App-Based Coaching to Prevent Addictive Behaviors among Young Adults

Study Protocol of a Cluster-Randomized Controlled Trial

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Abstract: *Background:* Vocational students have an increased risk to engage in health-risk behaviors compared to same-aged peers. To date, evidence-based digital prevention approaches that address multiple health-risk behaviors are rare. *Method:* The randomized-controlled trial (RCT) "Prevention of at-risk substance and Internet use disorders among vocational students" (PARI) investigates the efficacy of an app-based prevention approach compared to a waitlist-control condition. The aim is to prevent substance-related and behavioral addictions and improve life skills. An existing app (ready4life) was adapted under consideration of focus groups with teachers, prevention experts, and students. A Delphi expert group rated the quality of the approach. The efficacy of the modified ready4life app is currently being tested in a RCT. The proactive recruitment takes place in German vocational schools. After participating in an app-based screening (T0), participants get individualized feedback and will be cluster-randomized per class to the intervention group (IG; n=1.250) or control group (CG; n=1.250). The IG chooses two out of six modules: Social competence, stress management, cannabis, tobacco, alcohol, social media/gaming. The CG receives information on how to improve health behaviors. Follow-ups are conducted after 6 months (T1) and 12 months (T2). *Conclusion:* This RCT provides data on a multibehavioral prevention approach for vocational students. Final results are expected in 2023.

Keywords: vocational students, app-based prevention, young adults, substance-related disorders, internet use disorders

App-basiertes Coaching zur Prävention von Suchtverhalten bei jungen Erwachsenen: Studienprotokoll einer randomisiert-kontrollierten Studie

Zusammenfassung: *Hintergrund:* Berufsschüler_innen weisen gegenüber Gleichaltrigen ein erhöhtes Risiko für gesundheitsgefährdende Verhaltensweisen auf. Bislang gibt es nur wenige evidenzbasierte, digitale Präventionsansätze, die mehrere gesundheitsgefährdende Verhaltensweisen gleichzeitig adressieren. *Methode:* Die randomisiert-kontrollierte Studie (RCT) „Prävention bei Auszubildenden in Bezug auf Rauschmittelkonsum und Internetbezogene Störungen" (PARI) untersucht die Wirksamkeit eines app-basierten Präventionsansatzes gegenüber einer Warteliste-Kontrollbedingung. Ziel ist es, substanz- und verhaltensbezogene Suchterkrankungen zu verhindern und Lebenskompetenzen zu verbessern. Eine bestehende App (ready4life) wurde unter Berücksichtigung von Fokusgruppen mit Lehrer_innen, Präventionsexpert_innen und Schüler_innen angepasst. Eine Delphi-Expertengruppe bewertete die Qualität des Ansatzes. Die Wirksamkeit der modifizierten ready4life-App wird derzeit in einem RCT getestet. Die proaktive Rekrutierung findet in deutschen Berufsschulen statt. Nach der Teilnahme an einem app-basierten Screening (T0) erhalten die Teilnehmer_innen ein individuelles Feedback und werden cluster-randomisiert auf Klassenebene der Interventionsgruppe (IG; n=1.250) oder der Kontrollgruppe (KG; n=1.250) zugeordnet. Schüler_innen in der IG wählen zwei von sechs Modulen aus: Soziale Kompetenz, Stressbewältigung, Cannabis, Tabak, Alkohol, soziale Medien/Gaming. Schüler_innen in der KG erhalten einmalig Informationen zur Verbesserung des Gesundheitsverhaltens. Nachuntersuchungen werden nach 6 Monaten (T1) und 12 Monaten (T2) durchgeführt. *Schlussfolgerung:* Dieses RCT liefert Daten zur Wirksamkeit eines multibehavioralen Präventionsansatzes bei Berufsschüler_innen. Die endgültigen Ergebnisse werden Mitte 2023 erwartet.

