

## COVID-19 Forum: Transformation of Our World and Mental Health Promotion

# A CONCEPTUAL MODEL OF ADOLESCENTS' ATTACHMENT AND RESILIENCE TO DAILY STRESSORS: IMPLICATIONS FOR COVID-19 NORMALIZATION PERIOD AND AFTERWARDS

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### SUMMARY

*Resilience is a concept that has captured intensified attention since COVID-19. Over decades, resilience research has been done across diverse domains focused on stress responses to adversity. For adolescents who are undergoing a "storm and stress" phase in transition to adulthood, everyday stresses should be managed timely and properly so that resilience is in place when needed. Within the frameworks of attachment and resilience, the author conducted this narrative review proposing a conceptual model to discuss adolescents' attachment and resilience to daily stressors during and following the pandemic. Theoretical and empirical evidence showed building relationships and regulating emotions are instrumental in nurturing adolescents' resilience. This review may have implications for the prevention and intervention of adolescents' mental health during and after COVID-19, which may aid in the transition to adulthood and later life well-being.*

**Key words:** adolescents - attachment - resilience - daily stressors

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### INTRODUCTION

According to the World Health Organization (WHO 2014), adolescence is a "second chance in the second decade," indicating that it is a critical period in a person's lifelong development that cannot be overlooked. Witnessing the dramatic changes in an individual's body and mind (Masten 2006), adolescence is characterised by identity and confusion (Erikson 1993) and "Storm and Stress" (Collins & Laursen 2004). WHO (2019) advocated for worldwide action to address the mental health of 1.2 billion adolescents (10-19 years old) for whom depression and suicide were both listed as leading causes of death (WHO 2014). Research suggested suicide tendencies and depression in adolescents could be significantly correlated with an insecure attachment to parents (Armsden et al. 1990). Data from China prior to COVID-19 showed that the top three causes of suicide were family conflict, academic pressure, and teacher-student conflict (Yang 2019).

During the COVID-19 stay-at-home order, adolescents were reported to experience more family conflicts and fewer peer connections (Rogers et al. 2021). Anxiety, solitude, lethargy, depression, fear, and concerns about family finances, were also found to have significant psychiatric consequences for adolescents (Rogers et al. 2021). Adverse habits such as sedentary behavior and internet addiction pose ongoing threats to teenagers' mental health (Hall et al. 2021, He 2021).

However, why some adolescents are more vulnerable and at higher risk of attempting suicide, while others adapt and thrive despite encountering adversity? Those who adapt well demonstrate resilience that could

make a positive impact on an individual's life path (Broekman 2011, Hoffman 2010). There is a need to ponder how to help adolescents build resilience and brace themselves for future hardships and uncertainty.

Resilience is a process of interaction between protective and risk factors (Rutter 1987). However, unlike large scale events, the impact of the daily stressors (e.g., normative life transitions, interpersonal relations, and academic stress) could potentially be underestimated (Masten et al. 1990). How is resilience foundationally built when there is little crisis? Such a thread has been overlooked by resilience construction focused largely on catastrophic events (Ögtem-Young 2018). And even less is known about the underlying mechanisms between adolescents' attachment and resilience to daily stressors (Maximo & Carranza 2016). This review article is intended to address these issues.

### SCOPE OF THE REVIEW

#### Resilience theory and Attachment theory

Resilience was traditionally defined as being able to spring back from adversity and achieve functional outcomes (Fletcher & Sarkar 2013, Jakovljević 2017, Rutter 1987). Jay (2017) believed that resilience was a phenomenon of being "Supernormal", exceeding normality and expectations. There have been intense debates over decades about the conceptualization and the mechanisms underlying resilience (Jakovljević 2017, Masten 2018). However, little consensus has emerged except that resilience is a dynamic developmental process as opposed to merely a personal trait, or an outcome.

Under the developmental systems theory umbrella, resilience theory and other scientific approaches were integrated, such as ecological theory (Bronfenbrenner 1979), relational developmental system (Overton 2013), and attachment theory (Bowlby 1969). The concept of resilience is also theoretically rooted in the salutogenic theory (Antonovsky 1996) and positive psychology (Seligman 2000), or an integrative paradigm of the Salutogenic positive psychology (Mittelmark 2022). Additionally, the integrated and developmental nature of resilience manifests across the biological systems. Resilience research has increasingly focused on neurobiological processes, brain development and the interaction of these systems in shaping new development (Rodman et al. 2019).

