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Is it safe to just try? A longitudinal study of adolescent patterns of drinking and smoking via latent transition analyses

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ABSTRACT

Purpose: A growing body of research reports fruitful evidence about longitudinal patterns of alcohol and tobacco use. However, it is still necessary to understand longitudinal patterns of alcohol and tobacco use separately especially to describe if their sporadic use in adolescence is indeed sporadic or leads to escalation. This study aimed at exploring stability and change in alcohol and tobacco use.
Methods: This was a prospective longitudinal study with three waves of yearly data collection in Spain. The sample at T1 (2020) included 889 adolescents (48.3 % female, $M_{age} = 12.6$; $SD_{age} = 0.83$). Alcohol and tobacco use were measured with a validated questionnaire. Two Latent Transition Analyses were conducted.
Results: Three statuses were found for alcohol and tobacco use: non-user, sporadic user, and frequent user. Non-users and frequent users were highly stable over time, with the vast majority remining in their respective group one year later. Escalation from non-users to frequent users was rare and occurred only in 4–5 % of alcohol non-users and 3–5 % of tobacco non-users. On the other hand, sporadic users were likely to escalate to frequent users (>45 %) and unlikely to de-escalate to non-users (0–13 %). Similarly, sporadic tobacco users were relatively likely to escalate to frequent users (18–27 %) and 15–21 % de-escalated to non-users.
Conclusions: While non-users were relatively stable over time, the risk of escalation in alcohol and tobacco use after having tried these substances once or twice in adolescence was relatively high. Thus, interventions should discourage even sporadic experimentation with these substances and strengthening protective factors.

1. Introduction

Alcohol and tobacco use in adolescence are two frequent problem behaviours with serious detrimental short and long-term effects (Boer et al., 2024). Although a lot of knowledge on adolescent substance use has already been gathered, it is still necessary to describe stability and change in alcohol and tobacco use. While some parents supply alcohol to their children believing that it is safe to just try (Mattick et al., 2018) and sporadic use is widely accepted (Sanchez et al., 2023), it is still necessary to understand if sporadic use is indeed sporadic or if it leads to escalation. The current study focuses on stability and change in alcohol and tobacco use in early adolescents. Our main research question is to explore whether sporadic alcohol and tobacco use is indeed sporadic or if it leads to escalation and frequent use.

Adolescence is a developmental period that involves multiple physical, social and emotional changes (Yurgelun-Todd, 2007). One of the most concerning changes during adolescence is the rise in substance use (Zych et al., 2020). Alcohol and tobacco are the most prevalent substances used by adolescents (Moreno et al., 2020; OEDA, 2024). The European School Survey Project on Alcohol and Other Drugs (2024) reported that among 15–16 years old, 73 % of adolescents reported lifetime alcohol use and 32 % reported cigarette use. This habit may be explained by practices of social systems and perceived self-efficacy (Bandura, 2013). Despite its high prevalence, early substance use alters frontal cortices, white matter microstructure (Boer et al., 2024), mesolimbic and mesocortical circuitry, which can result in behavioural changes (Thorpe et al., 2020) with long-term consequences in academic, occupational, and social functioning (Squeglia et al., 2009). Thus, research should focus on earlier ages to capture the onset of alcohol and tobacco use to minimize negative consequences.

Although normative developmental transitions have been associated with both, increasing and decreasing in substance use (Schulenberg & Maggs, 2002), longitudinal evidence shows that substance use in adolescence tends to increase once it has started (Best et al., 2018;

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Martínez-Fernández et al., 2018; Rodríguez-Ruiz et al., 2021), however, most of the studies have focused on polysubstance use. Among them, Zych et al. (2020) analysed patterns of substance use in a sample of Spanish preadolescents and adolescents. Although the majority of participants were non-users at both times, there was a clear trend to increase substance use from one year to another. A recent study with Swedish students aged 15–16 followed-up two years later (Dennermalm et al., 2023) found that most participants were non-users in Grade 9 but a vast majority used substances in Grade 11. An increase was reported in alcohol users and co-users of alcohol, tobacco and cannabis. There was high stability over time, with half of the sample remaining in the same group and most of the changes occurring from softer to harder substance use. Despite the fruitful evidence regarding stability and change in polysubstance use (Choi et al., 2018; Davis et al., 2021; Merrin et al., 2018), new studies focused on specific substances are needed in order to give response to concerns regarding wide diversity in patterns of substance use (European Monitoring Center for Drugs and Drug Addiction, 2025).

