**Surviving the dangerous and polluted river of life: Desire for revenge and forgiveness in childhood sexual abuse survivors' well-being and health**

Limor Goldner, University of Haifa, Application Number: 904/23

**1A. SCIENTIFIC BACKGROUND**

The salutogenic model of health sees life metaphorically as a dangerous and polluted river in which well-being and health are constantly challenged. Well-being is enhanced by a sense of increased control over one's life, which can be described by the construct of “sense of coherence” (SOC; Antonovsky, 1987; Braun-Lewensohn, 2022). Childhood sexual abuse (CSA) is one of the river's dangerous and polluting factors (Krinkin et al., 2022). CSA is defined as a sexual activity (ranging from fondling to forced penetration) with a minor, perpetrated by a person significantly older than the child (Hetzel & McCanne, 2005) via coercion, force, or any overt or covert threat (Lalor & Mclvaney, 2010). CSA transcends geographic boundaries and has reached epidemic proportions, ranging from 8% to 31% for girls and reaching 17% for boys (see, for example, the meta-analysis of Barth et al., 2013). CSA includes violating the child's body as a “safe, private place,” eliciting fear of annihilation, damaging body-mind integration, demolishing a sense of control, predictability, and manageability, and inducing a constant threat of the fragmentation of body and self (Lev-Wiesel, 2015). It is thus a unique traumatic event associated with significant, deleterious mental consequences across the lifespan, including, but not limited to, risky sexual behaviors, depression, anxiety, conduct disorder, and Post-Traumatic Stress Disorder (PTSD; [McTavish](https://www-sciencedirect-com.ezproxy.haifa.ac.il/science/article/pii/S0145213419301309#!) et al., 2019). These effects also result in a variety of physical indices of poor physical health (e.g., increased risk for cardiovascular disease, increase of inflammatory activity, and increased risk of auto-immune diseases; D'Elia et al., 2018) and chronic disease (Gerber et al., 2018).

Although the “life river” of CSA survivors is particularly dangerous and polluted, there are salutary factors, as proposed in the Sense of Coherence (SOC) model, that may position survivors on the well-being end of the ease/dis-ease continuum (Antonovsky, 1987; Bauer et al., 2020)*.* SOC is defined as a global orientation, specifically a pervasive feeling of confidence that the life events one faces are  *comprehensible*, that one has the resources to *manage* the demands of these events, and that these demands are *meaningful* and worthy of engagement. Since CSA survivors experience a profound violation of their sense of safety, and their ability to manage and control their environment, bodies, and lives is severely hampered (often by the very individual whose role is to care for and protect them), it is not surprising that they exhibit lower levels of SOC (Watts, 2022).

Typically, survivors use various strategies to regain control, including engaging in compensatory fantasies (e.g., fantasies of revenge), unconsciously reenacting the abuse, and dissociating (Haen & Weber, 2009; Katz & Nicolet, 2022; Lev-Wiesel, 2015, Somer & Szwarcberg, 2001). It is thus crucial to further understand the role of revenge and forgiveness in assisting in “cleaning the river”—that is, enhancing SOC to increase survivors’ well-being and health.

**The Desire for Revenge and Revenge Fantasies**

The desire for revenge is a normative developmental response that first appears in childhood and is defined as a wish to cause harm and suffering to another individual who is perceived to have caused damage to oneself (Bloom, 2001; Haen & Webber, 2009; Jackson et al., 2019). It is characterized by resentment, anger, and at times hatred toward the offender, and it stems from the need to regain self-esteem, reinstate justice, and restore emotional equanimity (Tripp et al., 2002; Watson, 2016), which preserve the person's belief in a just world (Berger, 2014; Grobbink et al., 2015). In this sense, the desire for revenge is not destructive in nature but rather constructive, enabling acceptance and redefinition and encouraging progression and ego stability (van Denderen et al., 2014; Watson et al., 2016).

Trauma, particularly interpersonal trauma, often shatters the notion of a "just world" (Bloom, 2001). Thus, it is highly likely that restoration of justice through a desire for revenge (through which the perpetrator pays for their actions in the victim's mind) will increase SOC factors. This is particularly important for CSA survivors; power and control—the perception of one's ability to influence others—are basic human needs. This notion has been expanded upon in the practice of restorative justice, a theory of justice that emphasizes repairing the harm caused by criminal behavior and a familiar practice in the field of social work. In restorative justice, the survivor experiences greater control and empowerment when his or her voice is heard and when perpetrators are held accountable for the outcomes of their offenses (Burns & Sinko, 2021). In addition, data, treatment protocols, and theoretical conceptualizations have suggested that having a sense of control as compared to feelings of victimization, passivity, helplessness, powerlessness, and fearfulness is vital in empowering CSA survivors (Parry & Simpson, 2016; Puffer et al., 2011), especially in the case of unjust, abusive experiences (Zdaniuk & Bobocel, 2012).

Several studies have reported a strong desire for revenge and excessive preoccupation with revenge fantasies among children exposed to violence inflicted by peers or strangers (Ardila-Rey et al., 2009) and among adult victims of crimes such as rape, assault, robbery, and deprivation of liberty (Van Denderen et al., 2014). To the best of our knowledge, however, the normative tendency to desire revenge when treated unjustly by another person as a factor promoting recovery has not been studied in CSA survivors.

