The Future of Psychotherapy for Youth

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ABSTRACT

Despite countless modifications to adapt adult psychotherapy to treat pediatric populations, recent meta-analytic findings have found only modest effect sizes for the treatment of pediatric depression. Additionally, recent neuroscientific evidence suggests that most mental health disorders share greater comorbidity with other distinct mental health disorders and also have greater within-disorder heterogeneity than previously thought. This review aims to integrate recent findings of analytic reviews with developments in neuroscience to encourage the field to think differently about how to best improve pediatric psychotherapy and our understanding of the developing brain. This article examines why our approach to treating mood disorders in the pediatric population must change based on our current understanding of the neurocognitive and psychosocial etiologies of these disorders and to highlight the importance transdiagnostic perspectives. Perhaps, neuroscientific methods can one day become adjunctive to psychotherapy to help personalize approaches, and to help provide valuable insight into emerging psychopathology even before symptoms manifest.

Keywords: Psychotherapy, neuroscience, youth

1   Introduction

Although youth and adolescents constitute one third of the world's population, there is only 1 child psychiatrist for every 100 youth in high-income countries and only 1 for every 1000 in low-income countries (Skokauskas *et al.*, 2019). For major depressive disorder (MDD), between 1 and 2 out of every 50 children have MDD, and 1 out of every 100 children were found to meet criteria for dysthymia (Luyten & Fonagy, 2018). For adolescents, between 1 or 2 out of every 50 struggles with MDD, and between 1 and 4 adolescents met criteria for dysthymia for the DSM-V (Luyten & Fonagy, 2018, Olino *et al.*, 2018). This significant treatment disparity creates issues of access to even the most efficacious treatments available. Currently, for pediatric depression, cognitive behavioral therapy (CBT) remains to be the first-line treatment of choice, however, there are several meta-analytic findings of randomized control trials (RCTs) that have challenge this choice (Weisz *et al.*, 2006, Weisz *et al.*, 2017, Eckshtain *et al.*, 2020, Cuijpers *et al.*, 2020).

In pediatric populations, there have been a multitude of non-pharmacological interventions that have shown considerable promise with helping depression and mood disorders. More generally, CBT has been shown to be the most empirical intervention for youth, adolescent, and adult depression (Cuijpers *et al.*, 2020, Klimes-Dougan *et al.*, 2018, Steele & Roberts, 2020). In the recent decade, more nuanced forms of CBT have been established that have shown robust applications averaging medium effect sizes across many clinical disorders(Weisz *et al.*, 2017). Some of these include child-only CBT, CBT with parent involvement, CBT plus medication, and CBT-based education, modeling, and exposures (Steele & Roberts, 2020).

For youth with depression, CBT is generally more effective with adolescents, and generally more so than pharmacotherapy alone, but some research has found otherwise (Steele & Roberts 2020, Klimes-Dougan *et al.*,

2018). CBT has been found to be effective in junction with pharmacotherapy, such as selective-serotonin reuptake inhibitors (SSRIs) (Steele & Roberts, 2020), yet up to half of adolescents treated with SSRIs do not lead to a sufficient antidepressant response, likely because the exact neural predictors of pharmacological treatment response for adolescents with depression have not been identified being that depression is a neurobiologically-heterogenous disorder (Klimes-Dougan *et al.*, 2018, Finsaas *et al.*, 2018). Although there is some preliminary research that shows greater pretreatment anterior cingulate cortex (ACC) activation in response to negative emotions associated with a decline in depressive symptoms throughout selective serotonin reuptake inhibitor (SSRI) treatment (Klimes-Dougan *et al.*, 2018), there is a need for more replication to test the validity of this claim. Consequently, large-scale RCTs are needed to predict the moderates of psychopharmacological treatment to help ascertain the correct type and dosage of treatment for depressive heterogeneity and to better characterize the complex interactions between psychopharmacology and ongoing psychotherapy.