Schlüsselwörter: Berufschülerinnen, Berufschüler, app-basierte Prävention, junge Erwachsene, substanzbezogene Störungen, Internetnutzungsstörungen

Background

Health-Risk Behaviors in Emerging Adulthood

Typically, the period of emerging adulthood is associated with an increased readiness to engage in health-risk behaviors (Jordan & Andersen, 2017; Stockings et al., 2016). In the last years, research on the co-occurrence of multiple health-risk behaviors of adolescents and young adults (AYA) has received growing attention (Kotyuk et al., 2020; Velasco et al., 2021). In general, school settings are of high importance for the implementation of effective prevention approaches since many AYA can be reached with comparatively little effort. To date, most preventive approaches relate to regular schools. In Germany, however, a substantial part of AYA leaves the regular school system to start a vocational education. Vocational education typically takes place in a "dual system" that consists of a practical part in a company and a theoretical part in vocational schools. Previous studies found that vocational students are at increased risk to engage in multiple health-risk behaviors compared to other same-aged peers (Montag et al., 2015; Haug et al., 2013; Velasco et al., 2021). In a German sample of vocational students (M = 19.4 years; SD = 3.9; range 15–55 years; 45 % female), 40.7 % reported daily tobacco smoking, 45.0 % were screened positive for at-risk alcohol consumption, and the 30-days-prevalence of cannabis use was 7.5 % (Montag et al., 2015). Regarding pathological Internet use behavior, a prevalence rate of 3 % can be assumed among German adolescents (Wartberg et al., 2015). Since health-risk behaviors may have a synergetic effect on each other, effective prevention concepts that simultaneously address multiple risk behaviors in vocational school settings are required. In a Cochrane systematic review of 70 studies, universal school prevention programs addressing multiple health-risk behaviors were found to be beneficial compared to those addressing only one specific health-risk behavior (MacArthur et al., 2018). However, due to the poor quality of several included studies, the authors of this review underpin the importance of further intervention studies addressing multiple health-risk behaviors for strengthening the evidence base (MacArthur et al., 2018). To date, school-based prevention programs typically focus on single behavioral domains and behavioral outcomes (Velasco et al., 2021).

Prevention Concepts in School Settings

In vocational school settings, preventive goals usually cannot be achieved by primary prevention approaches. Instead, indicated prevention programs are more appropriate due to high prevalence rates of at-risk behaviors. In previous studies, the additional inclusion of life skills training in existing addiction prevention concepts had a positive effect on risky substance use and harmful Internet use (Durlak et al., 2011; Foxcroft & Tsertsvadze, 2011; Thomas et al., 2013). Besides, meta-analyses found that indicated prevention approaches for AYA that include individual brief interventions under consideration of individual needs were beneficial compared to universal group prevention approaches (Carey et al., 2007; Hennessy et al., 2019; Hennessy & Tanner-Smith, 2015). In particular, the combination of personalized feedback and individualized behavioral interventions (e.g., identification of individual risk situations, inclusion of goal-setting strategies) were found to be most effective (Scott-Sheldon et al., 2014). Furthermore, differences in the efficacy of school-based prevention programs are systematically related to age-specific psychological needs of those addressed (Onrust et al., 2016).

In recent years, several prevention concepts based on digital information and communication technology have been developed. Despite limited human and time resources, such low-threshold digital approaches can be easily implemented in school settings (Dotson et al., 2015) and may enable a better accessibility, attractiveness, adoption, and retention rate compared to usual school prevention concepts (Haug et al., 2017a, 2017b; Tait & Christensen, 2010; Whittaker et al., 2016). To date, however, existing prevention concepts in Germany are usually self-developed by schools and depend on local personnel resources. Systematic data on the efficacy of digital multibehavioral prevention approaches in German vocational schools are lacking.