In addition, only a single study has examined the desire for revenge among sexually abused women. This study indicated a relationship between lower levels of forgiveness and higher levels of desire for revenge with the severity of sexual abuse (Davidson et al., 2013). However, this study did not examine the impact of a higher desire for revenge and less willingness to forgive on CSA survivors' psychopathology and well-being. Furthermore, the study did not differentiate between the *desire* for revenge (the wish to retaliate for being unjustly treated by another) and the actual act of vengeance (Schumann & Walton, 2021). *Actual* vengeance—punishing the perpetrator openly and explicitly by causing suffering—is destructive because it can enmesh the survivor in an uncontrollable whirlpool of angry rumination and aggression (Berger, 2014; Carlsmith et al., 2008; Schumann & Walton, 2021) and an increased level of PTSD (Van Denderen et al., 2014).

Although most people do not actually engage in vengeance (Schumann & Walton, 2021), many tend to fantasize about it after being treated unjustly (Crombag et al., 2003). Revenge fantasies are defined as descriptive thoughts/scenes of getting even with the perpetrator (Haen & Weber, 2009; Horowitz, 2007). The therapeutic value of revenge fantasies lies in calming the feelings of insult, shame, and humiliation by virtually punishing the perpetrator and settling the score between the victim and the perpetrator (Lillie & Strelan, 2016; Seebauer et al., 2014). Thus, a desire for revenge is self-protective and stabilizing to the psyche and is part of the healing process of hurt and anger (Herman, 1992). In their imaginations, the survivors become active rather than passive, which helps them regain a sense of control (Berger, 2014). The hope of the vengeful triumph makes life more bearable, and survivors feel less like victims and less helpless. In their fantasies, survivors control their environments and are powerful enough to give their stories whatever endings they like (Berger, 2014). As a result, these fantasies serve as a means of self-soothing by reducing anger, frustration, and humiliation (Berger, 2014; Tripp et al., 2002).

The literature enumerates three main types of revenge fantasies (Goldberg, 2004):

1. Gaining justice by inflicting suffering and pain. This fantasy is based on the universal norm of reciprocity in relationships: an “eye for an eye” (Goldberg, 2004; McCullough et al., 2001).

2. Punishment by proxy through formalized judicial, military, or political procedures; shaming in social media; and force majeure (Ayvaci et al., 2019; Goldberg, 2004).

3. Revenge through the victim's personal success. For the survivors, their personal success represents the perpetrator's failure to ruin their lives (Rowntree, 2010).

Although these types have been identified, the differential contribution of each type to individuals' well-being has not been examined.

Retaliating against the transgressor is often considered negative. A small number of mainly cross-sectional studies have examined the adverse psychological outcomes of the desire for revenge, primarily in laboratory studies with student samples. In these studies, the desire for revenge is triggered by insult or humiliation and is reported to be associated with negative emotion and depression as well as reduced life satisfaction (McCullough et al., 2001; Ysseldyk et al., 2007; Van Denderen et al., 2014). Similarly, the desire for revenge and PTSD symptoms were positively associated among survivors of war exposure (Bayer et al., 2007). However, numerous other studies not necessarily related to traumatization have reported the empowering benefits of the desire for revenge and revenge fantasies. For example, Crombag et al. (2003) asked students to recall a recent event when they felt the desire to even the score after being harmed. Most of the respondents felt satisfied or triumphant after fantasizing. Zdaniuk and Bobocel (2012) reported that engaging in revenge fantasies in the workplace restored self-esteem. An experimental study revealed that imagined revenge after hypothetical cheating in a romantic relationship led to reduced aggression (Denzler et al., 2009). The desire for retaliation against the transgressor enhanced victims' feelings of empowerment (Strelan et al., 2020) and resulted in an increased sense of justice (Funk et al., 2014). Imagining direct retaliation against the transgressor was related to positive emotion via empowerment (Twardawski et al., 2021).

The clinical literature also suggests that encouraging revenge fantasies of traumatized clients in psychotherapy enhances the integration of traumatic experiences, the regulation of anger, and the restoration of a sense of control and self-coherence (as opposed to feeling frail or empty) through practicing the illusions of strength (Berger, 2014; Haen & Weber, 2009; Horowitz, 2007). A recent article demonstrated the use of role-playing revenge scenarios as a tool for enhancing trauma resolution in treating CSA children. Experiencing the role of the aggressor may help CSA clients regain control over the abusive experience and feel valuable and safe again (Iordanou, 2019).

**Forgiveness**

Forgiveness, like revenge, can be life-sustaining (Goldberg, 2004) and is associated with positive feelings of compassion and empathy. Forgiveness is seen as a change toward more positive and less negative thoughts and feelings about an individual who inflicted intentional harm (McCullough et al., 2006) or about the self or others who were involved but unable or unwilling to protect those who were harmed (Thompson et al., 2005). Although there is disagreement on the precise definition of *forgiveness,* in general it is defined as the positive transformation of a set of interrelated affective, cognitive, behavioral, and motivational reactions that survivors experience in response to a transgressor (Exline et al., 2003). Some researchers view forgiving as overcoming resentment and not retaliating against the offender, cultivating benevolence, and experiencing love-based emotions toward the offender that may motivate reconciliation (Exline et al., 2003; Wade & Worthington, 2003); others view forgiveness in terms of reductions of negative emotions that arise after ruminating about a transgression or downplaying the transgression itself (Fatfouta et al., 2015). In this latter definition, forgiveness also involves letting go of the right to hurt the offender or accepting that bad things happen (e.g., interpersonal transgressions; Thompson et al., 2005). Survivors of sexual abuse often attribute the cause of the assault to themselves, demonstrating self-contempt and self-blame. This tendency emphasizes the importance of self-forgiveness for CSA survivors to overcome trauma (Gerlsma & Lugtmeyer, 2018).

