour.

If we view the self to be a product of the narratives we tell about ourselves then individual memes can be thought of as reference points on an outline. The thick black circular line in figure 1 forms the outline of “Trevor’s” initial story. He had

begun by talking about how he could change and that he had begun life as a child of alcoholics and as a potential alcoholic. He talked about being introverted and cautious as a child with low self-esteem. He admitted his response was that he became an intimidator with the motto “Nobody messes with a big Indian.”

Figure 2. Final Revised Self-map of Trevor after Six Months

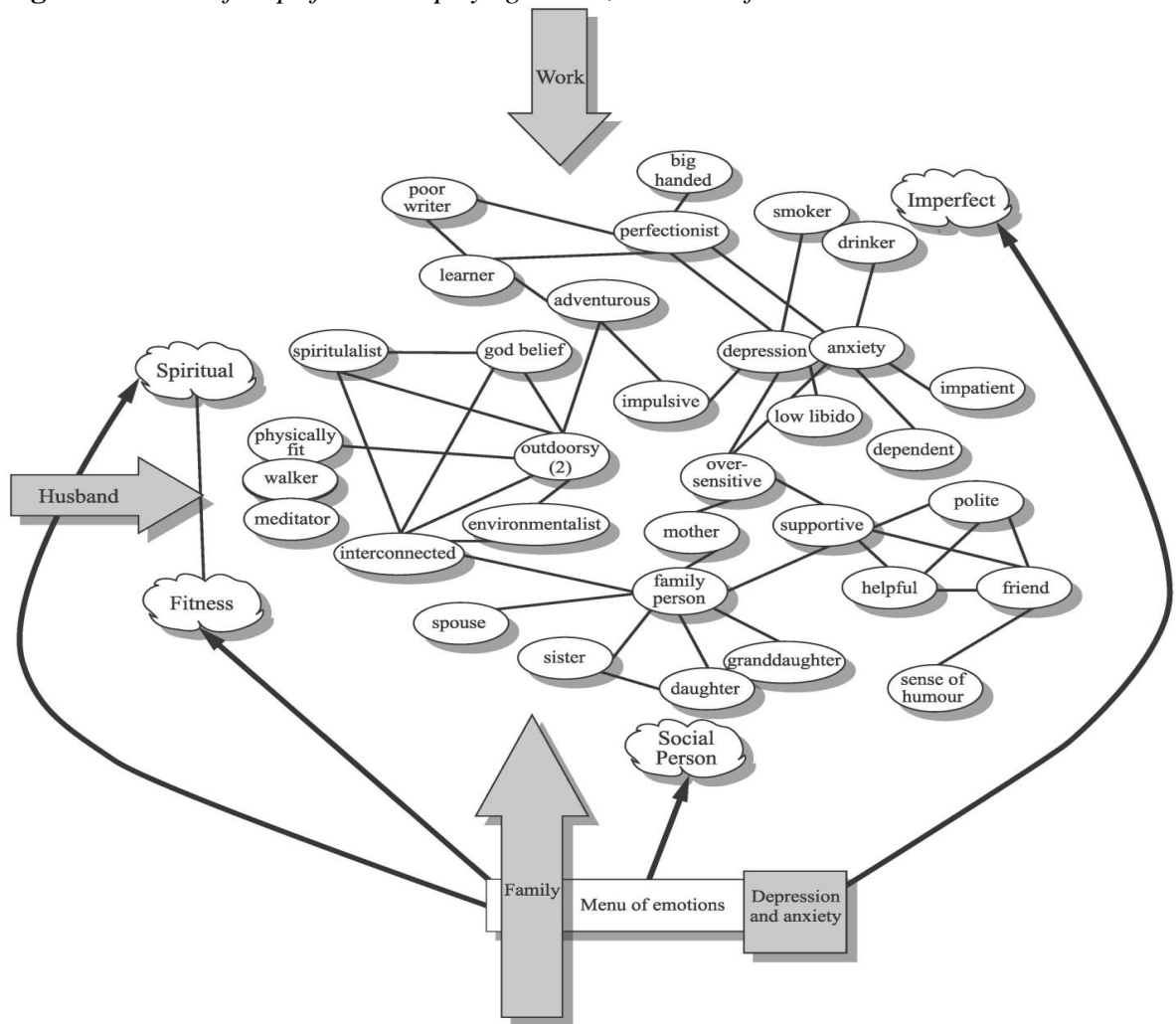


Despite being mentioned in six segments, “aboriginal spiritualist” was, as a relatively recent addition, placed near the edge of Trevor’s self. As a young man he asked himself what it meant to be an Indian and his first response was “warrior.” Taking direction from a traditional elder, he went on a vision quest and became a drum keeper and a powwow singer. He had previously embraced Taoism learned from his martial arts instructor.

After reflecting on the self map in figure 1, Trevor tempered his anger and aggressive behaviour, and he decided to be politically active in more mature and respectful ways. He began writing and performing poetry and music. He reflected on his failed relationships and decided to give up his need to “save” women, and he decided to date women who did not need saving. He replaced the referent “overweight” with the less pejorative “big.” He created a new meta-narrative for himself beginning with the theme “Humaness” and running clockwise on his self-map lessons he had learned in life. It suggests a distinctly male role in parenting drawing on new lessons learned from life experiences. These changes are reflected in Trevor’s final self-map illustrated in figure 2.

The initial self-map of “Olivia” who was treated for depression and anxiety is reproduced in figure 3 (Robertson, 2016). While figure 1 was created from a recorded transcription, this client was asked to name and rank order four lists: 1) at least ten “persons” such as worker, wife or poet that represents her, 2) a minimum of ten things she believed to be true, 3) a minimum of ten things she liked about herself, and 4) a minimum of ten things she would change about herself if she could.

Figure 3. *Initial Self-map of Olivia displaying Memes, External Influences and Emotions*



The therapist reviewed this “forty things” list with her to determine which of the statements she had made about herself met the definition of a meme. Centrality in the map was determined by rank ordering with items more difficult to give up deemed to be more central to her self. The memes in figure 3 form three clusters labelled “Imperfect,” “Social Person” and “Spiritual/Fitness.” These clusters were activated by triggering emotions represented by a menu at the base of the map. Work, Family and Husband were included as directional arrows in the map representing external forces that both impacted on her and formed part of her self-definition.

Olivia associated outdoor activities such as fishing, hunting, hiking, and snowshoeing with spiritual, meditative, and mystical processes with the result that the themes labeled “Spiritual” and “Fitness” are linked. She also saw herself as interconnected with her large extended family and this cognitive path leads to a cluster labeled “Social Person.” This cluster includes two groups, family and friends, connected by the meme “supportive.” A connotation of “supportive,” was that she should do for others, and this led to the self-critical, “oversensitive” meme which included the affect of feeling imposed upon and this, in turn, led to memes for depression and anxiety - the core of her “Imperfect” self-cluster.

Few pathways were available to Olivia between clusters with the result that she would ruminate on items within a cluster with associated behaviours to the exclusion of the rest of her self for days and weeks. Her family, spouse, and work associates were presented as being supportive, but as we began a process of therapeutic change Olivia experienced their pressure to keep her old self in place. For example, after reflecting on the effect that alcohol had on her life, Olivia committed to limiting herself to two drinks per social occasion. Olivia’s spouse continued a pattern of heavy drinking and when drunk accused her of neglecting her housework, infidelity and trying to “be white.” He began checking her e-mail, social media sites, and cell phone while sober. At a counselling session, Olivia announced that she had left her spouse and had moved into a small unfinished family cabin. She focused on her “Outdoorsy/Spiritual” self and took up “photography,” which she linked to “learner,” “outdoorsy,” and “environmentalist.” She also reframed “oversensitive” to “sensitive” with a positive connotation that it now included perceptiveness and perspective. She decided that “oversensitive” had been a word used by her family of origin and she decided to develop personal boundaries. Her new self-map including accumulated changes are illustrated in figure 4.

Olivia came to realize that she had changed, and actions that had been perceived to be supportive 6 months earlier were now felt to be restrictive. With the support of her family, she moved to another community, found a new job, and began professional training in photography.

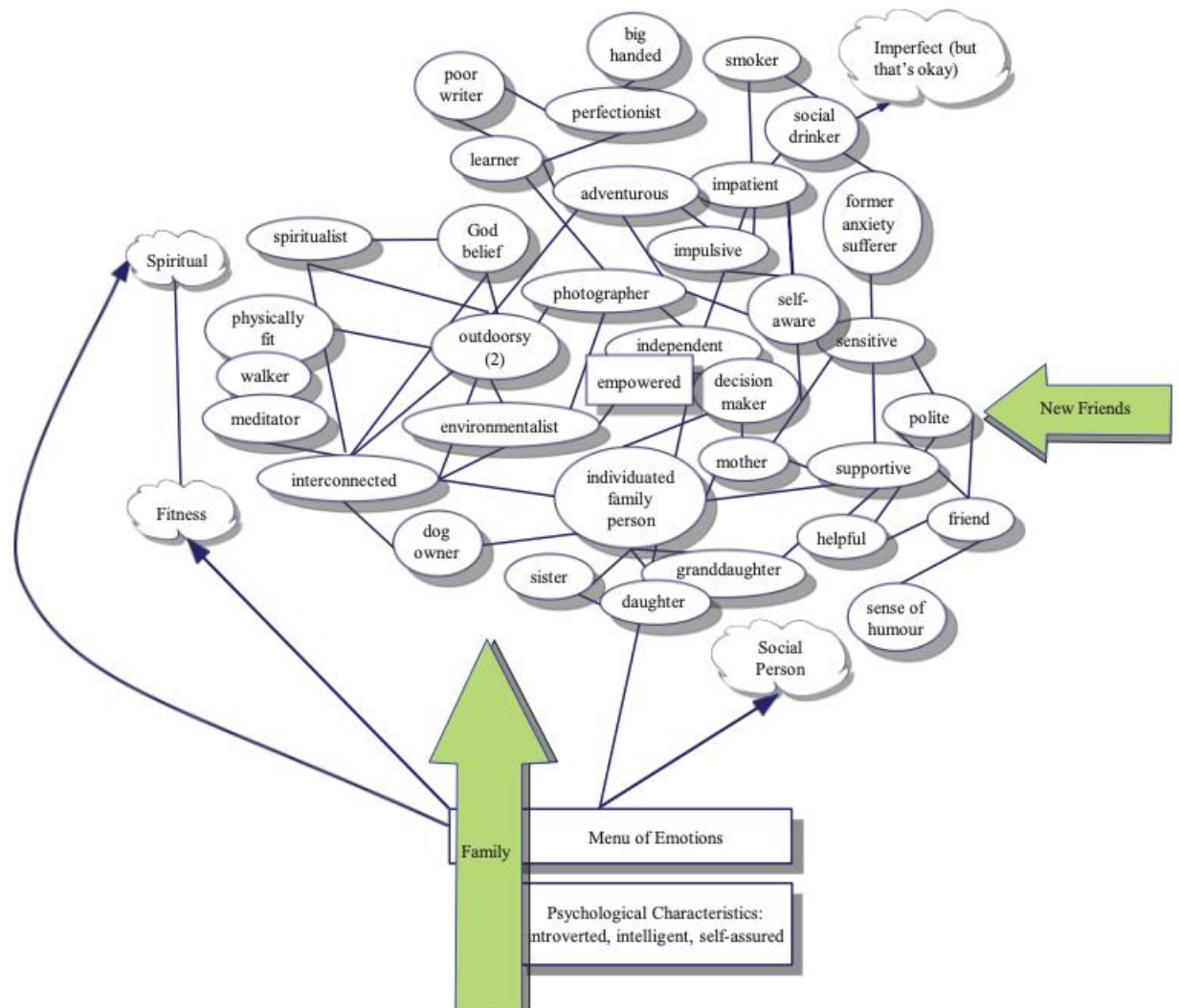
She offered the insight that being “sensitive” had led to her becoming “self-aware,” and that, in turn, fueled her newfound sense of independence and decision making.

Not only did Olivia complete commitments made in therapy, for example successfully becoming a social drinker and taking up photography; but, she successfully initiated actions even before discussing them in therapy. Having used this method of self-mapping on more than 40 clients, we have noted that the process often empowers them to take charge of their own treatment.

Identifying and Modifying Memes in Map Construction

Two methods of identifying memes for self-mapping were described here. The “forty things” method used to create figure 3 appears to be more directive than the narrative method used to create figure 1; however, both methods require that clinicians be prepared to ask supplemental questions to ensure a full and rich description. We have found both methods to be effective in generating memes that can then be mapped with memes linked according to internal characteristics and displayed graphically.

Figure 4. *Olivia’s Self-map as Co-constructed on the Termination of Therapy*



Typically, groups of memes form clusters and the psychotherapist adds those identifying themes to various clusters. The maps produced by either the “forty things” or “narrative” methods consist of cognitive pathways linking associated memes. As mentioned, the self also consists of non-rational and unconscious factors that trigger activation of various clusters of memes. These unconscious factors might include

associations between emotional triggers and responses that appear to overrule rational cognitive responses.

On its face, the narrative method of self-map construction allows for more possible variations and less therapist or researcher influence on self-depiction and is, therefore, preferred from a research perspective. The more directive method requires less of the therapist's time with respect to transcribing and segmenting interviews making it more practical for clinical settings. Both methods depend on the active involvement of the client in map co-construction and interpretation.

We posit seven core elements of a functioning self: constancy, distinctness, volition, productivity, intimacy, social interest, and remembering/reflecting (Robertson, 2016, 2020). Regardless of the method used to identify memes, it is important to ascertain whether the client is actually missing any structural dimensions not apparent from the procedure used. For example, a failure to identify an emotive aspect to the self independent of affect attributed to individual memes should be explored to determine whether the client is devoid of that attribute. Similarly, a failure to identify a volitional center using the directive method should not be interpreted as necessarily indicating the client lacks volition before exploring further the client's history and feelings with respect to self-empowerment. The process is aided by establishing collaborative equality with the mapping process viewed as exploration. Exploration of previous transitional experiences will remind the client that the self can change while maintaining a quality of continuity.

Client resistance involves a refusal to change. We have found that once clients recognize themselves in their self-map, they frequently initiate change. For example, Trevor immediately re-framed a meme with the referent word "overweight" with the less pejorative "big." He then built on existent memes to develop himself as an activist and an artist. Similarly, Olivia redefined "over-sensitive" to the less pejorative "sensitive" defining it as a strength contributing to a newfound interest in photography. Of course, sometimes further therapeutic intervention is necessary. In one example, when self-mapping revealed "depressed person" to be the core of a suicidal client's self, the therapist suggested the co-construction of a new core (Robertson, 2011). That new core was successfully built using memes already present.