Ready4life: An Example of an App-Based Prevention Approach in Vocational School Settings

Ready4life is an example of an app-based prevention program developed in Switzerland and designed to prevent addictive behaviors among vocational students and to promote life skills (Haug et al., 2020). After taking part in a screening on health behaviors via the *ready4life* app, an individualized risk and competence profile for each vocational student will be created. In the original app version, each vocational student can choose two modules that match individual interests (stress, social competence, tobacco, and alcohol). Over a period of four months, two to four individualized short message services (SMS) per week that are tailored to individual needs will be sent to the par-

ticipants. To increase retention rates, interactive elements such as quizzes, contests, and contact to experts ("Ask the expert" function) are available.

Based on established theories of health behavior, the social cognitive theory (Bandura, 1986), and the Health Action Process Approach (Schwarzer, 1992), *ready4life* was developed and evaluated by the Swiss Institute for Addiction and Health Research at the University of Zurich in collaboration with the Swiss Lung League and vocational schools.

To date, systematic evaluations of *ready4life* in Germany are lacking. Additionally, the prevention of harmful Internet use has not yet been implemented in multibehavioral digital prevention approaches. Furthermore, the original version of *ready4life* did not include cannabis use. To increase the acceptance and acknowledge the schools' efforts, it seems important to link addiction prevention approaches with local school projects and to include students and teachers in the development of the prevention approach.

Aim of this Trial

Summing up, addiction prevention approaches in school settings should (1) address life skills, (2) address multiple behaviors, (3) be economical and implementable with limited personnel capacities, (4) provide an indicated prevention approach for high-risk groups, (5) offer individualized interventions, and (6) may optionally include digital interventions. Based on these requirements, the PARI trial ("Prevention of at-risk substance and Internet use disorders among vocational students") aims to test the efficacy of a modified digital prevention approach (*ready4life*) that has already been evaluated in its previous form in vocational schools in Switzerland.

Methods and Trial Design

Study Design

The study is divided into two phases: (1) The first phase, which is already completed, included the modification of an existing Swiss prevention approach (*ready4life*) and the extension of the app by two modules (Social media/gaming and cannabis) under consideration of qualitative focus groups with students, teachers, and addiction prevention experts. (2) The second ongoing phase includes the cluster-randomized controlled trial to investigate the efficacy of the modified *ready4life* app.

Phase 1: Participatory Modification of an Established Digital Prevention Approach

In addition to the already existing *ready4life* app, further two modules which are of importance to the target group ("Social media/gaming" and "Cannabis") were developed and tested by the project team.

Focus Groups

For the participatory further optimization of the prevention approach, separate focus groups with students, teachers, and addiction prevention experts were conducted. The aim of the student focus group (n=8 students) was to adapt the content of the existing *ready4life* app and increase students' readiness to participate while the purpose of the teachers focus group (n=5) was to assess the feasibility of the program and to optimize the inclusion of teachers in the program, the embedding in the already existing prevention school concepts as well as the readiness of schools to participate. The focus group with addiction prevention experts (n=5) was conducted to assess the expected efficacy, the feasibility, and to discuss implementation strategies in the German vocational school context. All focus groups were conducted between December 2019 and January 2020, audio-recorded and evaluated by two independent raters. Constructive ideas for change were considered in the further development of the *ready4life* app. The final concept is displayed in Table 1.

Delphi Study

To evaluate the feasibility of the *ready4life* concept in Germany, a Delphi study was conducted with (1) experts in the fields of prevention, addiction, pedagogy, and education, and (2) scientists in the field of addiction. All experts were recruited in the federal state of Lower Saxony, based on a list of addiction prevention experts in Lower Saxony which was provided by the Lower Saxony State Office for Addiction Issues. In the selection process of potential participants, a wide spatial distribution across the state of Lower Saxony as well as different institutional affiliations was ensured. Experts in the field of prevention, addiction, pedagogy, and education who had previously participated in focus group discussions of other projects in this working group were excluded. Furthermore, school psychologists employed by the Lower Saxony State School Authority were invited to participate. Scientists in the field of addiction were recruited nationwide.