Several reasons (i.e., moral reasoning, the wish to avoid bitterness and anger, executing control over the abusive situation while reasserting personal power, and relinquishing the self-as-victim perspective) can lead to the letting go of personal retribution. In this sense, forgiveness appears to give survivors a sense of empowerment and control, enabling them to overcome negative feelings toward the offender such as hatred and anger (Akhtar et al., 2017). However, letting go of negative emotions does not necessarily include the letting go of the need for justice, which would involve reconciliation, trust, or release from legal accountability. Forgiveness also differs from suppression, which involves avoiding the experience and expression of anger but not ridding oneself of the internal desire for revenge (Exline et al., 2003; Jacinto & Edwards, 2011).

Despite the variance in definitions, the literature over the past 25 years points to the potential of forgiveness in helping people who have experienced deep emotional pain related to unjust treatment by others (Schumann & Walton, 2021; Strelan & Wojtysiak, 2009), suggesting there are links between forgiveness and more satisfactory outcomes for the survivor. Forgiveness is associated with enhanced mental and physical health such as reduced hostility, depression, and stress (Griffin et al., 2015; May et al., 2014; Rasmussen et al, 2019). Not forgiving hampers the regulation of emotions, harbors anger and anxiety, and has negative physiological effects on the neuro-immune and cardiovascular systems (Worthington & Scherer, 2004).

A meta-analytic review of process-based forgiveness interventions in clinical populations revealed promising results in achieving clinical treatment goals. In most cases, participants in intervention programs experienced fewer negative emotions, such as depression and anxiety, and higher positive emotions, such as hope and self-esteem (Lundahl et al., 2008). In a recent meta-analysis, forgiveness was found to be associated with improved psychological health and better physiological outcomes, such as healthy heart rate, except in cases where PTSD was present (Rasmussen et al, 2019). Thus, engaging in forgiveness is assumed to lead to a halt in anger rumination, lower stress levels, and the restoration of well-being.

There is scant literature on the mechanism of forgiveness as an alternative coping strategy to promote healing among CSA survivors (Ha et al., 2019; Tener & Eisikovits, 2017). Forgiveness of the self and others can be seen as a means to obtain control and manageability of the situation and release the self from the controlling grasp of anger and rumination and as a means to increase a sense of coherence. A recent study that applied forgiveness therapy with sexually assaulted women reported a significant reduction in shame and depression and an increase in post-traumatic growth (Ha et al., 2019). One study has underscored the societal expectation of CSA survivors to forgive offenders, thus restoring the social or familial order (Tener & Eisikovits, 2017). These qualitative findings underscore the need for further examination through quantitative or mixed-methods studies of the benefits of forgiveness among CSA survivors.

Some offenses might be harder to forgive than others (Gerlsma & Lugtmeyer, 2018). This is especially true for CSA survivors, and we must question the legitimacy of forgiving perpetrators of sex offenses toward children. Some suggest that CSA, especially intrafamilial sexual abuse, should be regarded as an unpardonable transgression (Gerlsma & Lugtmeyer, 2018) and that it is unethical to expect the victim to forgive the offender. It is thus vital to examine forgiveness toward the offender, forgiveness of the self (i.e., sympathizing with the self and treating oneself with acceptance and love), and forgiveness of the situation (which was beyond one's control at the time of the offense; Thompson et al., 2005), separately. This study will examine the specific contribution of forgiveness of the self, the situation, and the perpetrator to survivors' sense of coherence by enhancing their well-being and health and by reducing psychopathology.

**Contradictory or Complementary Functions? The Proposed Model**

Western thought tends to see the desire for revenge and forgiveness as opposite ends of a continuum; the desire for revenge is considered immoral and irrational and a form of mental illness, while forgiveness is seen as the cure (Goldberg, 2004). This outlook may be attributed to the close links among the desire for revenge, violence, rumination, and PTSD symptoms and among forgiveness, positive emotions, and life satisfaction (Barcaccia et al., 2020; McCullough et al., 2013). However, the conceptualization of revenge and forgiveness as polar opposites has been criticized for negating important positive aspects of the desire for revenge, such as seeking justice (Ho et al., 2002). The two constructs are not simple opposites or binary, and neither can be viewed as the pure absence of the other (Brown, 2003; 2004). Furthermore, less is known about the positive emotions of revenge (Chester & Martelli, 2020). The missing link in the association between revenge and psychopathology is the role of rumination and anger rumination, which may mask the positive aspects of the desire for revenge (Barcaccia et al., 2020).

Furthermore, both desire for revenge and forgiveness can serve as mechanisms with complementary functions for coping adaptively with harm and injustice (Goldberg, 2004; McCullough et al., 2013). In a functional and complementary theoretical perspective of revenge and forgiveness, cognitive revenge mechanisms are designed to deter future harm, by changing the power balance between the perpetrator and the victim, making future harm less beneficial to the perpetrator, and thus deterring future harm to the self. Forgiveness is employed when the survivor wants to maintain the relationship despite past harm (McCullough et al., 2013). Empirically, studies have shown that the forgiving and vengeful dispositions are only moderately negatively correlated (Wade & Worthington, 2003; Ysseldyk et al., 2007). A recent study demonstrated the potential role of *both* revenge and forgiveness in promoting a sense of *humanness* (repairing the damage from a dehumanizing event)*,* although the benefits of forgiveness were greater (Schumann & Walton, 2021).