Bowlby's (1969) attachment theory shares the heritage of Freud's finding (1964) which highlighted a strong mother-infant bond by breastfeeding and cuddling. Bowlby (1969) argued attachment was a secure and enduring emotional connection between infants and early caregivers and that attachment behavior was a survival strategy that protected infants from evolutionary harm. This intimate bond underpins an attachment system that provides a secure base for the infants or toddlers to explore themselves and attain support that sustains childhood, adolescence, and adulthood (Masten & Coatsworth 1998). The internal working model (IMW), proposed by Bowlby (1969), highlighted such attachment relationships, which will be discussed in more detail later.

### **Defining adolescents' attachment and resilience**

Adolescent attachment refers to the emotional bonds established between adolescents and their attachment figures, such as parents and peers (Nickerson & Nagle 2005, Zulkefly & Wilkinson 2015). Adolescent resilience refers to the process or trajectory of successful adaptation to varying daily stressors as adolescents transition to adulthood (Fletcher & Sarkar 2013, Masten 2018).

Parent attachment here means an intimate relationship between adolescents and parents that evolves from mother-infant attachment, and peer attachment extends to relationships between close friends or peers (Ainsworth 2004, Bowlby 1982). Both parent and peer attachment are typically identifiable factors along the transition from childhood to puberty (Fass & Tubman 2002).

### ***Resilience to daily stressors***

Though resilience as reactions to major or large-scale events has been widely recognized by policy makers and academic scholars, the conceptualization of resilience is still under debate. If resilience is defined as rebounding from severe adversity, it will rule out the resilience in those who actively adapt to everyday life stressors (Fletcher & Sarkar 2013). Masten (2001) believed resilience was an "ordinary magic" (p. 235) in children's minds, bodies, families, and communities,

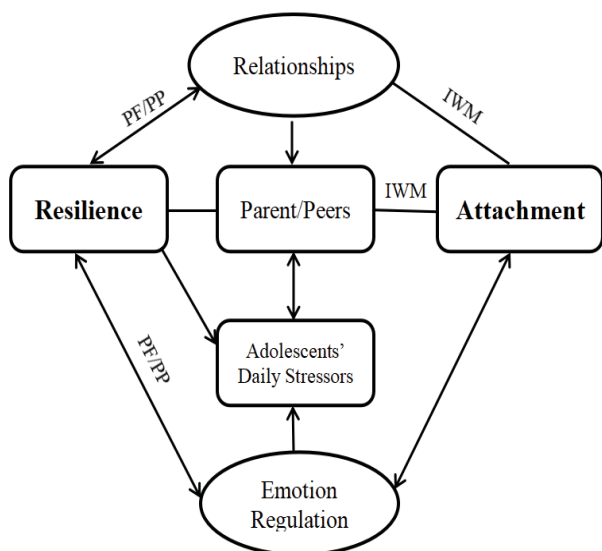
rather than an unusual and particular attribute. A group of scholars have argued that resilience exhibits itself more subtly and broadly in response to quotidian pressures, including issues of academic highs and lows, prejudice against migrants and romantic relationships (e.g. Martin & Marsh 2009, Ögtem-Young 2018, Seery & Quinton 2016). Today, with COVID-19 normalised, there is a need for the public to respond to potential COVID-related stressors on top of other daily hassles. Individuals with higher level of resilience reflect effective management of daily stressors (Seery & Quinton 2016).

## **PROPOSED MECHANISMS OF ADOLESCENTS' ATTACHMENT AND RESILIENCE TO DAILY STRESSORS**

Resilience and attachment were compatible and complementary and should be examined in combination (Schofield 2001, Atwool 2006). Schofield (2001) posited that resilience was linked to attachment theory through the lens of development, Internal Working Models (IWMs), adaptation, and application. Atwool (2006) claimed attachment theory emphasized the significance of relationships among all four facets of resilience (i.e., culture, community, relationship, and individual) and added weight to resilience theory (Maximo & Carranza 2016). Masten and Coatsworth (1998) also discussed resilience in the areas of attachment and self-regulation. Other scholars have further demonstrated that resilience and social construction model of attachment, acceptance and positive relationships can promote resilience (Lieberman et al. 1999, Zakeri et al. 2010).

