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What do adolescents and young adults strive for in sport and exercise? An explorative study on goal profiles in sport and exercise

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ABSTRACT

In sport and exercise promotion, it is important to consider goals because achieving these goals leads to a sense of well-being and behaviour adherence. Individuals often pursue multiple goals simultaneously. Therefore, it is also important to not only consider each individual's combination of goals but also to identify so-called "goal profiles". Taking a developmental-psychological perspective, the goal profiles of adolescents may differ from those of young adults. Furthermore, goal profiles might differ concerning the self-determined motivation, sport and exercise behaviour, and gender. Therefore, both age groups, 966 adolescents and 636 young adults, were questioned by self-report on their goals in sport and exercise, self-determined motivation, sport and exercise behaviour, and gender. A multiple-group-analysis for latent-profile-solutions was conducted resulting in six goal profiles for both age groups. As expected, the shape of these profiles differed qualitatively for the majority of adolescents and young adults: In adolescents, goals such as contact and the perception of challenge were more prominent, whereas in young adults, health, figure/appearance, and distraction/catharsis were dominant. Validation analyses support the profiles identified as they differ in self-determined motivation, sport and exercise behaviour, and gender. To more efficiently tailor interventions, an age-specific focus on goal profiles seems promising.

Introduction

Sport and exercise behaviour internalized in adolescence and young adulthood shapes future behaviour across adulthood and, therefore, lays the foundation of future public health (Patton et al., 2016; Sawyer et al., 2012). As a consequence, it is important to promote sport and exercise from an early age.

Recently, there has been a growing call for strategies to promote sport and exercise behaviour that take into account individual preferences, such as goals (World Health Organization, 2015). Goals can be defined as "internal representations of desired states" (Austin & Vancouver, 1996, p. 338), and subjectively explain why adolescents and young adults initiate sport or exercising (Schmid et al., 2018). Individuals often strive to accomplish goals, such as regulating their weight, competing against others, and distracting themselves from daily problems (Gut et al., 2019; Sebire et al., 2008). Achieving such goals, therefore, has positive effects on one's sense of well-being and long-term maintenance of sport and exercise behaviour (Antunes et al., 2018; Gunnell et al., 2014; Klusmann et al., 2016; Schmid et al., 2021).

There are great inter-individual variations in which goals are held to be most important in sport and exercise not only in terms of intrinsic and extrinsic goals but also within these types of goal content (e.g., Lindwall et al., 2016; Sudeck et al., 2011). A possible approach to giving more weight to individual differences in goals is to identify specific subgroups with similar characteristics (Biddle & Fuchs, 2009). As a result, interventions targeting subgroups can be developed that enhance the

efficacy of interventions (Conn et al., 2011). Consequently, the current study aims to develop knowledge about different subgroups of adolescents and young adults regarding their goals in sport and exercise to build a foundation for future interventions.

Individual differences in goals in sport and exercise among adolescents and young adults

Based on theoretical and empirical considerations, it is appropriate to treat the two age groups separately in considering individual differences in goals in sport and exercise: adolescents aged from 14 to 19 years and young adults aged from 20 to 34. Drawing on a developmental-psychological perspective, age-specific development tasks may lead to different goal contents and a different prioritization of the importance of goals (Feldman, 2014; Heckhausen et al., 2010; Hennecke & Freund, 2017; Newman & Newman, 2012). Indeed, several studies have shown that goals in sport and exercise differ depending on the age group (Quindry et al., 2011; Stults-Kolehmainen et al., 2013; Trujillo et al., 2004). Referring to personality development (Feldman, 2014; Steinberg, 2016), adolescents seek risky and competitive situations to explore their limits and to compare themselves with their peers. Consequently, in the field of sport and exercise, competition and challenge are more important for the 18 to 24 year olds than for those aged 25 to 34 (Box et al., 2019). In contrast, young adults tend to strive for certain ideals of beauty, and, furthermore, health gains in

importance (Feldman, 2014). For example, Quindry et al. (2011) showed that health and weight management are more important for young adults in sport and exercise than for adolescents.

The associations between goals, self-determined motivation, sport and exercise activity level, and gender

According to the Goal Contents Theory, a Sub-Theory of the Self-Determination Theory (Ryan & Deci, 2017; Sebire et al., 2009, 2011), the degree of self-determined motivation and sport and exercise behaviour is influenced by individual goals. Thereby, goal content can be defined as intrinsic and extrinsic. Extrinsic goals in sport and exercise have an external orientation, such as improving one's appearance or receiving social recognition (Gunnell et al., 2014; Gut et al., 2019; Lehnert et al., 2011; Lindwall et al., 2016; Schmid et al., 2018). In contrast, intrinsic goals in sport and exercise focus on the activity itself, such as experiencing aesthetic movement or developing technical skills, and are therefore inherently satisfying to pursue. Empirical research has shown more intrinsic goals, such as skill development, health management, and social affiliation, to be positively associated with higher sport and exercise activity level (Gunnell et al., 2014; Sebire et al., 2009, 2011). It can be assumed that this relationship is mediated by the degree of self-determined motivation (Gunnell et al., 2014; Sebire et al., 2009, 2011). According to the Self-Determination Theory Theory (Ryan & Deci, 2017), motivation can be placed on a continuum of Self-Determination between amotivation, extrinsic and intrinsic motivation. Based on the Theory of Organismic Integration, another Sub-Theory of Self-Determination Theory (Ryan & Deci, 2017) extrinsic motivation has moreover various qualities that differ in their degree of internalization. For example, an individual can be extrinsically motivated because of external reasons (e. g. because of a medical recommendation or the pressure of other peers), or already have a higher internalized motivation because sport and exercise are related to her or his own values (e. g. to be active because of health reasons). In general, more self-determined motivation, such as intrinsic motivation and internalized motivation, is associated with higher sport and exercise activity level (Teixeira et al., 2012). Since intrinsic goal content is associated with self-determined motivation such types of goals also positively influence sport and exercise activity level. In contrast, extrinsic goals are associated with extrinsic and controlled motivation, which in turn can negatively influence sport and exercise activity level (Gunnell et al., 2014; Sebire et al., 2009, 2011).