The proposed study will examine the joint contributions of the desire for revenge, revenge fantasies, and forgiveness as potential coping strategies for CSA adult survivors using a conditional process modeling (Bachl, 2017). The model will examine the possibility that participants' levels of desire for revenge, revenge fantasies, and forgiveness facilitate their sense of coherence and self-esteem, which in turn facilitate their well-being and health and decrease psychopathology. Further, the study will investigate the possibility that the model is conditioned by levels of rumination over the transgression, anger rumination, and dissociation (see Figure 1).



Note: We will examine any associations that arise between predicting and outcomes variables, which, for clarity, are not marked in the diagram.

**The Mediating Role of Sense of Coherence (SOC)**

Our model suggests that engaging in the desire for revenge, fantasies of revenge, and forgiveness toward the self, the perpetrator, and the situation will contribute to survivors' SOC. According to Antonovsky's salutogenic theory (1987), SOC serves as an adaptive orientation in the context of adversity that can help a person cope better. SOC is comprised of three elements: (1) comprehensibility (the person sees the stressors as predictable, structured, and explicable); (2) manageability (the person has the resources to handle the stressors); and (3) meaning (the person sees dealing with the stressors as worthy of personal investment; Antonovsky, 1987).

A high SOC facilitates coping successfully with different types of personal and collective crises, resulting in elevated levels of perceived physical health, fewer health complaints (Flensborg-Madsen et al., 2005), and better mental health outcomes in the general population (Schäfer et al., 2019; Nosheen et al., 2017) and among CSA survivors (McGee et al., 2018). Forgiveness and fantasies of revenge have the potential to instill comprehensibility, manageability, and meaning in the chaotic experience of CSA that robs the individual of SOC.

**The Moderating Role of Rumination over Transgression, Anger Rumination, and Dissociation**

Although the desire for revenge and forgiveness are seen as adaptive responses in the current study, the adaptability of these responses may vary according to individual characteristics (e.g., Fatfouta et al., 2015; Lillie & Strelan, 2016). Trauma survivors may exhibit several maladaptive tendencies in dealing with the aftermath of abuse, including rumination over transgression, anger rumination, and dissociation.

*Rumination over the transgression* involves repetitious unintentional thinking that emerges during and continues after the offense and is characterized by the re-enactment of the abuse in the mind. In some cases, it includes continuous fantasizing about how to retaliate violently against the transgressor and aims to maintain the goals of vengeance, teaching the offender a lesson and offsetting the injustice (Barber et al., 2005; McCullough et al., 2001; Wade et al., 2008). Evidence, mostly from students, indicates that the tendency toward rumination (i.e., individuals' disposition for repetitive and recurrent self-focused thinking about failure and depressed mood; Barber et al., 2005; Lucas et al., 2010) and rumination over transgression (i.e., rumination about the specific offense; Fatfouta et al., 2015; Wade et al., 2008) interfere with people's abilities to forgive the transgression. These authors suggest that adverse emotional reactions (e.g., anger, shame, or fear) after the offense are transformed into amalgams of lingering bitterness and vengefulness that make forgiveness less likely (Wade et al., 2008).

Some survivors experience *rumination of anger,* which is defined as the propensity to think repetitively about past situations that provoked anger at the time they occurred (Fernandez et al., 2010; Sukhodolsky et al., 2001). Anger has shown a moderately strong relationship with a history of traumatic events in general and with a sexual victimization history in particular (Sadeh & McNeil, 2013). Anger rumination is posited to be the mechanism activating the stress response (through cardiovascular responses), leading to poor physical and mental health (Busch et al., 2017). During angry rumination, anger is re-provoked by the repeated focus on the causes and consequences of an anger-provoking incident. It can lead to a cycle of violence that transforms victims into perpetrators (Denson, 2013; McCullough et al., 2013). Being caught within anger rumination and rumination over the transgression is likely to interfere with the positive effects of the desire for revenge and forgiveness and participants' SOC, thus impairing their well-being.

*Dissociation* is another maladaptive coping mechanism over the long-term that is a natural automatic self-protective response to overwhelming experiences (van der Hart, 2021). According to the DSM-V, dissociation in its grave form is defined as interference of the normal integrative functions of awareness, memory, identity, emotion, behavior, and perception of the self, the body, and the environment, as manifested in an altered sense of time, out-of-body experiences, de-realization, depersonalization, feeling disconnected from one's body, and feeling confused or disoriented. Dissociation is classically defined as a pathological response to trauma in which the victim splits daily reality into proper/effective functioning and the abuse experience (van der Hart, 2021). The two parts of the self, the one that acknowledges the harm and the one detached from it, are thought to operate on various levels of consciousness. The dissociation involves a disconnection between the traumatic event and ordinary consciousness, leading to detachment from oneself, numbness, and distortions in perceptions of reality and time (Briere, 2006), and it can exacerbate survivors' emotional distress (Spiegel et al., 2011). In addition, dissociation hampers the ability to play and fantasize as it aims to increase safety and containment (Davise, 1997).

Since desire for revenge and forgiveness involve the memory of the transgression, emotions stemming from the offense, and imaginary scenarios, an individual with a higher level of dissociation will likely have difficulty engaging in fantasies of revenge and forgiveness. These individuals are likely to have higher levels of psychopathology in addition to the dissociation and lower levels of well-being and health. Furthermore, emotional pain will for them be unbearable, and the body may take the toll (Lane et al., 2018).

**Severity of the Abuse**

The longer and more severe the violent experiences, the greater the desire for revenge (Ardila-Rey et al., 2009) and the less forgiveness (Gerlsma & Lugtmeyer, 2018). A single study that examined differences in desire for revenge and forgiveness among sexually assaulted women compared to non-assaulted women reported lower willingness to forgive and a higher desire for revenge in the sexually assaulted group (Davidson et al., 2013). It is thus plausible that CSA survivors who have experienced prolonged, more violent sexual abuse, including penetration and incest, will have higher levels of desire for revenge and revenge fantasies and less forgiveness.