Some studies focused on stability and change in alcohol use. A study with US adolescents enrolled in grade 7 in the 1990 s followed up four times until late 2000 s (Hoyland & Latendresse, 2018) found that "nonproblem drinkers" was the most stable group while abstainers, low intake drinkers and problem drinkers transitioned among different groups. Another study with three waves of data collection from 2005 to 2007 with Mexican-heritage youth in the USA (Shin et al., 2016) also showed an increase in substance use over time. All identified groups including non-drinkers, potential drinkers, experimenters and regular drinkers were relatively stable although potential drinkers and experimenters were more likely to escalate to regular drinkers in comparison to non-drinkers. These studies provide valuable insight into adolescent alcohol consumption patterns, but they were conducted almost 20 years ago and more up to date evidence is urgently needed.

Alcohol use transitions were also tested in US university students followed up four times at each college year (Hultgren et al., 2019). Non-drinkers and heavy drinkers were relatively stable groups while weekend light drinkers, weekend heavy drinkers and occasional heavy episodic drinkers were less stable and tended to increase consumption. Again, this study provides valuable results regarding drinking patterns in young adults, but similar research is needed in early adolescence.

There are also some studies focused on stability and change in tobacco use. Hair et al. (2018) reported the results of a nationally representative longitudinal study with 15–21 years old US adolescents with four waves of data collection. They found that non-users were likely to remain non-users whereas other patterns were relatively unstable over a longer period of time with a relatively high probability of change to non-current users. Another study conducted by Simon et al. (2020), with 12 to 17 years old US adolescents found that non-users and current polytobacco users were stable with a probability of 94 % and 100 %, respectively, of remaining in the same group, while ever tobacco users showed a 32 % of probability of changing to current polytobacco user. Also, with a nationally representative sample of US adolescents from 2014 to 2016, Romm et al. (2022) who excluded non-users, found that all low users transitioned to more use one year later. Thus, previous studies reported some inconsistent results, datasets used were collected around 10 years ago and most use only two waves of data. There are also some studies with adult populations (Clendennen et al., 2019; Do et al., 2022; Huang et al., 2023) but up to date longitudinal studies with several waves of data collection are urgently needed to provide a richer and more complex overview of tobacco use during adolescence.

1.1. The current study

Scientific literature points out that alcohol and tobacco use follow an ascending slope during adolescence. There is vast evidence on longitudinal patterns of polysubstance use. Some studies focused on either alcohol use or tobacco use during adolescence. The objective of the present study was to explore stability and change in alcohol and tobacco use during early adolescence. Non-users and frequent users were expected to be the most and the least prevalent status, respectively, in both substances. (H1). It was also hypothesised that alcohol and tobacco use increase over time (H2). Finally, we expected that having tried alcohol or tobacco one or two times would result in escalation over time (H3).

2. Method

2.1. Participants

The sample included students attending 18 Secondary Schools in the province of Córdoba (Spain) selected by convenience. Adolescents were enrolled in 1st and 2nd Grade at time 1 in fall 2020 and followed up yearly in 2nd and 3rd Grade and 3rd and 4th Grade. The first wave of data collection included 889 participants, the second wave 1439 and the third wave 1432. Regarding retention rate, 720 students were followed up from time 1 to time 2 and 1109 from time 2 to time 3, so the attrition rate was 19 % and 22.9 % at time 2 and time 3, respectively. Although the sample size increased from T1 to T2, this was due to temporary absences during the first wave (e.g., COVID-19 restrictions prevented many individuals from participating) rather than the recruitment of a different population. Participants who were not present at T1 belonged to the same classrooms and were incorporated at T2 and followed longitudinally thereafter. Other reasons for longitudinal sample mortality were school absent, school change or ineligible codes to match participants among waves. Details of sample characteristics are shown in Table 1.