In addition, various studies point to gender differences in goals in sport and exercise: In general, figure/appearance is a more important goal for females, whereas males rated competition/achievement as more important (e. g., Lehnert et al., 2011; Molanorouzi et al., 2015; Stults-Kolehmainen et al., 2013). Furthermore, distraction/catharsis tend to be more important for women (Kilpatrick et al., 2005; Molanorouzi et al., 2015), whereas social recognition and challenge seem to rate higher for men (Kilpatrick et al., 2005). These gender differences of importance in goals could be explained by different theoretical approaches (see for an overview Hyde, 2014; Lippa, 2010): For example, evolutionary theories assume that gender differences are caused by evolutionary selection, whereby men

compete against each other to gain privileges, tend to be more risk-taking and tend to endorse more status-oriented goals as characteristics of being an attractive partner.

A profile focus on goals in sport and exercise

As each individual deems a different combination of goals in sport and exercise to be important a focus on individual goal profiles is necessary (Lindwall et al., 2016; Molanorouzi et al., 2015). Furthermore, it can be assumed that there exist similarities of goal profiles across individuals and that, thus, individuals can be categorized into subgroups with similar profiles (Krauss et al., 2017; Lindwall et al., 2016). To investigate these profiles, a person-oriented approach is appropriate (Bergman & Lundh, 2015). This approach contains theoretical and methodological considerations and focuses on the interactions of goals within an individual. It allows patterns, types or profiles with similar characteristics to be identified across individuals. As a consequence, statistical methods have to be fitted to the research questions and theoretical assumptions. Therefore, in this study, an appropriate method is using a latent profile analysis focusing on variable patterns with non-linear relationships (Masyn, 2013).

So far, there has not been any research on goal profiles in sport and exercise concentrating on adolescents and young adults: Previous research has targeted on older rehabilitation patients around 60 years old (Krauss et al., 2017), middle-aged adults from 35 to 64 years (Sudeck et al., 2011), or even not focusing on a specific age group (Lindwall et al., 2016). However, referring to the developmental-psychological considerations mentioned above, it can be assumed that goal profiles are age-specific due to different development tasks depending on life phase. Consequently, the previous goal profiles found are not transferable to adolescents and young adults.

Aim of the study

In summary, a review of the current literature shows that little is known about age-specific goal profiles for sport and exercise in adolescents and young adults. In light of this, this person-oriented study aimed to examine the following research questions:

- *Research question 1*: What goal profiles among adolescents and young adults can be identified?

Furthermore, to validate the identified profiles, associations with self-determined motivation, sport and exercise behaviour, and gender were examined. Based on the Goal Contents Theory (Sebire et al., 2009), it can be hypothesized that profiles – whereby goals with external orientation, such as figure/appearance are prominent – are associated with a lower degree of self-determined motivation and a lower sport and exercise activity level. In contrast, profiles with more prominent activity-oriented goals, such as aesthetics and competition/performance, are associated with a higher degree of self-determined motivation and a higher sport and exercise activity level. Moreover, it can be assumed that more females are

represented in profiles where the goals of figure/appearance are deemed important, while more men are represented in profiles where competition/performance rank high.

Research question 2: How do the goal profiles differ between adolescents and young adults?

Since adolescents are confronted with other developmental tasks than young adults, presumably their goal profiles in sport and exercise also differ. Differences may refer to the number (configural similarity), the shape (structural similarity), and the size of the profiles (dispersion similarity).

Methods

Participants and procedures

Using a cross-sectional design, 966 adolescents (M_{age} = 16.9 years, SD_{age} = 1.37 years, range = 14–19 years; 58.4% female) and 636 young adults (M_{age} = 24.2 years, SD_{age} = 4.14 years, range = 20–34 years; 61.3% female) were examined between October 2016 and April 2017 by questionnaire. In accordance with the recommendation of Nylund-Gibson et al. (2007) a sample size of at least n= 500 was targeted for both age groups. Of all included adolescents and young adults, 24% were completely physically inactive, 86% had Swiss nationality and were from the German-speaking part of Switzerland.

All adolescents and young adults were recruited through 37 schools, two universities, and three service companies by personal contacts of the authors. People in schools and universities filled out a paper-pencil-version of the questionnaire under the supervision of the first author, whereas individuals from the service companies filled out an online-version of the questionnaire based on the software tool LimeSurvey. On average, people have about 12 min. to complete the questionnaire. Participants provided their informed written consent to the investigation. Furthermore, adolescents under 16 years of age required written confirmed consent from their parents to participate. The ethics commission of the Faculty of Human Sciences of the University of Bern approved the study design and procedures.

Measures

Goals in sport and exercise
To assess goals in sport and exercise a validated German scale, the Bernese Motive and Goal Inventory for adolescence and young adulthood, was used (Gut et al., 2019). The scale was specifically developed for the age group of adolescents and young adults. The inventory covers a wide range of eight different goals with 26 items (original values: .77 ≤ α ≤ .89; values of this study: .76 ≤ α ≤ .91): Contact (e.g., to get to know people), Competition/Performance (e.g., to compete with others), Distraction/Catharsis (e.g., to reduce stress), Figure/Appearance (e.g., to lose weight), Fitness (e.g., primarily to be fit), Health (e.g., primarily to improve my state of health), Aesthetics (e.g., to experience beautiful movements), and Risk/Challenge (e.g., to test my courage). Individuals were

asked why they (would) do exercise or sport and stated their answer on a 5-point-Likert-scale from 1 (*I strongly disagree*) to 5 (*I strongly agree*).

