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Sports and Friendships 2021-2023 **[Sport en Vriendschappen 2021-2023]** **Codebook**

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1. Abstract

The ‘Sports and Friendships’ study was conducted between 2021 and 2023 (Franken et al., 2023). Its aim was to understand the development of multiple dimensions of students’ social relations throughout student life, and its consequences for their sport participation and academic experiences and outcomes. The study follows two cohorts of students at a research or vocational university of a Dutch city (Cohort I: $N = 89$, Cohort II: $N = \dots$). We mapped the important transitions they experienced (e.g., leaving the parental home), the accompanying changes in their egocentric networks (e.g., newly formed ties), and employed multiple methods to map their sports activities (i.e., survey self-reports, behavior trace data). This codebook document describes the kinds of data that have been collected in the context of the ‘Sports and Friendships’ study.

2. Study description

Title (English)	Sports and Friendships 2021-2023
Title (Dutch)	Sporten en Vrienscappen 2021-2023
Principal investigators	Franken, R., Bekhuis, H., & Tolsma, J.
In collaboration with	Radboud Sports Centre (RSC)
Funding	NWA ‘Transition Into Active Living’ (TRIAL) 116018249
Citation (English)	Franken, R., Bekhuis, H., & Tolsma, J. (2020). Sports and Friendships: Codebook. DOI
Citation (Dutch)	Franken, R., Bekhuis, H., & Tolsma, J. (2020). Sport en Vrienscappen: Codebook. DOI
Topic	Life course transitions, social network changes and sport participation
Keywords	Social networks, egonets, students, life transitions, sport participation, name generators

3. Data availability and replication

Each survey data collection wave is stored in a separate R-object (e.g., `wave1_public.RData`), which can be accessed via: [URL]. All information that could identify a respondent is deleted from the data files (including all open-ended questions, names of alters, etc.). Please let us know if you find variables that should be deleted, by sending an email to rob.franken@ru.nl. Sports activity data collected about participants by the university sports center will not be made publicly available. If researchers wish to collaborate or replicate our research, we may share parts of these data. We will guarantee participants’ anonymity by aggregating these data into one-month intervals.

4. Study design

The ‘Sports and Friendships’ study includes the following types of data:

- **Ego-questionnaires:** Cohorts were surveyed with an online/smartphone questionnaire 2 (Cohort I) or 3 (Cohort II) times over the academic year. Questionnaires were administered via LimeSurvey (Schmitz, 2020). The questionnaire assessed various social network dimensions via multiple name generator questions, dynamic measures pertaining to (changing) social contexts, as well as individual attributes (e.g., sports motivation and activity). A summary of the question blocks administered in these questionnaires can be found under [ego-questionnaires](#).
- **Short questionnaire:** Cohort II participants who gave permission to be sent additional questions received a short smartphone questionnaire 1-2 weeks after filling out the second questionnaire. They were asked about their opinions regarding political topics and eco-friendly actions. Students were also asked to estimate the opinions and behaviors of a subset of ... alters. Last, they were asked to invite these alters to fill out a short alter-questionnaire (see below). A summary of the questions can be found in the short questionnaire section.
- **Alter-questionnaire:** Cohort II participants were asked to send a smartphone questionnaire invitation to a set of alters. In this questionnaire, alters answered similar questions as ego did in the short questionnaire. Alters were also asked to report both their own and ego’s sports participation frequency and level of proficiency. A summary of the questions can be found in the [alter-questionnaire](#) section.
- **Sports records:** We obtained comprehensive, time-stamped records of the sports activities of our participants that were collected by the university sports center. This is described in the [sports records](#) section.

4.1. Ego-questionnaires

Our ego-questionnaires consisted of multiple blocks of items. The most important are listed below. Not all blocks were asked in all waves (and over both cohorts). The timing of these blocks is reported in [Table 1](#). For the specific questions asked in each block, we refer to the (Dutch) LimeSurvey/survey structure files (see [supplementary material](#) section).

