

## Parental Coping Socialization and Child-Adolescent Adaptation: A Long-Term and Real-Time Temporal Perspective

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### Abstract

Parental coping socialization refers to the process by which parents provide children and adolescents with cognitive, emotional, and behavioral strategies to cope with stress. Empirical research has examined the role of parental coping socialization from perspectives such as long-term developmental timelines, real-time timelines in specific contexts, and the integration of different timelines, revealing the unique effects of parental coping socialization on child and adolescent adjustment. Regarding the underlying psychological mechanisms, the coping socialization process theoretical model explores the mediating role of child and adolescent coping processes between parental coping socialization and child and adolescent adjustment, while the parenting  $\times$  stress amplification and differential effects model examines the boundary conditions of the coping socialization process. This study integrates these two models and proposes a dynamic coping socialization process theoretical model based on a dynamic systems perspective, refining the mechanisms through which parental coping socialization influences child and adolescent adjustment from two dimensions (long-term developmental timeline and real-time timeline in specific contexts) and at two levels (the individual child and the parent-child dyad). Future research could further examine the generalizability of the effects of parental coping socialization, deepen the exploration of the mechanisms through which parental coping socialization influences child and adolescent adjustment, and provide a scientific basis for the application and promotion of parental coping socialization in the fields of family education and clinical intervention.

## Full Text

# How Parental Coping Socialization Influences Child and Adolescent Adjustment: Perspectives from Long-Term Developmental and Real-Time Situational Timelines

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## Abstract

Parental coping socialization refers to the process through which parents provide cognitive, emotional, and behavioral strategies to help children and adolescents manage stress. Empirical research has examined the effects of parental coping socialization from multiple perspectives, including long-term developmental timelines, real-time situational contexts, and integrated approaches combining both temporal frameworks, revealing its unique impact on youth adjustment. Regarding underlying psychological mechanisms, the coping socialization process theory model explores how youth coping processes mediate the relationship between parental coping socialization and adjustment, while the parenting  $\times$  stress amplification and differential effects models examine boundary conditions of this process. This study integrates these two models and proposes a dynamic process theory model of coping socialization based on a dynamic systems perspective. This integrated model refines the mechanisms linking parental coping socialization to youth adjustment by incorporating both long-term developmental and real-time situational timelines across two levels: the individual child/adolescent and the parent-child dyad. Future research should further investigate the universality of parental coping socialization effects, deepen exploration of the mechanisms through which it influences youth adjustment, and provide scientific evidence for its application and promotion in family education and clinical intervention contexts.

**Keywords:** parental coping socialization, child and adolescent adjustment, dynamic process model of coping socialization, long-term developmental timeline, real-time situational timeline

Acquiring effective stress coping skills represents a critical developmental task for children and adolescents. In recent years, numerous cases of youth engaging in extreme behaviors due to inability to cope with stressful events have sparked widespread societal concern. Helping children and adolescents develop adaptive coping strategy systems and promoting their effective stress management and long-term adaptive development has become a primary challenge for researchers

and educational practitioners. As a form of family socialization, parental coping socialization offers an important entry point for addressing this issue.

Parental coping socialization involves parents providing various coping resources (such as emotional, cognitive, and informational support) to help youth successfully manage stress. While extensive research has examined the relationship between parental emotion socialization (discussing emotions with children, parental emotional expression, responses to children's negative emotions) and youth development (Eisenberg, 2020), the potentially crucial role of parental coping socialization has been largely overlooked. For children and adolescents—who are still developing both knowledge and skills—parents should not only help them manage emotions but also transmit positive, adaptive coping advice to help them successfully handle stress, build their own coping skill repertoires, and thereby promote long-term adaptive development. In China, parental coping socialization represents a neglected yet ubiquitous domain of family research that plays out in virtually every household. For instance, when children face exam pressure, some parents encourage them to study diligently and identify knowledge gaps (engagement coping socialization), while others advise them not to think about the issue (disengagement coping socialization)—both constituting forms of parental coping socialization. Western research indicates that different types of coping socialization produce distinct effects on youth adjustment, but whether these findings hold true in Chinese families, given differing social values and cultural backgrounds, remains an open question.