Despite decades of research trying to characterize how to improve psychotherapeutic outcomes for youth and adolescents, little has been done to help improve treatment precision or change the overall effectiveness of therapy. Unfortunately, most psychotherapies are derived from adult models of depression and work with similar assumptions about the brain on cognitive, affective, and neurobiological levels. In the following sections, this review article aims to discuss the main limitations posed in youth and adolescent psychotherapy, highlight key differences between pediatric and adult psychopathology, and how contemporary perspectives in neuroscience can help transform our understanding of emerging youth psychopathology.

2   Issues of Efficacy in Youth and Adolescent Psychotherapy

RCTs are considered the gold standard for determining the effectiveness of one treatment compared to another (Steele & Roberts, 2020). Meta-analyses of RCTs allow researchers to systematically collect available literature to form an aggregate of statistical effects to suggest an overall leading effect of a given treatment with greater confidence. A large collection of quality RCTs can then be used to identify, quantify, and classify presenting problems, maintaining factors, and derive meaningful solutions for future intervention development. Once these factors have been identified, diagnoses can be made based on relevant treatment targets and initial case conceptualization can begin. Following this, treatment selection and the monitoring of side effects can occur (Steele & Roberts, 2020).

In 2006, West and colleagues conducted a meta-analysis on data studying youth psychotherapies and found that the mean effects size for Hedges' g was 0.34 at post-treatment marks, and then dropped to 0.28 at follow up assessment (Weisz *et al.*, 2006). Weisz and colleagues (2017) have also assessed psychotherapy outcomes for youth depression since 1963 and found that the average Hedges' g was 0.29 and 0.22 at follow up. In both of these studies, the authors note that of the high-quality studies reviewed, there was still a high degree of chance for heavy publication bias, that is that the true effect size of psychotherapy is likely significantly less. For adolescents, CBT has been found to range between having an average effect size of 0.29 and 0.53 suggesting that perhaps adolescents have a slightly greater chance of benefiting from psychotherapy than youth (Steele & Roberts, 2020). Of note, effect sizes are generally smaller in studies using intent-to-treat models with clinical samples and active treatment comparison conditions. In summary, using high quality RCTs, CBT is only somewhat effective for the treatment of depression, yet it still remains the number one treatment choice because we still do not have a treatment that has shown greater efficacy.

Additionally, Eckshtain and colleagues (2020) found there have been no significant changes in effect size for the summary of meta-analysis published on adolescent and youth psychotherapy since the Weisz and colleagues 2006 study. The mean effect size of 0.36 in recent years translates merely to, at best, a 60% chance that a random youth would be better with treatment than receiving no treatment whatsoever. This chance

dramatically decreases when measuring outcomes, a year after the cessation of therapy. Only half of the RCTs in recent meta-analysis' (Eckshtain *et al.*, 2020). include follow up assessments, so our understanding of longitudinal outcomes for youth and adolescents' therapy is limited. Additionally, only a handful of studies have focused on examining how psychotherapy reduces the risk suicide (Glenn *et al.*, 2017), which is a concern because suicide is a common issue within depressed populations (Başgöze *et al.*, 2021, Jopling *et al.*, 2021)**.**

Furthermore, in one of the largest systematic reviews and meta-analyses ever performed on psychotherapy for depression across different age groups, Cuijpers and colleagues (2020) found that the mean effect size for depressive symptoms in children and adolescents was significantly lower than those for middle-aged adults, however, the effect size for young adults was significantly larger than those for middle aged adults. This meta-analysis showed a curvilinear association with age and effect size with the smallest effect size in childhood and elderly life. This inverse U-curve relationship demonstrates considerable evidence that age at both ends of the distribution should be a considerable guiding factor for how to modify and translate aspects of psychotherapy across development and different time points in one's life. Of note, for all age-group categories, there was a significant risk of publication bias suggesting that perhaps that the true effect size is actually lower across all age categories. It should also be mentioned that the overall study design quality of trials across all age groups was low and that only when the highest quality designs were done, there were no clear significant differences between age groups. (Cuijpers and colleagues, 2020).