Self-determined motivation
Self-determined motivation for sport and exercise was assessed using a German scale by Seelig and Fuchs (2006). The scale was already used for similar age groups (see for example, Gerber et al., 2011). The scale measures four forms of motivation: intrinsic motivation (original α = .82; α of this study = .82; e.g., because I simply enjoy it), identified motivation (original α = .70; α of this study = .77; e.g., because the positive consequences are simply worth the effort), introjected motivation (original α = .72; α of this study = .81; e.g., because otherwise I would have a bad conscience), and extrinsic motivation (original α = .81; α of this study = .73; e.g., because people who are important to me urge me to exercise and do sport). Each form of motivation listed three items. A 6-point-Likert-Scale from 1 (*I strongly disagree*) to 6 (*I strongly agree*) was used. In addition, an index of self-determined motivation was calculated: (intrinsic motivation + identified motivation) – (introjected motivation + extrinsic motivation) (Seelig & Fuchs, 2006). Based on the current literature, a one-dimensional and unweighted index represents the level of self-determined motivation in an appropriate and parsimonious way (see for a critical discussion Howard et al., 2017, 2020).

Sport and exercise activity level
Sport and exercise activity level was measured using a validated German questionnaire by Fuchs et al. (2015). The questionnaire has already been used for a similar age group (Wunsch et al., 2017). Individuals were asked which types of sport or exercise activity they engage in, and how many times and how long they do the activity within a four-week timeframe.

Data preparation and statistical analyses
Firstly, a check was made for missing data in all relevant variables, resulting in the exclusion of nine individuals. Secondly, data were checked for multivariate outliers using Mahalanobis distance values χ^2 at p < .001 (Tabachnick & Fidell, 2013), eliminating five more individuals. Thirdly, missing data in single variables were accommodated via full-information maximum likelihood (FIML; Little & Rubin, 2012). In line with previous studies (Krauss et al., 2017; Sudeck et al., 2011), all goals were intra-individually standardized. This procedure has the advantage of rendering the range order of goals within an individual more visible. Furthermore, it can be assumed that inactive and less active individuals, in general, have lower values across all goals and, therefore, could be grouped into an overall low level profile without an intra-individual standardization (e. g., Lindwall et al., 2016). However, since it is especially these individuals who are the most important target group to promote sport and exercise, such a low-level profile would not be conducive to conceiving interventions. Furthermore, the volume of all activities was calculated over four weeks and divided by four to obtain the weekly activity level. Following the recommendation of the World Health Organization (2010),

three categories were formed: (1) inactive, (2) partially physically active (1–74 min per week), and (3) physically active (≥ 75 min per week).

Firstly, to identify and compare the goal profiles across adolescents and young adults, the guidelines for multiple-group analysis of similarity in latent profile analysis by Morin et al. (2016) were followed. All data analyses were performed in Mplus (Muthén & Muthén, 1998–2017) using maximum likelihood estimation with robust standard errors. To test if both age groups have the same number of profiles (configural similarity of the profiles), the same model specifications in both age groups were used to identify the optimal profile number. Therefore, in a first step, a separate latent profile analysis (LPA; Morin et al., 2016) with a series of 1- to 8-profile solutions with each age group (adolescents from 14 to 19 years and young adults from 20 to 34 years) was conducted using the intra-individual z-values of the eight goals. LPA is a probability-based method that allows the model fit to be tested based on statistical indicators: log likelihood value (LL), Bayesian information criterion (BIC), entropy, and bootstrapped likelihood ratio test (BLRT). Furthermore, the first two indicators were plotted to apply the elbow-criterion (Morin et al., 2016). In addition, to choose the optimal number of profiles, theoretical indicators, such as the principle of parsimony, theory-based considerations, and the interpretability of the identified profiles are ultimately decisive. Z-scores were utilized to better interpret and label the patterns, whereby goals with z-scores around .5 were categorized as rather high. Furthermore, t-tests were used to see whether goal values in one profile significantly differ compared to another profile and effect sizes in terms of cohen`s d were calculated (Cohen, 1988), whereby effect sizes lower than .06 were classified as small, .06 to .14 as medium, and higher than .14 as large. If the configural similarity (the same profile number) has been confirmed, in a second step the structural similarity of the profiles across the age groups can be tested by constraining the means within each profile to be equal across both age groups. Configural and structural similarity is a prerequisite for checking dispersion (same means and variances within profiles). Configural similarity is a prerequisite

for checking distributional similarity (same means, same variances, and same sample size of profiles) (Morin et al., 2016). To validate the identified profiles, the degree of self-determined motivation, sport and exercise activity level, and categories as well as gender were compared across all profiles using Wald chi-square equality tests (Bakk & Vermunt, 2016; Lanza et al., 2013). Furthermore, Cramers V was calculated, whereby effect sizes of V = .1 were classified as small, V = .3 as medium, and V = .5 as large (Cohen, 1988).

Results

Goal profiles in sport and exercise among adolescents and young adults

Descriptive statistics of all relevant variables are shown in Table 1. We tested the configural similarity of profiles across the whole sample and reported one to eight different latent profile solutions (see Table 2). The values of the entropy and BLRT provide no indication of the choice of profile number. However, in general, LL and BIC constantly improved as classes were added. This indicates that the relative data-to-model fit and the precision of the classification get better with more classes. The elbow-criterion (see online supplement Figure S1 and S2) supported a four- to six-profile solution for both age groups. However, a solution with four profiles is insufficiently differentiated and does not even cover the whole range of goals. Furthermore, in both age groups the five-profile solution has two almost similar profiles (see Electronic Supplementary Material [ESM] 1) so we decided for the six-profile solution. However, LRT shows that structural similarity across adolescents and young adults is not given (see Table 2). Moreover, the two age group profiles also differ in terms of dispersion and distributional similarity, meaning that the variance and sample size vary across the age groups.