**Outcomes: Mental Psychopathology (PTSD Symptoms, Depressive Symptoms), Well-Being, Perceived Health, and Cortisol**

***Mental Psychopathology.*** CSA serves as a significant risk factor for *PTSD symptoms* (Hailes et al., 2019) and *depression* (McTavish et al., 2019), which are aggravated by the severity, frequency, and duration of abuse. PTSD symptoms (not necessarily the full diagnosis) include a wide range of mental or behavioral manifestations (intrusion, avoidance, negative alterations in cognition and mood, and alterations in arousal and reactivity) that develop among people who experienced traumatic events such as sexual violence (Pai et al., 2017).

*Depression,* which is one of the common PTSD symptoms, refers to intense psychic suffering, consisting of depressed mood, inner tension, restlessness, and aimless psychomotor agitation characterized by marked functional impairment, morbid preoccupation with worthlessness, suicidal ideation, psychotic symptoms, or psychomotor retardation (Paykel, 2020).

***Well-Being.*** This is defined as the experience of positive emotions such as happiness and contentment as well as the development of one's potential, having some control over one's life, having a sense of purpose, and experiencing positive relationships. Lower levels were found in CSA survivors (Sigurdardottir & Halldorsdottir, 2013).

***Perceived Health.*** This refers to the perception of one's health in general. Adverse childhood experiences and in particular familial childhood abuse (sexual and/or physical) were associated with self-reported poorer health compared with women who experienced none of these experiences (Cloitre et al., 2001; Seon et al., 2022).

The hypothalamic-pituitary-adrenal (HPA) axis and its output, the steroid hormone *cortisol*, are markers of the physiological embedding of early adversity and its relationship with adverse health outcomes (Oresta et al., 2021). Cortisol has shown heterogeneity in survivors of early adversity and, because of its temporal expression, has proved difficult to measure accurately. The ability to measure cortisol in hair, however, provides an accumulative measure that indicates the activity of the HPA axis over time. A meta-analysis found that, although individuals who experienced early adversity may have hyper- or hypocortisolism (with higher PTSD symptomology) that lasts after the adversity, they had hypoactive HPA axes (Khoury, 2019). Associations between salivary cortisol reactivity and revenge as well as forgiveness have been found in physical abuse survivors (Ysseldyk et al., 2019). A 30-year prospective cohort study found that women who had a history of CSA had reductions in hair cortisol (Shenk et al., 2022), possibly because overactivation of the HPA axis can lead to HPA hypoactivity over time (Khoury, 2019), and a possible U-shaped relationship between the severity of sexual trauma and accumulated cortisol expression in hair (Schalinski et al, 2015).

**1B. RESEARCH OBJECTIVES AND EXPECTED SIGNIFICANCE**

The proposed study has four objectives:

* + - 1. To develop a complementary theoretical model to better understand the joint contribution of the desire for revenge, revenge fantasies, and forgiveness to CSA survivor’s psychopathology, well-being, and health through the mechanism of SOC.
			2. To examine the moderating role of rumination of the transgression, rumination of anger, and dissociation on the study model by identifying profiles of survivors based on these characteristics who are more likely to have higher well-being because of their tendency for rumination and dissociation.
			3. To examine levels of survivor’s psychopathology, well-being, and health according to type of fantasy.
			4. To use participant’s narratives to better understand CSA survivors' experience of forgiveness and revenge as a way of coping and its relationship with their SOC, perceived well-being, and health.

**Significance of the Proposed Study**

The field of social work invests major efforts in understanding factors that promote the well-being and health of maltreated children and CSA survivors (e.g., Cross & Hershkowitz, 2017; Mazursky & Ben-Arieh, 2020). However, studies that examine the joint contribution of the desire for revenge and forgiveness in CSA survivors are relatively rare. The proposed study's model, which includes both constructs, points to the importance of an innovative association between the desire for revenge and forgiveness that takes a complex, non-binary approach beyond the conceptualization of the desire for revenge as negative and of forgiveness as positive in CSA survivors' adjustment. This model provides a rich, in-depth understanding of the ways that SOC and survivors' personal characteristics may affect their well-being, health status, and psychopathology through their desire for revenge, fantasies of revenge, and forgiveness. In addition, CSA survivors’ narratives will shed light on their experiences and the complex relationship between the desire for revenge and forgiveness and their recovery. Recovery in this respect is defined as the ways in which individuals can reconcile their abuse history, establish new identities, and navigate complex intrapsychic and social processes (Sinko et al., 2021). Establishing the empirical validation of the model can pave the way for further examination of additional trauma populations. Another strength of this study is the integration of self-report, narratives, and physiological data. Furthermore, since the "body keeps the score” for trauma survivors in general, proposing a model that integrates psychological and physiological outcomes will have direct theoretical implications for child abuse survivors (Tsur, 2022) and is in line with a contemporary biopsychosocial trend in social work research to include biology in studies (Maynard et al, 2017).

**1C. DETAILED DESCRIPTION OF THE PROPOSED RESEARCH**

This project will implement a mixed-methods cross-sectional and qualitative study design using Structural Equation Modeling (SEM) analysis on a sample of CSA survivors along with in-depth, semi-structured interviews of a sub-sample of survivors. We selected a cross-sectional design as it aims to establish the associations between constructs; this design is common in studies of adult CSA survivors because, although the trauma is rooted in childhood, the effects are fixed in adulthood and not expected to change rapidly throughout adult development (for example, Slavin et al., 2020). We chose not to include a comparison with a control group without CSA or maltreatment as it would be redundant; the positive relationship between the desire for revenge and psychopathology that arises in this population, usually examined through their response to everyday interpersonal offenses (e.g., McCullough et al., 2001), is already well-established.