Existing empirical research has examined the relationship between parental coping socialization and youth adjustment from long-term developmental timelines, real-time situational contexts, and integrated approaches, encompassing psychological adjustment indicators such as internalizing and externalizing problems, emotion regulation, and coping styles, as well as school adjustment outcomes like academic achievement. This paper reviews the direct effects and underlying mechanisms of parental coping socialization on youth adjustment across different temporal frameworks, and proposes an integrated theoretical framework to guide future research and inform the development of family education programs and clinical interventions aimed at promoting effective youth coping and long-term adaptive development.

## 1. Coping Socialization

Coping socialization was first introduced by Kliewer et al. (1994) to describe how parents provide coping advice to youth within the family context to help them manage stress. Abaied et al. (2010a) later conceptualized parental coping socialization as the process through which parents provide cognitive, emotional, and behavioral strategies for stress management. Parents primarily employ two methods of coping socialization (Kliewer et al., 1996, 2006). First, explicit coping socialization involves direct coaching and guidance, such as advising youth to avoid thinking about stressors, engage in calming activities, or address problems directly. Second, implicit coping socialization occurs when youth model

their own coping behaviors after observing parental responses to stress. Research indicates these two forms of coping socialization are significantly positively correlated (Abaied & Rudolph, 2010a). From an intervention perspective, this study focuses primarily on explicit parental coping socialization behaviors. While parental coping socialization constitutes one aspect of broader parenting practices, its predictive effects on youth adjustment are independent of other parenting dimensions such as parental involvement and autonomy support (Abaied & Stanger, 2017), underscoring its unique importance for youth development.

Parental coping socialization behaviors can be categorized as engagement coping socialization and disengagement coping socialization (Abaied & Rudolph, 2010a, 2010b, 2011). Engagement coping socialization involves parents guiding youth to directly confront and manage stressors or related cognitive and emotional responses, such as problem-solving, seeking support, or expressing negative emotions to parents or friends. Engagement coping socialization can be further distinguished as primary control or secondary control engagement coping socialization (Abaied & Stanger, 2017; Monti et al., 2014). Primary control engagement coping socialization involves parents encouraging youth to modify stressors or manage resulting negative emotions through problem-solving or emotional expression. Secondary control engagement coping socialization involves parents encouraging youth to adapt to stressful circumstances through strategies like cognitive reappraisal. Disengagement coping socialization involves parents guiding youth to distance themselves from stressors or related cognitive and emotional responses through avoidance or denial. Generally, engagement and disengagement coping socialization show moderate positive correlations and interactive effects (Abaied & Rudolph, 2010a, 2011). However, in predicting youth developmental outcomes, engagement coping socialization demonstrates more positive effects, while disengagement coping socialization primarily shows detrimental effects.

## 2. The Relationship Between Parental Coping Socialization and Youth Adjustment

Growing evidence indicates that parental coping socialization influences not only the development of effective youth coping strategies but also a range of developmental outcomes, likely because this process transmits support, investment, and care (Abaied & Rudolph, 2010a, 2010b, 2011). Current research on coping socialization follows three orientations: long-term developmental timeline studies, real-time situational context studies, and integrated studies combining both timelines. The following sections elaborate on the relationship between coping socialization and youth adjustment from these three perspectives.

## 2.1 Long-Term Developmental Timeline: Parental Coping Socialization and Youth Adjustment

Long-term developmental timeline studies typically employ traditional questionnaire methods or vignette paradigms (Abaied & Rudolph, 2010a; Abaied et al., 2014; Tu & Ravindran, 2020; Tu et al., 2017, 2021) to examine the enduring effects of parental coping socialization behaviors over time. This research consistently finds that parental engagement coping socialization correlates with positive developmental outcomes, including fewer internalizing and externalizing problems (Abaied & Rudolph, 2010a; Anderson et al., 2021), better social skills (Abaied & Rudolph, 2011; Abaied & Stanger, 2017), more adaptive coping strategies (Abaied & Rudolph, 2011; Kliewer et al., 2006; Tu et al., 2020), enhanced emotion regulation abilities (Peisch et al., 2020), and greater peer acceptance (Tu et al., 2021). Beyond psychological adjustment indicators, parental engagement coping socialization also significantly predicts adolescents' academic adjustment (Tu et al., 2020).