Results of the six goal profiles in adolescents are provided in Table 3 and Figure 1 and ESM 2. Since fitness is a very important goal for all people and, thus, has no discriminant function, it

Table 1. Descriptive statistics and correlations between goals, self-determined motivation, as well as sport and exercise activity level.

Variables	M	SD	α	1	2	3	4	5	6	7
Goals in sport and exercise										
1. Contact	2.85	1.65	.91	-						
2. Competition/Performance	2.65	1.76	.78	−.32*	-					
3. Distraction/Catharsis	3.25	1.68	.86	−.41*	−.19*	-				
4. Figure/Appearance	2.96	1.87	.89	.49*	.13*	.42*	-			
5. Fitness	4.17	0.85	.86	−.21*	.11*	−.07*	−.11*	-		
6. Health	3.29	1.51	.83	.13*	.06*	.20*	−.09*	−.04	-	
7. Aesthetics	2.40	1.56	.84	−.09*	−.07*	−.39*	−.28*	−.19*	-	
8. Risk/Challenge	2.21	1.42	.85	.69*	−.19*	−.24*	−.16*	−.00	−.04	.47*
Self-determined motivation	M	SD	α	1	1a	1b	2	2a	2b	3
1. Index of self-determined motivation	3.91	2.63	-							
2. Intrinsic motivation	4.01	2.69	.82							
3. Identified motivation	4.49	2.09	.77							
4. Introjected motivation	2.97	2.50	.81							
5. Extrinsic motivation	1.66	1.25	.73							
Sport and exercise activity level (min/week)	196.33	189.88								
Sport and exercise activity level categories										
Inactive (n = 384)	23.9%									
Partially physically active (1– 74 min/week; n = 169)	10.5%									
Physically active (≥ 75 min/week; n = 1051)	65.4%									

Note. *p < .01

Table 2. Fit results for multiple-group-analysis of similarity across adolescents and young adults.

Class enumeration: adolescence ($n= 966$)	df	LL	AIC	BIC	Entropy	VLMR	BLRT
One profile	16	−9444.39	18,920.77	18,998.68	1		
Two profiles	33	−8935.08	17,936.16	18,096.84	.80	< .0001	< .0001
Three profiles	50	−8803.79	17,707.59	17,951.04	.77	.6930	< .0001
Four profiles	67	−8708.23	17,550.45	17,876.68	.75	.0126	< .0001
Five profiles	84	−8620.99	17,409.98	17,818.97	.79	.4416	< .0001
Six profiles	101	−8544.95	17,291.90	17,783.67	.79	.6971	< .0001
Seven profiles	118	−8471.07	17,178.13	17,752.68	.82	.7273	< .0001
Eight profiles	135	−8391.00	17,051.99	17,709.31	.82	.7788	< .0001
Class enumeration: young adulthood ($n = 636$)	df	LL	AIC	BIC	Entropy	VLMR	BLRT
One profile	16	−5715.59	11,463.17	11,534.43	1		
Two profiles	33	−5334.47	10,734.93	10,881.90	.74	< .0001	< .0001
Three profiles	50	−5220.79	10,541.59	10,764.27	.77	.0955	< .0001
Four profiles	67	−5135.90	10,405.80	10,704.20	.79	.3564	< .0001
Five profiles	84	−5073.91	10,315.83	10,689.93	.80	.4553	< .0001
Six profiles	101	−5013.82	10,229.65	10,679.46	.79	.4876	< .0001
Seven profiles	118	−4956.77	10,149.54	10,675.07	.82	.7524	< .0001
Eight profiles	135	−4902.46	10,074.93	10,676.16	.84	.6205	< .0001
Test of similarity	df	LL	AIC	BIC	Entropy	Δχ2 (df)	LRT
Configural (same number of profiles)	203	−14,451.16	29,308.31	30,397.06	.85		
Structural (means)	155	−14,552.42	29,414.83	30,246.14	.85	381.02 (48)	< .0001
Dispersion (same means and variances)	107	−14,585.37	29,384.73	29,958.61	.85	213.97 (96)	< .0001
Distributional (same means, same variances and same sample size of profile)	115	−14,576.91	29,383.82	30,000.60	.82	192.23 (88)	< .0001

Note. LL = model log likelihood; AIC = Akaike Information Criterion; BIC = Bayesian Information Criterion; VLMR = Vuong-Long-Rubin likelihood ratio test; BLRT = bootstrap likelihood ratio test; LRT = likelihood ratio test.

was not explicitly mentioned in the profile labelling. Adolescents in the first profile were characterized by a high level of the goals of health and figure/appearance, and, therefore, were labelled as *health- and figure-oriented sportspersons* ($n = 135$, 13.98%). Adolescents in the second profile were also characterized by a high level of the goals of health and figure/ appearance. However, compared to the first profile, these adolescents additionally want to relax through sport and exercise ($d = 3.01$, see also ESM 2) and were, therefore, labelled as *health-, figure-, and relaxation-oriented sportspersons* ($n = 163$, 16.87%). The third profile was characterized by adolescents who want to experience challenging and risk-taking situations within sport and exercise and were labelled as *sensation-seekers* ($n = 170$, 17.60%). In contrast to four other profiles (see ESM 2), the sensation-seekers have an above-average value in risk/ challenge ($0.71 \geq d \geq 2.44$). Adolescents in the fourth profile were characterized by a high level of the goals of contact and achievement/competition, and, therefore, were labelled as *contact-friendly athletes* ($n = 241$, 24.95%). The fifth profile is similar, with its high level of contact and achievement/competition, but is further characterized by a high level of aesthetics ($d = 2.15$). Since all of these goals are focused more on the sport and exercise activity itself and less on extrinsic goals, such as figure/ appearance, the profile was labelled as *purpose-free sports enthusiasts* ($n = 126$, 13.00%). Finally, adolescents in the last profile want to experience aesthetic movements, such as harmonic and fluent movements, and, therefore, were labelled as *aesthetes* ($n = 131$, 13.56%). Compared to the purpose-free sports enthusiasts, aesthetes are characterized by a higher level of aesthetics ($d = 0.62$), figure/appearance ($d = 1.78$) and health ($d = 1.09$).