**Working Hypotheses**

Our working hypothesis is that a desire for revenge, revenge fantasies, and forgiveness may serve as active ingredients in CSA survivors’ recovery, by providing an opportunity to regain a sense of coherence, which will increase well-being and health and lessen distress symptoms. This process will be conditioned by the moderating role of dissociation and rumination and will vary across groups of participants who manifest different aggregations of these personal characteristics.

More specifically, we hypothesize the following:

* **H1:** Higher levels of severity of abuse will be positively associated with higher levels of desire for revenge, revenge fantasies, and forgiveness, *which in turn* will be positively associated with higher levels of SOC. Consequently, participants' SOC will be positively associated with well-being, health, and hair cortisol and negatively associated with post-traumatic distress symptoms and depression.
* **H2:** Participants with higher levels of rumination of the transgression, anger rumination, and dissociation will have a negative association among the desire for revenge, revenge fantasies, and SOC and thus will have lower levels of well-being and perceived health and higher psychopathology and lower hair cortisol.
* **Exploratory hypothesis:** Distinct levels of survivors' well-being, perceived health, hair cortisol, and psychopathology will be associated with the type of revenge fantasy (gaining justice, punishment by proxy, revenge through the victim's success).

**Research Design and Methods**

**Participants and Procedures**

Participants will be 150 CSA adult survivors (over the age of 18, 50% of them men). To obtain a representative sample in regard to the severity of the abuse and our outcome measures, 75 participants will be recruited from the community through social media and online support forums for sexual abuse survivors, and 75 participants will be recruited through clinical settings, such as day hospitalization programs, welfare services, or treatments centers (e.g., Lotem). An overlap between the two groups will be identified by asking the participants whether they are currently being treated in the clinical settings or treatment centers. After signing the online informed consent, participants will have the option of answering questions online and sending us the hair cortisol in the mail or having a home visit by our research assistant to administer the questionnaire and collect the hair sample. The questionnaire will ask participants about their demographic details and to refer to their CSA experience(s) regarding abuse characteristics, the predicting variables (desire for revenge, fantasies of revenge, and forgiveness), and the moderating variables (rumination over transgression, anger rumination, and dissociation). Furthermore, they will answer validated questionnaires regarding the mechanistic variable (SOC) and the outcome variables (well-being, psychopathology, and perceived physical health). Participants who choose to mail in their hair samples will be asked to provide their addresses in a separate secured Google form. The research assistant will mail them a stamped envelope and instructions for the provision of one centimeter of hair for the cortisol analysis. Furthermore, participants will be asked if they are willing to participate in a semi-structured interview regarding the experience of revenge and forgiveness in relation to the CSA and to coping with the experience.

The sample size was determined based on the lower-bound sample size for SEM models as a function of the ratio (*r*) between the number of indicator variables and the number of latent variables (Westland, 2010, pp. 477). The formula used for this calculation is as follows: n ≥ 50*r*2 – 450*r* +1100, in which *r* is the ratio of indicator variables to latent variables; the online calculator took an effect size of 0.3 and 0.95 statistical power into account. In the proposed study, the number of indicator variables is 21 (including age, ethnicity, gender, and time since the abuse), and the number of the latent variables (revenge, forgiveness, SOC, and psychopathology) is 5.25. Thus, *r* = 5.25, and the calculated sample size is 116. Because we know that not all participants may agree to provide hair for the cortisol analysis, we will recruit a minimum of 150 participants to provide the recommended sample size for a model structure of 116. Participants will be compensated for their time with a gift card worth 150 NIS; interviewees will be provided an additional 100 NIS.

A subgroup of 30 participants (15 clinical and 15 community) will be invited to take part in a semi-structured interview. This sample size is recommended in qualitative research to achieve saturation in complex phenomena (Mason, 2010). Participants who agree to be interviewed will provide contact information in a separate secured Google form. Ethical approval will be obtained from the Committee to Evaluate Human Subjects Research of the Faculty of Health and Welfare at the University of Haifa and Ashkelon Academic College. We will inform participants that their participation is voluntary, and they can withdraw from the study at any time without penalties.

**Quantitative Measures**

Self-report questionnaires and physiological data will be used to test the model. All the self-report scales have been used in Israeli samples and have shown good reliability and validity. The model will be controlled for sociodemographic variables of age, gender, and ethnicity as well as for other characteristics of the abuse such as time elapsed since the abuse.

***Predictive Variables***

**• The Desire for Revenge.** The desire for revenge subscale from the Transgression-Related Interpersonal Motivations inventory (TRIM; McCullough et al., 1998) consists of five items assessing the respondents' agreement to statements regarding the desire to seek revenge against someone who committed a specific transgression against them (α = 0.85–0.93). Items are rated on a 5-point Likert scale (1 = strongly disagree to 5 = strongly agree).

**• Revenge Fantasy.** The modified version for adults of the Revenge Fantasy Inventory for Adolescents (RFI-J; Warncke et al., 2015; Goldner et al., 2019) will be used to assess fantasies for revenge. The inventory consists of two sections. The first (18 items, α = 0.90) deals with feelings and thoughts about revenge fantasies for past injustices, whereas the second (6 items, α = 0.90) deals with imagined revenge fantasies. Items are rated on a 4-point Likert-type scale (1 = does not apply to 4 = fully applies). In addition, to identify the type of fantasy (i.e., the survivor inflicts pain and suffering on the perpetrator, a proxy inflicts pain and suffering, or the survivor gains success despite what happened to them), participants will be asked to write a short description. Narratives will be coded by two coders separately to obtain interrater reliability.

