

Commentary on Evans *et al.* (2020): The complex interplay between adolescent substance use, internalizing and externalizing symptoms

The dynamic continuum between internalizing and externalizing symptoms could explain the complex association between specific emotional and behavioural problems and adolescent substance use.

Evans and colleagues [1] found that adolescents who presented more psychosomatic symptoms had higher odds of alcohol and polysubstance use. The authors highlight that throughout the study period this association remained stable, and intervention strategies that address both adolescent substance use and psychosomatic problems may be appropriate.

Substance use in adolescence does not occur in isolation. It co-occurs with other risk behaviours, such as antisocial and risky sexual behaviours [2]. The origins of these behaviours are multi-factorial and influenced by socio-demographic, family and individual factors, including common genetic and psychological vulnerabilities [3]. The complex interplay between these factors and the environment creates a developmental cascade that originates in early childhood, shaping behaviour throughout the life-span.

Emotional and behavioural symptoms—including externalizing, internalizing and psychosomatic problems—develop early in life and have been consistently associated with adolescent risk behaviours [4,5]. There is strong evidence for the association between externalizing symptoms and adolescent substance use [6,7]. These behaviours include conduct problems, hyperactivity, impulsivity and inattention, each of which contributes to a direct vulnerability to substance use early in life. This association may stem from high levels of risk-taking and low inhibitory control, both of which are common in externalizing problems, negatively impacting on decision-making processes [8].

However, for internalizing and psychosomatic symptoms, the evidence for the association with adolescent substance use is more scarce. A systematic review of the longitudinal association between internalizing symptoms and substance use in adolescence yielded mixed findings [9]. While depressive symptoms often constituted a vulnerability for later substance use, anxiety and internalizing symptoms were not as clearly associated with later substance use [9].

The dichotomization between externalizing and internalizing symptoms may be artificial, due to the dynamic relationship between these two constructs. Comorbidity

between internalizing and externalizing symptoms is quite common, with higher levels of emotional problems tending to cluster with conduct problems [10]. The combined presentation of internalizing and externalizing symptoms is associated with worse functional outcomes and substance use in adolescence, translating into higher vulnerability for risk behaviours [11].

It is also worth noting that profiles of emotional and behavioural symptoms are not static throughout development. While some children and adolescents will develop only transient symptoms throughout development, others will manifest chronic and stable emotional and behavioural symptoms [12]. Additionally, children and adolescents can present the same type (homotypical continuity) or different types of problems (heterotypical continuity) throughout development [13]. Thus, an individual with externalizing problems in childhood can present in adolescence with predominantly internalizing problems, and vice-versa. The dynamic continuum between internalizing and externalizing symptoms could explain the complex association between specific emotional and behavioural problems and adolescent substance use.

In this manner, interventions on the treatment and prevention of adolescent substance use and other risk behaviours should address externalizing and internalizing symptoms jointly. As the first signs of internalizing and externalizing symptoms usually appear in childhood—well before the initiation of substance use in adolescence—these interventions must be developmentally sensitive and implemented as early as possible. Examples of these interventions are parent-training programmes and the psychological and medical treatment of emotional and behavioural symptoms in children and adolescents. For instance, *Familias Unidas*, a parent training programme for Hispanic adolescents, has been shown to reduce both externalizing and internalizing problems, and substance use and other risk behaviours [14,15]. Similarly, the treatment of attention-deficit/hyperactivity disorder with psychostimulants has been associated with a lower risk for alcohol and substance use in adolescents [16].

As Evans and colleagues emphasized, prevention and intervention endeavours that address both psychosomatic problems and adolescent substance use are crucial. Further studies are needed to explore the hypothesis that early treatment and prevention of internalizing and externalizing symptoms in childhood prevents substance use and other risk behaviours in adolescence.

Declaration of interests

None

Keywords Adolescence, developmental psychopathology, externalizing, internalizing, psychosomatic problems, substance use.

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