In total, 44 experts and scientists were informed about the Delphi study via mail in August, 2020. Of these, 23

Table 1. Content of the intervention for each module per week

Week	Goals	Underlying psychological theory	Module					
			Stress	*Social competence*	*Social Media & Gaming*	*Alcohol*	*Tobacco*	*Cannabis*
1	Arousing interest in the program	Self-monitoring, normative feedback, outcome expectations	Feedback on individual stressors, introduction and quiz, overview of the program	Feedback on individual social skills, introduction and quiz, overview of the program	Feedback on own social media/ gaming behavior, introduction and quiz, overview of the program	Feedback on own alcohol consumption, introduction and quiz, overview of the program	Feedback on own smoking behavior, introduction and quiz, overview of the program	Feedback on own cannabis use, introduction and quiz, overview of the program
2	Realizing risks – motivating to implement low-risk behavior and building competencies	Decisional balance, outcome expectations	Weighing the pros and cons of stress, positive stress, balance stress/relaxation	Advantages of socially competent behavior, Introvert – Extrovert, Body language	Weighing the pros and cons of internet and smartphone use, social media pressures, effects on sleep patterns	Pros and cons of alcohol consumption, highlighting the benefits of low-risk consumption, Invitation to „Low-risk drinking“	Weighing the pros and cons of smoking, pointing out the benefits of not smoking. Invitation to „Becoming smoke-free“	Weighing the pros and cons of cannabis use, pointing out the benefits of not using, dealing with peer pressure, alternative strategies for relaxing without cannabis
3	Risk awareness, improving motivation to change, building competencies and strategies for reducing risk behavior	Decisional balance, outcome expectations	Picture Contest „What relaxes you when you‘re stressed?“	Picture Contest on dealing with peer pressure	Picture Contest „Upload a photo that shows you having fun without a smartphone or computer“	Picture Contest of a nice evening without alcohol	Picture Contest „What might motivate you or others to smoke less or to quit smoking?“	Picture Contest „What might motivate you or others to smoke less or quit smoking pot?“
4	Goal setting and personal plans for behavioral changes	Implementation intentions, self-regulation	If-then plan for coping strategies in personal stress situations	If-then plan for representing one‘s own opinion in conversations	If-then plan to reduce internet and smartphone use	If-then plan for learning alternative behaviors in drinking situations	If-Then Plan for Dealing with Temptation in Smoking Situations	If-Then Plan for Dealing with Temptation in Cannabis „Smoking“ Situations
5	Clarify individual questions in connection with the topic	Implementation Intentions, self-regulations	Reminder of behavior plan. Opportunity to ask questions about the topic to an expert	Reminder of behavior plan. Opportunity to ask questions about the topic to an expert	Reminder of behavior plan. Opportunity to ask questions about the topic to an expert	Reminder of behavior plan. Opportunity to ask questions about the topic to an expert	Reminder of behavior plan. Opportunity to ask questions about the topic to an expert	Reminder of behavior plan. Opportunity to ask questions about the topic to an expert
6	Select and pursue a personal goal as an example	Goal setting, self-monitoring, self-efficacy	Personal Challenge to promote sports behaviors for stress reduction	Personal challenge on the topic of „body language“, „tone of voice“, or „small talk“	Personal challenge on internet and smartphone use (no longer use during work/school, no longer use in bed at night, spend fixed times without)	Personal challenge on alcohol (don‘t drink or drink less, support friends to drink less)	Personal challenge on smoking (not smoking for a while, observing smoking behavior, supporting friends in quitting smoking)	Personal challenge on cannabis („say no“, don‘t smoke weed one day on the weekend, observe consumption behavior)