In hermeneutic fashion, data collection and analysis proceed cyclically with more data collected and maps amended until the client declares that the map resonates with who they are; that is, the client identifies with the map at a feeling level. Participants are invited to discuss ways that their map could be strengthened, and, they are invited to elaborate on issues that came to mind while viewing their maps. Sometimes, resonance is achieved with the first iteration; but from our experience, two iterations are likely and occasionally three.

Once resonance is achieved, clients are invited to reflect on things that happened in their past that helped make their present selves. They are invited to share any new thoughts or feelings about who they are as a result of developing this map of themselves. Relationships between memes or clusters of memes are reviewed to establish themes. Themes may be viewed as the outline of a script habitually invoked in response to triggering stimuli. Scripts that do not result in a positive outcome can be amended.

The Self as a Small World Network

We began by describing the self as a cognitive construct, and the earliest application of this method of mapping the self used on a client with suicide ideation was bereft of a mechanism whereby emotions could activate clusters of memes (Robertson, 2011). Cognitive therapy by definition involves the slow process of conscious thought proceeding logically through linked memes to a targeted area with the objective of challenging illogical associated thoughts and associations (David & Szentagotai, 2006; David et al., 2008; Dryden et al., 2001; Robertson, 2017). While this method has proven efficacy, the method can be confounded by emotions disrupting logical progression. The maps of Olivia's self (figures 3 and 4) illustrate the interplay of cognitive and emotional routes directing client behaviour, and it resembles a small world network as found in graph theory (GT).

Robertson and McFadden (2018) demonstrated that memes correspond to vertices in GT, the pair-wise relationships between memes correspond to GT edges, and the time evolution of the self-mapping diagrams correspond to GT sequence analysis. While the focus of using traditional cognitive behavioural methods involves tracing pathways from memes along edges or links and altering those pathways in some ways, emotional or unconscious centers can override this process. We can take the laborious "high road" of methodically thinking each step or we can intuitively or reactively take the emotional "low road" of responding to stimuli and quickly changing our presentation.

While methodical thinking is often necessary to generate self-change, the low route is necessary when time is an important factor. It also requires less mental energy. In their examination of connections in networks using graph theory, Watts & Strogatz (1998) demonstrated that the existence of even a few longer range connections reduced the minimum path length of networks of self organizing systems without deleterious effects on local clustering. Put simply, tracing a pathway along short links is both time consuming and results in an overall longer pathway while the existence of a few long-range "short cuts" increases the speed of operation and reduces the total distance of movement making the system more efficient. Drawing on research using fMRI experiments, Bassett and Bullmore (2006) concluded that such a small-world network model provided a powerful approach to understanding the structure and function of human brain systems. Since such a structure combines the stability of linked pathways with the ability to "leapfrog" normal pathways and stimulate distant clusters, from an evolutionary perspective such a combination of short and long connections would be expected. As Bassett and Bullmore (2006) explained, "Small-world topology is associated with low wiring costs and high dynamical complexity, suggesting that small-world brain network topology could indeed have been selected to optimize the economic problem of cost effective information processing" (p. 516).

The self-maps discussed in this article were created by linking memes that shared connotative, affective or behavioral characteristics. Pathways between memes were mapped highlighting cognitive and behavioral scripts. These pathways involve a progression through short connecting links simulating conscious thought, but sometimes events, both internal and external, can act as triggers to focus

attention on aspects of the self that are removed from the current focus. Intuitive and unconscious forces can lead to thought clusters relatively instantaneously without the necessity of pursuing a series of short connections from a present location.

The Self in Transition

Memetic self-mapping can be used to identify key structural elements that are weak or missing, and dysfunctional elements on which the client may rely for self-definition. *The Evolved Self* (Robertson, 2020) is based on research suggesting that the qualities of constancy, distinctness, volition, productivity, intimacy, social interest, and remembering are necessary for a functioning modern self. These qualities were already well established in the literature. Constancy, the feeling that we remain the same person over time; distinctness, the view that we are a unique person separate from all others; and, volition, the sense that we have the power to enforce our will were listed as constituting the “subjective self” in the classical work of William James (James, 1890, 1892/1999, 1892/2003). Productivity, the idea that people need to feel that they are contributing through their own efforts; intimacy, the need to feel a sense of closeness to others; and social interest, the feeling that we are benefiting our families, communities or societies in some ways, have been cornerstones of Adlerian Psychotherapy since the beginning of the twentieth century (Adler, 1927/1957, 1929, 1967). The idea that reflecting on ourselves in past events is crucial to consciousness is also well established (Donald, 2001; Hermans, 2006; Mead, 1934; Seigel, 2005).

The Evolved Self (Robertson, 2020) begins with a description of “Suzie” whose “depressed person” core led to an unstable self when treatment was attempted. Traditional psychotherapy was successful after we were able to construct a new core that addressed weaknesses in volition and social interest. “Brent” replaced low academic self-esteem after choosing to believe that he had always been a competent learner but had been led to believe otherwise by other actors. Thus a sense of continuity was preserved while increasing his sense of productivity and competency. “JohnB” had negotiated several adult transitions resulting in different “selves” that he would invoke dependent on context. He worried that he had no true self and that he might not exist as a distinct person. His self-map gave him a sense of unity coupled with continuity through change.

As a result of our work with numerous clients we developed a hypothesis that the co-construction of self maps provides clients with a sense of continuity amidst change. To the angst of counsellors since the beginning of the profession, the self in its striving for continuity resists change; but self-mapping illustrates the structural integrity of the whole thus satisfying the client’s need for constancy while engaging in a process of change. Referencing earlier transitional events in map form illustrates an ability to overcome early maladaptive self-definitions while remaining the same person thus empowering clients to engage further beneficial change.

While no map represents a territory perfectly, they allow us to chart a course, and so it is with memetic self-maps. Planned incremental change can take into account groups of memes serving to keep dysfunctional core memes in place. Groups of such

memes can be appropriated to support new desired alternatives. Peripheral memes are usually the easiest for the client to remove, or replace. Since the map building activity is necessarily a collaborative exercise between therapist and client, it commends itself to the joint planning of therapeutic alternatives. The dynamic of co-constructing developmental transitions is a way of increasing client self-empowerment and commitment to change. The potential benefits also include enhanced development of collaborative counsellor-client relationships, increased rapport, and a holistic perspective on the self-structure.

The various schools of therapy may be thought of as emphasizing combinations of the seven structural elements reviewed in this manual. Cognitive-behavioural therapy has stressed volition, activity and thinking. Adlerian Psychotherapy adds intimacy and social interest to the mix. Other therapies focus more specifically on emotion or remembered narratives. All therapies recognize the uniqueness of the individual, but most do not elevate this element to their central focus.

While counselling may focus on problem solving, psychotherapy is about self-change. If we think of the self as a theory each of us has of who we are, then each meme is a proposition linked to other such propositions in logical and emotive ways. With new information it should be possible to construct better self-theories.

Psychotherapists continuously confront confirmation bias when helping clients construct better selves. Clients have their own habitual ways of defining what constitutes evidence and we need to explore and extend those definitions. Some individuals with negative self images resist feedback because they fear confirmation of what they already fear is true. The challenge of therapists is to provide objectively defensible rationale for exploring self-enhancing change in a safe and nurturing place. The core of the modern self is the idea that there is an objective reality, and psychotherapists are in the business of helping our clients explore that reality through hypothesis testing and rational discourse.

While the self may not be purely a cognitive structure, it is possible to bring more of that structure into conscious awareness. The client may be relatively unaware of personal psychological characteristics such as intelligence, kindness, shyness or other dispositional qualities that may be true but unacknowledged. Equally important, therapists also need to acknowledge aspects of the client's self not in need of change that support a sense of constancy. The client needs to feel that in some important sense the person coming out of therapy is still the same person who entered it. Seeing oneself in map form placing the desired change in perspective assists this sense of constancy. Successful change requires support from memes already existent within the self, and such change may be viewed as part of an evolutionary process.

Due to the incremental nature of self-change, it is not always possible to identify when a particular change occurred. For example, Trevor (figure 1) reported he had become a political activist after his initial interview and he was surprised to find that "political activist" was already present when he appeared for a second interview. That meme was identified constructed after our initial interview as a result of narratives in which he had taken direct action against a doctor who may have over-prescribed medications and men seeking the services of prostitutes. More formal political action during the course of this study seemed to flow from this earlier orientation. While this result may be interpreted as a phenotypic manifestation of a meme that was already

present, changes in expression may precursor change in self-identification. If we view the self as something that will change over time, then self-mapping can be used to interpret the direction of future change.

All of the transitions we have observed have involved relationships with other people. Those relationships were remembered in narratives that included thematic interpretations of events. The storylines imputed cause and effect. JohnB's relationship with a high school classmate who was non-Christian led to his questioning of church doctrine and eventually to an acceptance of cultural diversity. Trevor's relationship with an uncle resulted in his thematic Indian name "Against the Wind," and that gave direction to his life. Brent received encouragement from a swimming instructor led him to experiment with teaching others, and this, in turn, led to improved academic self-esteem and a teaching career. A friend encouraged "Magdelynn" to play wheelchair basketball, which eventually led to an invitation to play for the national women's team. "Tina" stopped drinking and drugging on learning she was pregnant. Since all of these transitional events were based on relationships with other people we need to consider the implication that therapy cannot be successful without consideration of such relationships and their affect on the self.

If the objective of therapy is change, then self-maps may be thought of as snapshots at a particular point in time. To be effective, the client needs to identify with the snapshot taken with the realization that snapshots taken at different points of time would not be identical. Since the self cannot be viewed as static, it is important to bring into focus the notion of remembered transitions. Once clients can link previous developmental change to who they are in the present, they will be able to better visualize future planned change. Therapists can use the concept of incremental change in planning such developmental transitions.

Limitations and the need for more Research

Clinicians may generate new techniques during the course of psychotherapy when established treatments fail. The method developed here was first used to treat a youth who was experiencing suicide ideation that was resistant to anti-depressant medication, cognitive behavioral therapy, Adlerian psychotherapy, and eye movement reprocessing and desensitization (Robertson, 2011). Using the narrative method of generating memes the practice of memetic self-mapping was tested on a qualitative cross-cultural sample of people who were not in psychotherapy (Robertson, 2009). Subsequent research has consisted of published case studies and the reports of the authors in their practices. We need to confirm our anecdotal findings in larger studies using mixed methods. While we believe the methods of generating self-maps described here are compatible with various schools of psychotherapy, research demonstrating efficacy across this range of schools has not been done. In addition, research using the self-mapping technique on targeted populations whose selves have been damaged by trauma, psychiatric illness or other life experiences is indicated.

Two methods of identifying memes for self-mapping were described here. The "forty things" method used to create figure 3 appears to be more directive than the narrative method used to create figure 1. Research is indicated to demonstrate the

equivalency of these two methods. Research may assess the efficacy of methods as applied to research and use in therapy sessions.

While there may be a basic structure to the self, the importance placed on certain aspects of that structure and their relationship to other aspects of the self would be expected to vary between cultures. Memetic mapping may be used to further study how the selves in various cultures are constituted. As we have seen, the dichotomy between collectivist and individualist is simplistic as the self is constituted and maintained by social forces in all cultures. The study of cultural differences will include consideration of how such forces are accommodated, balanced and interpreted.

Memetic mapping is a technique and as such is subject to influence by each practitioner's style and preferred therapeutic approaches. While we support the view that the process aligns with a number of common approaches, we are limited in that practitioners currently using it share commonality in approaches and client demographics. Data gathered by therapists with a broad range of foci and approaches would demonstrate transferability between mapping methods. Given that memetic mapping uses supported psychotherapy skills incorporated into existing therapeutic frameworks, the risks in applying the technique in therapy is low.

In applying memetic mapping, the only research conducted to date is by the creator of the mapping technique. Study replication with greater sample sizes would show the efficacy of memetic mapping as a technique and encourage further research and refinement of the methods. A clinical manual outlining the two approaches is in development for use by practitioners and researchers interested in applying memetic mapping to research and practice. It is our hope that memetic mapping has enough perceived utility for therapy that psychotherapists will want to learn the technique and conduct further research.

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The Psychosocial Support offered to Pregnant Teenage Girls and Teenage Mothers in Bungoma County, 2019-2021

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This research endeavored to assess the psychosocial support extended to pregnant teenage girls and teenage mothers in Bungoma County during the period spanning 2019 to 2021. Recognizing the distinctive challenges faced by this demographic, the study employed a mixed-methods approach to investigate the nature, availability, and efficacy of psychosocial support systems tailored to their specific needs. Quantitative data was gathered through structured surveys, focusing on demographic information, the types of psychosocial support received, and the perceived effectiveness of these interventions. Complementary qualitative data was derived from in-depth interviews and focus group discussions, providing a deeper understanding of the emotional, social, and psychological dimensions of the support offered. Purposive and stratified random sampling techniques were used in the study. The sample size of the study was 277 respondents from a total of 901 target population. A total of 216 dull filled and cleaned questionnaires for pregnant or teenage mothers were used for reporting as response return. There was also a total of 44 questionnaires for school principals. The study found that pregnant teenage girls and teenage mothers in Bungoma County encounter varied psychosocial challenges, including societal stigmatization, isolation, and emotional distress. Additionally, the study majorly found that most of the school support that adolescent mothers received revolved around guiding and counseling, encouragement, spiritual and love, which indicate psychological support.

Keywords: psychosocial support, teenage girls, teenage mothers and Support

Introduction

Psychosocial support can be defined as a range of interventions and resources provided to address the psychological and social needs of pregnant teenage girls and teenage mothers (Babedi, 2021). This support includes emotional care, counseling,

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guidance, encouragement, and assistance from family members, schools, and the community (Babedi, 2021). The goal is to help these young mothers cope with the challenges they face, reduce their feelings of isolation and stigma, and improve their overall well-being during pregnancy and motherhood (Letourneau, Stewart & Barnfather, 2004).

World Vision (2021) estimates that as many as one million girls across sub-Saharan Africa may be blocked from returning to school due to pregnancy during COVID-19 school closures. Chimhungwe (2012) in Zimbabwe point out that without the support system of teachers and school authorities, several girls are likely to be exposed to sexually transmitted infections, unwanted pregnancies and sexual exploitation among other overwhelming effects of covid-19. Furthermore, Chimhungwe (2012) maintained that Schools closures as part of the response to Covid-19 may have doubled the teenage pregnancy rates. Schools provide an important safe environment for the girls. When schools close children are left unsupervised and consequently left in the hands of predatory family members and neighbors (Besag, 2006).