### **An overview of the proposed model**

The current study provides a conceptual model (See Figure 1) that reflects the mechanisms of adolescents' attachment and resilience to normative stressors. Resilience in adolescents can be seen at all levels of interactive systems, including interpersonal relationships with parents and peers. Parents and peers are significant attachment figures in adolescents' social networks. Secure parent and peer attachment are protective factors of adolescents' resilience in their developmental trajectory (Armsden & Greenberg 1987). Resilience as a dynamic process is embodied in how these protective factors help people overcome risks and thrive (Chmitorz et al. 2017). Attachment theory informs this process and promotes individual resilience through two mechanisms: the well-known Internal Working Models (IWMs; Cicchetti 1990) and emotion regulation (Contreras et al. 2000). IWMs links resilience and attachment with a "relationship" core, as attachment is also a "relational construct" (Sroufe 1997). Emotion regulation, associated with both attachment and resilience, is an effective strategy for adolescents to manage daily stresses and can also facilitate prevention and intervention in clinical practice (Jakovljević 2018). These two mechanisms are described in more depth in a later section.



PF - protective factors; PP - protective process;  
IWM - internal working model

**Figure 1.** Adolescents' attachment and resilience to daily stressors

### Core issues in the model

This section focused on the core facets in the proposed model, such as protective factors and processes in resilience system, two mechanisms of attachment theory: Internal Working Model and emotion regulation, and the interdisciplinary mechanisms underlying attachment and resilience (Bergeman et al. 2020).

### Protective factors and protective processes

*Protective factors* is defined as “the positive role of individual differences in people’s response to stress and adversity” (Rutter 1987). This terminology has considerable relevance to the concept of “general resistance resources” (GRRs) in Antonovsky’s model of salutogenesis (Antonovsky 1996). Both terms adopt an anti-deficit perspective, looking at the good rather than the bad, for example, opportunity over risk and health over disease.

Previous literature has documented a broad spectrum of protective factors (Afifi & MacMillan 2011, Babić 2020), which fall within two categories: internal and external factors, or three levels: individuals, families, and communities (Ungar 2015). These classifications are intersecting and overlapping. *Internal factors* refers to the individual resources, including personality characteristics, temperament type, perseverance, competence, self-efficacy, self-awareness, optimism, and self-esteem (e.g., Afifi & MacMillan 2011, Dias & Cadime 2017). *External factors* include family resources, peer relationships, school, community, and religious resources (Afifi & MacMillan 2011, Masten 2001, Sameroff & Rosenblum 2006). With the deepening of globalization, culture is increasingly perceived as a protective factor (Ungar 2011). Consistent findings suggest protective factors can be used as a short-term intervention strategy to improve awareness and understanding of resilience in young people (Afifi & MacMillan 2011, Stoffel & Cain 2018), particularly in the context of COVID/post-COVID (See Table 1).

The term protective process is often used when life trajectories change so that risk is transformed into adaptation (Jakovljević 2018, Rutter 1987). This process is not related to whether the variables are positive or negative, as one is concerned with how these variables protect people from risk and overcome difficulties, rather than what makes people feel good (Rutter 1987). For example, more attention has been paid to how parental attachment helps adolescents improve resilience and withstand stress and challenges than to parent-adolescent attachment variables. Also, in this process, how an individual responds to stressful events (e.g., academic barriers) depends not only on the stressors but on the individual’s perception and reappraisal of the adversity (Yeager & Dweck 2012). Oldfield et al. (2018) noted, “the process of how protective factors overcome risk is essentially resilience” (p. 15).

**Table 1.** Key Protective Factors of Relevance to Adolescents in the COVID and Post-COVID Context

Internal Protective Factors	Individual Factors	personality characteristics, temperament type, perseverance, competence, self-efficacy, self-awareness, optimism, and self-esteem (e.g., Afifi & MacMillan 2011, Dias & Cadime 2017)
External Protective Factors	Family-level Factors	family economic status, parent-child attachment, parental divorce, family conflicts, parenting style (e.g., Gorman et al. 2010, Donnellan et al. 2009, Jeon & Nepl 2016, Qu et al. 2021, Rogers et al. 2021)
	Community Factors	spiritual support from community (e.g., Jakovljević 2017, Ungar 2015)
	Other Social Factors	peer relationships, school support, academic performance, teacher-student relationship (e.g., Luo et al. 2011, Özyurt et al. 2018, Qu et al. 2021, Rogers et al. 2021)
	Cultural Factors	religion and spirituality, faith, etc. (e.g., Jakovljević 2017, Ögtem-Young 2018, Ungar 2011)