In addition to the disheartening calculations of psychotherapeutic efficacy across time, future assessments on the effectiveness of psychotherapy should also be considered within the context of known drop-out rates which has been well documented for the treatment of depression and in the case of most evidence-based therapies (Steele & Roberts, 2020). In fact, some studies have shown that 16-72% of adolescents do not achieve optimal symptom relief (Steele & Roberts, 2020). For those who are lucky enough to finish treatment, up to half of depressed adolescents' relapse within 6 months to 2 years post-treatment (Steele & Roberts, 2020) which greatly affects efforts to measure intervention sustainability in RCTs (Bearman *et al.*, 2020).

Although CBT continues to be the gold standard treatment for youth and adolescent depression, the knowledge around which mechanistic processes are occurring while an adolescent approaches remission is largely understudied in the context of therapy. Many cognitive therapies posit that depression is maintained by problems within the behavioral and cognitive processes that unfold through stressful events (Steele & Roberts, 2020). In Beck's Cognitive Therapy specifically, stressful life events are hypothesized to trigger negative automatic thoughts, assumptions, and core beliefs that lead to the development, maintenance, and worsening of depression. In Lewinsohn's more behaviorally oriented therapy (Steele & Roberts, 2020), depression is similarly developed from a low level of response-contingent reinforcement behaviors where stressful events lead to a cascade of ineffective behaviors in the absence of available reinforcers and skills for eliciting helpful behaviors. In short, negative thoughts are assumed to bring about depressed mood, by both Lewinsohn's and Beck's account, that can lead to a downward spiral of ineffective behaviors, which in turn, lead to a worsening symptoms. Of which, learning new behaviors and thought patterns can help reduce or even reverse symptoms and fix underlying core beliefs that trigger psychopathology. Within these cognitive models of depression, depressive affect comes from in large part from maladaptive cognitions, however, there is strong evidence to suggest that cognitive change does not always mediate symptom change in depression (Clark *et al.*, 2017). In fact, there is only a few studies that look at how evidence-based therapies change treatment mechanisms, or that deter mechanism causality, and these results have been mixed (Steele & Roberts, 2020).

Another contradictory finding from recent literature shows that goal setting, booster sessions, maintenance sessions, and relapse prevention sessions, which are hypothesized to help increase the rate of remission, do not always improve effect size at follow-up or at post-treatment time points (Steele & Roberts,

2020). This goes against decades of research that have previously posited that there are clear modifiable targets that predict the effectiveness of therapy, such as: having a strong therapeutic alliance and a strong internal agreement on the general goals and specific tasks of therapy. Furthermore, despite the core tenants of CBT being quite standard across the execution of clinical practice, often times clinicians will execute components differentially because they vary in their knowledge of how to transfer relevant components, especially to different age groups (Bearman *et al.*, 2020). Differential execution of treatment practice can be due to a variety of factors such as: the quality of study supervision and training, the level of clinical confidence and competence, and their understanding of key principles and theory. Furthermore, there are several barriers to sustainability, which include a lack of goodness of fit with client and back towards the clinician, logistical challenges, such as limitations with money, time, and organizational resources, skepticism towards adopting new therapeutic style and theoretical orientation change, and a lack of knowledge translation (Bearman *et al.*, 2020). Additionally, there are few studies that outline how to best teach clinicians on how to engage youth and their parents and how specific characteristics or behaviors of the therapist help engage youth and utilize evidence-based therapies (Steele & Roberts, 2020).

For treatments that have been validated with adults, they are generally less effective when treating adolescents. This is true for somatic therapies, psychopharmacology, and general psychotherapy (Cullen *et al.*, 2019). For example, in a recent meta-analysis done by Krause and colleagues (2021), problem-solving training, which has been an established practice for the treatment of depression since the 1970s, was not recommended as a stand-alone treatment for youth depression in any of the 23 reviewed studies, with only a small possibility that it might help in junction with CBT, but even then, the evidence was limited at best. For what therapies we do know are efficacious for youth and adolescents, currently, there is still a lot that we do not know about the qualitative and quantitative differences between adult and child depression. Despite decades of research on how to improve psychotherapy, diagnostic recovery rate is only applicable to, on average, about 1 in 4 children for the treatment of depression (Steele & Roberts, 2020). This alone may serve as evidence to help push the field to think differently about what we think is effective about in therapy, and deeply review our understanding of child and adolescent depression and how it differs not just in clinical presentation, but also in underlying neurobiology.