Akter (2019) reiterated that, adolescent parenthood is associated with a range of adverse outcomes for young mothers, including mental health problems such as depression, substance abuse, and post-traumatic stress disorder. According to Centres for Disease control (2019), Teen mothers are also more likely to be impoverished and reside in communities and families that are socially and economically disadvantaged. These circumstances can adversely affect maternal mental health, parenting, and behaviour outcomes of these teen mothers and their children (Smith, 2004). To sum up, teenage pregnancy is one psychosocial and economic problems across the globe found in both developed and developing societies. Thus, the effects of teenage pregnancy need further empirical studies since it affects the social-psychological well-being of teenagers and disruption of academic process for the affected student, her family, peers and the school community.

Purpose of the Study

The study sought to explore processes that can be used to build a mutual framework for reducing Adolescent Pregnancies in Bungoma County, Kenya. Thus, it pursued to determine the psychosocial support offered to pregnant teens and teenage mothers, develop a mutual framework for militating against Adolescent Pregnancies in Bungoma County and disseminate the framework for militating against teenage pregnancies in Kenya.

Research Questions

- i. What types of psychological support are provided to pregnant teenage girls and teenage mothers by their families in Bungoma County?
- ii. How do schools in Bungoma County provide psychosocial support to pregnant teenage girls and teenage mothers?

- iii. What are the existing gaps in community-based psychosocial support for pregnant teenage girls and teenage mothers in Bungoma County?

Limitations of the Study

The study found that support from community members and health volunteers was relatively low, with significant numbers of adolescent girls reporting insufficient community-based assistance. The study emphasized the need for enhanced community involvement and outreach programs, highlighting the gaps in community support and recommending increased efforts to build robust community networks and integrate them into the support systems for pregnant teens.

Although psychological support was available from family and teachers, there was a variance in its consistency and effectiveness, with some respondents reporting gaps in support. The study called for more structured and consistent psychological support systems, both at home and in schools. It advocated for formalized counseling programs and regular training for teachers and caregivers to ensure continuous and effective psychological support for pregnant adolescents.

Literature Review

A study by Smith *et al.* (2020) explored the impact of emotional and mental health interventions on pregnant teenage girls and teenage mothers in the USA. The research focused on school-based counseling programs designed to offer emotional support and guidance. These programs aimed to reduce feelings of anxiety, depression, and isolation among pregnant teens by providing individual and group therapy sessions. The study found that participants who received regular counseling showed significant improvement in their mental health and were more likely to continue their education. However, the research highlighted that the reach of these programs was limited, often excluding girls in rural areas or those without access to supportive school environments.

May (2014) posits that, despite the worrisome prevalence of teenage pregnancy in Africa with nearly in adolescent/teenage girls becoming pregnant in this region the evidence base on the psychosocial support concerns of affected girls within this context is surprisingly thin. Furthermore, from May (2014), the current literature on the experiences of teenage mothers (including psychosocial support/mental health issues) is characterized by 'few studies', with evidence on best practices around psychosocial support for pregnant and parenting girls described as being 'limited'. Hitimana (2018) discusses the severe psychosocial effects of early pregnancy, particularly in the context of low-resource settings common in many African countries. According to his study, teenage pregnancy often leads to significant emotional and psychological challenges, including feelings of shame, guilt, and isolation. These effects are exacerbated by the lack of adequate support systems, as many communities in Africa lack the resources to provide proper psychosocial support. The study further indicates that these challenges contribute to a cycle of poverty and limited opportunities, as teenage mothers are

often forced to drop out of school, limiting their future prospects. Hitimana emphasizes the need for community-driven interventions that address not only the immediate psychological needs of these young mothers but also the broader socio-economic barriers they face. His findings underscore the importance of developing tailored support systems that consider the unique challenges of low-resource environments, highlighting a critical gap in current support initiatives.

According to Hamburg (2017), a number of studies have begun to respond to this call, noting that the psychosocial support needs of pregnant and parenting teenage girls in Kenya, for instance, revolve around issues such as economic support, mental health concerns and stigma. Hamburg (2017) further says that, these important psychosocial support issues emerged from conventional datasets focusing on pregnant/parenting girls and other related populations. However, data derived from actual psychosocial support contexts are yet to inform the emerging body of literature. Yet, such data have the potential to deepen our understanding of a complex issue requiring urgent solutions.

Nyaga and Munene (2020) explored the psychosocial challenges faced by teenage mothers in rural areas of Kenya, focusing on how these challenges affect their educational and social outcomes. The study revealed that teenage mothers in rural areas often experience stigmatization, social isolation, and inadequate support from their families and communities. It was found that the majority of these girls lack access to professional counseling services, which exacerbates their emotional and psychological distress. The study suggested that there is a critical need for more structured psychosocial support systems tailored specifically to the needs of teenage mothers in rural areas.

Ndirangu and Wambugu (2019) examined community-based support systems available for pregnant adolescents in Kenya. Their research highlighted the role of community health workers, religious institutions, and local non-governmental organizations (NGOs) in providing support to pregnant teenagers. They found that while these support systems exist, they are often uncoordinated and inconsistent, leading to gaps in service delivery. The study emphasized the importance of creating a more cohesive network of support services that can address the diverse needs of pregnant teenagers, including emotional support, healthcare, and education.

Kilonzo et al., (2021) focused on the impact of various psychosocial interventions on adolescent mothers in Western Kenya, including Bungoma County. Their study assessed the effectiveness of peer counseling, group therapy, and family-based interventions in improving the mental health and well-being of teenage mothers. The findings indicated that while these interventions had a positive impact, their reach was limited, with many teenage mothers not accessing these services due to cultural barriers, lack of awareness, or logistical challenges. The study recommended scaling up these interventions and ensuring they are more accessible to the target population.

The reviewed literature provides valuable insights into the psychosocial support available to pregnant teenage girls and teenage mothers in Kenya. However, a significant gap exists in understanding the specific experiences and needs of this demographic in Bungoma County during the period 2019-2021. While Kilonzo *et al.* (2021) included Bungoma County in their study, the research did not focus exclusively on the county, and the unique cultural, social, and economic factors that

may influence the effectiveness of psychosocial support in this region were not thoroughly explored.

Moreover, there is a lack of longitudinal studies that track the long-term impact of psychosocial interventions on the well-being of teenage mothers in Bungoma County. The existing studies largely focus on short-term outcomes without considering how these interventions might affect the girls' lives over a more extended period. This gap highlights the need for more localized, in-depth research that considers the specific context of Bungoma County and evaluates the sustainability of psychosocial support systems over time.

To address this gap, this paper draws on the voices and experiences of pregnant/parenting girls (and, by extension, their parents) in the context of Bungoma County, Kenya. Examining affected girls' lives in this unique context provides an opportunity to gain deeper insight into their worlds, and to pick up on critical psychosocial support challenges and needs that have yet to make their way into the literature. Such evidence is critical for assess the psychosocial support extended to pregnant teenage girls and teenage mothers in Bungoma County during the period spanning 2019 to 2021.

Methodology

Study Description and Location

The COVID-19 timeline of events spanning from closures and restrictions to phased re-openings is well-documented in Kenya. This unique COVID-19 situation offered researchers an opportunity to study and establish the nature, trend and level of teenage Pregnancy trends in Bungoma County between 2019-2021.

In this study, all the teenage mothers in public mixed and girls secondary schools in Bungoma County were the universe under study. This study first stratified the public mixed and girls secondary schools as per the 12 sub-counties of Bungoma County. Simple random sampling was used to pick schools in each sub-county. All the girls in the sampled schools were purposively selected. The study employed both Quantitative and Qualitative approaches. Quantitative method helped to generate the trends and nature of teenage pregnancies while qualitative enabled participants to describe their experiences and perspectives regarding teenage pregnancies.

Data Collection Methods

Data collection was done through document analysis, questionnaires and interviews. This was ensured by use of Survey questionnaires distributed to school Principals of the selected schools. Additionally, the researchers conducted FGDs, Key informant interviews, review of documents with the school principals of the selected schools in Bungoma County.

Sampling Frame and Sampling Size

The affected girls and the principals were purposively sampled. The main target population who are affected teenagers were sampled from a population of 901 reported cases from Bungoma County.

Table 1. *Reported Pregnancy Cases in Bungoma County*

SUB COUNTY	NUMBER OF REPORTED CASES
Bungoma South	147
Kopsiro	21
Cheptais	23
Webuye West	61
Mt.Elgon	11
Tongaren	86
Kimilili	86
Bungoma East	80
Bungoma West	98
Bungoma North	121
Bungoma Central	105
Bumula	62
TOTAL	901

According to Creswell (2014), the sample size is the population’s subset or the total number of items which should be selected from the study population to constitute a sample. Kothari (2014) argued that the sample size should not be too large or too small. In this study, the sample size was calculated using the formula below by Yamane Taro (1967);

Where n = sample size
 N= population size
 e = level of precision using 95% confidence level thus
 $n = N \div 1 + N (e)^2$
 $n = 901 \div 1 + 901(0.05)^2$
 $n = 277$

Results and Discussion

In Bungoma County, the phenomenon of teenage pregnancies presents a complex and pressing challenge, particularly concerning the psychosocial well-being of pregnant adolescents and teenage mothers. This study addressed it in the findings as follows.

Psychological Support offered to Pregnant Teenage Girls and Teenage Mothers at Home

The study sought to establish the psychological support offered to pregnant teenage girls and teenage mothers at home from their own responses.

Table 1. *Psychological Support offered to Pregnant Teenage Girls and Teenage Mothers at Home*

No	Statements	SD	D	U	A	SA	M	SD
1	My family members guide and counsel me whenever i experience any challenges	3(1.4)	8(3.7)	9(4.2)	122(56.5)	74(34.3)	4.2	.79
2	My family members assist me in homework	24(11.1)	67(31)	24(11.1)	65(30.1)	36(16.7)	3.1	1.31
3	Parents accompany me to hospital for treatment	16(7.4)	39(18.1)	11(5.1)	86(39.8)	64(29.6)	3.7	1.28
4	Family members always encourage me whenever I feel low	10(4.6)	27(12.5)	14(6.5)	99(45.8)	66(30.6)	3.9	1.13
5	Community members visit me at home	27(12.5)	73(33.8)	20(9.3)	59(27.3)	37(17.1)	3.0	1.34
6	Religious leaders pray for me at home	12(5.6)	57(26.4)	7(3.2)	93(43.1)	47(21.8)	3.5	1.25
7	Community health volunteers attend to me at home	30(13.9)	79(36.6)	17(7.9)	57(26.4)	33(15.3)	2.9	1.34
8	I am not allowed to do certain work because of my condition	35(16.2)	66(30.6)	9(4.2)	63(29.2)	43(19.9)	3.1	1.43
9	I receive free treatment whenever I fall sick at school	18(8.3)	31(14.4)	15(6.9)	74(34.3)	78(36.1)	3.8	1.30
10	Family members love my child	9(4.2)	18(8.3)	10(4.6)	84(38.9)	95(44.0)	4.1	1.09

Majority of the girls, 122(56.5%) agreed that their family members guided and counseled them whenever they experienced any challenge, and these were supported by 74(34.3%). Cumulatively, 90.8% of the girls received this kind of support at home, which was highly rated averagely ($M=4.2$, $SD=.79$) with low standard deviation. The findings further shows that 86(39.8%) of the girls agreed that their parents accompanied them for hospital treatment, which was also supported by 64(29.6%) with high mean and standard deviation ($M=3.7$, $SD=1.28$) and always encouraged them whenever they felt low as agreed by 99(45.8%) and strongly agreed by 66(30.6%). Cumulatively, 76.5% were in agreement that their family members always encouraged them whenever they felt low, which had a high mean ($M=3.9$, $SD=1.13$) although with a high standard deviation as well.

A significant number, 64.9% cumulatively agreed that religious leaders prayed for them at home ($M=3.5$, $SD=1.25$) while 70.4% cumulatively agreed that they received free treatment whenever they felt sick at school, ($M=3.8$, $SD=1.30$). The findings also indicates that 82.9% of the girls cumulatively agreed that their family members love their children ($M=4.1$, $SD=1.09$). On the contrary, majority, 66(30.6%) of the adolescent girls disagreed that they were not allowed to do certain work because of their condition. Seventy nine, that is 36.6% also disagreed that community health volunteers attended to them at home ($M=2.9$, $SD=1.34$). The findings also indicates that majority of the adolescent girls, 73(33.8%) disagreed that community members visited them at home. From these findings, it can be noted that

adolescent mothers mainly received their support from immediate family members and spiritual leaders but not from the community.

Psychological Support Offered to Pregnant Teenage Girls and Teenage Mothers at School

In addition to the psychological support offered to pregnant teenage girls and teenage mothers at home, the study sought the same at school. The findings are presented as shown in Table 3 that follows.

Table 3. *Psychological Support Offered to Pregnant Teenage Girls and Teenage Mothers at School*

No	Statements	SD	D	U	A	SA	M	SD
1	Teachers guide and counsel me whenever I experience any challenges	6(2.8)	11(5.1)	10(4.6)	89(41.2)	100(46.3)	4.2	.96
2	My classmate assist me in classwork	19(8.8)	41(19.0)	13(6)	90(41.7)	53(24.5)	3.5	1.29
3	School nurse or teacher accompany me to hospital for treatment	28(13)	80(37.0)	20(9.3)	49(22.7)	39(18.1)	3.0	1.36
4	My schoolmate always encourage me whenever I feel low	10(4.6)	30(13.9)	13(6)	107(49.5)	56(25.9)	3.8	1.12
5	Teachers always encourage me whenever I feel low	7(3.2)	13(6)	11(5.1)	98(45.4)	87(40.3)	4.1	.99
6	Teacher or school chaplain pray for me at school	12(5.6)	31(14.4)	18(8.3)	87(40.3)	68(31.5)	3.8	1.20
7	The school provides special meal for me	41(19)	89(41.2)	19(8.8)	35(16.2)	32(14.8)	2.7	1.35
8	I am not allowed to do certain work because of my condition	29(13.4)	63(29.2)	16(7.4)	69(31.9)	39(18.1)	3.1	1.37
9	I receive free treatment whenever I fall sick	24(11.1)	62(28.7)	17(7.9)	62(28.7)	51(23.6)	3.3	1.38
10	My friend love my child	15(6.9)	18(8.3)	8(3.7)	89(41.2)	86(39.8)	4.0	1.18

From the findings, majority of the adolescent mothers, 100(46.3%) strongly agreed that teachers guide and counsel them whenever they experience any challenge, which averagely received a high rating ($M=4.2, SD=.96$). Cumulatively, 143(66.2%) of the adolescents agreed that their classmates assisted them in their classwork ($M=3.5, SD=1.29$) while 163(75.4%) cumulatively agreed that their schoolmates always encourage them whenever they feel low with a high mean and standard deviation ($M=3.8, SD=1.12$). The findings also indicates that majority of the adolescent girls, 185(85.7%) cumulatively agreed that teachers always encouraged them whenever they felt low, ($M=4.1, SD=.99$) and teachers or school chaplain prayed for them at school as indicated by cumulatively 155(71.8%) who agreed. Cumulatively 109(50.0%) of the girls agreed that they were not allowed to do certain tasks because of their condition ($M=3.1, SD=1.37$), in addition, 113(52.3%) received treatment whenever they felt sick ($M=3.3, SD=1.38$) while 175(81.0%) agreed that their friends love their children ($M=4.0, SD=1.18$). However, it also emerged that majority of the adolescent girls, 80(37.0%) disagreed that school nurse or teachers

accompanied them to hospitals for treatment, ($M=3.0$, $SD=1.36$). The findings also shows that 89(41.2%) of the girls disagreed that the school provided special meal for them ($M=2.7$, $SD=.135$). These findings imply show that most of the school support that adolescent mothers received revolved around guiding and counseling, encouragement, spiritual and love, which indicate psychological support.