The results of the six goal profiles in young adults are provided in Table 3 and Figure 2 and ESM 3. Young adults in the first profile were also characterized by a high level of the goals of health and figure/appearance, and, therefore, were labelled as *health- and figure-oriented sportspersons* ($n = 99$, 15.60%). Young adults in the second profile were characterized

by a high level of the goals of health and figure/appearance. Because they are especially looking to reduce stress through sport and exercise, these young adults were labelled as *figure- and health-oriented stress regulators* ($n = 170$, 26.7%). Compared to the health- and figure-oriented sportspersons, competition/ performance ($d = 1.74$) and contact ($d = 0.93$) are more important for people in this profile. Young adults in the third profile were characterized by a combination of high levels in health, figure/appearance, distraction/catharsis, and aesthetics, and, therefore, were labelled as *health-, figure-, relaxation-, and aesthetics-oriented sportspersons* ($n = 53$, 8.30%). Compared to the figure- and health-oriented stress regulators, aesthetics is much more important for people in this profile ($d= 3.50$). The fourth profile is characterized by young adults who want to improve their health. Furthermore, for them the kinaesthetic experience in sport and exercise is important. Therefore, they were labelled as *health-oriented aesthetes* ($n = 105$, 16.50%). Compared to health-, figure-, relaxation-, and aesthetics-oriented sportspersons, relaxation ($d= −0.58$) and figure/appearance ($d= −0.97$) are less important for people in this profile. Young adults in the fifth profile were characterized by a high level of health and distraction/catharsis, and, therefore, were labelled as *relaxation- and health-oriented sport athletes* ($n = 100$, 15.70%). Compared to the health-oriented aesthetes, distraction/catharsis is much more important for people in this profile ($d = 1.05$), whereas aesthetics is less important ($d = −0.60$). The sixth and last profile in young adults was characterized by a high level of contact and competition/achievement: these people were, therefore, labelled as *contact-friendly athletes* ($n = 109$, 17.10%).

When comparing the goal profiles between adolescents and young adults, it is noticeable that there are two age-unspecific profiles: the contact-friendly athletes and the health- and figure-oriented sportspersons. Furthermore, the aesthetes in adolescents and the health-oriented aesthetes in young adults are quite similar. However, compared to the aesthetes in adolescents, health is much more important for young adults labelled as health-oriented aesthetes ($d = 1.13$).

Table 3. Descriptive characteristics of the goal profiles for sport and exercise in adolescents and young adults.

Goal profiles of adolescents	n (%)	Index of self-determined motivation M (SD)	Intrinsic motivation M (SE)	Identified motivation M (SE)	Introjected motivation M (SE)	Extrinsic motivation M (SE)	Sport and exercise activity level M (SD)	Sport and exercise activity categories	gender
1) Health- and figure-oriented sportspersons	135	(13.98%)	1.38 (0.22) [2, 3, 4, 5, 6]	2.43 (0.13) [2, 3, 4, 5, 6]	3.91 (0.13) [2, 5, 6]	3.12 (0.14) [6]	1.84 (0.10)	107.23 min/week (17.26) [3, 4, 5, 6]	47.4% inactive, 16.1% partially active, 36.5% active
70.6% female [3, 4, 5]									
2) Health-, figure- and relaxation-oriented sportspersons	163	(16.87%)	3.15 (0.23) [1, 5, 6]	3.60 (0.12) [1, 6]	4.74 (0.10) [1, 4]	3.54 (0.13) [4, 5, 6]	1.68 (0.08)	151.86 min/week (16.65) [4, 5, 6]	22.2% inactive, 16.3% partially active, 61.4% active
83.6% female [3, 4, 5, 6]									
3) Sensation-seekers	170	(17.60%)	3.39 (0.27) [1, 6]	4.11 (0.14) [1, 6]	4.27 (0.12)	3.02 (0.12) [6]	1.87 (0.10)	199.80 min/week (18.50) [1, 6]	33.1% inactive, 8.7% partially active, 58.2% active
49.9% female [1, 2, 5]									
4) Contact-friendly athletes	241	(24.95%)	4.02 (0.19) [1, 5, 6]	3.62 (0.10) [1, 6]	4.24 (0.10) [2]	2.59 (0.10) [2]	1.62 (0.06)	200.42 min/week (14.95) [1, 2, 6]	22.9% inactive, 8.7% partially active, 68.4% active
37.4% female [1, 2, 5]									
5) Aesthetes	131	(13.56%)	4.64 (0.29) [1, 2, 6]	4.44 (0.14) [1, 6]	4.73 (0.12) [1]	2.86 (0.14) [2, 6]	1.69 (0.10)	232.06 min/week (19.91) [1, 2, 6]	12.5% inactive, 11.3% partially active, 76.2% active
69.1% female [1, 2, 4, 5]									
6) Purpose-free sports enthusiasts	126	(13.04%)	5.78 (0.25) [1, 2, 3, 4, 5]	5.10 (0.10) [1, 2, 3, 4, 5]	4.56 (0.12) [1]	2.16 (0.12) [1, 2, 3, 5]	1.66 (0.09)	320.98 min/week (23.59) [1, 2, 3, 4, 5]	8.7% inactive, 9.8% partially active, 81.6% active
44.1% female [1, 2, 5]									
		$\chi^2 = 201.29, p < .0005$	$\chi^2 = 310.24, p < .0005$	$\chi^2 = 38.09, p < .0005$	$\chi^2 = 76.04, p < .0005$	$\chi^2 = 6.05, p < .302$	$\chi^2 = 68.35, p < .0005$	$\chi^2 = 65.21, p < .0005$	$\chi^2 = 82.26, p < .0005$
Goal profiles of young adults	n (%)	Index of self-determined motivation M (SD)	Intrinsic motivation M (SE)	Identified motivation M (SE)	Introjected motivation M (SE)	Extrinsic motivation M (SE)	Sport and exercise activity level M (SE)	Sport and exercise activity categories	gender
1) Figure- and health-oriented sportspersons	99	(15.57%)	2.95 (0.26) [2, 3, 4, 5, 6]	3.22 (0.15) [2, 3, 5, 6]	4.88 (0.13)	3.81 (0.16) [4, 6]	1.38 (0.08)	117.75 min/week (13.50) [5, 6]	26.6% inactive, 18.5% partially active, 54.9% active
76.2% female [4, 5, 6]									

