

Summary

In the digital age, understanding why and how maladaptive online engagement emerges and develops in adolescence has become an important scientific and societal priority. This dissertation examined adolescent maladaptive online engagement (MOE) through the lens of adverse childhood experiences (ACEs). Across the dissertation, MOE was conceptualized as comprising both addiction-related forms (problematic social media use and problematic online gaming) and aggression-related forms (cyberbullying perpetration and online trolling). Although previous research has positively linked childhood adversity to a range of MOE, important gaps remain regarding the overall strength of these associations, their temporal ordering as well as their robustness across multiple informants, the moderating conditions under which ACE-related vulnerability may be amplified or attenuated, and the mediating mechanisms through which ACEs may unfold across different forms of MOE. To address these gaps, this dissertation started with a three-level meta-analysis, followed by three longitudinal empirical studies, each based on three waves of data.

Chapter 2 established the empirical baseline by conducting a three-level meta-analysis of associations between ACEs and digital addiction among children and adolescents in mainland China. The meta-analysis showed significant positive associations between ACEs and five subtypes of digital addiction examined (i.e., internet addiction, gaming addiction, mobile phone addiction, social media addiction, and short-form video addiction), indicating that childhood adversity is consistently linked to elevated risks of addiction-related digital engagement. However, moderator analyses showed that most study-, sample-/participants-, and measurement-level characteristics were not significant. Only the participant characteristic ‘left-behind status’ emerged as a significant moderator, suggesting that children growing up with prolonged parental absence may constitute a particularly vulnerable subgroup in the context of ACEs and problematic internet use. Overall, Chapter 2 demonstrated that the literature in mainland China provides a robust basis for treating ACEs as a meaningful risk domain in adolescent digital well-being research, while also highlighting the need for longitudinal and multi-informant studies.

Chapter 3 examined whether earlier ACE exposure predicted subsequent problematic social media use and, in particular, whether this association followed a linear or nonlinear functional form. In doing so, the chapter moved beyond the question of whether adversity matters

and instead addressed how cumulative ACE exposure is patterned in relation to later MOE. The findings showed that earlier ACE exposure prospectively predicted adolescent-reported problematic social media use, but not parent-reported problematic social media use. In addition, regardless of informant, the results supported a linear pattern, indicating that increases in cumulative ACE exposure were associated with proportionate increases in subsequent problematic social media use. This suggests that adversity-related risk may accumulate progressively rather than emerge only at extreme levels of exposure.

Chapter 4 extended the investigation of *addiction-related MOE* by focusing on problematic online gaming and testing parental control as a potential moderator in the association. Parental control was conceptualized as excessive overinvolvement in children's activities and attempts to dominate their choices. The chapter drew on the assumption that highly controlling parenting may intensify ACE-related vulnerability by constraining adolescents' autonomy and adaptive coping while failing to address adversity-related distress. Consistent with Chapter 3, the findings showed that earlier ACE exposure prospectively predicted adolescent-reported, but not parent-reported, problematic online gaming, thereby offering more specific support for compensatory accounts of addiction-related MOE. However, parental control did not significantly moderate this association. This null finding suggests that parenting should not be assumed to function as a uniformly strong longitudinal contextual amplifier or attenuator of adversity-related digital vulnerability. At the same time, the finding that ACEs prospectively predicted adolescent-reported problematic online gaming indicates that adolescents' own accounts may be particularly sensitive to ACE-related vulnerability, insofar as addiction-related MOE associated with ACE exposure may initially emerge at the level of internal coping processes before becoming externally observable. Practically, this suggests that efforts to address addiction-related MOE should attend more closely to adolescents' subjective experiences, rather than relying primarily on caregiver detection of observable problems.

Chapter 5 shifted attention to *aggression-related MOE* by examining cyberbullying perpetration and online trolling as two related but distinguishable forms of online aggression. This chapter tested a serial mediation model in which parental warmth and interpersonal alienation were specified as candidate mechanisms linking ACE exposure to later online aggression. The model was grounded in the Risky Families framework, according to which chronic family stress and low

emotional warmth may shape socioemotional development in ways that increase vulnerability to maladaptive outcomes. Specifically, low parental warmth was expected to undermine adolescents' sense of relational security and belonging, thereby fostering interpersonal alienation, which in turn was assumed to increase susceptibility to harmful online conduct. The hypothesized longitudinal pathways were not supported. Earlier ACE exposure did not show the expected prospective effects on cyberbullying perpetration or online trolling through the proposed mediating sequence. These findings suggest that adversity-related pathways to aggression-related MOE may differ from those observed for addiction-related MOE. They also indicate that frameworks developed primarily to explain offline aggression and family risk processes may not fully capture the temporal dynamics of online aggression, which may be more sensitive to platform affordances and immediate situational triggers.

In sum, this dissertation advances understanding of how ACEs shape adolescent MOE by showing that childhood adversity constitutes a meaningful developmental risk factor, although its influence is not expressed uniformly across different forms of MOE. More specifically, the results indicate that addiction-related and aggression-related forms of MOE should not be treated as interchangeable, as they appear to follow different developmental pathways and temporal patterns. The dissertation also underscores the importance of longitudinal evidence for distinguishing prospective developmental risk from cross-sectional co-occurrence, as well as the value of a multiple-informant perspective, particularly for addiction-related MOE, where adolescent and parent reports may reflect different stages and manifestations of maladaptive engagement. Overall, this dissertation supports a developmental and adversity-informed understanding of MOE and suggests that efforts to promote adolescent digital well-being require attention not only to online environments themselves, but also to the offline adversities and vulnerabilities that shape how adolescents engage with them.