Table 4. Views on Support and Capacity Building Available in the School

No	Statements	SD	D	A	SA	M	SD
1	Learners are openly talked to by all of us about the effects of early pregnancies and pre-marital sex	5(9.8)	2(3.9)	13(25.5)	31(60.8)	3.4	.96
2	Learners are taught to say no to early sex	7(13.7)	1(2)	15(29.4)	28(54.9)	3.3	1.04
3	There are peer counseling sessions on pre-marital sex	5(9.8)	6(11.8)	23(45.1)	17(33.3)	3.0	.93
4	school alumni are invited to give talks on effects of pre-marital sex	7(13.7)	17(33.3)	18(35.3)	9(17.6)	2.6	.94
5	There is a programme to empower girls and boys into avoiding early sex and prioritizing education.	8(15.7)	6(11.8)	16(31.4)	21(41.2)	3.0	1.09
6	There is stronger partnership between teachers and parents on the topic of sex	11(21.6)	15(29.4)	18(35.3)	7(13.7)	2.4	.98
7	Teaching and learning materials are available to teachers on sex education	14(27.5)	14(27.5)	16(31.4)	7(13.7)	2.3	1.03
8	Teachers are well trained to manage teenage pregnancy crisis	10(19.6)	12(23.5)	17(33.3)	12(23.5)	2.6	1.06
9	Toilets and sanitary facilities are available and suitable for girl child	5(9.8)	6(11.8)	22(43.1)	18(35.3)	3.0	.94
10	Toilets and sanitary facilities are privately situated for use by girls	3(5.9)	5(9.8)	18(35.3)	25(49.0)	3.3	.87
11	The environment is safe for learners	1(2)	2(3.9)	23(45.1)	25(49.0)	3.4	.67
12	Safe and clean water is available for use by girls		3(5.9)	24(47.1)	24(47.1)	3.4	.61
13	Clear rules and regulation for re-entry for teenage mothers are available	4(7.8)	5(9.8)	19(37.3)	23(45.1)	3.2	.92
14	Teenage mothers are aware of re-entry rules and regulations	4(7.8)	7(13.7)	20(39.2)	20(39.2)	3.1	.92
15	School community members are supportive to teenage mothers	7(13.7)	17(33.3)	14(27.5)	13(25.5)	2.6	1.02
16	Teenage mothers are supported to develop self esteem	3(5.9)	7(13.7)	26(51)	15(29.4)	3.0	.82

From the findings, majority of the heads of guiding and counseling, 31(60.8%) revealed that learners are openly talked to by all of them about the effects of early pregnancies and pre-marital sex ($M=3.4$, $SD=.96$). They were also taught to say no to early sex, 28(54.9%) with high rating ($M=3.3$, $SD=1.04$) as well as peer counseling sessions on pre-marital sex ($M=3.0$, $SD=.93$) as revealed by 40(78.4%). School alumni were invited to give talks on effect of pre-marital sex, ($M=2.6$, $SD=.94$) with 52.9% cumulative agreement. According to the high rating, ($M=3.0$, $SD=1.09$) majority, 37(72.6%) of the heads of guiding and counseling agreed that there is a programme to empower girls and boys into avoiding early sex and prioritizing education.

Teachers are well trained to manage teenage pregnancy crisis ($M=2.6, SD=1.06$) as revealed by majority, 29(56.9%) whereas toilets and sanitary facilities are available and suitable for girl child ($M=3.0, SD=.94$) as agreed by 40(78.4%). According to the majority, 43(84.3%) of the respondents, toilets and sanitary facilities are privately situated for use by girls, which was highly rated ($M=3.3, SD=.87$). Majority, 49(94.1%) of heads of guiding and counseling as agreed that the environment is safe for learners, which was highly rated ($M=3.4, SD=.67$) and there was safe and clean water available for use by the girls ($M=3.4, SD=.61$) according to 48(94.2%).

The findings indicates that there are clear rules and regulations for re-entry for teenage mothers as revealed by majority, 42(82.4%) as highly rated ($M=3.2, SD=.92$). Majority, 40(78.4%) teenage mothers are aware of re-entry rules and regulations, which was highly rated ($M=3.1, SD=.92$). In addition, the findings show that teenage mothers are supported to develop self-esteem as revealed by majority 41(80.4%) with a high rating ($M=3.0, SD=.82$) whereas school community members are supportive to teenage mothers as indicated by a high rating ($M=2.6, SD=1.02$) as indicated by majority, 27(53%) of the heads of guiding and counseling.

Conclusion and Recommendations

Parenting teenage girls require a range of psychosocial support responses that recognize the realities of sexual violence and other challenges in the lives of the girls themselves, as well as in the lives of their parents and caregivers (Undie & Birungi, 2022). While parents and other caregivers can serve as an important resource for supporting affected girls, they often need assistance as well, in order to support pregnant/parenting girls effectively. These realities need to be taken into account to maximize the effectiveness of health and development programs for pregnant and parenting girls (Kumar *et.al.*, 2018). Furthermore, emerging themes from actual counseling sessions with affected girls and parents can provide important insights into the potential psychosocial support needs of the broader population of pregnant and parenting girls.

The study also concludes that, throughout this period, pregnant teenage girls and adolescent mothers faced a spectrum of psychosocial hurdles, encompassing societal stigma, emotional distress, isolation, and limited access to tailored support services. The analysis revealed the complexity of their experiences, underscoring the need for comprehensive, holistic, and community-driven interventions to address their numerous needs effectively. Despite efforts made by various stakeholders and support initiatives, gaps persist in the provision of psychosocial support. Access to mental health resources, community-based support networks, and culturally sensitive interventions remains limited, contributing to the vulnerability of this demographic.

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Motivation of Academic Success and its Relation to Smartphone Addiction and Stress Related to Academic Expectations in Turkish High School Students

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This article examines three subjects concerning teenagers. First, consider the psychological condition of motivation, which pushes individuals to pursue and achieve goals, and how it affects teenagers. Second, smartphone addiction may disrupt daily activities and have a detrimental impact on well-being. It further adds that using a smartphone might cause difficulties such as decreased concentration in class and bad effects on physical and mental health. The article also discusses the phenomena of stress associated with academic expectations, as well as how distress caused by discontent or awareness of approaching failure is a substantial source of stress for students and may lead to mental health problems. This paper emphasizes the importance of being aware of these issues of adolescents. We present six possible hypotheses and analyse our variables to determine them. First, we use correlation to see whether there is a significant relationship between these three variables. Secondly, we discovered a strong positive association between motivation for academic performance and stress over expectations ($p=.002$). We also discovered a positive and significant correlation between stress regarding expectations and smartphone addiction ($p=.026$). Thirdly, we run an independent t-test to see whether there are any gender differences in our variables. Fourthly, we revealed a gender difference in the level of stress about expectations ($p=.005$). Additionally, we discovered a significant connection between our variables and demographic characteristics. We established a strong correlation between academic motivation and having a private space: Adolescents with rooms for themselves ranked significantly higher in motivation than those without private rooms ($p=.015$). Furthermore, we discover a difference in smartphone addiction between students whose parents are married and those whose parents are divorced ($p=.016$). Moreover, we discovered a significant effect of siblings on stress levels ($p=.036$). Furthermore, we discover a significant difference between grades in motivation for academic performance ($p=.042$) and stress linked to expectations ($p=.048$). We also found that age had a substantial influence on motivation for academic performance ($p=.010$) and stress related to expectations ($p=.005$). Overall, in this study, we looked at some of the impacts on students' psychology, the significance of family attitudes in the student's life, a variety of factors that influence the student's academic life, and a few of the issues and consequences they face today.

Keywords: *Adolescents, motivation, stress, academic success, smartphone addiction.*

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Introduction

The subjects of studies concerning students change with the evolution of generations. In other words, nowadays, teenagers are so different than they were 30 years before. Interest and attention among adolescents have also changed since the internet became a part of their lives. In particular, they have been influenced by the addition to their life of cell phones and tablets. As such, their education and how they are spending their time have also changed. When it comes to the usage of smartphone, adolescents may use it in an exaggerated and unhealthy manner. As a result, now we have a phenomenon called smartphone addiction. Smartphone addiction is basically an exaggerated usage of smartphones. However, its effects are not simple as its definition. Basically, this kind of addiction is not easier than other types of addictions. It can be so dangerous, based on the level of dependency, that it could affect other areas of social life. Moreover, it is possible to assume the education is the most affected part of adolescents' lives. It is difficult for adolescents to concentrate on their school life and education, given that internet and social media are the main concerns of these age groups. This is where we are seeing a reduction in motivation levels for academic success. Perhaps the addition of smartphone is not the only reason for the drop in motivation for academic success. Moreover, there are still many factors for social life that we need to discuss such as stress. Stress, most of the time, is related to the expectations of the social relations. Parents and teachers are the most common relations that their expectations of success in academic life may lead to higher level of stress in adolescents. In summary, this paper examines the definitions of motivation of academic success, smartphone addiction and stress related to academic expectations for adolescents.

Motivation of Academic Success in Adolescents

To begin with, motivation is a key psychological condition or force that pushes and energizes a person to act, develop and fulfil goals, or engage in certain actions. Motivation is influenced by four factors: context "the environment and external stimuli," temper "the internal condition of an organism," objective "the behaviour's aim, purpose, and preference", and instruments "the tools used to attain the goal". It might be extrinsic "influenced by incentives or punishments" or intrinsic "driven by personal preferences or values" (Amari et al., 2011). The idea of intrinsic vs. extrinsic motivation is certainly common in social-cognitive motivation frameworks (Linnenbrink et al., 2002). Pintrich and Schunk (2002) defined intrinsic motivation as the desire to execute an action simply for the purpose of executing it. Extrinsic motivation, on the other hand, is the desire to do something in order to achieve a goal. Furthermore, the shift in motivational theories from conventional achievement motivation models to social cognitive motivation models made the integration of motivational and cognitive aspects easier (Pintrich & Schunk, 2002). Additionally, social cognitive models stress that there are several ways in which students might be motivated, and that understanding the reasons and mechanisms underlying students' desire for academic achievement is critical (Linnenbrink et al., 2002). For many

years educational specialists and psychologists studied the impact of motivation on student learning and accomplishment (Graham & Weiner, 1996). Furthermore, through an educational understanding, motivation has a multidimensional structure that is linked to academic motivation and learning (Reev, 2006). To summarize, motivation is an essential component of effective teaching and learning. As a result, educational research has concentrated substantially on the motivation of teens in learning contexts during the last 20 years (Nicholls et al., 1985). Understanding teenage motivation is critical for ensuring that students fulfil their academic potential. Examining the motives underlying students' success behaviours through the goals they pursue in educational settings has been demonstrated to be a useful technique of understanding student motivation (Mansfield, 2010). Scholarly interest in understanding motivation and learning about motivation has increased (Turner & Patrick, 2008). External incentives, inspirations, sentiments, needs, and desires may all have an impact on motivation. Furthermore, the relationships between the individual, situation, and ultimate accomplishment are mediated by personal, social, or ethnic characteristics rather than by the contextual features of the classroom environment that shape motivation and achievement, or by the individuals' active management of motivation, thinking, and behavior (Linnenbrink et al., 2002). Overall, a person's motivation determines how willing and ready they are to pursue objectives, overcome difficulties, and succeed in many areas of life. As a consequence, motivation explains the origins of people's activities and explains why they behave the way they do. Motivated actions, on the other hand, are lively, goal-oriented, and persistent (Omidian, 2006). Numerous studies have also shown that self-efficacy, one of the most potent motivators for student accomplishment is conviction in one's capacity to complete a task or activity. Self-efficacy is described as people's assessments of their own ability to achieve in a given situation, task, or area (Bandura, 1997). Depending on their past accomplishments and failures, a student may have a high level of self-efficacy while solving algebraic issues but a low one when dealing with geometry difficulties or challenges in other academic areas (Linnenbrink et al., 2002). These self-efficacy beliefs differ from views regarding one's general self-concept or self-esteem (Linnenbrink et al., 2002). Finally, students who feel they can complete the assignment and have greater levels of positive self-efficacy beliefs are more willing to work more, persevere, and eventually achieve at a higher level (Linnenbrink et al., 2002). In conclusion, adolescents require motivation to reach their full potential, to behave effectively, to concentrate, to develop critical thinking and creativity, and to create resilience and self-assurance.