Parental disengagement coping socialization typically exacerbates youth psychopathological symptoms, including depressive mood, externalizing problems (Abaied & Rudolph, 2010a), emotion dysregulation (Peisch et al., 2020), maladaptive coping (Tu et al., 2020), and peer relationship difficulties (Abaied & Stanger, 2017). However, it is important to note that disengagement coping socialization may also facilitate adjustment depending on whether stressors are controllable and changeable. For example, under uncontrollable and unchangeable stressors such as chronic poverty, community violence, parental conflict, or abuse, parental disengagement coping socialization may actually demonstrate beneficial effects.

## 2.2 Real-Time Situational Timeline: Parental Coping Socialization and Youth Adjustment

Real-time situational timeline studies primarily employ naturalistic parent-child interaction paradigms to objectively capture parental coping socialization behaviors during ongoing interactions, examining how these real-time processes relate to youth adjustment (Stanger, 2019). Drawing on dynamic systems theory, Stanger (2019) used real-time interaction methods to investigate the moment-to-moment synchrony between parental coping socialization and child behavioral states. Stanger coded parental coping socialization into five mutually exclusive categories: primary control, secondary control (both engagement coping socialization), disengagement coping socialization, silence, and other behaviors. Child real-time states were coded into six categories: 3 (verbal, silent, behavioral)  $\times$  2 (engagement, disengagement). The study mapped coupling states and transition trajectories between parental and child behaviors, examining both state combinations at specific moments (e.g., at a given moment, parent uses primary control coping socialization while child engages silently) and transitions between these combinations over time (e.g., shifting from parent primary control with child silent engagement to parent silence with child silent engagement).

This research demonstrates the dynamic interactive nature of parental coping socialization and youth coping processes in real time and establishes the feasibility of examining relationships between parental coping socialization and child behavioral responses during live interactions.

### **2.3 Cross-Timeline Integration: Parental Coping Socialization and Youth Adjustment**

The third research orientation integrates long-term developmental and real-time timelines to examine how moment-to-moment parent-child coping socialization interactions influence later youth adjustment (Kliewer et al., 2006; Stanger et al., 2018). For example, Stanger et al. (2018) used a mirror-tracing task and found that parental engagement coping socialization during the task predicted fewer internalizing problems six months later. Butterfield et al. (2019) employed a speech task to assess parent-child dyadic interactions and found that parental coping socialization during real-time interactions predicted not only psychological and behavioral adjustment indicators but also youth neural activity in response to threat. Greater parental engagement coping socialization was associated with lower activation in the inferior anterior insula and cingulate cortex among healthy adolescents but higher activation among anxious adolescents. Furthermore, parental engagement coping socialization indirectly predicted fewer disengaged coping strategies in anxious adolescents through increased brain activation. This suggests that parents can help anxious youth process threat information more effectively and cope with daily stressors by providing more engagement coping suggestions. However, Watson et al. (2022) found no significant association between maternal coping socialization during real-time interactions and child internalizing symptoms using a topic discussion task; this relationship was moderated by maternal depressive symptoms and peer stress levels. These divergent findings suggest that researchers should employ multiple experimental paradigms to assess parental coping socialization while considering additional influencing factors to thoroughly characterize its processes and effects.

Unfortunately, these findings derive exclusively from Western research, and their applicability to Chinese families remains unknown. Chinese culture values principles such as “endure a moment of conflict for future peace” and “go with the flow, govern by non-action,” leading parents to frequently employ disengagement coping socialization strategies like “distract yourself” or “take it easy.” Under such prevalent and frequent conditions, does parental disengagement coping socialization still negatively predict youth development, and should it be abandoned? These questions warrant investigation. Moreover, do conclusions from different research orientations demonstrate universality? Do the mechanisms and effects of parental coping socialization show consistency or specificity across different timelines? These issues require deeper analysis.

### 3. Mechanisms Through Which Parental Coping Socialization Influences Youth Adjustment

How does parental coping socialization affect youth adjustment? Despite growing empirical research, theoretical exploration of parental coping socialization remains limited. Existing literature reveals two distinct theoretical perspectives: Kliewer et al.'s (1996, 2006) theoretical model of coping socialization processes in family contexts, and Abaied et al.'s (2010a) parenting  $\times$  stress amplification and differential effects models.