2.2. Instruments

Substance use was measured with the Substance use subscale from the *Self-Reported Antisocial Behavior Questionnaire* (*SRA*; Loeber et al., 1989) translated and validated in Spain by Espejo-Siles et al. (2023). For this study, information regarding alcohol (3 items on beer, wine and liquor use) and tobacco (1 item) use was analysed. Participants answered according to their frequency of use in the last academic year: 1

Table 1
Sample characteristics.

	Time 1	Time 2	Time 3
Total	889	1,439	1,432
Sex			
Female	429 (48.3 %)	703 (48.9 %)	702 (48.8 %)
Male	460 (51.7 %)	736 (51.1 %)	718 (50.1 %)
Age	$M = 12.6$; $SD = 0.83$	$M = 13.64$; $SD = 0.83$	$M = 14.58$; $SD = 0.82$
Nationality			
Spanish	858 (98.3 %)	1 418 (98.5 %)	1 373 (97.4 %)
Others	15 (1.7 %)	21 (1.5 %)	36 (2.5 %)
Ethnicity			
Spanish	822 (95.2 %)	1 363 (95 %)	1 330 (94.3 %)
Roma	13 (1.5 %)	28 (2 %)	23 (1.6 %)
Sub-Saharan	1 (0.1 %)	4 (0.3 %)	4 (0.3 %)
Latin-American	5 (0.6 %)	14 (1 %)	22 (1.6 %)
Maghribs	4 (0.5 %)	10 (0.7 %)	13 (0.9 %)
Other	18 (2.1 %)	15 (1 %)	19 (1.3 %)
Family SES			
Very poor	0 (0 %)	2 (0.1 %)	4 (0.3 %)
Poor	8 (0.9 %)	18 (1.3 %)	32 (2.3 %)
Average	831 (94.1 %)	1 326 (92.5 %)	1 278 (89.9 %)
Rich	39 (4.4 %)	81 (5.6 %)	101 (7.1 %)
Very rich	5 (0.6 %)	7 (0.5 %)	6 (0.4 %)
Neighbourhood SES			
Very Poor	2 (0.2 %)	7 (0.5 %)	9 (0.6 %)
Poor	28 (3.2 %)	55 (3.9 %)	76 (5.3 %)
Average	783 (88.3 %)	1 215 (85.1 %)	1 186 (83.4 %)
Rich	68 (7.7 %)	139 (9.7 %)	142 (10 %)
Very rich	5 (0.6 %)	11 (0.8 %)	9 (0.6 %)

= *No*, 2 = *Yes, once*, 3 = *Yes, twice*, 4 = *Yes, more times*. Instrumenťs reliability in this study was appropriate in time 1 (ω = 0.82), time 2 (ω = 0.82) and time 3 (ω = 0.84).

The three items regarding alcohol use were recoded into a single item. The objective of this study was to capture the onset of substance use during early adolescence, Accordingly, although most of the studies rely on summed or averaged indices, a unified alcohol variable was calculated by retaining the maximum score observed across the three items, reflecting the maximum level of involvement in alcohol use regardless of the specific beverage consumed. For example, if a participant reported 1 (*No*) in beer use, 2 (*Yes, once*) in wine use and 4 (*Yes, more times*) in liquor use, the score in alcohol use would be 4. Therefore, this approach was intended to capture escalation from experimentation to more habitual use, and results should be interpreted as indicating peak involvement rather than cumulative alcohol use.

2.3. Design and procedure

This was a prospective longitudinal study with three waves of data collection through three consecutive school years. Data were collected in fall 2020 (Time 1), fall 2021 (time 2) and fall 2022 (time 3). School boards were contacted and, when they confirmed their participation in the study, parental consent was required from each participant. Students were asked to assent before the administration of the questionnaires. They were also informed that participation was anonymous, voluntary and they could withdraw at any moment.

Data collection took place during the regular classroom hours under the supervision of the research team in about 50 min. In time 1, six schools filled in the questionnaires online due to their anti-COVID-19 restrictions. In these cases, participants were supervised by their teachers who had previously received specific instructions to conduct the data collection rigorously. In time 2 and time 3, all the participants completed paper-and-pencil questionnaires.

The present study was approved by the Ethics Committee of the University of Cordoba (Spain). All the national and international ethical guidelines, as well as the Helsinki Declaration and protection data laws were followed.