3   Key Differences in Youth and Adolescent Psychopathology

Perhaps, one reason for the lack of efficacy in psychotherapy is that younger children have greater difficulties recognizing their self-concept in relation to the main targeted treatment goals and lack the fundamental abstract thinking processes to apply therapeutic concepts to real life. Some research has shown that youth who have more advanced cognitive development are better able to perform cognitive therapy concepts, whereas youth who have less meta-cognitive abilities, struggle with self-reflection, insight, and an ability to elaborate on thoughts (Steele & Roberts, 2020). Hence, youth would likely benefit from evidence-based therapies that are more concrete and less abstract. However, this could limit the applicability of many psychotherapy techniques, as a core tenant of CBT is being able to increase one's meta-cognitive abilities, specifically around recognizing, talking about, and changing their thinking around negative self-schema.

Additionally, youth with less language skills may also not benefit as much with talk therapy as adolescents (Blom *et al.*, 2014). Older youth tend to be more capable to grasp onto core CBT concepts compared to younger youth, but usually have more life-related difficulties, internalizing problems, psychosocial challenges, and be less willing to comply with the therapeutic process (Blom *et al.*, 2014, Aksoy *et al.*, 2022). Although many studies have shown that age is not related to treatment completion or outcomes, there are recent studies that demonstrate otherwise (Blom *et al.*, 2014, Bearman *et al.*, 2020).

Many researchers believe that the future of clinical interventions should try to leverage neuroscience protocols as a part of standard practice in research and in clinical practice to bridge evidence of known neurobiological targets into the reinvention of psychotherapeutically aligned frameworks (Pollak, & Smith, 2021.) For example, it may be important to consider how paying attention to differences in environment and underlying biology plays a role in successful remission. One known factor that often creates differential effects of long-term therapeutic outcomes for adults is exposure to sexual, physical, and emotional abuse as children (Vaughn-Coaxum & Weisz, 2021). Interestingly, there is some research that has shown that different types of abuse show differential effects on these outcomes, such as that emotional abuse is associated with more symptoms of psychopathology than physical abuse in adolescents (Zhou & Zhen, 2022). Other studies have shown that sexual and physical abuse can lead to an even higher likelihood of a worse response to CBT for depressed adolescents compared to other forms of abuse such as neglect or verbal abuse. At large, childhood maltreatment (CM) is associated with smaller effect sizes for psychotherapy, yet there are only a few therapies that have specific treatment goals to help address this component. We do not yet have a full understanding of the varied mechanisms that CM acts through to exert its negative effects, but we do know of its harm in not only leading to a higher likelihood of developing a mental health disorder but developing a degree of treatment resistance later in life (Zhou & Zhen, 2022, Vaughn-Coaxum & Weisz, 2021). Perhaps advances in neuroscience can help in discovering how CM exerts its mechanistic effects on developing and sustaining psychopathology.

Despite our understanding of how adversity affects neurodevelopmental processes in the brain, we know much less about how different types of adversity leads to differential disruptions within the brain. Within child and adolescent literature, CM and exposure to community violence (ETV) are the two most commonly studied types of childhood adversity that consistently demonstrate meaningful differences between them. CM has been shown to negatively affect a broad array of processes that likely confer high risk of developing later psychopathology. These include disruptions in associative learning processes, which heavily shape individuals' perception to fearful and emotional content, as well as reward learning processes (Vaughn-Coaxum & Weisz, 2021). Disruptions in reward learning occur in depressed adolescents that is associated with adversities of childhood maltreatment and disruptions in reward learning has shown to lead to a disruption of a child's ability to gain competence and generalize skills outside of therapy (Vaughn-Coaxum & Weisz, 2021). CM has also been shown to increase lifetime psychopathology as evidenced by neural responses to threatening faces and LPP signaling (Sandre et al., 2018). Interestingly, CM is also more strongly associated with the development of later internalizing and externalizing symptoms, whereas ETV is more associated with externalizing symptoms only (Estrada et al., 2021, Aksoy et al., 2022).