#### 3.1 Family Context Coping Socialization Process Model: Mediating Role of Youth Coping Processes

Kliewer et al. (2006) proposed a theoretical model of coping socialization processes in family contexts to address how parents help children cope with community violence. The model comprises three components: coping socialization coaching, modeling, and context. Coping socialization coaching resembles Abaied et al.'s (2010a, 2010b, 2011) concepts of engagement and disengagement coping socialization, representing explicit parental methods for influencing youth coping skills and strategy selection in specific situations. Parental coping advice proves particularly effective when youth's own strategies are depleted or ineffective, or when facing novel stressors. Parents can provide appropriate support and suggest new coping strategies to guide children through current pressures and difficulties.

Modeling refers to youth gradually internalizing coping strategies by observing parental responses to stress. This component draws heavily from Bandura's observational learning theory and has received substantial empirical support. For instance, research demonstrates that parents' own coping styles significantly predict youth coping styles (Meyer et al., 2014). Similarly, Kliewer et al. (2006) surveyed 101 African American adolescents and their mothers regarding responses to community violence, examining modeling as an indicator of maternal coping socialization. Results showed that when mothers used aggressive coping strategies for community violence, their adolescent sons were more likely to employ aggressive strategies as well.

The third component, context, primarily refers to family climate and parent-child relationship quality. Kliewer et al. (2006) included this as a key component because transmitting coping advice and teaching strategies requires substantial verbal and nonverbal communication and interaction, making relationship quality and family environment crucial in the coping socialization process.

According to Kliewer et al. (2006), these three components do not operate independently but rather interact through mediation and moderation effects. For example, coping socialization coaching and modeling may show significant positive correlations, as parents who transmit specific coping strategy suggestions likely use those strategies themselves. Additionally, cohesive families with low conflict and effective communication may strengthen parental coping socializa-

tion coaching, provide adequate support, reduce children' s stress levels, and promote more adaptive strategy selection.

All three components are influenced by background factors including youth characteristics (e.g., gender, age), caregiver characteristics (e.g., personality, values), and family environmental factors (e.g., family structure, socioeconomic status). These background factors affect parental coping socialization coaching, youth modeling of caregiver coping behaviors, and family environment, which in turn influence youth coping processes and adjustment.

Following the theoretical model' s proposal, Kliewer et al. (2006) conducted empirical tests using block-building and peer conflict discussion tasks, coding parental coping socialization and child coping behaviors from task recordings. Results showed that parental positive (problem-focused) coping socialization during real-time interactions positively predicted child problem-focused coping behaviors, which subsequently promoted academic achievement and self-esteem while reducing internalizing problems and post-traumatic stress symptoms six months later. Parental active coping socialization predicted child active coping behaviors, which in turn predicted improved self-esteem and social skills six months later. These findings provide preliminary support for the coping socialization process model, confirming that youth coping processes may mediate the relationship between parental coping socialization and child adjustment.

However, as research has progressed, the coping socialization process model has shown limitations in explaining certain phenomena. First, the effects of parental coping socialization are influenced by numerous factors, including child characteristics (e.g., gender; Peisch et al., 2020; Tu et al., 2021), physiological reactivity (Stanger et al., 2018), and psychopathological symptoms (Butterfield et al., 2019); parental factors such as father/mother roles (Tu et al., 2020) and parental psychopathology (Monti et al., 2014; Watson et al., 2022); and stressor characteristics including type and severity (Abaied & Rudolph, 2010a; Watson et al., 2022). The coping socialization process model only addresses how background factors influence coping socialization itself, failing to account for how they moderate its effects, thus cannot explain why similar parental coping socialization behaviors produce different effects across contexts and individuals.

Second, the conceptualization of youth coping processes remains unclear. In Kliewer et al. (2006) and subsequent empirical studies, researchers have often equated coping behaviors with coping processes (Abaied & Rudolph, 2011; Tu et al., 2020). However, coping processes actually encompass broader components, including emotion regulation (Eisenberg et al., 2009). Empirical research has demonstrated the importance of parental coping socialization in predicting youth emotion regulation (Peisch et al., 2020). Recently, Szkody et al. (2020) showed that positive parental coping socialization predicted fewer regulation difficulties and reduced negative emotions following social exclusion. Thus, clarifying the 内涵 of "youth coping processes" is essential for elucidating mechanisms and guiding future research.