Table 1. *Continued*

7	Dealing with difficult situations	Observational learning, outcome expectations, self-efficacy	Formulation of a personal anti-stress thought for exam situation, connection sleep – stress	Video quiz on dealing with peer pressure	Quiz on physical consequences of excessive smartphone and internet use	Video quiz on behavior in drinking situations, quiz on the addictive potential of various substances	Video quiz on the social norm of smoking among children, motivation to stand by oneself and resist peer pressure	Video quiz on the effects of cannabis and the dangers of the „new" cannabis strains, as well as the development of dependence
8	Dealing with the questions of others and broadening one's own perspective	Observational learning, self-efficacy	Summary of the most interesting and frequently asked questions and expert answers on the topic of stress	Summary of the most interesting and frequently asked questions and expert answers on the topic of social competence	Summary of the most interesting and frequently asked questions and expert answers on the topic of social media/gaming	Summary of the most interesting and frequently asked questions and expert answers on the subject of alcohol	Summary of the most interesting and frequently asked questions and expert answers on the topic of tobacco/ nicotine	Summary of the most interesting and frequently asked questions and expert answers on the subject of cannabis

were addiction prevention specialists, 10 were school psychologists, and 11 were scientists. Those who were willing to participate (n=21) received another mail with a brief description of *ready4life* and the planned implementation strategy in vocational schools. Additionally, an online questionnaire was designed to obtain expert assessments. In total, six topics were covered with a total of 32 items: Evaluation concept, anticipated efficacy, the attractiveness of the program and expected willingness to participate, reaching different groups of vocational students, acceptance of *ready4life,* and potential difficulties and possibilities for improvement. Data assessment was anonymous. There was no incentive for the participants. Of 21 experts who agreed to participate, 17 completed the online questionnaire (response rate: 81 %). Overall, the modified *ready4life* program was perceived to be attractive and effective. The recruitment strategy was perceived to be feasible. Minor changes in terms of the implementation strategy in vocational school settings were made in line with the recommendations provided by the participants.

Phase 2: Cluster-Randomized Controlled Trial to Test the Efficacy of the App-Based Prevention Approach

To test the efficacy of the modified *ready4life* app, a two-arm cluster-randomized controlled trial is currently being conducted, including an intervention group (IG) and a waitlist-control group (CG) with pre-post and follow-up assessments.

Sample, Procedure and Study Setting

The modified *ready4life* program and the PARI study are implemented in vocational school classes in at least four German federal states, reflecting the heterogeneity of the Federal Republic of Germany. Depending on the local conditions, the aim and the procedure of the PARI study are presented in the classes by trained teachers, trained local school social workers/ addiction experts, or members of the PARI project team. The person who presents the app and the trial does not know if the class is cluster-randomized to the control or intervention group. All vocational students who are at least 16 years old and willing to participate can download the app with a password that is created for each class by the project team. After taking part in the app-based screening (all assessments are shown in Table 2), each student receives an individualized risk and resource profile. The whole class is cluster-randomized (T0) either to the intervention group (IG; n=1.250) or the control group (CG; n=1.250) to avoid spill-over effects. Each

Table 2. Pre-post assessments

Construct	Screening instrument	Baseline (T0)	Follow-up after 6 months (T1)	Follow-up after 12 months (T2)
Sociodemographic information	Standard items	X	X	X
Vocational school characteristics	Standard items	X		
Alcohol	Based on Alcohol Use Disorders Identification Test – Consumption (AUDIT-C; Bush et al., 1998)	X	X	X
Tobacco	Frequency of tobacco/ nicotine products smoking in the last 30 days, consumption days of cigarettes/ electric products, number of cigarettes per day	X	X	X
	Heaviness of smoking index (HIS; Heatherton et al., 1989)		X	X
Cannabis	Life-time consumption of THC-containing cannabis, consumption days, Cannabis Use Disorder Identification Test Short-Form (CUDIT-SF; Bonn-Miller et al., 2016)	X	X	X
Internet	Short – Compulsive Internet use scale (Short CIUS; Besser et al., 2017), most frequently used Internet application	X	X	X
Social competence	Modification of the "Assertion Inventory" (Gambrill & Richey, 1975)	X	X	X
Self-rated health	1st question of the Health Survey (SF-36; Ware & Sherbourne, 1992)		X	X
Stress	Single-item measure of stress symptoms (Elo et al., 2003)	X	X	X
Subjective well-being	World Health Organization (WHO) – Five Well-Being Index (WHO-5; WHO, 1998)		X	X
Readiness and self-efficacy ruler	Readiness and self-efficacy ruler for alcohol, tobacco, social media/ gaming, cannabis		X	X
Self-efficacy	General self-efficacy beliefs (Allgemeine Selbstwirksamkeit Kurzskala; ASKU; Beierlein et al., 2012)	X	X	X
Impact of COVID-19 on consumption behavior	Self-developed		X	X
Consumption climate at work	Self-developed		X	
Restrictions of daily activities or work due to consumption behaviours	Self-developed		X	X
Process evaluation	Self-developed		X	
Utilization of professional help	Standard items		X	X
Work Experiences	Self-developed		X	
Health topics at school/work	Self-developed			X
School success	Self-developed			X
Impact of consumption behavior on school success	Self-developed			X