**• Forgiveness.** Forgiveness of the self, of the situation (i.e., letting go), and of others will be assessed using the Heartland Forgiveness Scale (HFS; Thompson et al., 2005). The 18 items (α = 0.75–0.86) are rated on a 7-point Likert-type scale (1 = Almost always false to 7 = Almost always true).

**• Severity of the Abuse.** Participants will report the abuse characteristics in terms of violence inflicted, duration of the abuse, intra-/extrafamilial abuse, single/multiple abuses, single/multiple abusers, and bodily penetration. A total score will be calculated to indicate the severity.

***Outcome Variables***

**• PTSD Symptoms.** The PTSD Checklist for DSM-5 (Blevins, 2015) corresponding to the DSM-V criteria is a 20-item scale comprised of four sub-scales: invasive experience (5 items), avoidance (2 items), changes in cognitive function and mood (7 items), and hyperarousal (5 items). Participants use a 5-point Likert scale (0 = not at all to 4 = extremely; α = 0.94–0.95) to rate the extent to which they are bothered by the problem described.

**• Depression.** The Patient Health Questionnaire-9 (PHQ-9; Kroenke et al., 2001) is a 9-item questionnaire based on the diagnostic criteria in the DSM-IV and rated on a 4-point scale according to severity of the symptoms (0 = not at all to 3 = nearly every day; score range = 0–27). Scores of 5, 10, 15, and 20 represent mild, moderate, moderately severe, and severe depression (α = 0.78).

**• Well-Being.** The Brief Inventory of Thriving (BIT; Su et al., 2014) assesses comprehensive well-being on 10 items (α = 0.71–0.96), rated on a 5-point Likert scale (1 = strongly disagree to 5 = strongly agree).

**• Perceived Physical Health.** The Short-Form Health Survey (SF-12; Ware et al., 1996) is a 12-item measure assessing physical health. Most items are rated on a 5-point Likert scale, while items related to the frequency of physical activities are rated on a 3-point scale (α = 0.70–0.72).

**• Cortisol.** Hair samples for cortisol measurement will be collected from the posterior vertex area of the head as close as possible to the scalp. Hair growth is approximately one centimeter per month, so cortisol measured in the hair close to the scalp is estimated to indicate HPA axis activity in the previous month. Thus, extraction and analysis of cortisol in hair provides a good non-invasive retrospective quantification model (Greff et al., 2019). Before analysis, the samples will be washed twice in isopropanol and, after drying, ground to a fine powder to break up the hair's protein matrix and increase the surface area for extraction. Cortisol is then extracted into methanol, the methanol is evaporated, and the extract is reconstituted in an assay buffer that is analyzed with an ELISA kit. Concentration per mg of powdered hair weight correlates with a picogram of cortisol per milliliter.

***Mechanistic Variable***

**• Sense of Coherence (SOC).** The 13-item Orientation to Life Questionnaire comprised of meaningfulness (4 items), comprehensibility (5 items), and manageability (4 items; Antonovsky, 1987) will assess participants' SOC. Responses are made on a 7-point semantic differential scale (1 = very seldom or never to 7 = very often; α = 0.91–0.95).

***Moderating Variables***

**• Rumination over Transgression.** The Rumination About an Interpersonal Offense Scale (RIO; Wade et al., 2008) asks participants to think back to a specific hurtful experience and indicate their agreement with statements using six items (α = 0.79–0.90). Items are rated on a 5-point scale (1 = strongly disagree to 5 = strongly agree).

**• Anger Rumination.** The Angry After Thoughts subscale from the Anger Rumination Scale (ARS; Sukhodolsky et al., 2001) measures the tendency to focus attention on angry moods, recall past anger episodes, and think over the causes and consequences of anger episodes using 6 items rated on a 4-point Likert-type scale (1 = almost never to 4 = almost always; α = 0.86).

**• Dissociation.** The Dissociative Experiences Scale (DES; Bernstein & Putnam, 1986) assesses the intensity and frequency of the dissociative symptoms of detachment, amnesia, and experiences of de-personalization on 28 items. Participants are asked to indicate the percentage of time they experienced each symptom in the past month on a 0% (never) to 100% (always) scale (α = 0.84).

In addition, to capture the somatic aspects of dissociation that associate with CSA, we will use the Medical Somatic Dissociation Questionnaire (MSDQ; Daphna-Tekoah et al., 2019), which detects CSA adult survivors (cutoff values >= 2.40). The questionnaire includes 30 items rated on a 5-point Likert-type scale (0 = nothing to 4 = extremely) articulated in behavioral terms that reflect elements of somatization, psychological distress, and dissociative states (α = 0.93).

**Qualitative Tool**

We will conduct semi-structured interviews that include questions designed to obtain in-depth information about survivor’s desire for revenge, fantasies of revenge, and forgiveness as strategies they have used to cope with the abuse. They will be asked to describe the content of the fantasies and feelings of forgiveness in detail, the contexts in which they are evoked, their motivations and dilemmas, the meanings ascribed to these thoughts and feelings, and the ways in which these facilitate or hinder their coping.