### 3.2 Parenting $\times$ Stress Amplification and Differential Effects Models: Moderating Role of Stress

Addressing limitations of the coping socialization process model, Abaied and colleagues (2010a) proposed two models of parental coping socialization effects: the parenting  $\times$  stress amplification effects model and the parenting  $\times$  stress differential effect model. These models posit interactive effects between parental coping socialization behaviors and the type and severity of stressors experienced by youth in influencing internalizing and externalizing problems. The amplification model suggests that parental coping socialization effects are negligible under low stress, as youth possess adequate resources to manage challenges, but become amplified under high stress. The differential effect model proposes that parental coping socialization has different but equally important effects on youth adjustment under high versus low stress conditions. For example, for youth experiencing high stress, parental coping socialization may predict increased psychopathological symptoms, whereas for those experiencing low stress, it may predict reduced symptoms.

These core propositions have received preliminary empirical support. Abaied and Rudolph (2010a) found that the amplification model applied only to interpersonal stress: under low interpersonal stress, parental coping socialization effects were negligible, but under high interpersonal stress, parental engagement coping socialization significantly predicted more externalizing problems in boys and fewer in girls. The differential effect model was validated in non-interpersonal stress contexts (Abaied & Rudolph, 2010a): for youth exposed to high non-interpersonal stress, parental disengagement coping socialization predicted increased externalizing problems one year later, whereas for those exposed to low non-interpersonal stress, the same parental behaviors predicted fewer externalizing problems one year later.

These findings demonstrate that different types of parental coping socialization exert varying effects depending on stressor characteristics (type and severity). Although the parenting  $\times$  stress amplification/differential effects models identify boundary conditions for parental coping socialization effects, they only address moderating factors related to stressors, providing an incomplete picture and failing to address underlying mechanisms.

### 3.3 Integration and Expansion of Coping Socialization Theory

**3.3.1 Theoretical Integration** The coping socialization process model and the parenting  $\times$  stress amplification/differential effects models explain how parental coping socialization influences youth adjustment from complementary perspectives—mechanisms and boundary conditions, respectively. Based on existing empirical research, these two theories can be integrated and refined (see Figure 1 [Figure 1: see original paper]). Regarding mechanisms, the coping socialization process model and related empirical studies propose that youth coping processes may serve as an important mediating mechanism linking parental

coping socialization to long-term adjustment, encompassing both coping strategies (Kliewer et al., 2006) and regulation strategies (Szkody et al., 2020).

Regarding boundary conditions, integrating the amplification/differential effects models with relevant research suggests that parental coping socialization behaviors, youth coping processes, long-term adjustment, and the socialization process itself may be influenced by parental factors (Tu et al., 2020), youth factors (Butterfield et al., 2019; Tu et al., 2021), and stressor characteristics (Watson et al., 2022).

**3.3.2 Theoretical Expansion** Current research on parental coping socialization has become a hot topic in family socialization, with researchers continuously shifting perspectives and updating methodologies to examine relationships between parental coping socialization and youth adjustment at behavioral and neurophysiological levels. However, existing theoretical models have two primary limitations.

First, current models primarily explain parental coping socialization mechanisms from the individual youth perspective, which cannot fully capture the process through which parental coping socialization affects youth adjustment. In reality, children's social adjustment outcomes are determined by parent-child dyadic interaction processes (Granic, 2005), which accumulate and transform over time to produce qualitative changes in child social adjustment (Lougheed & Keskin, 2021). From this perspective, parent-child dyadic interactions make unique contributions to socialization processes (Wilson & Durbin, 2013), and the dyadic interaction itself may represent a distinct mechanism through which coping socialization operates. Therefore, this study supplements and expands existing models by incorporating a parent-child dyadic dynamic interaction perspective within real-time situational contexts, aligning with current empirical trends and providing a new research direction for clarifying how parental coping socialization behaviors influence youth adjustment.

Researchers have speculated that parent-child dynamic interaction processes may represent one mechanism through which parents influence youth development (Lunkenheimer & Dishion, 2009), a perspective grounded in dynamic systems theory (Dynamic Systems Theory; Kunnen, 2018; Smith & Thelen, 2003). As a guiding framework for coping research, dynamic systems theory posits that development emerges from continuous interactions across all system levels (Bülow et al., 2022). Specifically, behavioral inputs from parents and youth self-organize into a higher-order dyadic system distinct from either individual (Granic & Patterson, 2006). When applied to parental coping socialization, positive synchrony in parent-child coping behaviors can function as a higher-order dyadic dynamic process that promotes children's coping skill acquisition and long-term adaptive development.