Smartphone Addiction in Adolescents

The mobile phone is one of the most common technological tools in the market. It has gone from almost non-existent to the most popular (and desired) item among youths in less than ten years (Choliz, 2012). Furthermore, the mobile phone appeals to youngsters and encourages its use owing to a range of functions and attributes. Adolescents' use and ownership of mobile phones, in reality, serves a range of functions (Choliz, 2012), such as maintaining individual liberty and providing social

life status and identity. In other words, cell phones are getting increasingly popular. They are particularly popular among young people, who use them to increase the frequency of their social connections and to widen their social networking choices (Matsuda, 2000). A cell phone, on the other hand, can bring a slew of problems. Students' ability to focus on class, for example, is reduced when they use their phones in class (Selwyn, 2003). In India, Orissa government made mobile phone use on college campuses illegal on September 16, 2008. "Cell phones have been discovered to be an unsettling feature on college campuses. As a result, we have made it illegal on campus," Minister of Higher Education Samir Dey added. Furthermore, again in India, the Gujarati government prohibited mobile phone use in schools, citing worries that it hampered pupils' capacity to learn. Smartphone use has several detrimental effects on the physical and emotional health of youth such as musculoskeletal problems, fatigue, a hot sensation, headaches, and earaches (Goswami et al., 2016). Furthermore, whether or not excessive cell phone usage promotes cancers is still being debated. Additionally, adolescents who use their phones excessively are more likely to feel stress, restlessness, and sleep disruption. Soderqvist et al. (2008) looked precisely at the association between cell phone use and health problems in 2000 Swedish youths. They discovered that mobile phone users regularly complained about health difficulties such as exhaustion, stress, headaches, anxiety, trouble focusing, and sleep disruption. According to Ozturan et al. (2002), the ear is the first organ to be impacted by cell phones, with increased energy deposition and variable effects on hearing. Loughran et al. (2005) discovered that pre-bedtime exposure to electromagnetic fields enhanced spectral power while decreasing REM. Furthermore, sperm deterioration was observed by Agrawal et al. (2008). However, in order to diagnose mobile phone addiction clinically, it must be compared to existing addiction criteria. The American Psychiatric Association has established objective and quantitative criteria for diagnosing drug dependency in The Diagnostic and Statistical Manual of Mental Disorders (5th ed.; DSM-5; American Psychiatric Association, 2013). In other words, Bianchi and Phillips (2005), excessive mobile phone use can be viewed as a compulsive gambling-like impulse control problem. Addiction to mobile phones is frequently diagnosed using seven dependency criteria. Some of these include tolerance, withdrawal, unintentional use, cutting back, amount of time spent, substituting other activities, and persistent use. The term "addiction" was used in Roman law to characterize a dependence relationship and a constraint on human freedom, particularly subjugation to an owner or lord (Choliz, 2012). When they are unable to use their phones, some youths display the core symptoms of dependence disorders, such as problems with their parents, difficulty limiting their use, disruption of other activities, and mental discomfort. People reported extreme worry and annoyance when their mobile phones were unavailable for an extended length of time, according to the findings of a few studies (Park, 2005). These behaviours may be suggestive of abuse, according to The Diagnostic and Statistical Manual of Mental Disorders (5th ed.; DSM-5; American Psychiatric Association, 2013) Technology addictions should not be dismissed, even if the human consequences are not as severe as those associated with drug misuse. To summarize, several research have found that teen mobile phone addiction has detrimental consequences (Subba et al. 2013).

According to research, the most prevalent psychological indicators of smartphone addiction include difficulties focusing and low academic achievement.

Stress Related to Academic Expectations

A specific level of stress is required for success, and it may be divided into four categories: work-related, marital, familial, and academic stress. This study focuses on academic stress, which is defined as mental suffering caused by approaching discontent or awareness of impending failure. Stress may be caused by both external and internal factors, such as harsh parental demands and attitudes. These stresses must be controlled for general well-being. To put it another way, because teens spend so much time in school, academic concerns are among the most often stated sources of stress for them (Genshaft, Broyles, 1991). Academic pressure from parents, teachers, and other individuals can also be a substantial source of stress for many teenagers (Tan et al., 2011). Dramatic outbursts in the form of stress, dissatisfaction, or even suicide can occasionally result from parents having unrealistic expectations for their kids (Hazari, 2013). Moreover, a person's belief that they are unable to handle a perceived past, present, or future incident is said to be the source of stress (Lazarus & Folkman, 1984). Students are expected to handle heavier workloads, which causes self-doubt and failure (Jones, 1993). According to various large-scale surveys and interviews, adolescents face an extremely stressful school environment (Ho and Yip, 2003). The pressure to perform well in school and attain a job that pays well reflects the stress of academic performance. Academic performance, according to Wong et al. (2005), was perceived as a filial obligation and a source of pride for the family, but school failure was associated with sentiments of familial guilt. As a result, the primary sources of stress for Hong Kong Chinese teenagers were their desire to flourish personally and satisfy their parents. Asian students in Singapore, for example, appear to be more stressed as a result of the cultural emphasis on meeting family obligations and maintaining one's dignity, as they place pressure on themselves to perform well in school and work hard to meet the expectations of important people like parents and teachers. Furthermore, "stress is a lifestyle crisis" that can be caused by any internal or external factor that makes it difficult for an individual to adapt to their surroundings and increases their effort to maintain a state of equilibrium with themselves as well as the outside world (Humphrey, Bowden, 2000). Stress, on the other hand, is viewed as a loss of inner tranquillity in eastern philosophies (Seaward, 2008). However, empirical data reveals that excessive academic pressure is a significant cause of stress for students and may exacerbate mental health difficulties (Shek, 1995). More specifically, research on Asian and Asian-American children has revealed that, while aiming for academic achievement has great effects, it also has obvious drawbacks, such as excessive stress and mental health issues (Shek 1995). Individuals, on the other hand, are occasionally prepared to forego their current satisfaction in order to attain other culturally meaningful goals (Diener et al., 2003).

To sum up, this study addresses three issues concerning teenagers' motivation, high academic expectations, and the influence of mobile phone addiction to their motivation and well-being. Motivation is an emotional condition that pushes people

to seek and achieve their goals. It can be extrinsic or intrinsic. Understanding students' motivation is critical in education for effective teaching and learning. Self-efficacy, which relates to one's conviction in one's capacity to succeed in specific tasks, is a powerful motivator for student achievement. Teenagers must be motivated in order to attain their full potential, develop critical thinking, creativity, resilience, and self-confidence. The report also covers the extensive use of smartphones among young people, as well as the possible harmful implications of excessive smartphone use. While mobile phones have grown in popularity among youngsters owing to their numerous functionalities, their usage can result in issues such as decreased concentration in class and detrimental effects on physical and emotional health. We also address the stress linked with academic expectations, particularly among adolescents. Stress may be caused by both external and internal factors, such as strong parental demands and attitudes. These demands must be controlled if general well-being is to be maintained. To put it another way, because teens spend so much time at school, academic concerns are frequently highlighted as sources of stress for them. Academic pressure from parents, teachers, and others may be a major source of stress for many teenagers. Unreasonable parental expectations for their children can occasionally lead to severe acts of tension, and dissatisfaction.

As a result, we propose:

H1: Students with smartphone addiction have low motivation of academic success.

H2: Students with high levels of stress regarding academic expectations have low motivation of academic success.

H3: Smartphone addicted students have high stress levels regarding academic expectations.

H4: Smartphone addiction is different in men and women.

H5: The motivation of academic success is different in men and women.

H6: The level of stress regarding academic expectations is different in men and women.

These are our major hypothesis, however we tested some others to provide a more comprehensive overview, as can be seen in the Results section below.

Methods

Participants and Procedure

For this study, eighty-four high school students were selected from a private educational institution in Istanbul, Turkey. 60.7% of the participants in this research were female, and 39.3% were male students aged 14 to 19. The participants had an average age of 16.35 years and a standard deviation of 1.517 years. Furthermore, 25% of the students were in the eleventh grade, while 29.8% were in the twelfth. 14.3% of the students were in their gap year, with 16.7% in ninth grade and 14.3% in tenth grade. In summary, the student's average grade was 11.11 over 13 with a standard deviation of 1.299. Table 1 summarizes the demographic information of all participants, detailing their gender, age, family background, and parental status. All participants in our study are high school students, including those currently on a gap year who are still preparing for college. To collect data, participants were asked to complete online surveys on stress linked to academic expectations, mobile phone

addiction, and the motivation for academic accomplishment. These questions were administered to them without explaining the real purpose of the study. The research participants gave their approval and completed the questions in around 10 minutes.

Table 1. *Demographics Variables*

Variable	n (84)	Frequency	%
Gender	Female	51	60.7
	Male	33	39.3
Age	14	13	15.5
	15	9	10.7
	16	26	31.0
	17	18	21.4
	18	8	9.5
	19	10	11.9
Grade	9	14	16.7
	10	12	14.3
	11	21	25.0
	12	25	29.7
	13	12	14.3
Private Room	Yes	68	81
	No	16	19
Parents	Married	73	86.9
	Divorced	11	13.1
Siblings	0	8	9.5
	1	31	36.9
	2	18	21.4
	3	12	14.3
	4	6	7.1
	5	2	2.4
Father Employment Status	Working	68	81.0
	Not Working	4	4.8
	Retired	12	14.3
Mother Employment Status	Working	29	34.5
	Not Working	46	54.8
	Retired	9	10.7

Measures

One of the purposes of this study was to alter the expectancy-value theory-based motivation scale for use in high school to measure the motivation for academic accomplishment. To attain this purpose, we used the motivating scale created by Saritepeci (2016) (see appendix 1). It was based on the work of Eccles et al. (1993) and Wigfield and Eccles (2000), who investigated expectancy-value theories. Rather than focusing on a specific class, the test was redesigned to measure overall motivation across all classes. Additionally, the questions were presented in Turkish. This scale is divided into two subdimensions and contains nine components, both the value and expected sub-dimensions. The scale has a minimum potential score of 8 and a maximum value of 40. The scale can produce a score ranging from 8 to 40. The

rating ranged from 1 to 5 (1 strongly disagreed, 5 strongly agreed). The Cronbach Alpha internal consistency coefficient for the whole scale was 0.74.

We used the Turkish cultural adaptation of the smartphone addiction scale—the short version for adolescents—to assess the level of teenage smartphone addiction (see appendix 2). The Smartphone Addiction Scale-Short Version (SMAS-SV) contains only one subdimension. Self-evaluation, as one type of assessment tool, was used to measure teenagers' "smartphone addiction". The measure's original version consisted of ten components on a 1-6 scale (1: strongly disagree, 6: strongly agree). This scale allows for the acquisition of points ranging from 10 to 60. The Cronbach Alpha coefficient was used to examine the scale's reliability, and it was found to be .90.

We used the Academic Expectations Stress Inventory (AESI) to assess stress associated with expectations (see appendix 3). The AESI is a Likert-type measure developed by Ang and Huan (2006) for Asian middle and high school students. AESI classifications range from one (never) to five (always). The nine-item measure has two dimensions: self-expectations (4 items) and family/teacher expectations (5 items). Higher scores indicate an increase in academic-related stress. We determined that the Cronbach's alpha internal consistency coefficient, which we utilized to assess AESI consistency, was .85.

Results

We started with testing our first hypothesis: it was that adolescents who are addicted to smartphones are not much motivated for success academically. We investigated possible relationship between smartphone addiction and being motivated to achieve success academically. The Pearson correlation analysis findings revealed no significant link between the two variables $r(82) = .127, P = .251$. The hypothesis was not supported. According to our second hypothesis, adolescents who are very stressed about academic expectations are less likely to be motivated to achieve academically. We find a significant relationship between these two variables after testing our second hypothesis and examining whether stress associated with high expectations and motivation for academic achievement are connected. The Pearson correlation analysis found a moderately significant positive relationship between academic achievement motivation and stress related to expectations $r(82) = .328, p = .002$, erroneous hypothesis. According to our third hypothesis, students who were addicted to their smartphones face high level of stress regarding expectations. According to the data, stress regarding to academic expectations and smartphone addiction have a positive and significant relationship $r(82) = .243, p = .026$, but the correlation was low. Our fourth hypothesis examines if there is any difference between genders among the three scales that we are measuring (stress related to expectation, smartphone addiction, and motivation for academic success). We began by testing if there was any difference in the motivation for success between male and females. The mean score for male students was 34.9, $SD = 5.81$, while for female students it was 36.8, $SD = 4.43$. The t-test revealed no significant difference between the two groups, $t(82) = -1.73, p = .87$. Next, we looked at how students' smartphone addiction is impacted by their gender. The mean score for male students was $M = 27.1$,

SD=8.61, whereas the mean score for female students was $M=27.9$, $SD=9.85$. T test findings, $t(82) = -.400$, $p=.108$, showed that there was no significant gender difference in smartphone addiction. For testing our last hypothesis, we also looked to see if there was a difference between the two genders in terms of expectation-related stress. Male students had a mean score of $M=32.9$, $SD=7.45$, while female students had a mean score of $M=37.1$, $SD=5.80$. The t-test revealed a significant gender difference in the level of stress related to expectations $t(82) = -2.89$, $p=.005$.

We also investigated how students with private rooms differed from those without private rooms in terms of expectations-related stress, smartphone addiction, and motivation for achievement. First, the mean academic success motivation score was $M=36.7$, $SD=5.07$ for those who had a private room and $M=33.3$, $SD=4.20$ for those who did not. The t-test results showed a significant difference $t(82) = 2.47$, $p=.015$ in the motivation for academic accomplishment between these two groups. Next, we examined for any differences in phone addiction between students who had private rooms and those who did not. The mean score for those with a private room was $M=27.2$, $SD=9.2$, and the average score for those without one was $M=29.3$, $SD= 10.01$. According to the results, there is no difference in students' phone addiction between those who have private rooms and those who do not $t(82) = -.798$, $p =.427$. In examining the stress that students experience in associated with expectations, we also looked at whether having a private room makes a significant difference or not. The average score for those with a private room was $M=35.4$, $SD=6.9$, whereas the average for those without one was $M= 35.6$, $SD= 5.9$. The findings showed that students' stress levels regarding expectations are the same whether they have a room or not $t(882) = -.107$, $p=.915$.

We also tested if there were any distinct differences in expectations-related stress, smartphone addiction, and academic success motivation between adolescents whose parents were married and those whose parents had divorced. First, we looked at how the motivation for academic accomplishment changes between teenagers whose parents are married and those who are divorced. Individuals with married parents had a mean score of 36.1 , $SD=4.9$, whereas those with divorced parents had a mean score of 35.9 , $SD=5.9$. This data suggests that there is no significant difference in the motivation for academic accomplishment between students with married and divorced parents $t(82) = .146$, $p=.884$. Second, we looked at the differences in smartphone addiction between students whose parents were married and those whose parents were divorced. Mean score for students with married parents was $M=26.6$, $SD=8.7$, whereas mean score for those with divorced parents was $M=33.9$, $SD=10.9$. The results show that there is a significant difference in smartphone addiction between students whose parents are married and those whose parents are divorced $t(82) = -2.461$, $p=.016$. Finally, we looked at any difference in expectations-related stress between adolescents whose parents are married and those whose parents are divorced. The mean score for those with married parents was $M=35.4$, $SD=6.7$, whereas the mean score for those with divorced parents was $M=36.2$, $SD=6.9$. The t-test revealed no significant differences in stress related to expectations between students whose parents are married and those whose parents are divorced $t(82) = -.391$, $p=.697$.