participant in the IG chooses two out of six modules: (1) Social competence, (2) stress management, (3) cannabis, (4) tobacco, (5) alcohol, or (6) social media/gaming. New content is posted via a chatbot once a week over a period of eight weeks per module. The CG receives a link in the app with information on how to improve health behaviors. Fol-

low-ups take place after 6 months (T1) and 12 months (T2). After the second follow-up, the app-based prevention is available for the CG. As incentives, vouchers with a total worth of 20 000 Euro are raffled among all participants. The study procedure is displayed in Figure 1. An insight into the app is shown in Figure 2.

Follow-Up and Outcome Measures

Alcohol consumption, tobacco use, cannabis use, Internet Use Disorders (IUD), social competence, and stress management will be assessed with standardized valid and reliable instruments. An overview of all measures at baseline (T0) and both follow-ups (T1, T2) is displayed in Table 2. For the follow-ups, all participants receive a link via SMS or email that leads to an online assessment. To increase the participation rate, participants who did not complete the follow-up get a reminder via SMS or email. Besides, participants will be contacted via telephone by the project team to provide the option to complete the follow-up during a telephone interview.

Analyses

The primary endpoint is a composite outcome, including changes between baseline, 6- and 12-month follow-ups with respect to tobacco smoking, alcohol, cannabis, and internet-related problems. To investigate changes in addictive behaviors from baseline to 6 and 12 months longitudinal structural equation modeling will be used. A latent factor at each of the three assessment points will be estimated using tobacco smoking, alcohol, cannabis, and IUD as indicators. Secondary endpoints are as follows: Frequency of tobacco, alcohol and cannabis consumption, frequency of