From a dynamic systems perspective, the parental socialization process is continuously dynamic and context-specific. Children and adolescents acquire coping

skills through each real-time parent-child interaction, gradually forming stable coping patterns that influence long-term adaptive development. This suggests researchers should examine real-time parent-child interactions in specific contexts and study child development within these dynamic processes (Bülow et al., 2022).

With the rise of dynamic systems theory in developmental psychology, increasing numbers of researchers have examined parent-child dyadic dynamic processes and interaction patterns in real time. Researchers have proposed “parent-child dyadic synchrony” as an effective indicator of parent-child dynamic interactions (Morris et al., 2018; Perlman et al., 2022) that mediates the effects of parental socialization on youth adjustment. For example, the Parent-Child Emotion Regulation Dynamics Model (Morris et al., 2018; Ratliff et al., 2022) focuses on how real-time parent-child dynamic interactions shape children’s emotion regulation abilities, emphasizing mediating mechanisms involving behavioral, physiological, and neural synchrony. This model has received substantial empirical support (Lobo & Lunkenheimer, 2020; Lunkenheimer et al., 2020; Reindl et al., 2018; Zhao et al., 2021).

Similar to emotion regulation, coping also exhibits dynamic and dyadic interactive properties (Eisenberg et al., 2009; Skinner & Zimmer-Gembeck, 2007). Parents and youth express and transmit coping methods during each daily real-time interaction. Through these continuous experiences, youth learn coping strategies, gradually forming and consolidating their own coping patterns, which ultimately exert long-term effects on their adaptive development (Stanger, 2019). During real-time parent-child interactions, dyads exhibit synchrony at both behavioral and neurophysiological levels, and this multimodal synchrony supports and facilitates parent-child coping dynamics. Examining the role of parent-child dyadic synchrony in parental coping socialization may hold important and unique significance. Because parental coping socialization involves helping youth manage stress and difficulties—often challenging situations that elicit goal-directed parent-child interactions—researchers may observe both positive and negative synchrony, enabling investigation of whether and how different parental coping socialization behaviors influence youth adjustment through parent-child dyadic synchrony (including both positive and negative forms).

The second limitation concerns previous models’ failure to distinguish between real-time and long-term developmental timelines, a distinction necessary for understanding parental coping socialization processes. The processes linking parental coping socialization to youth adjustment show both connections and differences across these two timelines. Regarding connections, real-time coping socialization processes feed back into long-term developmental trajectories. From a dynamic systems perspective, relationships (e.g., parent-child relationships) consist of interactions between individuals across time (e.g., moments, days, years; Loughheed, 2019; Loughheed & Hollenstein, 2018; Loughheed & Keskin, 2021), with coping processes co-constructed within ongoing parent-child relationships. Dyadic relationship states change over time, and through repeated

interactions within the relationship, stable parent-child coping interaction patterns emerge that influence future dyadic dynamics and youth adaptive development. Preliminary empirical evidence indirectly supports this view, showing that real-time parental coping socialization in specific contexts affects not only youth's immediate coping processes and emotional/behavioral states (Stanger, 2019) but also their later adjustment (Butterfield et al., 2019; Stanger et al., 2018). Conversely, long-term developmental timeline parental coping socialization can influence real-time dyadic interactions, which subsequently affect youth adjustment. These connections suggest that parental coping socialization processes may function similarly across both timelines.

Regarding differences, the relationship between parental coping socialization and youth coping processes, as well as patterns of parent-child dyadic dynamic interactions, may change with youth age. Mapped onto the long-term developmental timeline, this suggests that the effects and patterns of parental coping socialization may differ across developmental stages. This temporal variation cannot be captured within the real-time situational timeline alone, necessitating a distinction between the two timelines to promote deeper understanding of parental coping socialization processes and how their effects and patterns may evolve over time.