We also tested whether mother's job status influences their children's motivation to succeed academically. The findings of a one-way ANOVA revealed that the

mother's work level had no noticeable influence on the students' motivation to succeed $F(2,81) = .262, p = .770$. Second, we examined the possible influence of the mother's employment on her children's stress levels regarding expectations. The results show that there is no significant relationship between students' stress levels and their mother's job status $F(2,81) = 1.371, p = .260$. We also investigated the possible impact of a mother's employment position on a student's cell phone addiction. However, the data indicated that there is no significant difference $F(2,81) = 0.824, p = .442$.

We also conduct a one-way ANOVA to see if the father's employment status influences the stress regarding expectations in adolescents. According to our data, the fathers' job status had no significant impact on students' expectations-related stress levels $F(2,81) = 1.19, p = .309$. We then investigated whether the father's work position had any significant impact on the children's motivation for academic accomplishment. The findings show that teenagers' motivation for academic success is not significantly influenced by their father's job status $F(2,81) = .342, p = .712$. Next, we looked at whether the father's work status had any impact on the students' smartphone addiction. The study found no significant relationship between a father's employment level and a child's smartphone addiction $F(2,81) = .244, p = .784$.

Next, we look at whether the number of siblings has an impact on children's motivation of being academically successful. The data show that the number of siblings had no significant effect on academic success motivation $F(6,77) = .797, p = .575$. Furthermore, we examine if the number of siblings affects smartphone addiction. The results show that there is no significant association between a student's smartphone addiction and the number of siblings they have $F(6,77) = .640, p = .698$. We also tested how the number of siblings affects children's stress levels in response to expectations. The number of siblings has a significant impact on stress regarding expectations, as shown by the one-way ANOVA result $F(6,77) = 2.387, p = .036$. In addition, because our data is not normally distributed, we run the Tamhane post hoc test to see which of the number of siblings had a significant influence on groups' levels of stress linked to expectations. Students with one sibling outperformed those with four siblings significantly according to the Tamhane post hoc test ($p = .024$). Furthermore, the students with two siblings scored higher than those with four siblings ($p = .019$). Furthermore, children with six siblings outscored those with four siblings according to post hoc test score ($p = .008$).

We also use ANOVA to examine if there is a significant difference in smartphone addiction across grades. The data indicate that grades had no significant influence on smartphone addiction $F(4,79) = .513, p = .726$. However, we checked if there is an influence or difference between grades in terms of motivation for academic performance. The one-way ANOVA test demonstrated a significant difference across grades in terms of motivation for academic success, $F(4,79) = 2.610, p = .042$. Furthermore, because our data is normally distributed, we run the LSD post hoc test to determine which grade has a higher level of motivation. More, 12th grade students scored significantly higher than 11th grade students ($p = .024$). Furthermore, 12th grade students performed significantly better than 11th grade students ($p = .024$). We next run one-way ANOVA to see if there were any changes in stress levels between grades. The results demonstrate a significant difference in stress levels between grades $F(4,79) = 2.509, p = .048$. Furthermore, we used the LSD post hoc test because our data

was normally distributed, and the findings demonstrate that the 12th grade scored significantly higher than the 10th ($p=.004$), and 11th ($p=.043$) grades.

Finally, we run one-way ANOVA to examine if age influences motivation for academic success, smartphone addiction, and stress regarding expectations. First, the data reveal that there is no significant influence of age on smartphone addiction $F(5,78) = .839$, $p=.526$. However, we discovered a significant impact of age on motivation for academic performance $F(5,78) = 3.270$, $p=.010$. We used the LSD post hoc test to determine age variations in levels of motivation for academic performance. The results of LSD post hoc test showed that the age of eighteen scored significantly higher than the ages of fourteen (.003), sixteen (.005), and nineteen (.003). Finally, we investigated whether age influences stress regarding expectations in high school students. The findings of one-way ANOVA demonstrated that age had a significant impact on stress related to expectations $F(5,78) = 3.270$, $P=.010$. We also used the LSD post hoc test to identify which ages had a significant influence on high school students' levels of stress related to expectations. The findings of the LSD post hoc test showed that seventeen scored significantly higher than fifteen (.048), and sixteen (.002). Furthermore, the age of eighteen was significantly greater than fourteen (.029), fifteen (.012), sixteen (.001), and nineteen (.013).

Finally, to see the factor analysis, one can look at table-2, table-3, and table-4.

Table 2. *Factor Analysis of the Motivation of Academic Success Scale*

The Motivation of Academic Success Scale	Factor Load
Factor 1: Caring about Lessons and Achievement Dimension (Eigenvalue=3.15; variance %39.43)	
Being optimistic about academic success	0.76
Being interested in classes	0.83
Finding the classes useful	0.77
Being interested in being productive in the classes	0.82
Attaching importance to being successful	0.76
Factor 2: Believing in Oneself and Other Factors for Success (Eigenvalue=1.78; variance %22.2)	
Preferring favourite courses to disliked ones	0.82
Believing that being interested in lessons brings success	0.80
The belief of being among the best students in the class	0.64

Table 3. Factor Analysis of The Smartphone Addiction Scale

The Smartphone Addiction Scale	Factor Load
Factor 1: Thinking of The Smartphone as an Inseparable Part of Life (Eigenvalue=4.70; variance %52.27)	
Having the belief that one cannot live without a smartphone	0.86
Experiencing attention deficit in the absence of a smartphone	0.84
Thinking about the smartphone even when it's not around	0.83
I could never live without a smartphone	0.52
Not being able to stop checking social media	0.54
Other people complain that I use the smartphone too much	0.73
Factor 2: Considering that The Smartphone Causes Bad Experiences (Eigenvalue=1.14; variance %12.67)	
Blame the smartphone for taking too much time	0.86
Experiencing distraction during the classes due to smartphone	0.86
Feeling pain in the head and neck because of the smartphone	0.72

Table 4. Factor Analysis of the Stress Regarding Expectations Scale

The Stress Regarding Expectations Scale	Factor Load
Factor 1: Family/Teachers Expectations (Eigenvalue=3.78; variance %47.30)	
Blaming myself for disappointing my family when I fail to meet their expectations	0.84
When I fail, I believe I disappoint my family	0.82
When I fail, I believe I disappoint my teachers	0.79
I feel nervous that my family will be disappointed because of my low grades	0.79
I feel bad when I fail to meet my teacher's expectations	0.74
Factor 2: Self Expectations (Eigenvalue=1.48; variance %18.55)	
I feel tense when I cannot live by my own standards	0.89
I think I am not good enough when I do not fulfil my expectations	0.82
I feel nervous when I cannot do what I can do in the exam	0.53

Discussion

We began our data analysis with correlations to identify relationships between our variables. Further, we discovered a significant relationship between motivation for academic performance and stress regarding expectations. Students who appear to be motivated for academic achievement are still stressed about their own and others' expectations. When we examine the data of other research, such as Calaguas (2011), we can see that there is a definite association between these two factors in more than one study (Eccles & Wigfield, 2002; Gonzalez & McMahon, 2019; Gaspard et al.,

2018; Miller & Vela, 2019; Pintrich & Schunk, 2002). Furthermore, we found a significant relationship between stress about expectations and smartphone addiction in teenagers. In fact, the relationship between stress from expectations and smartphone addiction in teenagers has also been explored in several studies earlier (Leung, 2017; Liu & Ma, 2020; Andreassen et al., 2017; Bennett & Tsetsi, 2019; Twenge & Campbell, 2018). As a conclusion, we suppose that excessive expectations are one of the factors that cause stress in teenagers. Furthermore, because smartphone addiction is particularly common among teens, it may be an approach to escaping from the stress. Also, smartphone addiction may be a stress trigger because it results in a significant waste of time as there are some studies that showed how smartphone addiction can trigger stress due to significant time wastage (Kelley et al., 2019; Kuss & Griffiths, 2017; Ravindran & Ross, 2021). However, additionally, earlier studies (e.g., Shen et al., 2021; Iqbal et al., 2023) have also reached similar results and shown a significant relationship between stress and smartphone addiction in general. Next, we found a significant difference between genders in the level of stress about expectations. Females scored higher than males in terms of expectation-related stress. Certainly, this does not imply that females confront significantly higher expectations from themselves or the environment. However, it is crucial to consider how to deal with this stress and how seriously these expectations are taken. Furthermore, Longo (2005) provided support for our findings through his research on gender differences in stress. Our findings also indicated that having a private room has a significant impact on academic motivation. Having a private workspace appears to be helpful for students' motivation. We assume it improves focus, organization, and productivity. Other studies also found that there is a positive impact of having a private room on academic motivation (Becker & Park, 2018; Korpelainen et al., 2019; Miller, 2020; Ting & Tzeng, 2017; Weisz & McCabe, 2021). We also saw significant differences between students from families that divorced and those with married parents. In fact, we also revealed a relationship between smartphone addiction and divorced parents. Since it was shown earlier in multiple research that smartphone use can consume significant time and serve as an escape from feelings of emptiness and stress in home situations (Andreassen et al., 2016; Baker & Oswald, 2010; Elhai et al., 2017; Kuss & Griffiths, 2012). In contrast, we find that siblings have significant impact on stress levels related to expectations. According to our findings, having more siblings reduces stress in contrast to expectations. We also came across other studies showing how having siblings can provide emotional support that helps reduce stress related to expectations (Lindsey & Caldera, 2005; McHale & Gamble, 2009). These findings may indicate that parental expectations are higher when they have fewer children and focus all of their energy, hope, and expectations on them. Furthermore, we found significant variations in grades in terms of academic motivation and stress about expectations. As predicted, the 12th grade had the highest levels of motivation, as well as stress. Additionally, we indicate that age has a significant impact on academic motivation and stress about expectations. Again, the age of eighteen scored much higher than all other ages in terms of motivation for academic performance and stress about expectations. According to the data, when the university test period approaches and students begin to confront all aspects of life and their own and others' expectations, stress levels rise.

Conclusion

The present paper's contributions are included in the discussion and results sections. Still, the results bring up a number of concerns. Furthermore, significant correlations between several components are found; nevertheless, the underlying reasons of the results as well as the mediating variables in these results remain uncertain. We appear to recommend a large amount of more study. However, this study, like many others, had limitations such as the sample size, the restricted scale variations, and the confounding factors that were not examined, as well as examining other environmental or individual consequences that may have led to these findings.

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Appendix 1. Motivation for Academic Success Scale

Alt Boyutlar	Madde No	Madde İfadeleri
Beklenti ve Değer Faktörü	m1	Bu dönem bu derste çok başarılı olmayı bekliyorum.
	m2	Bu derste yeni şeyler öğrenmeyi severek beklerim.
	m3	Okulda öğrenilen bazı şeyler, sınıf dışında bazı şeyleri daha iyi yapmamıza yardımcı olur. Bu derste öğrendiklerim sınıf dışında bazı şeyleri daha iyi yapmama yardımcı olmaktadır.
	m4	Bu derste etkinlik yapmaktan, çalışmaktan, çaba harcamaktan hoşlanırım.
	m5	Bu derste başarılı olmak benim için önemlidir.
	m6	Diğer derslerin çoğuna kıyasla, bu derste bir şeyler öğrenmek benim için çok daha yararlıdır.
	m8	Diğer derslerin çoğuna kıyasla, bu derste bir şeyler öğrenmek benim için çok daha önemlidir.
	Başarıya Yönelik İnanç Faktörü	m9
m10		Sınıftaki öğrencileri bu derste gerçekleştiren faaliyetlerde en kötünden en iyiye doğru listelediğimde en iyiler arasında olduğuma inanıyorum.

Appendix 2. Smartphone Addiction Scale

AKILLI TELEFON BAĞIMLILIĞI ÖLÇEĞİ – KISA VERSİYONU (ATBÖ-KV)		Kesinlikle Katılmıyorum		Kısmen Katılmıyorum		Kesinlikle Katılıyorum	
Maddeler		Kesinlikle Katılmıyorum	Katılmıyorum	Kısmen Katılmıyorum	Kısmen Katılıyorum	Katılıyorum	Kesinlikle Katılıyorum
1	Akıllı telefon kullanımından dolayı planladığım işleri yetiştiremem.						
2	Akıllı telefon kullanımından dolayı, sınıfta ödev yaparken veya ders dinlerken konsantre olmakta zorlanırım.						
3	Akıllı telefon kullanırken el bileklerimde veya enseimde ağrı hissedirim.						
4	Akıllı telefon olmadan yapamam.						
5	Akıllı telefonum elimde olmadığında sabırsız ve huysuz hissedirim.						
6	Kullanmasam bile akıllı telefonum hep aklımdadır.						
7	Günlük yaşantım çok etkilenmiş olsa bile akıllı telefonumu kullanmayı asla bırakmam.						
8	Twitter veya Facebook'taki diğer insanlar arasındaki konuşmaları kaçırmamak için sürekli olarak akıllı telefonumu kontrol ederim.						
9	Akıllı telefonumu düşündüğümde daha uzun süre kullanırım.						
10	Etrafımdaki insanlar akıllı telefonumu çok fazla kullandığını söyler.						

