

Supplementary Information for

A qualitative study exploring adolescent's perspectives of resilience trainings for chronic medical conditions

L. Sieper¹, J.-L. Kerth¹, D. Schneble¹, C. Tomoiaga², O. David², E. Mayatepek¹, T. Meissner^{1*}, A.C. Bischops^{1*}

¹ Department of General Pediatrics, Neonatology and Pediatric Cardiology, Medical Faculty and University Hospital Düsseldorf, Heinrich Heine University Düsseldorf, Germany

² Department of Clinical Psychology and Psychotherapy, Babes-Bolyai University, Cluj-Napoca (UBB), Romania

*shared last authors

Corresponding author: Dr. A.C. Bischops, Department of General Pediatrics, Neonatology and Pediatric Cardiology, Medical Faculty and University Hospital Düsseldorf, Moorenstraße 5, 40225 Düsseldorf, Germany
E-Mail: annechristine.bischops@med.uni-duesseldorf.de

Content

<u>SUPPLEMENTARY TABLES</u>	<u>3</u>
<u>CODING GUIDELINES.....</u>	<u>4</u>
<u>INTERVIEW GUIDELINES</u>	<u>7</u>
<u>REFERENCES.....</u>	<u>8</u>

.Supplementary Tables

Table 1: Adolescent's self-assessment of resilience status

Items	Number answers (in %)
Resilient	35 (76)
Somewhat resilient	7 (15)
Not Resilient	3 (7)
I don't know	1 (2)

Table 2: Evaluation of usefulness of RETHink app for resilience training

Items	Number answers (in %)
Yes	35 (78)
I don't know	3 (7)
App was considered useful for other youth, but not relevant for interviewee	4 (9)
No	3 (7)

Refers to 45 interviews as one interview was not evaluable for this question.

Table 3: Evaluation of general usefulness of apps for resilience trainings

Items	Number answers (in %)
Very useful	12 (27)
Somewhat useful	28 (68)
Not useful	3 (7)
I don't know	1 (2)

Refers to 44 interviews as two interviews were not evaluable for this question.

Table 4: Evaluation of future resilience training app usage

Item	Number answers (in %)
Very probable	10 (22)
Probable	15 (33)
Somewhat probable	6 (13)
Not probable	14 (31)

Refers to 45 interviews as one interview was not evaluable for this question.

Table 5: Usefulness of weekly app usage notifications

Item	Number answers (in %)
Yes	33 (72)
No	7 (15)
Not applicable	4 (7)
Did not receive notification (only parents)	2 (4)

Table 6: Preferred format of future coaching interventions

Item	Absolut count answers (in %)
Online	14 (61)
On-site	8 (35)
I don't know	1 (4)

Refers to 23 interviews (coaching intervention group participants only)

Coding guidelines

Category	Category formation	Definition	Anchor example/Items	Coding rules
Self-assessment resilience status	Deductive	- Do youth consider themselves resilient - All passages indicating the youth's assessment of their own resilience	- Yes, I would consider myself resilient - No, not so much - Depending on the situation	- Slightest hints (as well from nonverbal annotations) - All documents included, multiple codings per document possible
	Deductive	- Did resilience change during the course of the study - All passages indicating that that resilience did/did not change	- Yes, I think it did change - No, I would say it stayed the same - Maybe a little - I don't know how to answer	- Slightest hints (as well from nonverbal annotations) - All documents included, multiple codings per document possible
	Inductive	- What do adolescents think would help them become more resilient - All passages including suggestions what would be helpful	—	- Slightest hints (as well from nonverbal annotations) - All documents included, multiple codings per document possible
App evaluation	Deductive	- Did youth consider the app helpful to increase resilience - All passages indicating that it was helpful/not helpful	- App was considered helpful to increase resilience - App was not considered helpful to increase resilience - App was partly considered helpful to increase resilience - No assessment could be made	- Slightest hints (as well from nonverbal annotations) - All documents included, multiple codings per document possible
	Deductive	- How useful is an app perceived to be in addressing mental resilience - All passages indicating that it was useful/not useful	- App was perceived as very useful - App was perceived as useful - App was not perceived as useful - No assessment could be made	- Slightest hints (as well from nonverbal annotations) - All documents included, multiple codings per document possible
Long-term general app use	Deductive	- How likely is it that an app will be used again to increase mental resilience? - All passages including likeliness	- Highly probable - Probable - Rather improbable - Improbable	- Slightest hints (as well from nonverbal annotations) - All documents included, multiple codings per document possible