#### 4. Construction of the Dynamic Process Theory Model of Coping Socialization

Based on the above theoretical integration and expansion, combined with relevant empirical research on parental coping socialization and youth adjustment, this paper proposes an integrated model: the Dynamic Process Theory Model of Coping Socialization (see Figure 2 [Figure 2: see original paper]). This model integrates the existing coping socialization process model with dynamic systems theory, synthesizing long-term developmental timelines, real-time situational timelines, and their integration to propose distinct process mechanisms and potential boundary conditions through which parental coping socialization influences youth adjustment. Building on previous models, this framework further emphasizes parent-child dyadic dynamic interactions as a key mechanism explaining how parental coping socialization affects youth adjustment. Even when considering youth coping processes at the individual level, parent-child dyadic dynamic interactions make unique contributions to the coping socialization process (Lunkenheimer et al., 2021; Moore et al., 2013).

At the theoretical level, this model guides researchers to examine coping socialization processes across multiple time scales (long-term developmental and real-time situational timelines) and multiple levels (individual youth and parent-child dyad). At the practical level, it helps practitioners capture early patterns of youth coping and predict adjustment risks by integrating parents' daily coping socialization tendencies with real-time dyadic interaction dynamics, enabling timely prevention and intervention.

The model proposes that across both long-term developmental and real-time situational timelines, following the coping socialization process model (Kliewer et al., 2006), parents' daily and momentary coping socialization behaviors can indirectly predict youth adjustment through youth's daily and momentary coping processes (including coping and regulation strategies). Furthermore, within the real-time situational timeline, parental coping socialization not only directly influences youth's immediate coping processes but also indirectly predicts youth real-time performance and long-term developmental outcomes through real-time parent-child behavioral and neurophysiological synchrony. Additionally, real-time parent-child interactions feed back into the long-term developmental timeline, influencing youth's long-term adaptive development.

Notably, the effects of parental coping socialization may also change with youth age. The model includes the following components: (1) **Antecedents/Moderators**: As discussed in the theoretical integration, the model considers antecedent and moderating factors from parental, youth, and stressor characteristic domains. These factors can function as antecedent variables influencing parental coping socialization, youth coping processes, and long-term adjustment, or as moderators affecting the strength and direction of relationships between parental coping socialization and youth coping processes/adjustment. (2) **Potential Mechanisms**: The model extends previous research by examining both youth coping processes and, from a dynamic real-time interaction perspective, the mediating role of parent-child dyadic real-time coping interaction states. Building on the coping socialization process model and related empirical research, the model proposes youth coping processes (including coping and regulation strategies) as an important mediating mechanism across both timelines. Grounded in dynamic systems theory, the model further hypothesizes that within real-time interactions, parental coping socialization influences youth real-time performance not only directly but also indirectly through parent-child behavioral, physiological, and neural synchrony, with cascading effects on long-term outcomes. (3) **Relationships Across Timelines**: The long-term developmental and real-time timelines are both interconnected and distinct in three key ways. First, parental coping socialization behaviors across the two timelines are interrelated, and youth coping processes show cross-timeline influences. Second, long-term developmental timeline parental coping socialization can indirectly predict youth daily and real-time coping processes through dyadic synchrony in real-time interactions (Lobo & Lunkenheimer, 2020; Lunkenheimer et al., 2020, 2021). The real-time timeline represents the concrete manifestation of the long-term developmental timeline, while the latter constitutes the cumulative result of the former (Lougheed, 2019; Lougheed & Hollenstein, 2018; Lougheed & Keskin, 2021), with both jointly influencing long-term adaptive development. Third, the effects and patterns of parental coping socialization in the real-time timeline may change over developmental time. The model hypothesizes that during early childhood, children primarily obtain coping resources and skills from parents, making direct effects of parental coping socialization on adjustment

more salient. During middle childhood, cognitive development enables more diverse coping strategies, and while children become increasingly capable of implementing coping strategies independently, they still rely partially on parental guidance (Stanger, 2019). Therefore, this stage may more clearly demonstrate dynamic processes and parent-child dyadic interactions. During adolescence, youth self-development matures, they possess greater capacity to manage some stressors independently, and they increasingly seek advice from other important figures (e.g., teachers, peers), leading to diminished parental coping socialization effects (Pearl et al., 2014).

## 5. Future Research Directions

Current research on coping socialization remains incomplete. Future studies can advance the field in several directions.