(Continued)

Table 3. (Continued).

Goal profiles of adolescents	n (%)	Index of self-determined motivation M (SD)	Intrinsic motivation M (SE)	Identified motivation M (SE)	Introjected motivation M (SE)	Extrinsic motivation M (SE)	Sport and exercise activity level M (SD)	Sport and exercise activity categories	gender
2) Relaxation-seeking, aesthetic-, figure- and health-oriented sports persons 89.1% female [4, 5, 6]	53	(8.33%)	4.34 (0.34) [1, 4, 6]	4.24 (0.18) [1, 5]	4.96 (0.13)	3.34 (0.18) [6]	1.49 (0.12)	152.90 min/week (21.77) [6]	14.5% inactive, 18.0% partially active, 67.5% active
3) Health-oriented aesthetes 79.3% female [4, 5, 6]	105	(16.51%)	4.36 (0.29) [1, 6]	4.32 (0.13) [1, 5]	4.81 (0.12)	3.20 (0.15) [6]	1.57 (0.09)	157.72 min/week (16.63) [6]	26.9% inactive, 13.1% partially active, 60.0% active
4) Figure- and health-oriented stress-regulators 32.8% female [2, 3]	170	(26.73%)	3.80 (0.22) [1, 6]	3.86 (0.12) [1, 5]	4.55 (0.09)	3.05 (0.12) [1, 6]	1.49 (0.12)	178.56 min/week (15.15) [1, 6]	14.7 inactive, 2.7% partially active, 82.6% active
5) Relaxation- and health-oriented athletes 43.5% female [1, 2, 3]	100	(15.72%)	4.35 (0.28) [1, 6]	4.27 (0.16) [1, 5]	4.71 (0.12)	3.12 (0.16)	1.55 (0.10)	214.65 min/week (22.57) [1, 6]	26.0% inactive, 0.0% partially active, 74.0% active
6) Contact-friendly athletes 41.5% female [1, 2, 3]	109	(17.14%)	5.32 (0.27) [1, 2, 3, 4, 5]	5.03 (0.12) [1, 2, 3, 4, 5]	4.45 (0.13)	2.39 (0.13) [1, 2, 3, 4]	1.73 (0.10)	313.85 min/week (21.10) [1, 2, 3, 4, 5]	9.6% inactive, 3.9% partially active, 74.0% active
		$X^2 = 45.36$, $p < .0005$	$X^2 = 106.57$, $p < .0005$	$X^2 = 16.80$, $p = .005$	$X^2 = 53.41$, $p < .0005$	$X^2 = 7.87$, $p = 0.163$	$X^2 = 69.24$, $p < .0005$	$X^2 = 87.71$, $p < .0005$	$X^2 = 77.74$, $p < .0005$

Note. The overall significance test values are Chi-square values with df = 5. Subscripts designate profiles which differ significantly at p = .05, whereby bonferroni-correction for gender (.05/15) and for modes of motivation as well as sport and exercise behaviour (0.05/70) was applied.
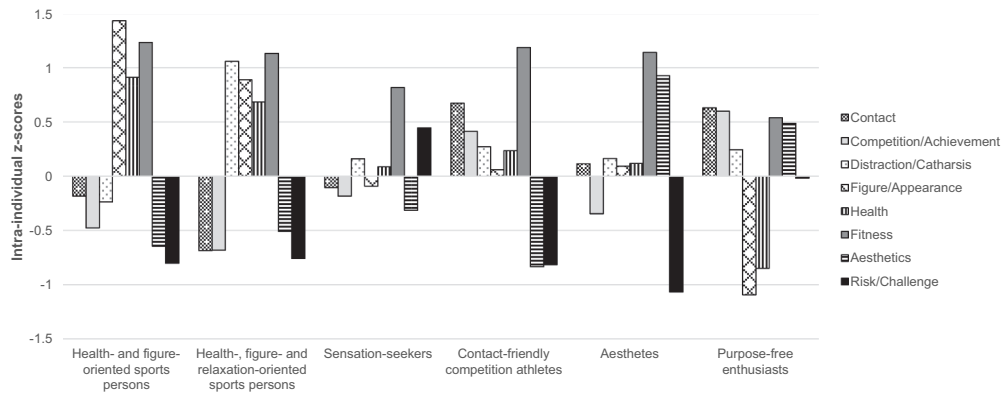
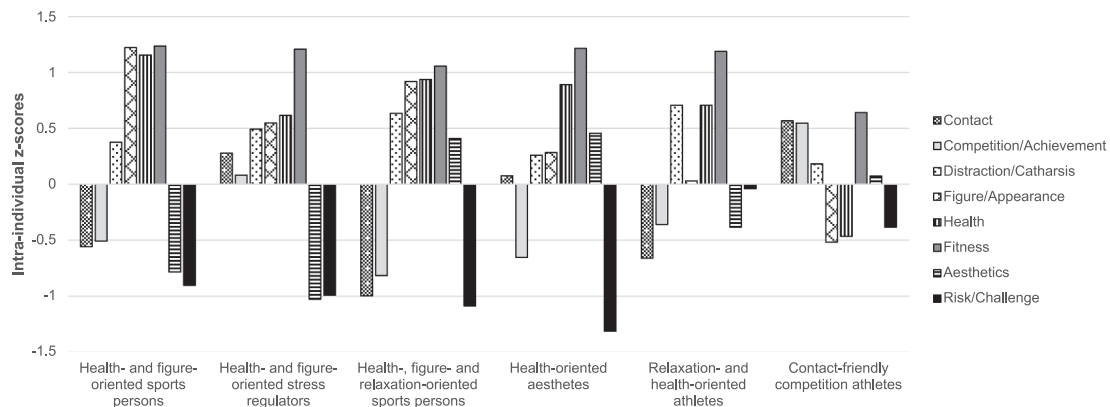**Figure 1.** Goal profiles in sport and exercise among adolescents.