Currently, we know that children and adolescents typically show more symptoms of anxiety and anger, less verbalization of hopelessness, and less negative symptoms in comparison to adults' populations who have depression (Luyten & Fonagy, 2018). These findings further complicate our understanding of childhood depression, as it may present different clinical attributes and perhaps deserves a different etiological consideration than that of adult depression, especially with the influence of developmental timing, characterized changes in plasticity, and unique but shared environmental psychosocial stressors.

From a neurobiological perspective, high anhedonia severity has also been shown to be a greater predictor of higher dropout rate, relapse, and iatrogenic treatment response (Auerbach et al., 2022, Khazanov et al., 2021). Individuals with anhedonia, across many psychiatric conditions, have shown decreased preferences for and avoidance of rewarding experiences, which could be due to many reasons that include reduced effort valuation, reward anticipation, initial responsiveness, reward learning, and reward probability and delay (Khazanov et al., 2021, Auerbach et al., 2022). Currently, there is not enough evidence to demonstrate which therapy is best for treating anhedonic deficits specifically, or how to best tailor a therapeutic approach. This is especially concerning considering given that anhedonia is a cardinal symptom of depression, is prevalent in many other

mental health disorders, and is linked to increased relapse rate, worsening recovery, and low symptom improvement for both pharmacotherapy and psychotherapy outcomes for both adults and youth (Khazanov *et al.*, 2021). Perhaps improvement can be made with a focus on treating transdiagnostic symptoms rather than just focusing on one disorder per se.

4 Personalizing Psychotherapy on Transdiagnostic Symptoms

In the past decade, there has been a considerable push to try to personalize mental health delivered interventions to address key elements from transdiagnostic perspectives, such as addressing histories of abuse and issues of anhedonia and broader reward processing (Ng & Weisz, 2016). Presently, the field does not have enough evidence, yet for which is the best approach to take for pediatric depression. However, there is an increase in using neurobiological perspectives to help aid clinicians in treatment precision and prevention (Farber *et al.*, 2020, Pollak & Smith, 2021, Quinlan *et al.*, 2020). Additionally, there is also some evidence that suggests that key predictors of treatment engagement and response, such as comorbidity, motivation for change, and treatment history, can help with treatment planning and chance of successful symptom improvement (Ng & Weisz, 2016, Mahendran *et al.*, 2021).

For youth and adolescents, aligning neuroscientific protocols to psychotherapeutic orientations might look like structuring activities based on their difficulty level and letting youth choose which therapy goals are most rewarding for them (Ng & Weisz, 2016). Alternatively, it could look like a provider selecting psychotherapy, psychoactive medication, or another treatment approaches, including deep brain stimulation, or combination of interventions, in a sequence that is most optimal where the monitoring of symptoms continues to guide future clinical decisions (Steele & Roberts, 2020). Future therapies could also involve targeting environments that are thought to impact youth outcomes, identify subgroups of the population that normally respond poorly to therapy, develop and test these new approaches for these established subgroups, and then organize future evidence-based psychotherapies into modular approaches (Ng & Weisz, 2016).

Unfortunately, most therapy manuals today are written in a standard, linear, session-by-session sequence that encourages only a small level of personalization (Steele & Roberts, 2020). Many manuals are wary about asking clinicians to stem too much away from what has been tested and verified within evidence-based literature (Steele & Roberts, 2020). Whereas youth with more comorbid problems will usually exhibit more difficulties with successful remission when undergoing CBT or IPT-A alone. Youth with significant comorbidities are also often excluded from studies examining the effectiveness of these therapies on a given psychiatric condition, such as depression, which severely limits the field from knowing which personalized approaches and adaptions make the most sense for those who do have these comorbidities. This is especially the case for youth who think about suicide and intend to act on it, teens who are angry and hostile, and those who have psychotic features (Steele & Roberts, 2020, Aksoy *et al.*, 2022).