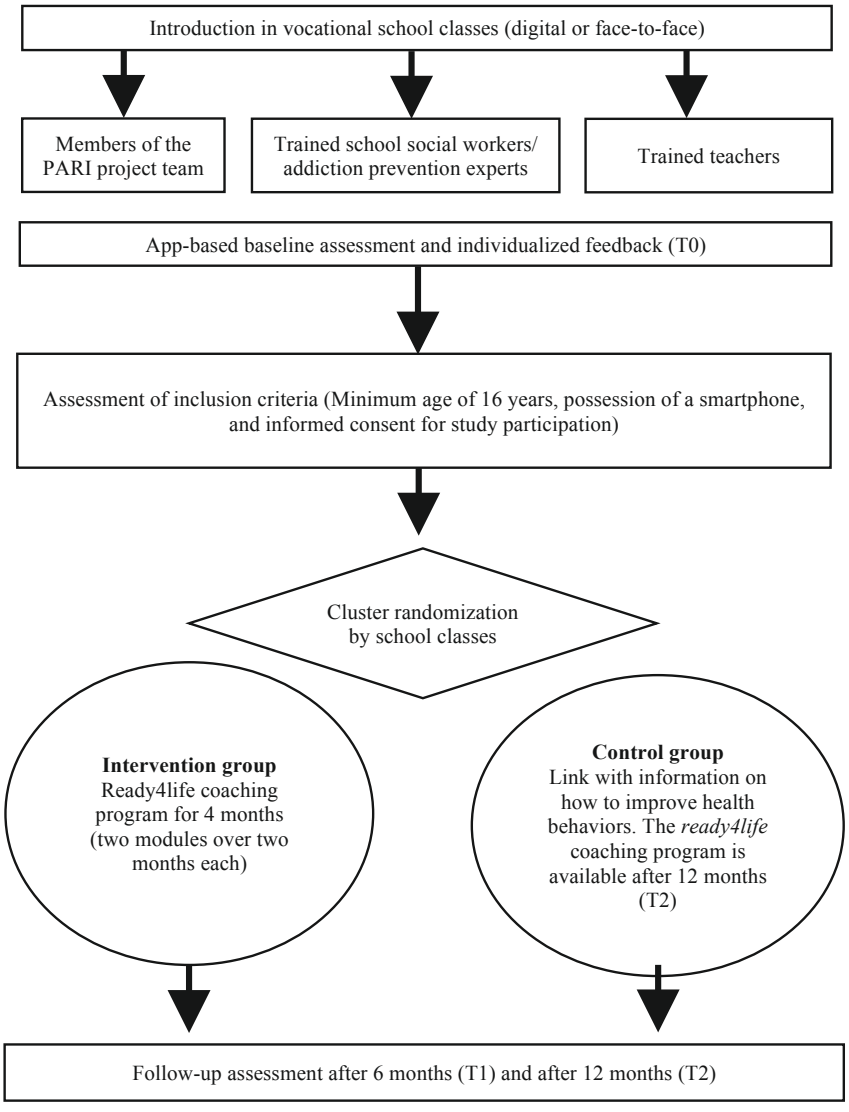

Figure 1. Flow-chart.

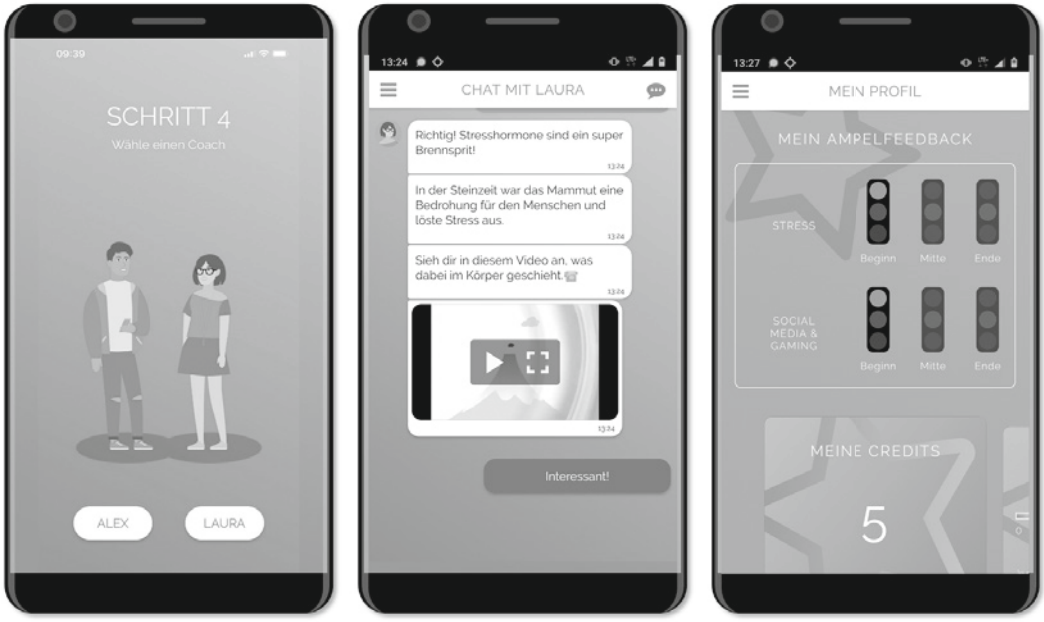

Figure 2. App Ready4life.

binge drinking, number of cigarettes per day, internet-related problems, stress load, social competence, days of absence from company/vocational school, and drop-out.