App usability	Inductive	- Which parts of the application were considered good and why? - All passages including assessment of the app	—	- Slightest hints (as well from nonverbal annotations) - All documents included, multiple codings per document possible
	Inductive	- Which parts of the application were considered poorly and why? - All passages including assessment of the app	—	- Slightest hints (as well from nonverbal annotations) - All documents included, multiple codings per document possible
	Inductive	- What should be changed on the app for a better usability - All passages including suggestions of change	—	- Slightest hints (as well from nonverbal annotations) - All documents included, multiple codings per document possible
App use	Inductive	- What should be changed for the app to be used more frequently? - All passages including suggestions of change	—	- Slightest hints (as well from nonverbal annotations) - All documents included, multiple codings per document possible
	Deductive	- Were the weekly reminders to play considered helpful? - All passages indicating that it was helpful/not helpful	- Reminders were considered helpful - Reminders were not considered helpful - Game was played without reminder - Reminders were not needed, e.g. “Most of the times I had already played the reminder arrived” - Parents received reminder and did not forward it	- Slightest hints (as well from nonverbal annotations) - All documents included, multiple codings per document possible
	Inductive	- What resources would youth need to stay motivated while playing? - All passages including suggestions of motivational aspects	—	- Slightest hints (as well from nonverbal annotations) - All documents included, multiple codings per document possible
Coaching evaluation	Inductive	- What did adolescents like about the intervention? - All passages including assessment of the coaching intervention	—	Slightest hints (as well from nonverbal annotations)

			All documents included, multiple codings per document possible
Inductive	- What did adolescents not like about the intervention? - All passages including assessment of the coaching intervention	—	- Slightest hints (as well from nonverbal annotations) - All documents included, multiple codings per document possible
Inductive	- What should be changed for the Coaching intervention to be used more frequently? - All passages including suggestions of change	—	- Slightest hints (as well from nonverbal annotations) - All documents included, multiple codings per document possible
Deductive	- Would the coaching intervention be preferred on site or online? - All passages indicating preference	- Intervention would be preferred online - Intervention would be preferred face-to-face on site - No assessment could be made	- Slightest hints (as well from nonverbal annotations) - All documents included, multiple codings per document possible

Interview Guidelines

Topic	Key questions	Supporting questions
Introduction	Introduction Thank you for participating as a game tester! Goal of the interview Time frame	There are no right or wrong answers. Do you have any questions? What was it like for you to participate in the study?
Introduction Resilience	This question is not about right and wrong, but about your opinion. What do you think the app or coaching was about?	What did you learn/understand?
Resilience status	Do you consider yourself resilient against stress, e.g. at school, with friends, etc.?	Would you like to be more resilient? What do you think would help you become more resilient?
Usefulness of resilience training	You used our app and received coaching during the study. Do you think that changed your resilience? Why?	Can you give an example of how the app/coaching helped you? Can you give an example of why the app/coaching didn't help you?
App evaluation- Usability	How satisfied were you with the app? Which parts of the app did you like the most? Why? Which parts of the app did you not like so much? Why? What should be changed in the app so that you can use it better? Do you think the app is a good tool to improve resilience?	Can you give an example of what the app could help you with? Or what did not work for you?
App evaluation- Language	In which language version did you play the app? Do you think it's important what language RETman speaks? Should he speak English or German?	Do you think the app would be more usable for you if RETman spoke German/native language?
App evaluation- Usage	You have used the app xxxx times. What were the reasons for not using it more often? What can be improved about the app so that you use it more often? Did you find the notifications helpful?	What resources would you need to stay motivated?
Coaching evaluation	You participated in xxx coachings. How did you like the coaching? What did you like about the coaching? What did you not like?	What could we change so that you would participate more often?

	Would you prefer to do the intervention on-site or online?	
Questionnaire	Did you understand all questions from the questionnaires?	If not, which ones? Why?
Long term usage app and coaching	Do you think you will use the app again? How useful do you think an app is in general for dealing with the topic of mental resilience? How likely is it that you would use an app again to increase your mental resilience? Would you like to participate in a coaching intervention like this more often?	If yes, why? If no, why? How often? (1-2/week, 1x/month)? How long should a session last?(30-60-90-120 minutes?)
Conclusion	We're almost done with the interview now. Have we forgotten anything else?	Do you have any suggestions, requests or anything else you want to tell us?

Based on interview guidelines of Husted et al. 2018 and Simons et al.[1, 2]

References

1. Husted GR, Weis J, Teilmann G et al. Exploring the Influence of a Smartphone App (Young with Diabetes) on Young People's Self-Management: Qualitative Study. JMIR mHealth and uHealth 2018; 6: e43. DOI: 10.2196/mhealth.8876
2. Simons D, De Bourdeaudhuij I, Clarys P et al. A Smartphone App to Promote an Active Lifestyle in Lower-Educated Working Young Adults: Development, Usability, Acceptability, and Feasibility Study. JMIR mHealth and uHealth 2018; 6: e44. DOI: 10.2196/mhealth.8287