Figure 2. Goal profiles in sport and exercise among young adults.

Validation of goal profiles: Differences in self-determined motivation, sport and exercise behaviour, and gender

Overall analyses show that the profiles differ regarding the degree of self-determined motivation ($\chi2 = 201.29$, $df = 5$, $p <$ .0005, $V = .20$ medium effect size for adolescents and $\chi2 = 45.36$, $df = 5$, $p < .0005$, $V = .11$ small effect size for young adults, respectively). As expected, adolescents and young adults in profiles with a combination of rather extrinsic goals, such as figure- and health-oriented sportspersons ($-0.75 \geq d \geq -1.11$ for adolescents and $-0.51 \geq d \geq -1.11$ for young adults, respectively), have a lower index of self-determined motivation. Inspecting specific modes of motivations more closely, a similar result pattern was found for intrinsic motivation ($\chi^2 = 310.24$, $df = 5$, $p < .0005$ $V = .25$ large effect size for adolescents and $\chi^2 = 106.57$, $df = 5$, $p = .005$, $V = .18$ medium effect size for young adults, respectively) and identified motivation ($\chi^2 = 38.09$, $df = 5$, $p < .0005$, $V = .09$ small effect size for adolescents and $\chi^2 = 16.80$, $df = 5$, $p = .005$, $V = .07$ small effect size for young adults, respectively). Regarding introjected motivation, significant differences in goal profiles were found for both age groups ($\chi^2 = 76.04$, $df = 5$, $p < .0005$, $V = .13$ small effect size for adolescents and $\chi^2 = 53.41$, $df = 5$, $p = .005$, $V = .13$ small effect size for young adults, respectively). Persons with rather intrinsic goals have a low level of introjected motivation,

e.g., purpose-free sports enthusiasts in adolescents ($-0.31 \geq d \geq -1.08$). The extrinsic motivation of adolescents did not differ across their six goal profiles ($\chi^2 = 6.05$, $df = 5$, $p = .302$, $V = .04$). Similarly, the extrinsic motivation of young adults did not differ across their six goal profiles ($\chi^2 = 7.87$, $df = 5$, $p = .163$, $V = .049$).

Furthermore, in both age groups, the goal profiles differ significantly in terms of sport and exercise activity level ($\chi2 = 68.35$, $df = 5$, $p < .0005$, $V = .12$ small effect size for adolescents and $\chi2 = 69.24$, $df = 5$, $p < .0005$, $V = .15$ medium effect size for young adults, respectively), sport and exercise activity categories ($\chi^2 = 65.21$, $df = 4$, $p < .0005$, $V = .11$ small effect size for adolescents and $\chi^2 = 87.71$, $df = 4$, $p < .0005$, $V = .17$ medium effect size for young adults, respectively). As expected, individuals with a combination of rather extrinsic goals also have a lower sport and exercise activity level and are more likely to be inactive, e.g., figure- and health-oriented sportspersons ($-0.25 \geq d \geq -1.07$ for adolescents and $-0.28 \geq d \geq -1.17$ for young adults, respectively) compared to those individuals with a combination of rather intrinsic goals, e.g., purpose-free sports enthusiasts in adolescence ($0.44 \geq d \geq 1.07$).

Moreover, goal profiles in both age-groups significantly differ regarding gender ($\chi^2 = 82.26$, $df = 4$, $p < .0005$, $V = .13$ small effect size for adolescents and $\chi^2 = 77.74$, $df = 4$, $p < .0005$, $V =$

.16 medium effect size for young adults, respectively). Females are more often in goal profiles characterized by health and figure/appearance, e.g., health-, figure- and relaxation-oriented sportspersons in adolescence (0.18 ≥ ϕcorr ≥ 0.52).

Discussion

This is the first study that investigates goal profiles for sport and exercise in both adolescents and young adults. For both age groups, six different goal profiles with different qualities of motivation as well as sport and exercise behaviour were found. Furthermore, goal profiles differ in terms of gender.

Taking a developmental perspective, results show that there are both age-specific and age-unspecific profiles. For example, in both adolescents and young adults, there are two similar profiles: health- and figure-oriented sportspersons and contact-friendly athletes. Two similar profiles were also found in middle-aged adults (Sudeck et al., 2011), supporting the existence of some similar, age-unspecific goal profiles across the lifespan. However, the majority were age-specific goal profiles that can be linked to specific development tasks. For instance, adolescents need to find their identity. Accordingly, a group of individuals labelled as sensation-seekers wants to explore new challenging situations and to test their courage within sport and exercise (Feldman, 2014). In contrast, it is a central development task for young adults to master the higher demands of everyday life and to keep a balance between work and private life (Newman & Newman, 2012). Accordingly, a group of young adults labelled as figure- and health-oriented stress regulators have a great need to do something for their health and to reduce stress, thereby giving sport and exercise a stress-buffering effect (Klaperski, 2018). Therefore, sport and exercise may be used as a problem- or emotion-focused coping strategy for some young adults. As a consequence of different development tasks, it can be summarised that the two age groups have different goal contents and a different prioritization of importance of goals (Feldman, 2014; Heckhausen et al., 2010; Hennecke & Freund, 2017; Newman & Newman, 2012).