2.4. Data analyses

Descriptive analyses were run using SPSS version 25 and instrumenťs reliability was calculated with FACTOR software (Lorenzo-Seva & Ferrando, 2006).

A latent transition analysis (LTA) was conducted using SAS 9.4 software Proc latent class analysis, LTA macros (Lanza et al., 2015). This analysis makes it possible to create groups of participants, called latent statuses, based on their response patterns and estimate the stability and change among latent statuses over time. Missing data were handled using full information maximum likelihood (FIML). For each substance (alcohol, and tobacco), 3 different models with 2, 3 and 4 latent statuses were tested with 1000 randomly generated seeds. The convergence criterion maximum absolute deviation (MAD) ≤ 0.00000100 was used. Log-likelihood, G^2, Akaikés information criterion (AIC) and Bayesian information criterion (BIC) were the statistics used for model fit, following Lanza et al. (2003). The number of statuses was chosen considering the lowest AIC, BIC and log-likelihood of the model. In cases where indices diverge, researchers are advised to balance model fit with parsimony and the theoretical meaningfulness of the latent classes (Lanza et al., 2007). After choosing the number of latent statuses, each response option was allocated in the corresponding status based on rho estimates (ρ). The probability of belonging to each status at each time was reckoned according to delta estimates (δ). Finally, tau estimates (τ) indicated the likelihood of stability and change among latent statuses at different time periods. Measurement invariance across time was tested using a constrained LTA model in which the item-response probabilities (ρ parameters) were forced to be equal across waves. This model was compared with an unconstrained model in which ρ was allowed to vary across time.

3. Results

3.1. Alcohol use

Table 2 shows the fit indices for the models comparing two, three and four latent statuses of alcohol use. The model compound by three statuses had the best fit (log-likelihood = -3765.28; G^2 = 62.34; AIC = 108.34; BIC = 236.61; Df = 40) where participants were grouped in Non-Alcohol Users (response "No"), Sporadic Alcohol Users (responses "Yes, once" and "Yes, twice") and Frequent Alcohol Users (response "Yes, more times"). Measurement invariance was evaluated. Although the time-varying model showed slightly better fit according to AIC, the invariant model was favored by BIC (BIC = 14,915.44 vs. 15,025.62), which prioritizes parsimony in latent class and transition models. These results support longitudinal measurement invariance of alcohol use, indicating that latent statuses retained the same meaning across waves and allowing transition probabilities to be interpreted as reflecting true developmental change rather than shifts in measurement.

Table 3 shows probabilities of response to each item (rho estimates) according to the latent status. Non-users had over 92 % of probability to respond "no" to alcohol use, sporadic users had over 65 % of probability to respond "yes, once" and over 20 % of probability to respond "yes, twice" to alcohol use whereas frequent users had over 20 % of probability to respond "yes, twice" and over 74 % of probability to respond "yes, more times".

Percentages of participants in each status in each time (delta estimates), together with percentages of participants who remained or transitioned among statuses from time 1 to time 2 and from time 2 to time 3 (tau estimates) are shown in Fig. 1. The most prevalent group at all waves was Non-Alcohol User (77.73 % at T1, 64.2 % at T2 and 45.81 % at T3). Although Sporadic Alcohol Users were more prevalent at time 1 (15.89 %) and time 2 (20.1 %) than Frequent Alcohol Users (6.29 % at T1 and 15.7 % at T2), the percentage of Frequent Alcohol Users was slightly higher at time 3 (27.35 %).

The most stable groups were Non-Alcohol Users (79.2 % and 71.3 % likelihood of remaining at T2 and T3, respectively) and Frequent Alcohol Users (69.4 % at T2 and 100 % at T3 remained to be frequent users). The most dynamic status was Sporadic Alcohol Users, highlighting its trend to increase alcohol use overtime, with probabilities of 13 % of decreasing to non-use and 46.1 % of increasing to frequent use from T1 to T2; and 0 % moved to non-use, while 45.1 % changed to frequent use from T2 to T3.