Appendix 3. Stress Related Expectations Scale

	Faktör1		Faktör2		h ²	Ort.	Ss
	ÖK	YK	ÖK	YK			
<i>Faktör 1: Aile/Öğretmen Beklentileri</i>							
1. Ailemin benden beklediklerini gerçekleştiremediğimde kendimi suçlarım.	.645	.706	.134	.425	51.2	3.73	.98
2. Başarısız olduğumda öğretmenimi hayal kırıklığına uğrattığımı düşünürüm.	.849	.759	-.201	.181	60.8	2.94	1.25
3. Okulda başarısız olduğumda ailemi hayal kırıklığına uğrattığımı düşünürüm.	.754	.777	.051	.390	60.6	3.73	1.12
4. Düşük notlarım yüzünden ailem hayal kırıklığı yaşayacak diye gerginlik hissederim.	.717	.781	.142	.465	62.6	3.57	1.28
5. Öğretmenlerimin benden beklentilerini gerçekleştiremediğimde kendimi kötü hissederim.	.694	.724	.067	.379	52.8	3.32	1.26
<i>Faktör 2: Kendine İlişkin Beklentiler</i>							
6. Kendi standartlarıma göre yaşayamadığımda gerginlik hissederim.	.103	.313	.466	.512	27.1	3.53	1.25
7. Beklentilerimi gerçekleştiremediğimde yeterince iyi olmadığını düşünürüm.	-.076	.307	.852	.818	67.3	3.90	1.03
8. Kendim için belirlediğim hedefleri gerçekleştiremediğimde genellikle uyuyamam ve endişelenirim.	.000	.340	.755	.755	57.0	3.20	1.17
9. Sınavda yapabileceklerimi yapamadığım zaman gerginlik yaşarım.	.040	.351	.690	.708	50.2	4.25	.87

Psychological Challenges Experienced by Rural Women due to Climate Change in Chimanimani, Zimbabwe

By Tatenda Dutiro* & Rosemary Chigevenga[‡]

This research paper examined the psychological challenges faced by women in rural areas of Zimbabwe as a consequence of climate change. The study employed a qualitative research approach, utilising a case study design to explore the experiences of women in Nyanyadzi ward 8 Chimanimani District. Ten participants including a key informant were selected using purposive and convenience sampling methods to ensure diversity in the sample. Data was collected through semi-structured interviews featuring open-ended questions and supplemented with note-taking. Ethical considerations, including honesty, truthfulness, and integrity, were maintained throughout the research process. Thematic analysis was employed to analyse and present the collected data and two themes were revealed; 1) Vulnerability and exposure of women to the effects of climate change and 2) The psychological challenges experienced by women due to climate change. The findings underscore the urgent need for holistic support systems and interventions that recognise and address the psychological well-being of women in rural areas affected by climate change. The study emphasises the importance of integrating gender-sensitive approaches and climate education initiatives to promote resilience, gender equity, and sustainable development in rural communities. The research outcomes have implications for policymakers, practitioners, and researchers working in the fields of climate change adaptation, gender equality, and mental health. The recommendations put forth in this paper provide valuable insights and guidance for implementing initiatives that empower rural women, enhance their mental well-being, and promote gender-responsive climate action.

Keywords: *climate change, psychological wellbeing, resilience, gender norms*

Introduction

Climate change comes with relatively stable changes in the weather patterns like temperature, rainfall as well as increasing the occurrence of extreme weather events like cyclones, droughts, heat waves and floods. The global climate change has impacted the health of people in a negative way, both the physical and mental health. The effects of climate change affect different genders disproportionately and are also felt differently between people living in different economical locations like urban areas and rural areas.

A Lancet Commission on climate change (Lancet 2018), suggested that climate change is the biggest global health threat of the 21st century. According to (Chaki,

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2021; Charlson et.al. 2021), climate change is a long-term significant transformation in temperature and weather patterns, which have resulted in rising of temperatures, erratic rainfall patterns, desertification, disappearance of rivers and extreme weather events like floods, cyclones, glaciers, bushfires. Climate change is not just affecting the weather conditions but its consequences have become a sad reality of millions of people around the world. The Climate and health alliance (Cherry 2022), posits that climate change is expected to affect the psychological wellbeing of people both directly and indirectly. Direct ways include experiencing extreme or traumatic weather events such as cyclones, floods, landslides and indirect ways involve reduction of food security, water scarcity, decrease in places to cultivate, famine and limited resources for a huge population which may trigger depression, anxiety related to the uncertainty of the survival of human, suicidal ideation due to hopelessness and chronic environmental stress. It is also important to note that, according to neuroscience the limbic system consisting of the amygdala which regulates emotions is more active in women which make them experience more worry about the dangers brought by the environment known as eco-anxiety. According to Dominelli (2011), the adverse effects of climate change are felt more by the world's poorest regions and or developing countries whose economies largely depend on natural resources like agriculture. Rural communities in developing countries suffer double impacts of climate change as there are high levels of unemployment, low levels of education and they depend more on natural resources for survival for example subsistence farming, fishing whereas rivers are disappearing because of heavy siltation.

Charlson et al. (2021) note that data from Finland showed that high temperatures were also associated with self-harm and suicide rates, temperature changeability explained more than 60% of the total suicide difference over several decades in Finland. An Australian study found that rural communities experience the threat of floods and drought simultaneously and it contributed to reduced wellbeing starting from stress, anxiety, loss and fear (Charlson et al. 2021). A study from Ethiopia, a low-income country in Africa that has a significantly high reliance on natural resources to secure basic human and animal necessities revealed that seasonal environmental changes which may affect water security, exposes populations to noteworthy emotional distress.

UN Women Watch (2009), states that women are more vulnerable to outcomes of climate change than men because they constitute the majority of the world's poor population due to gender inequality, they are more dependable on natural resources for their livelihoods like agriculture as it can be noted that in India alone women constitute 65% of the agricultural workforce (Surgitha and Littleflower, 2015). They also suffer social, economic and political exclusion which may affect their coping capacity to respond adequately to the implications of climate change. Furthermore, rural women in developing countries are more vulnerable due to gender norms as the responsibility to secure water for domestic use is placed on them as it is estimated that in developing countries 8 in 10 women are responsible for securing water for domestic use (Phiri, 2020). In some cases women will have to travel miles in search of water, journeying to far rivers to do the family's laundry. Rural women are also charged with the responsibility to fetch fuel like firewood for cooking and due to desertification women end up travelling to far places in search of firewood. These responsibilities place huge burden on women and will in return affect their psychological wellbeing as they begin

to experience minimal stress and distress symptoms to clinical disorders ranging from sleep disturbances which may cause depression, general anxiety, suicidal ideation due to feelings of hopelessness (Lancet, 2018).

Research by Glasgow Caledonian University (GCU) (2022), found that climate change can worsen violence against women thereby impacting their mental health. This was confirmed in a study conducted in Malawi which found out that out of 213 surveyed women 86% testified that their psychological wellbeing and health had been affected by climate change. The participants spoke of emotional stress, expressed feelings of sadness or depressive symptoms, feelings of worry and restlessness, fear, traumatized by physical impacts, being confused and frustrated and more than 5% admitted to having suicidal thoughts due to the stressing experiences brought by climate change. Most women in the study reported that they were more worried about their children and expressed feelings of guilt that they were failing to provide enough food for them or raise them properly. One woman expressed how troubled she was when she lost her baby due to a landside but had to continue caring for her other two kids in the direct aftermath of the disaster.

The livelihoods of 70% women in Zimbabwe is dependable on rain fed agriculture, making their livelihoods vulnerable to droughts, erratic rains experienced and extreme weather events like floods, cyclones caused by climate change (Madzwamuswe, 2010). The Zimbabwean Herald of 12 March (2011) reported that 65% of rural water points had dried up due to changing weather conditions and this had increased the journey to be travelled by rural girls in search for water. This has worsened over the years due to erratic weather conditions. Most of these experiences are causing havoc in the psychological wellbeing of women making it a necessity to explore the issue further and bring out more solutions and coping strategies.

Chaki (2022), states that disasters brought by climate change can trigger psychological and psychopathological distress as compared to normal weather patterns thus making people struggle with adjusting and coping with the implications of climate change. Women's vulnerability to climate change impacts can be attributed to gender inequality, social, economic and cultural values. Women, mostly rural women are the most affected by climate change as they are found to interact more with the environment for their survival for example in Zimbabwe, women rely on farming and gardening and due to climate change their means of survival is sometimes disturbed by the erratic rains being experienced in the country, cyclones with the most recent one being Cyclone Idai which destroyed houses, farms leading to loss of life, reduction of food. In addition these women are also charged with the responsibility of fetching water for domestic or household use. Due to water scarcity women will have to travel to far places in search of water and they also have to secure firewood for cooking or selling. Their situation has been exacerbated by the intensification of desertification which causes these women to travel very long distances in search of firewood. The long journeys have deepened the struggles of women as they worry a lot about providing for the family, experience sleep disturbances due to fear and worry, emotional turmoil as they have to work extra hard with little time to rest just to provide for the family, hopelessness when crops fail, stress as they struggle to secure water or food and engage in fighting for the little resources in the environment. Women are also known as primary care givers at household level and the impact of

climate change has worsened their burden to provide for the family as they have to work extra hard to fulfill their duties leaving little time for them to access healthcare services and practice self-care which is a mental health hygiene technique to care against mental illnesses and promote psychological wellbeing. These experiences clearly indicate that climate change is causing a rise in psychological problems due to the nature of its outcomes and this study sought to tackle the psychological challenges experienced by rural women due to the effects brought by climate change as it has become a major cause for concern.

Aim of the study

To bring under scrutiny the psychological challenges experienced by rural women in Zimbabwe due to the adverse outcomes of climate change.

Research Questions

- How is climate change affecting the psychological wellbeing of rural women?
- What are the psychological challenges experienced by rural women due to climate change?

Materials and Methods

Research Approach and Design

The study employed a qualitative research approach which according to Leedy and Ormrod (2015), allows researchers to address participants' perceptions, values and human emotions in a subjective and real-world setting. This helped the researchers to get a clear understanding of the psychological experiences which are being experienced by women in rural areas due to various factors of climate change. A case study was used to provide insights on the psychological challenges which women in Nyanyadzi, Zimbabwe are experiencing due to climate change. A case study brings to scrutiny every aspect of the subject's life and history to seek patterns and causes of behavior in this study to bring under scrutiny how changes in the climate is affecting the psychological wellbeing (Madzwamuse, 2011). This design was particularly important as it offered an in-depth understanding and description of the trends of climate change and how it is affecting the psychological well-being of women in Nyanyadzi.

Participants

Purposive and convenience sampling methods were used to select participants in the study. Purposive sampling was used because it allowed researchers to use their judgment to select a sample that represented the targeted population. In order to facilitate the collection of qualitative data, the researchers selected participants based on geography, relevance, population, demographic information that is single,

married, widowed, age, type of employment and participant accessibility. According to Brewis (2014), it is practical to select study participants based on their availability and willingness to participate. A total number of 10 participants were selected including a key informant who is a Village Health Worker (VHW) in Nyanyadzi.

Data Collection

Data was collected using semi structured interviews with open ended questions, consent forms were issued before the commencement of every interview. The researchers engaged in note taking during the face to face interviews as some women were not comfortable with being recorded. Most interviews ranged from 20-25 minutes depending with eloquence of participants. Semi structured interviews also helped the researchers with time keeping by giving direction to the interviews so as to be short and precise, as some participants would wander around various issues. According to Raymond (2012), face to face interviews give the interviewer an opportunity to probe for more clarification with follow up questions and help the researcher to modify lines on inquiry and it facilitates a more in-depth discussion. Interviews helped the researchers to collect as much information for the research for in some cases the responses would unlock new experiences which women are experiencing due to climate change. The researcher also took some time to observe the mentioned distances, nature of water points, mentioned irrigation schemes.

Ethical Considerations

According to Morse and Coulehan (2015), ethics should be considered when gathering knowledge in the field of social sciences. The researchers observed the ethical considerations of honesty and integrity by being truthful that the research was being done for educational purposes only and showed integrity by not manipulating participants to participate in the data collection process through fake promises of cash or recognition. The researcher respected the participants by telling them that they were not going to receive anything from the researchers for it was all for educational purposes. The research also considered the ethical issues of confidentiality by not using participant's real names in the data collection. The researchers discussed issues of consent with participants before the commencement of any interview. A consent form was drafted for the participants to read, understand and sign before participating, only women who had reached the age to consent were approached.

Data Presentation and Analysis

Thematic analysis was used as a method of identifying, analysing and reporting of patterns within data. The researchers identified recurring experiences from the interviews conducted, which were then used as themes to present the data for the larger population to read, (Isaacs, 2014). The researchers utilised this technique in analysing the collected information in a way to identify whether there was any congruence between the themes and also enabled the researchers to display relationships between

different themes. In addition, thematic analysis played a pivotal role in the identification of linkages between the themes.

Results

Using thematic analysis three key themes were identified from this study which included women's vulnerability, their exposure to the effects of climate change and the psychological challenges they experienced due to climate change. Almost half of the participants were adult women from the age of 25 to 39 and the other half was shared amongst young adult women from the age of 18-24 and women in the late adult period of 40 to 65. Key informants also turned out to be women as the researchers did not have power to choose a particular gender but work with the available resource persons. Most of the participants were informally employed hence the researchers took note of their source of livelihood as a way to get deeper understanding of how their source of livelihood may impact their experiences. As experiences may vary due to the marital status, the study tried to maintain a fair representation of the women who are married, single, widowed and the divorced. The themes are displayed below along with the direct quotes from participants obtained during the data collection.

Vulnerability and Exposure of Women to the effects of Climate Change

Gender Norms

The study identified some gender norms as one of the factors increasing the vulnerability and exposure of women to the adverse outcomes of climate change. Gender norms are the society's dictated actions of how a male or female is expected to behave. Participants acknowledged that gender norms are persistent and despite what a woman maybe doing they still have to fulfill their duties at home and there are no weekends or off days but rather an everyday responsibility.

Gender Inequality

Gender inequality was found to be amongst the contributing factors of women's vulnerability and exposure to the effects of climate change. Gender inequality is the social phenomenon in which men and women are not treated equally and according the findings it has been increasing women's vulnerability to climate change. The participants complained about how such harsh treatments are making it difficult to have a sustainable source of livelihoods and so they just have to work with what is at least available to them which is the environment although it is now being affected by the changing climate.