Perhaps adapting therapies to take transdiagnostic approaches could be helpful to help reduce symptoms across different disorders, but it will also take considerable research to identify which modifiable targets are best to treat. For example, some studies have shown that focusing treatment on increasing emotion regulation skills, a mechanism that that has been found to both a predictor and mediator of many psychiatric conditions, can be used as a helpful transdiagnostic target for youth with multiple comorbidities (Steele & Roberts, 2020, Fernandez *et al.*, 2016). For example, Aitken and colleagues (2019) assessed adolescents with moderate to severe MDD to treatment response to brief-psychology intervention (BPI), CBT, and short-term psychoanalytic psychotherapy (STPP). They used this model over 5 time points, ranging from baseline to one year follow-up, and after comparing parameter estimates of change across treatments, they found that specific factors, such as melancholy, depressive cognitions, and conduct problems only decreased from baseline to 6 weeks of treatment only, and did not see any further improvement after 6 weeks. Interestingly, anxiety increased

initially, but then decreased by the end of treatment, whereas general psychopathology decreased through all timepoints. Finally, thought problems did not meaningfully decrease over time and differences between treatments were minimal. This is concerning as different therapies are built off of the assumption that there are different theorized mechanistic properties that each therapeutic uniquely target and change. It is not clear why thought problems showed no meaningful decrease overtime, especially because most therapies, at least in some capacity, are thought to help better cognitive processing and general problem-solving capabilities (Krause *et al.*, 2021). However, it is clear that viewing psychopathology in adolescence transdiagnostically may help characterize important nuanced relationships that determine why some proportions of the population do not response well to therapy and what unique factors about individuals will help them succeed (Gee, 2021).

Utilizing factor analysis, specifically bifactor models that account for psychopathology factor (p-factor) and specific factors can also help understand the discrepancy between initial and follow-up therapeutic effect of different therapies (Aitken *et al.*, 2020). Interestingly, specific factors may do a better job at explaining initial differences in youth depression treatment outcomes, but at follow up, they become less significant in comparison to the general p-factor observed (Aitken *et al.*, 2020). This could mean that specific melancholic and cognitive factors could decrease during the beginning of therapy, whereas anxiety factors can either initially increase or stay the same, y*et al*so follow a gradual reduction of overtime. Perhaps p-factor has the capacity to articulate specific clinical and prognostic validity and utility; not just carry redundant variance and reductionistic explanations to field of psychopathology (Aitken *et al.*, 2020). In summary, perhaps decreases in symptom areas can be best understood as decreases in general psychopathology rather than improvements in discrete areas.

Additionally, p-factor can help researchers understand the homotypic and heterotypic stability of internalizing and externalizing disorders over time. While there has been some research examining the stability of one internalizing disorder from another, and one externalizing disorder from another, less has been done to examine the relationship between internalizing and externalizing disorders for youth and adolescents. Traditionally speaking, internalizing and externalizing disorders, such as schizophrenia and ADHD, share few overlaps in symptoms, yet there is evidence that shows that heterotypic comorbidity is seen at rates that exceed random chance (Schettini, Wilson, & Beauchaine, 2021). This is followed by evidence that suggests that both internalizing and externalizing dimensions of psychopathology are relatively stable between the ages of 18 and 21 and are less heterotypic than previously thought. However, research on this topic relies heavily on cross-sectional designs and it is less clear to what extent latent dimensions influence this stability (Olino *et al.*, 2018). Interestingly, p-factor has actually shown greater promise in predicting mental stability, that is less heterotypic, from looking at youth and adolescents when examining latent factors (Olino *et al.*, 2018). This is supported by evidence showing that previously thought heterotypic continuity between the ages of 3 and 6 is actually rather homotypic when using longitudinal modeling to look at internalizing and externalizing latent factors (Olino *et al.*, 2018). Of note, there is some evidence that suggests that genetic profile scores and stressful life events could be used use as moderates and predictors of internalizing stability throughout childhood (Nusslock & Alloy, 2017, Olino *et al.*, 2018) which may be related to evidence of p-factor in explaining these associations.