Besides, the results indicate that more intrinsic goal profiles, e.g., purpose-free sport enthusiasts, are more favourable than others because people within these profiles are more active. This finding is in accordance with the Goal Contents Theory (Sebire et al., 2009) and empirical findings (e. g. Sebire et al., 2009). Furthermore, in line with the Theory of Organismic Integration (Ryan & Deci, 2017), the results support that different qualities of extrinsic motivation are associated with different sport and exercise behaviour. The less internalized the motivation is, the less active is an individual. For example, individuals labelled as health- and figure-oriented sportspersons have a lower degree of internalization of motivation and are less active compared to the contact-friendly athletes.

In addition, the results show that genders are not equally represented in all profiles. Certain goal profiles are associated with a higher percentage of females. For example, a higher proportion of the health-, figure- and relaxation-oriented sportspersons are women, whereas most contact-friendly athletes are men. These results are in accordance with theoretical assumptions concerning gender differences (Hyde, 2014; Lippa,

2010) and with previous non person-oriented studies showing that goals such as figure/appearance and distraction/catharsis are more important for females, whereas men assess competition/achievement as more important (Kilpatrick et al., 2005; Lehnert et al., 2011; Molanorouzi et al., 2015; Stults-Kolehmainen et al., 2013).

Practical implications

Based on the identified age-specific goal profiles in this study, interventions for specific subgroups in sport and exercise can be designed for both age groups separately. In particular, profiles with a combination of rather extrinsic goals and a low level of internalization, such as the health- and figure-oriented sportspersons, are relevant for sport and exercise promotion since those profiles are associated with a lower activity level.

In the current research, two different intervention strategies are discussed. The first strategy focuses on goal attainment as it is associated with well-being and maintenance of sport and exercise behaviour (Klusmann et al., 2016; Sudeck & Conzelmann, 2011). Whether goals are achieved depends not only on the type of activity but also on the organizational and social setting and the instructor`s behaviour (Lohmann et al., 2019; Sudeck et al., 2011). For example, health- and figure-oriented stress-regulators should be recommended activities that reduce health complaints and positively influence body weight. Furthermore, activities should distract individuals from daily problems and reduce stress. This could be a combination of fitness activities, such as body forming, endurance activities, e.g., jogging, and relaxation-oriented activities, such as yoga or progressive muscle relaxation. The activities may be organized in a fitness centre or outdoors, since exercising or doing activities in nature have a positive effect on physical and psychological health (Lahart et al., 2019). Furthermore, instructors may provide information about the positive effect of regular sport and exercise activities on health (e. g., Sudeck & Conzelmann, 2011). For practical reasons or due to limited financial resources, it is also possible to combine several similar goal profiles (e. g., the health- and figure-oriented sportspersons and the health-, figure-, and relaxation-oriented sportspersons) to design a joint intervention (see for an example Sudeck & Conzelmann, 2011).

The second intervention strategy focuses on promoting intrinsic goal contents. With regard to goal attainment, intrinsic goals are especially desirable, since individuals who are pursuing more intrinsic goals will put more effort into their attainment and will be more likely to be active in the long term (Gunnell et al., 2014; Ryan & Deci, 2017; Sebire et al., 2009). Sheldon (2014) suggests promoting an individual`s self-awareness and goal reflection. In the field of sport and exercise, a possibility would be to provide individuals with positive sport and exercise experience (e.g., perceived competence and positive affective state) and to reflect on these experiences.

Limitations and future directions

There are several limitations inherent in the study: Firstly, the sample is not representative due to a lack of random sample selection. Within the sample, there are more females and white-

collar workers and, as a consequence, the generalizability of the profiles may be questioned. Furthermore, there is an imbalance in the ratio of adolescents to young adults. Secondly, data collection was limited to self-report. However, due to the large sample size, another type of data collection to assess sport and exercise activity level, such as per accelerometer, was not feasible. Thirdly, sport and exercise behaviour might be slightly biased due to a seasonal effect, since the data acquisition was conducted over a period of six months. However, an attempt was made to control this bias by asking all participants if their actual behaviour differed from their habitual behaviour. If this fact was true, the participants were asked to indicate their habitual sport and exercise behaviour. Finally, a cross-sectional design was applied, whereby no causal relationships between goals, self-determined motivation, and sport and exercise behaviour could be investigated.

As a consequence of the latter limitation, future longitudinal studies are needed for several reasons: Firstly, researchers should observe the stability and modifiability of the goal profiles across time. For instance, it can be hypothesized that goal profiles intraindividual change during the transition from adolescence to young adulthood. Existing research about change in life goals (e.g., Ebner et al., 2006; Lüdtke et al., 2009) supports this idea since during this transitional period the development tasks of an individual change. Secondly, it is important to examine if a fit between an individual's goal profile and the incentives of a sport and exercise activity promotes adherence to sport and exercise in the long term. Finally, interventions should be designed to help people find activities that match to their individual goals in sport and exercise (e.g., Schmid et al., 2020).

Conclusions

In conclusion, using a developmental-psychological perspective to build goal profiles is a promising way to promote sport and exercise for both adolescents and young adults: Researchers are not only better able to understand the interactions of different goals within the individual of both age groups and both gender, but practitioners can also use goal profiles as a tool to conceive and adapt sport and exercise interventions that result in more self-determined motivation and higher levels of sustained participation in sport and exercise.

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