Table 1. Gender Norms

Participant	Response
A	<i>"I usually wake up as early as 4 a.m. in the morning to go to the borehole because there are long queues there and I have to get the water before the time for school so that I will not be late. The queues have become so long because the other borehole which people used to go to is drying up"</i>
B	<i>"Sometimes you will realise that you have spent all your time journeying to find water to use at home, as it is your duty as the woman of the house."</i>
C	<i>"The duties are sometimes too much for me, the mountains are too far and because there are no trees for firewood close by I must go there, with the long queues at that borehole I still must go there because I'm the daughter in-law at this house then after all that I still must leave time for my vending because that's how I raise money."</i>
D	<i>"Sometimes we must sleep in the farm as the water may flow in abundance at night, at some point my crops failed because I had a little baby and could not sleep outside in the farms, my husband left for South Africa in search of a job so I am the one responsible for everything here"</i>
E	<i>"It's either you fetch water early in the morning or late in the night because the queues are always long during the day and as the girl child it is your responsibility to fetch the water"</i>
F	<i>"... because of this new trend you'll find that everyday on school days, one or two girls are absent in class and when you ask they'll tell you there was too much work at home, these girls do the house chores... fetching water, firewood, cooking and going to the farms...that's how they're being raised and that's expected of them...they can't escape it"</i>
G	<i>"After the death of my husband his family seized the farm so every development that I may want I have to go through them even for paying the money for the irrigation, I have to give it to them and then they pay it to the offices and when they decide not pay it means that my crops will fail and I will struggle with feeding all these children."</i>
H	<i>"Before going for my normal routine of selling around the area I first face a long distance to fetch water sufficient for the day at home...I'm the elder sister so I must put things in order before leaving."</i>
I	<i>"Sometimes your farm can be sidelined for long without getting irrigation water simply because there is no man to voice up...as a woman they will just trample on you (other farm owners are being supplied by the same irrigation system)."</i>
J	<i>"I go to the mountains very far to search for firewood for selling and household use because in all the close areas people have cut down trees to build their homes and we wake up so early in the morning. For me to be able to get enough firewood to sell for at least 5 USD I will have to work so hard. The money comes from the hand to the mouth and that's how we live"</i>

Source: Primary Data

Table 2. Gender Inequality

Participant	Response
A	<i>"... even at household level parents should also prioritise the education of women because if I had gone to school perhaps I would not have to rely on subsistence farming only... my father suggested that it was a waste of money and resources to send me to school..."</i>
B	<i>"After the death of my husband his family seized the farm so every development that I may want to do, I have to go through them even for paying the money for the irrigation..."</i>
C	<i>"Even when we go to till the land together as a family, after all the fieldwork I am expected to do all the other house chores alone"</i>
D	<i>"As female farmers we demand that there may be an independent board that monitors if water is being shared equally to all farmers regardless of gender, political status or social status..."</i>
E	<i>"Females are not valued here and this puts us at a disadvantage."</i>
G	<i>"I did not get the opportunity to go to school because my father suggested that I was not as bright as my brother in school hence it was going to be a waste of time"</i>
H	<i>"As women we are expected to do a lot at home and in the field, we spend most of our time exposed to these harsh weather conditions."</i>
I	<i>"Society values men, so I think they are better off, as they do not do much of then chores which expose them to harsh weather conditions."</i>
J	<i>"In our community, I see women doing many tasks which expose them to a lot of dangers whilst men play the supervisory roles."</i>

Source: Primary Data

Poverty

Most women reiterated that their livelihood is rooted within the environment and the changes that are coming to the environment is also affecting them and their survival.

Table 3. Poverty

Participant	Response
A	<i>"I go to the mountains which are very far to search for firewood for selling and household use because in all the close areas people have cut down trees to build their homes... to be able to get enough firewood to sell for at least 5 USD I will have to work so hard..."</i>
B	<i>"At some point my crops failed because I had a little baby and could not sleep outside in the farms waiting for the irrigation water, my husband left for South Africa in search of a job so I am the one responsible for everything here"</i>
C	<i>"Since birth we have been relying on our land for survival but suddenly the weather has changed and we are struggling to get the yields we used to have in the past."</i>
D	<i>"I think the ancestors are not happy because hey we have been having either dry spells or floods causing us to fail to harvest anything for our families."</i>
E	<i>"I have just been hearing about these changes in weather and since they started we are struggling to survive here."</i>

F	<i>"We value our land and as women and children, one of our key roles is to till the land for survival but changes in climate have affected our survival."</i>
G	<i>"There is poverty here due to climate change and it is affecting us worse as women because we are the ones who decide what to be eaten at the homestead every day."</i>
H	<i>"Changes in season have robbed us of our peace as we no longer have enough food to feed our families."</i>
I	<i>"Our livelihoods have been affected very much by the change of weather leaving us and our animals stranded."</i>
J	<i>"...being a Village Health Worker is something with an allowance yes but farming is the major thing...in this region we barely receive water and the drying up of Odzi river the supplier of our irrigation is reducing our harvest year by year."</i>

Source: Primary Data

Psychological Challenges Experienced by Women Due to Climate Change

Post-Traumatic Stress Disorder (PTSD)

According to the data collected, women in the rural areas of Nyanyadzi display symptoms of PTSD due to the occurrence of extreme weather events which was propelled by climate change from 2019 to 2023.

Table 4. *Post-Traumatic Stress Disorder*

Participant	Response
A	<i>"I no longer feel comfortable due to the events associated with climate change, it's the things we used to watch in movies....it's slowly becoming a reality and I'm just afraid of what will happen."</i>
B	<i>"Cyclone Idai keeps haunting me... I always dream of the heavy rains that killed our relatives and left us in poverty."</i>
C	<i>"Some time ago this year, they were talking about cyclone Freddy, my child, my mind was restless... the news never brings peace but memories of the pain we went through because of Cyclone Idai"</i>
D	<i>"I can't stand the rains as they remind me of Cylone Idai but at the same we need to eat. Ah the experience gives me shivers."</i>
E	<i>"When it rains I cannot sleep during the night for fear that I may wake up washed away like my relatives who died during Cyclone Idai."</i>
F	<i>"When it comes to mental health the government must intervene as mental illnesses are real issues, in some case you realize that you have been given painkillers in the hospitals but what really caused the headache? Sometimes it is because of too much stress because it is not easy to be living in the days we are now living in, days characterised by extreme weather events like cyclones and floods."</i>
G	<i>"We are no longer safe in the environment it is just like we are waiting for the next disaster to come and we don't know what it is going to be like, things will just get worse and worse."</i>
H	<i>"When I receive news about a coming cyclone I do not take it well as my mind does not even rest and even when I sleep I even dream of being swept away by flooding. My mind will only be able to rest when it passes, we saw what happened in Ngangu Chimanimani and it is not far from here."</i>

I	<i>"These changing seasons have exposed us to a lot. I always visualise us waking up one day and there will be nothing to do, nothing to live for"</i>
J	<i>"Many people from this community really need psychological help. The help that they received during the cyclone is not enough as a lot of them show signs of stress related to the cyclone."</i>

Source: Primary Data

Hopelessness

Women in rural areas also displayed signs of hopelessness due to the experiences triggered by climate change. Most women highlighted that they no longer hope for a better tomorrow because their current experiences are difficult and do not see anything changing.

Table 5. Hopelessness

Participant	Response
A	<i>"We are no longer safe in the environment, it is just like we are waiting for the next disaster to come and we don't know what it is going to be like, things will just get worse and worse..."</i>
B	<i>"If the weather has started changing it means there is no turning back not even scientist can stop it, only God can..."</i>
C	<i>"We have been waiting for long for good yields like what it used to be in the past but hey there is no change, nothing good is going to come out of our land as these seasons keep changing for the worst."</i>
D	<i>"I would be lying if I say that I know anything about the climate or why what is happening is happening, but I do know that without my husband's help there is nothing much that I can do for myself or the kids when disasters come"</i>
E	<i>"I see no positive change for our motherland, we are cursed for real."</i>
F	<i>"Our lives are pathetic, there is nothing to looking forward for in the future."</i>
G	<i>"The cyclone destroyed us, our animals and our infrastructure, life is hard and I do not see any change any time soon."</i>
H	<i>"I thought something good was going to come after the cyclone but it seems the situation is getting worse by day."</i>
I	<i>"We are in a fix. The ancestors and God have forsaken us. It is now drought after drought."</i>
J	<i>"When I interact with most of these women they show that they have lost hope. They do not see themselves going back to their levels of survival that they used to have."</i>

Source: Primary Data

Anxiety

Anxiety was found to be amongst the psychological challenges which some women are experiencing due to climate change.

Table 6. Anxiety

Participant	Response
A	<i>“Even when it starts raining heavily the fear that falls on me is extreme I will only be thinking of the worst things that happened in Chimanimani during the days of Cyclone Idai and gives me no peace”</i>
B	<i>“Sometimes I fail to control my worry because I cannot stop thinking of what tomorrow looks like, we used to live in harmony with nature but now we had Cyclone Idai, COVID-19 where we had to stay at home.”</i>
C	<i>“Mental health is an important aspect because it is difficult to make better decisions or even perform better in school when you are not ok psychologically”</i>
D	<i>“I’m always worried about the food security of this family, I’m afraid one day I will fail to provide food for these little ones if the droughts persist and crops die...what will I do? I don’t even know”</i>
E	<i>“Sometimes we hear about heat waves and especially around here we experience extreme temperatures and will be forced to stay home in a shade, now I cannot stop thinking about my future or my grandkids here’s future. I am so worried about our lives.”</i>
F	<i>“Before I got married, in 2019 with my family we experienced that drought...it was hard...I become so anxious when it is the farming season and it doesn't rain, I can't help it but remember how hard it was.”</i>
G	<i>“We should not only get counseling when we go for HIV testing, but even when one goes to get treated for a headache because, hey sometimes this uncertainty makes me nervous.”</i>
H	<i>“Sometimes I fail to control my worry because I cannot stop thinking of what tomorrow looks like we are no longer at peace with nature... now I cannot stop thinking about my future or my grandchildren’s future.”</i>
I	<i>“These shifts in seasons are worrisome, I really dread thinking about what is going to become of us.”</i>
J	<i>“In the Out-Patient Department (OPD) cases of women reporting to be having stomach pains or headaches which are persistent but may not be finding any source of cause when we ask them follow up questions, these cases have been on the rise over the past five years, some women report that they experience the unsettling of the stomach.... it is not in all cases like those do we give them medicines”</i>

Source: Primary Data

Suicide Ideation

Most participants highlighted the magnitude of how their thoughts are preoccupied with death or dying as well as suicide ideation. The researchers noticed that they may not be having a plan on how they wish to execute the task but they sometimes find themselves imagining about dying. Most of the remarks about dying were mentioned in passing or in very subtle ways that one may even miss the point of dying that was there because most people in rural areas believe that those issues are not allowed to be spoken of openly.

Table 7. Suicide Ideation

Participant	Response
A	<i>"The natural disasters of today make you assume that life would be better off out of this world. We cannot continue living like this, one can even go crazy when they start thinking about everything going on with the climatic environment"</i>
B	<i>"If this is now the way of living then it is better for those who are dead and resting"</i>
C	<i>"Living with the memories of my relatives who were marooned by the cyclone makes me fail to see any meaning in life."</i>
D	<i>"Sometimes the poverty becomes too much that you wish you were dead. Just imagine looking at your own children crying for food yet you cannot provide because there is drought and the economy is poor. All this suffering because of the changing climate."</i>
E	<i>"I think we are cursed, there are times when I think its better to die than face these adversities."</i>
F	<i>"There is no rest here on earth worse with these weather conditions."</i>
G	<i>"Cyclone Idai did more harm to us than good. Being given a choice between death and life, I am sure some people here would choose death."</i>
H	<i>"Effects of this changing climates are worse than death especially when we have some relatives who lost their lives due to the cyclone."</i>
I	<i>"Sometimes when you face this poverty and how the rains are not coming you really think that it is better to die that to struggle like this."</i>
J	<i>"As a healthcare worker I suggest the full implementation of a healthcare system that helps the whole person both psychologically, physically even social. A psychosocial approach where there is a department in every hospital even rural clinics...a department that asses all aspects of a person. This can help prevent some cases of suicide and suicide attempts which are on the rise."</i>

Source: Primary Data

Discussion

The study established that climate change is affecting the psychological wellbeing of women in rural areas. Findings reflect that women's vulnerability and exposure to adverse climatic conditions had a bearing on their mental health. Most participants reported gender norms, gender inequality and poverty as some pressing issues which make women in rural areas more vulnerable and exposed to the effects of climate change. In most rural communities accessing education is considered a privilege for men; women are often deprived of the opportunity to build careers which might have a positive effect on their current socio-economic status (Phiri, 2020). In Zimbabwe women still hold the lowest positions in the society especially in rural areas where there is strict observation of the old societal rules which propels gender inequality. This therefore concurs with what this study found, that women and men in rural areas do not have equal access to land for farming and due to climate change women were found to be more prone to the effects of climate change than men.

Gender norms are most influential in most rural areas. According to the Borgen Project Zimbabwe (Madzwamuse 2011), women by tradition hold lower positions in Zimbabwean cultures which are often patriarchal and this leads them to engage in unpaid care work in the home or subsistence agriculture. Engaging in unpaid care work or working jobs with low wages contributes to women being poor and makes it difficult for them to resort to other means of survival except for relying on the environment. USAID (2018), highlighted that in a usual day in rural areas of Zimbabwe, a woman must fetch water, search for firewood to use as fuel, make a fire, cook and wash the dishes, repeating this cycle for every meal throughout the day and then spare time for the farm. The change in climate affects how women must fulfill these gender roles assigned to them on daily basis.

Furthermore, the findings of the study indicated that women experience mental health conditions like PTSD, anxiety, hopelessness, and suicide ideation due to their experiences with climate change. Most women displayed symptoms of PTSD when asked about how they react when they receive news of the coming of an imminent weather event like a cyclone and because of the proximity to Ngangu where Cyclone Idai in 2019 hit ward 8 of Chimanimani district which is Nyanyadzi and women were the hardest hit. Most survivors are still in fear and have been affected psychologically. According to Phiri (2020), explains that people living closer to a disaster-prone area may develop psychological distress as a response to their worry of living close to an area posing as a danger to them. Any traumatic event can trigger a stress disorder like PTSD like announcing the coming of a similar disaster.

Surviving women also displayed symptoms of depression, anxiety and suicidal ideation due to their day to day experiences in the midst of climate change like droughts which cause desert like features, high temperatures, cyclones, unpredictability of farming seasons. Most women showed concern over the changes and how it is affecting their livelihoods for example travelling long distances in search of firewood or for water, crop failure due to insufficient distribution of the water in the irrigations which are affected by drying rivers and heavily silted rivers. Due to the changes brought by climate change some women reflected that they no longer have hope for a bright future but a future full of catastrophe and they perceive that they have little to no power to be able to adapt. This may be because of lack of knowledge on climate change adaptation and mitigation measures.

Conclusions

This study concluded that climate change is not only an environmental crisis but a mental health crisis too and that there is a close link between psychological wellbeing and changes in climate conditions. The effects of climate change are felt disproportionately amongst men and women due to high exposure and vulnerability of women. Based on the study's findings the vulnerability of women in rural areas is propelled by poverty, strict observations of gender norms and gender inequality. The experiences which women in rural areas face on day to day basis due to the changing climate were found to be affecting their mental wellbeing causing them to experience psychological challenges like PTSD, depression, anxiety, hopelessness and suicide ideation.

Recommendations

This study recommends the following:

- Skills enrichment programs targeting women as a way of enabling them to adapt to the dictates of climate change.
- The government should ensure that mental health services can be accessed by everyone at their local clinics even in rural areas.
- Gender equity to open doors for the inclusion of women in major decision processes, in climate change task force and the valuing of women which will help in reducing the vulnerability and exposure of women to the effects of climate change.
- Climate change education to raise awareness on adaptation and mitigation measures

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