Power Calculation

Based on a sample of 5.000 students and an estimated participation rate of 50 %, 1.250 students need to be assigned to the IG and 1.250 students to the CG. With the cluster-randomized sample, a loss of statistical power has to be taken into account, resulting in a design effect of 1.55 by assuming 12 participants per class and an intra-cluster correlation (ICC) of 0.05. This procedure ensures that even small effects (d=0.2) will be identified. The power calculation was conducted with Gpower.

Quality Ensurance

Standard operating procedures (SOPs) for the implementation in vocational schools were provided. All project members who are included in the recruitment process were trained in advance.

Ethics

Informed consent will be obtained from all participants prior to study enrollment. Underaged participants are advised that their caregivers must be informed about study participation. For this purpose, a link with relevant information about the study is provided in the app. Participation in the study is voluntary. Information about the study's purpose and procedures, data protection, and the option to withdraw from the study at any time without any given reason will be provided. Approval for the study was obtained from the ethics committee of the University of Lübeck (number 19-419) and the University of Greifswald (BB 024/20). Prior to data collection, an authorization of the ministries of education and cultural affairs of each Federal state in Germany involved in the PARI study was collected. The study is conducted in accordance with CONSORT guidelines and in line with the Declaration of Helsinki. After the second follow-up, the intervention is also available for the CG.

Discussion

To date, low-threshold approaches aimed to prevent addictive behaviors by improving life skills in vocational school settings are rare. The present PARI study aims to investigate the efficacy of an app-based coaching program (*ready4life*). This approach has already been evaluated in its previous form in vocational schools in Switzerland (Haug et al., 2017a, 2017b, 2017c). For this cluster-randomized controlled trial in Germany, however, the existing *ready4life* app has been supplemented with the modules social media/ gaming and cannabis. Although the representativeness of the sample cannot be guaranteed, a broad range of heterogeneous vocational sectors (e.g., service industries, business professions, and industrial-technical

professions) from different federal states across Germany will be included. Results of this cluster-randomized controlled trial are expected in 2023. The results will be published and presented at congresses. If the results indicate that this approach is feasible and effective, it can be distributed in German vocational schools. All materials (explanation video, app, website) are designed to require minimal effort and resources for schools and teachers.

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Declaration of Competing Interests
All authors declare that they do not have a conflict of interest.

Authorship
Hannah Schmidt wrote of the manuscript draft, was responsible for the recruiting of vocational schools and vocational students, and trained teachers to introduce the program to their classes. *Dominique Brandt* was involved in the development of the additional modules cannabis and internet use, the testing of the modified ready4life app, the training of teachers to introduce the program to their classes. *Anja Bischof* and *Svenja Sürig* were involved in the development of the additional modules cannabis and internet use and the testing of the modified ready4life app. *Gallus Bischof* contributed to the study design and obtained the data gathering process. *Diana Gürtler* was responsible for the data management and data monitoring, the contribution to two newly developed ready4life modules, the testing of the modified ready4life app, the recruiting of vocational schools, and the presenting of the PARI study in vocational classes. *Anne Möhring* contributed to study planning and the development of the two new ready4life modules as well as the testing of the modified ready4life app. *Merten Neumann* and *Arne Dreissigacker* were involved in the recruitment of vocational schools and vocational students, and trained teachers to introduce the program to their classes. *Sven Haug* was responsible for the development of the ready4life app. *Dominic Bläsing* was responsible for the programming of participant management software, follow-up reminder, and assessment. *Christian Meyer* contributed to the study design, obtained the data gathering process, and follow-ups. *Florian Rehbein* was responsible for conducting the focus group discussions with students, teachers, and prevention experts, the phase 1 Delphi study, and the development of the standard operating procedures (SOPs) of implementation. *Hans-Jürgen Rumpf* is the principal investigator of this study and was involved in all steps of the study process.
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