### 5.1 Examining the Universality of Parental Coping Socialization Effects on Youth Adjustment

Existing research consistently demonstrates that parental engagement coping socialization promotes youth adjustment while disengagement coping socialization has detrimental effects (Anderson et al., 2021; Tu et al., 2020). However, due to limitations in study populations and methods, the universality and stability of these conclusions require further investigation. Future research should examine parental coping socialization and youth adjustment within Chinese cultural contexts, considering how social and cultural environmental factors influence these processes. For example, while parental disengagement coping socialization is considered maladaptive in Western societies and associated with negative outcomes (Peisch et al., 2020), moderate disengagement coping socialization is culturally acceptable in traditional Chinese culture, as reflected in common sayings like “let it go,” “take it easy,” and “go with the flow.” Whether Western findings regarding engagement and disengagement coping socialization apply to Chinese families—particularly the role of culturally distinctive disengagement coping socialization—remains an open question. Future research should establish culturally grounded conceptualizations and structures of parental coping socialization in China and clarify its relationship with youth adjustment within Chinese cultural contexts.

### 5.2 Validating and Refining the Dynamic Process Theory Model of Coping Socialization

Investigating the relationship between parental coping socialization and youth adjustment is crucial for enhancing youth coping skills, promoting long-term adaptive development, and understanding the value of coping socialization for family education and clinical intervention. However, no comprehensive theoretical model currently exists. Existing theories have different starting points and foci with limited interconnections. The coping socialization process model iden-

tifies mechanisms but focuses narrowly on youth coping processes, remaining macroscopic and general. The parenting  $\times$  stress amplification and differential effects models emphasize stressor influences but do not specify coping socialization processes. Both models require validation and expansion through indigenous research. How parental coping socialization effects manifest and operate across different timelines remains unresolved.

The Dynamic Process Theory Model of Coping Socialization proposed in this study emphasizes examining parental coping socialization and youth adjustment across multiple timelines (long-term developmental and real-time situational) and multiple levels (individual youth and parent-child dyad). First, across both timelines, following the coping socialization process model (Kliewer et al., 2006), the model proposes youth coping processes as a key mechanism mediating parental coping socialization effects on adjustment, influenced by parental, youth, and stressor factors. Second, within the real-time situational timeline, grounded in dynamic systems theory, the model proposes that real-time parental coping socialization influences youth real-time coping processes through parent-child dyadic synchrony. This proposition requires future theoretical and empirical examination. Third, regarding relationships across timelines, dynamic systems theory suggests that parental coping socialization processes are both interrelated and distinct across the two timelines—a proposition that also requires rigorous testing.

### 5.3 Promoting Applied Translation of Research Findings

In recent years, numerous cases of youth engaging in extreme behaviors due to inability to cope with stress have raised widespread societal concern, making the promotion of effective coping and long-term adaptive development a primary challenge. However, no intervention studies targeting coping socialization currently exist. Researchers must translate parental coping socialization research findings into practical applications to promote youth mental health through optimized family education.

First, given the importance of parental coping socialization for youth coping and adjustment, future intervention research should target both healthy and special populations. For healthy populations, interventions can teach parental coping socialization methods to harness the promotive effects of engagement coping socialization (Abaied & Rudolph, 2011; Abaied & Stanger, 2017). Parents should also be encouraged to understand youth personality traits and mental health status (Butterfield et al., 2019; Stanger et al., 2018) and remain sensitive to stressor types and severity (Abaied & Rudolph, 2010a; Watson et al., 2022) to flexibly select appropriate coping socialization approaches. For special populations, interventions could target youth with impaired coping skills, such as those with anxiety (Butterfield et al., 2019) or depression, combining brain modulation with coping socialization interventions to examine the clinical value of behavior-brain interventions in reducing symptoms, decreasing negative emotions, and enhancing coping skills.

Second, the Dynamic Process Theory Model of Coping Socialization emphasizes the real-time dynamic interactive nature of coping socialization, suggesting that caregivers and mental health professionals should attend to real-time parent-child interactions and establish adaptive coping patterns in daily interactions (Morris et al., 2018; Ratliff et al., 2022). Parent-child synchrony may serve as an important mechanism linking parental coping socialization to youth coping processes. Therefore, future research could innovatively employ non-invasive neurointervention techniques (e.g., transcranial magnetic stimulation, biofeedback training) targeting brain regions involved in parent-child synchrony identified in empirical research, examining whether changes in core brain region activation and parent-child synchrony causally influence coping socialization processes and outcomes.

In summary, to promote effective youth coping and long-term adaptive development, establishing a family-based, two-generation participatory coping socialization education mechanism is essential.

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