3.2. Tobacco use

Table 4 shows fit indices for the models with two, three and four latent statuses. Although BIC index was lower in the two-statuses model, all the other indices were better in the three-statuses model (log-likelihood = -1989.35; G^2 = 25.96; AIC = 71.96; BIC = 200.23; Df = 40), so considering the theoretical meaningfulness, the model with three statuses was selected. Participants were labelled as Non-Tobacco Users (over 98 % of probabilities of response "No"), Sporadic Tobacco Users (over 76 % of probability of "Yes, once" and 22 % of probability of "Yes, twice" responses) and Frequent Tobacco Users (over 77 % of probability

Table 2
Model fit for alcohol use.

Number of statuses	Likelihood-Ratio	G squared	Df	AIC	BIC
2	−3821.38	174.54	52	196.54	257.88
3	−3765.28	62.34	40	108.34	236.61
4	−3761.74	55.25	24	133.25	350.76

Note: in red the selected model.

Table 3
Item-response probabilities for each status of alcohol use.

	Non-users	Sporadic users	Frequent users
No	0.9262	0.0193	0.0585
Yes, once	0.0671	0.6538	0.0000
Yes, twice	0.0068	0.2098	0.2002
Yes, more times	0.0000	0.1171	0.7413

of response "Yes, more times"), taking into account rho estimates (Table 5). Measurement invariance across time was tested. Information criteria favored the invariant model (AIC = −183,609.9) over the non-invariant model (AIC = −180,918.9), providing support for longitudinal measurement invariance of tobacco use.

Probabilities of belonging to each status (delta estimates) and stability/transition over time (tau estimates) are shown in Fig. 2. Overall, the most prevalent status was Non-Tobacco Users (93.48 % at T1; 84.75 % at T2 and 77.52 % at T3), followed by Frequent Tobacco Users (3.97 % at T1; 8.21 % at T2 and 12.81 % at T3) and Sporadic Tobacco Users (2.55 % at T1; 7.03 % at T2; and 9.67 % at T3).

Similarly to alcohol use, the most stable groups from one year to another were Non-Tobacco Users (89.5 % remained from T1 to T2 and 90.1 % remained from T2 to T3) and Frequent Tobacco Users (74.8 % and 100 % continued as frequent users in T2 and T3, respectively). The transitions of Sporadic Tobacco Users were more balanced than in the case of alcohol regarding their change to non-use (21.4 % from T1 to T2 and 15.4 % from T2 to T3) and frequent use (18 % and 26.8 % at T2 and T3, respectively).

4. Discussion

Adolescent substance use is a major health concern for societies around the world (European Monitoring Center for Drugs and Drug Addiction, 2025). Nevertheless, it is necessary to provide more up-to-date evidence on stability and change in alcohol and tobacco use during onset, paying special attention to sporadic use to describe if it is indeed sporadic or if it leads to escalation. Thus, the current study focused on stability and change in alcohol and tobacco use.

The first hypothesis that stated that non-users and frequent users

Table 4
Model fit for tobacco use.

Number of statuses	Likelihood-Ratio	G squared	Df	AIC	BIC
2	−2007.96	63.17	52	85.17	146.52
3	−1989.35	25.96	40	71.96	200.23
4	−1984.86	16.97	24	94.97	312.47

In red the selected model.

Table 5
Item-response probabilities for each status of tobacco use.

	Non-users	Sporadic users	Frequent users
No	0.9816	0.0113	0.0000
Yes, once	0.0134	0.7600	0.0841
Yes, twice	0.0000	0.2287	0.1428
Yes, more times	0.0051	0.0000	0.7731