### **Two mechanisms of Attachment theory**

The well-known Internal Working Models (IWMs) and emotion regulation are two mechanisms hypothesized by attachment theory (Contreras et al. 2000). The first mechanism is based on the assumption that the children's early attachment experience will shape their inner cognitive mode and affect their adult life (Bowlby 1958). This mode was documented as Internal Working Models (IWMs; Cicchetti 1990). IWMs, as rules or schemas (Bretherton 1987) of relationships, play a guiding role in the information processing of social dynamics. According to Bowlby's (1969, 1982) attachment theory, infants establish a tight bond with their primary caregiver, typically their parents, who provide them with a safe environment from which to explore themselves, seek assistance, gather attachment experiences, and eventually form cognitive representations over time. These representations, known as IWMs, or "cognitive maps" (Bowlby 1982, p. 80), are responsible for transmitting, storing, and manipulating information to predict how the goals of attachment are achieved. IWMs regularly support people in anticipating and maintaining their relationships with the outside world (particularly with important persons), which has an effect on how they perceive interpersonal interactions as adults. Because adolescents may experience relational, intrapsychic, or environmental stresses outside their initial attachment networks as they age, IWMs are flexible despite being generally stable (Bowlby 1988).

The second mechanism underpinning attachment is Emotion Regulation, referring to tactics and conduct that can impact and control emotional arousal (Contreras et al. 2000), which governs various complex processes in people's everyday lives (Tugade & Fredrickson 2007). There are two types of emotion regulation strategies: cognitive reappraisal (seeking positivity in stresses) and emotional expression suppression (reduces the display of emotional actions and experiences, Košutić et al. 2019). Frequent use of the former contributes to psychological well-being, while prolonged use of the latter leads to depressive symptoms (Marganska et al. 2013).

Early attachment was critical to developing lifelong emotion regulation (Bowlby 1973, 1982). Bowlby (1982) drew inspiration from psychophysiology and assumed that the social and biological functions of the attachment system were involved by the right hemisphere of the human brain charging emotional processing and expression, and emotion regulation. Ryan et al. (1997) tested this hypothesis using electroencephalograph (EEG) and neuroimaging data, and concluded the right hemisphere of the brain was engaged in overall complementary emotion regulation, including positive emotional communication created by autonomy-supportive parents. Consistent with Bowlby's claim, attachment behavior is critical to the living state

of the species. The right hemisphere controls these pivotal functions that facilitate survival and support the organism to accommodate frustrations and struggles (Bowlby 1982).

### **Interactive mechanisms underlying attachment and resilience**

Given that attachment predicts emotion regulation and emotion regulation contributes to resilience; emotion regulation in this model is considered to be the central mechanism underpinning attachment and resilience. This section will touch on the more underlying mechanisms of the neurobiological and developmental brain perspectives that are at the forefront of attention (Rodman et al. 2019).

For instance, Feldman et al.'s (World Psychiatry 2020) affiliative neurobiology model has elaborated upon human attachment/social belonging and resilience in terms of cellular plasticity, social relationships and the individual's sense of meaning; Genetics of Resilience by Elbau et al. (2019) viewed gene-by-environment interaction studies as a tool to unravel the mechanisms of resilience. Boyce et al. (2021) further discuss "gene-environment-time" interactions that take into account critical and sensitive periods, thus illuminating the importance of early intervention in which attachment theory occupies a unique place.

These interactive effects produce disorder at one end, while reinforce the foundations of resilience at the other (Boyce et al. 2021). Solid evidence showed that supportive and responsive parents mitigated the unfavorable influence of chronic immune system activation on adolescents (Boyce et al. 2021, Shonkoff et al. 2021) and not only promoted the healthy brain development, but decreased the inflammations (Miller et al. 2014) and prediabetes rate (Brody et al 2017). These overlaps shape state-of-the-art research on resilience in relation to attachment.