Despite the immense amount of hype around the utility of p-factor, there is still a lot that we do not know about its true ecological validity. Few studies have actually examined the translation of this evidence into clinical practice (Haltigan, 2019) and we still do not know the extent to which p-factor is simply explaining covariation among items or is simply a statistical result of positive manifolding (Aristodemou & Fried, 2020). If p-factor is simply nothing more than a statistical result, rather than a concrete entity or meaningful phenomenon to characterize greater psychopathology, the utility of using p-factor to showcase useful mechanisms of treatment approaches would be greatly limited. However, perhaps the widespread scientific investigation of p-factor as a casual entity creates an opportunity for changing the field's thinking about latent variables and its role in predicting future psychopathology (Haltigan, 2018).

Luckily, the traditional approach to psychotherapy is slowly changing to try to align itself with dimensional constructs that incorporate a broad range of disorders, rather than just focusing on one disorder per se (Auerbach *et al.*, 2022, Ng & Weisz, 2016). The push for viewing psychopathology dimensionally, rather than categorically, encourages the possibility of viewing chosen dimensions as being transdiagnostic and potentially modifiable across a broad range of clinical disorders (McLaughlin *et al.*, 2021, Hopwood *et al.*, 2020). Moving forward, hopefully dimensions of known processes such as learned helplessness, negative cognitive biases, anhedonia, excessive sadness and irritability, and emotional dysregulation (Chad-Friedman *et al.*, 2021, Brislin *et al.*, 2021, Bufferd *et al.*, 2019, Bufferd *et al.*, 2018, Buffered *et al.*, 2021, Hirsch *et al.*, 2021, Hodgdon *et al.*, 2021), could be the future targets of intervention that lead to deeper insights to why and how internalizing disorders develop, persists, and ultimately remit within a spectrum of dysfunctionality and adaptive functioning for growing adolescents and youth.

Recently, there has been a massive push for adopting new approaches to examine psychopathology and to reach new conceptualizations about the nosology, underlying etiology, and subsequent treatments of clinical disorders. For example, there are some new psychotherapy treatments that are trying to focus on improving reward sensitivity with the goal of directly targeting anhedonia for individuals with high degrees of internalizing symptoms (Auerbach *et al.*, 2022). New training developments, such as the Training for Awareness, Resilience, and Action (TARA) developed by Blom and colleagues (2014), has helped make improvements in our understanding of adolescent depression, and has shown considerable promise of successfully integrating transdiagnostic principles. In addition to TARA, Weisz and Bearman (2020) came up with FIRST intervention strategies that have helped clinicians come up with a personalized, evidence-based approach for addressing internalizing disorders in youth and adolescents. Additionally, emotion-regulation training has also emerged as another intervention that shown considerable promise for sustaining change in youth with a range of psychopathology (te Brinke *et al.*, 2021). Hopefully, more interventions will come to help bolster childhood resilience to hard life events while focusing on transdiagnostic perspectives to addresses issues of comorbidity and increase our understanding heterogenous presentations of internalizing disorders and greater psychopathology in adolescents and youth (Gee *et al.*, 2021, Finsaas *et al.*, 2018, Latzman *et al.*, 2020).

5   Concluding Thoughts

Although psychotherapy continues to be the first treatment recommended for pediatric depression, the evidence for its efficacy is moderately weak. Additionally, the knowledge around which specific mechanistic processes that occur while a child approaches remission is largely understudied in the context of psychotherapy. Moreover, mental health disorders are now seen as etiologically complex than what has been previously understood, especially in the context of the developing brain. Hopefully, neuroscientific methods can help inform future psychotherapeutic interventions by aiding in our understanding of what key neurobiological processes drive successful or unsuccessful remission, and what key neurobiological differences exist between adult and pediatric internalizing disorders. Future research should integrate neuroscience into our understanding of how symptoms develop, perhaps even before disorders emerge, and how integrates psychopathology evolves, resolves, and remits in the developing brain. Lastly, future research should integrate transdiagnostic dimensions of psychopathology into key etiological considerations of clinical disorders and develop subsequent novel interventions that address clinical heterogeneity and diverse biotypes of developing youth psychopathology.

6   Declarations

6.1   Competing Interests

There are no conflicts of interest to report.

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