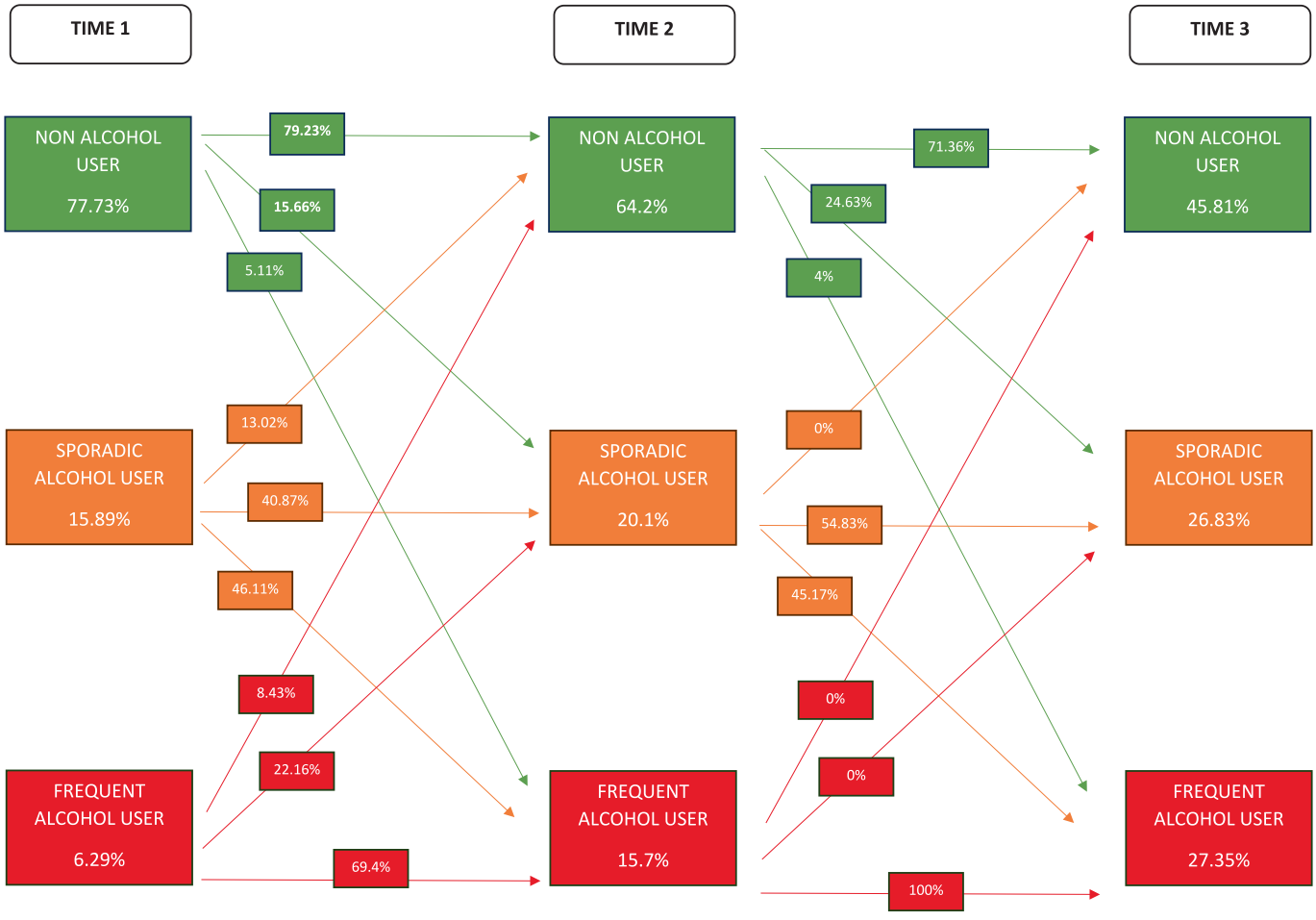

Fig. 1. Membership and transition probabilities for alcohol use.