## **Resilience to adolescents' daily stressors**

### **Adolescents' daily stressors**

Adolescence is a crucial period characterized by identity and confusion (Erikson 1993) and "storm and stress" (Collins & Laursen 2004). Such a period involves a person trying to develop a sense of identity and resolving inner disturbance due to insecurity and doubt about themselves and their future (Erikson 1993). Accompanied by rapid physio-psychological changes and mounting academic pressure, adolescents confront multiple daily challenges.

In early adolescence, individual autonomy is awakened and conflicts with parents increase; the COVID stay-at-home order has exacerbated this problem (Qu et al. 2021, Rogers et al. 2021). Academic strain is another key stressor for adolescents (Martin & Marsh 2009). In China, the *Gaokao*, the national college entrance examination system, has been

described as “thousands of soldiers and tens of thousands of horses going across a single log bridge” (Luo et al. 2011). Adolescents' perceived anxiety about this competitive examination is intensified due to COVID-19 pandemic (Qu et al. 2021). Additionally, adolescents' stressors also include financial hardship (Donnellan et al. 2009, Jeon & Neppel 2016) and parental divorce (Gorman et al. 2010), which have become prominent during COVID and in a post-COVID era (Wang et al. 2021). Finally, COVID-19 outbreak has deteriorated the teenagers' life styles, such as problematic use of internet/Smartphone (Xiang et al. 2020), physical inactivity or sedentary behavior, which increase the risk of depression in the long run (Hall et al. 2021, He 2021).

In accordance with the normal developmental trajectory of the individual, adolescents' attachment relationships are undergoing a change, moving from attachment to parents to attachment to peers (Özyurt et al. 2018); the epidemic lockdown has somewhat altered or hampered this development, which is no small challenge for both adolescents and their parents (Rajkumar 2020, Wang et al. 2021).

Adolescents are more sensitive and susceptible to these internal or external stressful environments (Williams & Merten 2014) and may become vulnerable or dangerous if they fail to navigate these crises successfully (Erikson 1993). A report showed that although half of the mental health issues affecting adolescents occur by age 14, most teenagers are not yet diagnosed or treated properly (WHO 2014). Adolescents need safekeeping and scaffolding because a successful transition from puberty to adulthood is essential for later life well-being (WHO 2019). Normative day-to-day pressures should be managed in a timely and appropriate manner (Seery & Quinton 2016) so that there is resilience when needed.

#### ***Empirical evidence for attachment/relationship and resilience to adolescents' daily stressors***

The literature documents that secure parental attachment predicts resilience in adolescents. A Chinese study on adolescents from intact families suggested secure attachment to mothers was directly related to adolescents' resilience and coping played a mediating role (Guo 2019). Regarding peer attachment, the research findings are equivocal. Studies indicated that peer attachment was a more robust predictor than attachment to parents in adolescent anxiety and depression (Mothander & Wang 2014, Özyurt et al. 2018) and adjustment or functioning (Laible et al. 2000). A Guatemalan research showed high quality peer attachment predicted low level of resilience in the adolescents with low parental attachment (Oldfield et al. 2018), however, a mainland China study showed adolescents with secure peer attachment and insecure parent attachment reported higher level of resilience than the secure parent and insecure peer attachment

group (He et al. 2018). Cultural factors may come into play.

A prominent concept of resilience is having the capacity to regulate emotions in response to unfavourable situations (Bergeman et al. 2020). Research showed safe parent and peer attachment in adolescents significantly predicted good emotion regulation strategies and resilience in adulthood (Karreman & Vingerhoets 2012, Pascuzzo et al. 2013). Additionally, strong attachment to mother was associated with adolescents' better emotion regulation and coping strategies (Contreras et al. 2000).

Lyu et al. (2017) demonstrated that in negative emotion regulation, adolescents with low resilience adopted cognitive reappraisal, while in positive emotion regulation, the highly resilient participants prioritized catharsis over suppression. Recent research has evidenced the active involvement of the cognitive control network in regulating negative emotions is a crucial neurobiological mechanism of resilience to depression and anxiety in children and adolescents following maltreatment (Rodman et al. 2019). Both findings indicate cognitive reappraisal is more likely to be triggered when individuals were in a disadvantaged situation (i.e., adversity or low resilience). This may have an implication for future clinical intervention.