**Analytic Approach**

To examine H1, structural equation modeling in MPLUS package (Muthén & Muthén, 2017) will be conducted. To test H2, Latent Class Analysis (LCA; Muthén & Muthén, 2000) will be run to identify the number of unobserved homogenous subgroups at the individual level; we will use the following continuous indicators to inform latent class membership: rumination over transgression, anger rumination, and dissociation. To identify the best-fitting model, we will use the four-stage sequential modeling strategy. Fit of the competing models will be compared using the Bayesian Information Criterion (BIC), and the classification quality of the competing models will be assessed using entropy. Models will be evaluated and compared according to interpretability of the obtained solutions. Once the ideal number of clusters is determined, a series of multi-group analyses will be performed between pairs of clusters to examine differences in the path estimations. In case of missing values, we will use full-information maximum likelihood (FIML) estimation, which allows for missing data on a dependent variable under missing at random (MAR) assumption with the robust maximum likelihood estimator (MLR). MLR uses model-based methods to accommodate complex survey data. Participants with >20% missing data will be excluded (Graham, 2009). For the qualitative analysis of the CSA's narratives and voices, the Listening Guide, which is a voice-centered, relational research approach developed to identify the contradiction between the spoken and silenced voice especially in trauma and conflict, will be implemented (Gilligan & Eddy, 2017; Harel-Shalev & Daphna-Tekoah, 2021).

The analysis is conducted in four stages: "listening to the plot" (attention is paid to the whole story); "I poems" (tracing how the participants represent or speak of themselves during the interview); "listening for contrapuntal voices" (paying attention to how the interviewee talks about his or her relationships with others); and "composing an analysis" (through which the researchers reach an understanding of the interview that integrates everything that has been learned during the entire process, and a summary analysis is constructed).

**Preliminary Results**

Our team has conducted two cross-sectional studies that examined the relationships between revenge and injustice in CSA survivors. The first study, with 278 young adults, found that a feeling of injustice mediated the relationship between the number of previous traumatic events and the desire for revenge, revenge fantasies, and the perception of revenge fantasies as helpful (Goldner et al., 2019; see figures 2 and 3).



We set out to explore the relationship between desire for revenge, post-traumatic growth, and psychopathology through the mechanisms of positive self-concept and conditioned by children's perceived level of injustice. We worked with a sample of 70 sexually abused children. Three moderation mediation models were used through PROCESS MACRO (model 7). Analysis of the moderation effects indicated a positive relationship between the desire for revenge andpost-traumatic growth via self-concept for children with a lower level of perceived injustice values (<+1 SD above average). B = 0.08, SE = 0.02, 95% CI [0.03, 0.12] for – 1 SD below average perceived injustice values; B = 0.05, SE = 0.02, 95% CI [0.01, 0.08] for average perceived injustice values. Similarly, the negative relationship between the desire for revenge andpost-traumatic growth via self-concept was significant for children with lower levels of perceived injustice: B = –0.06, SE = 0.02, 95% CI [-0.11, -0.03]; , B = –0.04, SE = 0.02, 95% CI [-0.07, - 0.008] for participants with average perceived injustice values. The results show that an elevated level of desire for revenge increases post-traumatic growth and decreases psychopathology for children who do have not high values of perceived injustice. These findings point to the potential of desire for revenge and revenge fantasies to enhance CSA survivors' self- competence and the complex nuanced relationships among the variables.

**Conditions for Research**

Prof. Goldner is the head of the Emili Sagol Creative Arts Therapies Research Center & The Sagol Laboratory for Children at Risk at the University of Haifa. She is an expert in emotional abuse and gender-based violence and has published roughly 50 peer-reviewed papers. She serves as an E-COST member focusing on Multi-Sectoral Responses to Child Abuse and Neglect in Europe. Dr. Czamanski-Cohen is a senior lecturer in the Faculty of Social Welfare and Health Sciences at the University of Haifa. She holds a PhD in social work and health sciences, and she studies women's health by conducting psychosomatic research. She recently completed an NIH-funded RO1 clinical trial, which also collected biological specimens. Her laboratory has all the necessary equipment required to conduct hair cortisol analyses. Prof. Daphna-Tekoah is a senior social worker and the head of the Faculty of Social Work at the Ashkelon College. She is an expert on sexual abuse, trauma, and post-traumatic growth. She developed the Medical Somatic Dissociation Questionnaire, which detects CSA adult survivors. She has published peer-reviewed papers, books, and chapters on these issues.

**Expected Results and Pitfalls**

We expect the results of this study to shed light on the complex relationship between revenge and forgiveness in CSA survivors and to provide a multidimensional understanding of CSA survivors' experience and coping strategies that (a) is well-grounded in current theory, (b) differs from the current binary view that assigns the roles of revenge and forgiveness to opposite poles, and (c) will integrate psychological and physiological measures as well as qualitative and quantitative methods. It is in this integration that lays its strength.

There are some potential pitfalls. We will be collecting data from participants who self-identify as CSA survivors, and it can be assumed that this population will be difficult to recruit. However, PIs Drs. Goldner and Czamanski-Cohen have previously succeeded in obtaining physiological data from large high-risk populations. Prof. Daphna-Tekoa is acquainted with key figures in CSA survivors' assistance centers.

Recalling the traumatic event and responding to questionnaires that pertain to trauma may elicit distress, so we will closely monitor the distress levels of participants. Clinical M.A. students will be hired and trained to set up and conduct the data collection and follow up with participants with high PTSD (+1 SD above the mean) or depression scores above the clinical cutoff point. We will refer those participants to further professional support in the community. We will also request that participants with lingering distress contact us for a referral for treatment.

We believe that the prospective risks to the project's objectives are negligible given the clinical and research experience of the researchers and their familiarity with complex statistical techniques, which they have used extensively in their studies.

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