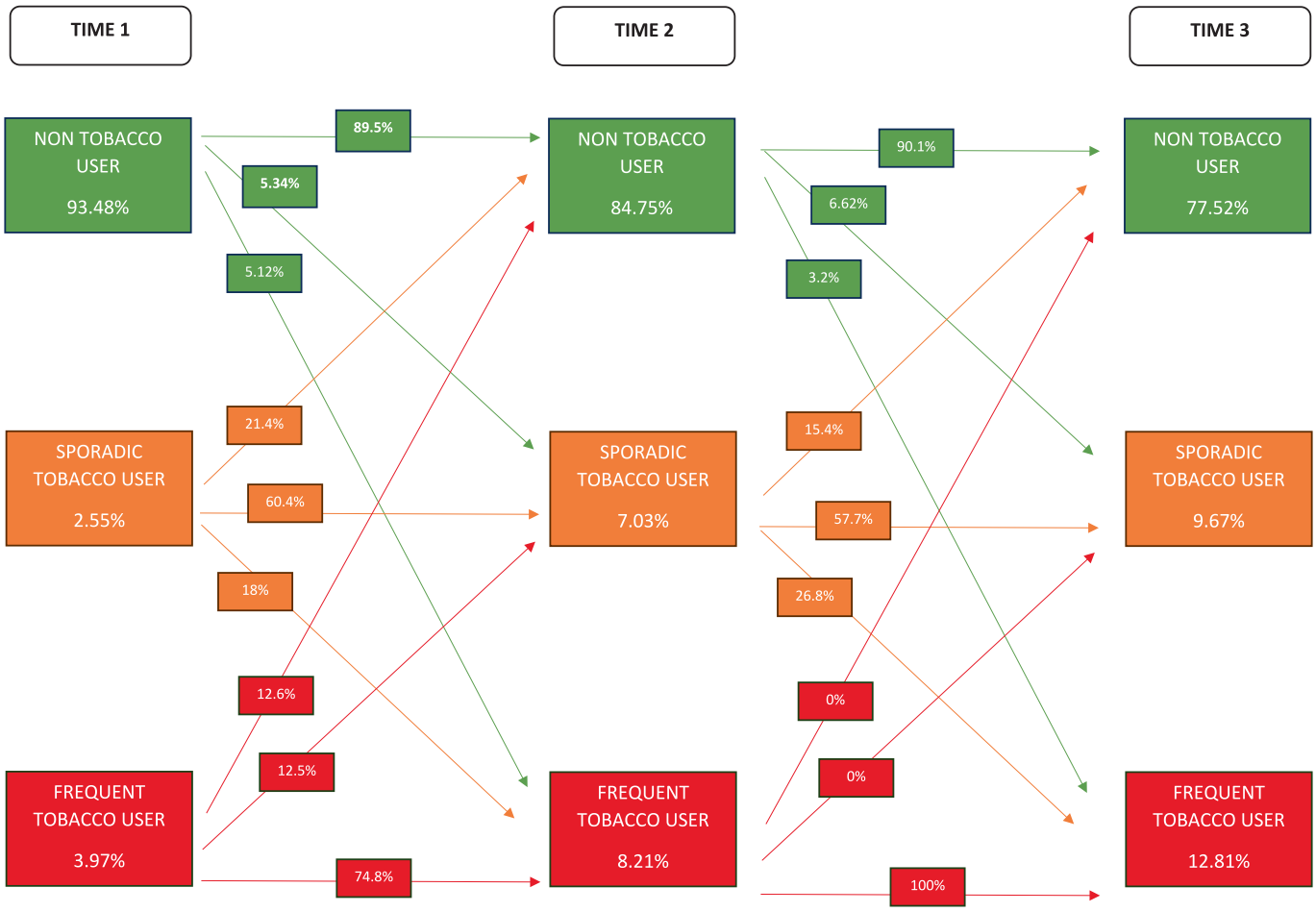

Fig. 2. Membership and transition probabilities for tobacco use.

would be the most and the least numerous groups, respectively, was partially confirmed. In line with previous research (Choi et al., 2018; Davis et al., 2021; Zych et al., 2020), the majority of the sample reported not having used alcohol or tobacco in the three waves. However, there was a sharp decline in the likelihood of non-use over time. This decline was especially remarkable in the case of alcohol in comparison to tobacco. On the other hand, frequent alcohol or tobacco users were the least prevalent groups only at time 1. It is thus possible that availability of alcohol and tobacco in Spain (Delegación del Gobierno para el Plan Nacional sobre Drogas, 2023), together with social acceptance of their use (Cortés-Tomás et al., 2014) lead to a high prevalence of substance use in our sample.

The second hypothesis was confirmed as it stated that alcohol and tobacco use would increase over time. Congruently with other studies (e.g. Rodríguez-Ruiz et al., 2021), it was found that alcohol and tobacco use increased across the three waves of data collection. Thus, the percentage of non-users steadily decreased while the percentages of sporadic and frequent users increased across data collection waves. Recent research has pointed out that sociodemographic, cultural and environmental factors may explain the initiation of substance use (Green et al., 2024). Therefore, this result should be interpreted considering the sociocultural background of this research. This research has been carried out in Spain, where drinking is related to family-oriented values and it has a positive connotation that may increase this behavior (Espejo-Siles et al., 2023).