Guo (2019) examined two coping strategies and found enhanced problem-orientated coping and reduced emotion-oriented coping mediated the relationship between secure attachment to mothers and adolescents' resilience. Simultaneously, the enhanced problem-oriented coping style also mediated the relationship between paternal attachment and adolescent resilience.

Research also indicated that the individual's experience and awareness of positive emotions had a significant impact on resilience (Lyu et al. 2017). People could cope with stress through positive emotions and improve resilience (Masten 2001, Tugade & Fredrickson 2007). The converse held true that highly resilient people had higher levels of positive emotions, which contributed to active coping during stress/adversity (Lyu et al. 2017, Tugade & Fredrickson 2004).

Both attachment and resilience are conducive to addressing other daily stressors for adolescents. Secure attachment to parents and resilience are identified as protective factors for the risk of adolescents' internet addiction (Bolat et al. 2018, Robertson 2018). A recent qualitative study revealed British parents' perceptions on sports influenced their adolescent children's resilience to performance pressures in Physical Education class (Tudor et al. 2020). A COVID-19 related study showed strong parent support and family cohesion contribute significantly to adolescents' navigation ability to family economic crisis during the pandemic (Wang et al. 2021).

## IMPLICATIONS

### Implications for future research

In the context of COVID-19 and its normalization, the mechanism proposed in this review may provide a new model for future studies of adolescents' resilience to everyday stressors, which are typically overlooked and underestimated (Masten et al. 1990). Additional research is needed to raise awareness among parents, schools and society to address the needs of young people and to identify issues that may be falling through the cracks.

Furthermore, as adversity ranges from mild to severe (Guo 2019), the underlying mechanisms of resilience and their protective factors may be different between resilience related to disasters versus everyday challenges. Laboratory studies demonstrated that individuals' significant negative encounters had an impact on their later resilient responses to daily stressors (Seery & Quinton 2016). In this vein, future research may empirically investigate whether and how COVID-19 pandemic is connected to people's subsequent reactions to or management of stress (Abbas 2020, Anjum 2020). Finally, neurobiological approaches to resilience, attachment, and emotion regulation are flourishing and still in the ascendant trend. Therefore, such interdisciplinary research still merits more attention.

### Implications for practice and policy

In the conceptual model, the links between resilience and attachment through relationships and IWMs, may have implications for both parents and adolescents to be aware of the importance of building relationships. "...the family is where all of society begins" (Trabue 2016, p. 10), a parent is the first teacher of the children, but this teacher has never received pre-job training. So first of all, parents should learn how to be parents and help their children establish secure IWMs to sustain their future social network. A parent is also a leader of the family and children. "There is no other leadership role in society of greater significance than the parent's role as a leader in the family..." (Trabue 2016, p. 10). This leadership role may be accomplished as early as possible through inter-generational role-modelling or parent education.

In view of the key role of adolescence in social emotional learning, emotion regulation, as a resilience factor and the mechanism of attachment, has become instrumental for adolescents to address their daily stressors. Emotion regulation, is also a protective process through which the adolescents could practice diverse daily activities such as self-reflection (Crane et al. 2019), mindfulness (Aini et al. 2021), or sports (Tudor et al. 2020) under the guidance of parents and teachers at home or school during COVID lockdown or afterwards. Individual adolescents may benefit from these practices by discovering and utilizing their inner

resources to face future uncertainty and surmount potential barriers throughout life. Moreover, because the parents' emotion regulation pattern will be internalized and applied by children to other interpersonal relationships, parents should pay attention not only to their children's or adolescents' emotional well-being but also to their own mental health and try to reduce the family conflicts with their united strength. Furthermore, school or teachers could organize more online class meetings to enable adolescents to pass on positive influence to peers and increase peer connections which have been considerably restricted by COVID social distancing. There is also a need for policy makers to launch nationwide parenting development programmes aimed at improving parents' mental health and parent-child relationships as a whole. Professional psychologists and counselors may provide support for adolescents with mental problems to sustain their family well-being during and after the COVID era.

## CONCLUSIONS

Resilience is not built overnight. Normative daily stresses should be managed timely and properly (Seery & Quinton 2016) so that resilience is in place when needed. This paper goes beyond reviewing literature to explore how a conceptual model can inform resilience to adolescents' daily stressors. This study has implications for the prevention and intervention of adolescents mental problems during and after the COVID normalization phase and may contribute to adolescents' psychological growth and sustainable development in adulthood.

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