As stated in the third hypothesis, we expected to find that sporadic alcohol and tobacco use would lead to escalation. Indeed, adolescents who tried alcohol or tobacco were much more likely to become frequent users than those who have never tried these substances. Previously, a study found that substance use onset may be associated with inhibitory behavioural traits and pursuing fun-seeking behaviors, linking negative emotions to an increased likelihood of early substance initiation in adolescents (Shao et al., 2024). Therefore, research on motives for substance use may be especially needed during early adolescence to retard substance use.

Nearly 13 % of sporadic alcohol users and 21 % of tobacco users transitioned to non-use. Previous research suggests that, even when adolescents are exposed to parental or peer alcohol and tobacco use, abstinence remains possible (Rodríguez-Ruiz & Espejo-Siles 2025; Rodríguez-Ruiz et al., 2025). To increase the likelihood of non-use, these authors recommend fostering individual skills such as emotional regulation, strengthening family cohesion, promoting involvement in healthy environments, encouraging reciprocal friendships, and supporting participation in sports. This is congruent with Social Cognitive Theory (Bandura, 2013), where is stated that the health of an individual is the result of their personal and sociostructurally determinants.

The present study has important strengths as it provides up-to-date evidence on patterns of alcohol and tobacco use in early adolescence. Its longitudinal design including three waves of data collection made it possible to explore patterns in a relatively long period of time. Notwithstanding, this study also has some limitations. Although the sample was big, it was selected by convenience and due COVID-19-related disruptions some participants were missing at the first wave, which means that most robust transition estimates in this study pertain to the T2 to T3 period, where panel continuity was substantially higher. Therefore, future studies with representative samples should be conducted to confirm our results. Data were collected using self-reports and some studies suggest that these may underestimate substance use when

compared to hair samples (Steinhoff et al., 2023). Also, response options for substance use frequency cannot discriminate between weekly use and diary use and this approach does not distinguish between single-beverage experimentation and broader multi-beverage use. Thus, future studies should also use other data collection methods. The inclusion of other substances, such as cannabis, would be useful to compare differential longitudinal patterns among several substances.

Even with some limitations, findings of the current study have important implications for research, policy and practice. Regarding implications for research, this study sheds light on stability and change in alcohol and tobacco use during adolescence by analysing latent transitions in a single sample. Experimentation with substances do not appear to be a benign developmental phase. Sporadic users is a status that seems to be a gateway to frequent use, especially for alcohol. This builds upon previous findings that showed that substance use tends to escalate once started (Best et al., 2018; Rodríguez-Ruiz et al., 2021). However, some participants de-escalated from sporadic user to non-user. Therefore, future studies should focus on protective factors that enable sporadic use to non-use. More longitudinal studies should treat alcohol and tobacco separately instead of being only a composite substance use variable (Zych et al., 2020) given that transitions in the use of alcohol and tobacco were slightly different with tobacco users showing a higher likelihood of de-escalation to non-use alcohol users.

The belief among some parents who supply alcohol to their children to "just try" safely (Mattick et al., 2018) is a misconception. Once the barrier of abstinence is broken, escalation is likely. Thus, policies and practices should focus on promoting abstinence by enhancing socio-structural factors (Bandura, 2013). Prevention programs should also focus on decreasing substance use once it progressed to frequent and delays the age of onset if total abstinence is impossible taking into account its impact on brain development during adolescence (Boer et al., 2024).

The findings of this study confirm that it is not safe to just try. While non-users are relatively stable over time, having tried alcohol or tobacco once or twice is a volatile and risky status. These findings show that prevention of alcohol and tobacco use is urgently needed to discourage early experimentation and preserve non-user status.

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CRediT authorship contribution statement

Raquel Espejo-Siles: Writing – review & editing, Writing – original draft, Methodology, Formal analysis, Data curation, Conceptualization. **Joaquín Rodríguez-Ruiz:** Writing – review & editing, Writing – original draft, Methodology, Formal analysis, Data curation, Conceptualization. **Izabela Zych:** Writing – review & editing, Supervision, Project administration, Funding acquisition.

Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Data availability

Data will be made available on request.

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