- **Introduction:** Introduction to the study, link to our website containing a formal invitation letter, and an informed consent form.
- **Socio-demographic questions** on topics such as participants' gender, age, study program and year. Asked also about parents' educational attainment.
- **Social networks:** Asked name-eliciting questions about personal relations, including core discussants, study partners, best friends, and sports partners. See the [social network measurement](#) section for more information on our procedure.
- **Other relations:** Asking about participants' relational closeness with family members, and their romantic relationship.
- **Occupation before studies** (e.g., secondary or tertiary education, a gap year, employment)
- **Study integration:** Asked about memberships of multiple relevant (departmental) student associations, and about participation in the introduction week and its activities.
- **Study habits:** Asking about self-perceptions on the participant's studying success and efficiency. It also included an item on whether the participant had considered quitting their studies (Elmer et al., 2022).
- **Other memberships:** Asked about memberships of other (in)formal organizations (e.g., sports clubs, political or religious organizations).
- **Residency:** Asking about housing situation (e.g., with friends, parents, or alone) and place of residence (including 4-digit ZIP code).
- **Loneliness:** Included two items to measure the titular construct, one tapping into emotional loneliness, the other into social loneliness (de Jong Gierveld & van Tilburg, 2008).
- **Extraversion:** Measured the titular construct with 2 items of the BFI-2 (Denissen et al., 2020).
- **Financial constraints:** Measured the degree to which participants experienced having to miss out on activities or outings with friends because they could not afford them financially.
- **Sports participation:** Asked participants about the types of sports activities they had done, how often they did these activities, and the setting in which they did them [e.g., a formal (clubs) setting, a commercial gym, or alone].
- **Sports competency:** Focused on the participants' perception of their, and their sports partner(s), abilities in the sport(s) they participate in.
- **Sports motivation:** Measured different types of motivation for sports (fun, health, aesthetics, competition, social interaction).
- **Attitudes:** Asking about participants' attitudes towards varied (Dutch) modern political topics (e.g., vaccination, migration, farmer protests, 'wokism').

Questionnaire block	Cohort I	Cohort II
Introduction	Wave 1 + 2	Wave 1 + 2 + 3
Socio-demographic questions	Wave 1	Wave 1
Social networks	Wave 1 + 2	Wave 1 + 2 + 3
Other relations	Wave 1 + 2	Wave 1 + 2 + 3
Occupation before studies	Wave 1	Wave 1
Study integration	Wave 1	Wave 1
Study habits	N/A	Wave 2 + 3
Other memberships	Wave 1	Wave 1
Residency	Wave 1 + 2	Wave 1 + 2 + 3
Loneliness	Wave 2	Wave 2
Extraversion	Wave 2	Wave 2
Financial constraints	Wave 2	Wave 2
Sports participation	Wave 1 + 2	Wave 1 + 2 + 3
Sports competency	Wave 2	Wave 1 + 2
Sports motivation	Wave 1	Wave 1
Attitudes	Wave 1 + 2	Wave 1

Table 1. Question blocks over questionnaire rounds and cohorts.

4.1.1. Social network measures

The ego-questionnaires used an extended egocentric name generator (Marin & Hampton, 2007) method to delineate participants' personal network and collect information about alters. We asked participants to name the people whom they were connected to in four ways: (1) confiding or discussing important matters, (2) studying together, (3) being best friends, and (4) doing sports and exercise together. See [name generators](#) section for full text of these questions. In response to each name generator, participants provided the names of up to 5 alters. Following each name generator, we

asked respondents about the relationship – in terms of ‘closeness’ – between the members listed in the particular name generator. After each set of name generators, respondents completed an adjacency matrix that indicated which pairs of names referred to the same alter (see [Fig. 1](#)). Last, name interpreter questions were asked to obtain additional information about the alters and dyadic relationships (see [name interpreter](#) section).

We would like to know if the people whom you studied with are the same people as the ones you mentioned earlier. Do you want to indicate for each person whether this is the same as an aforementioned name, by ticking the corresponding box? If there are no matches, you can click on 'Next'.

	Study partner: Mustafa	Study partner: Jessica	Study partner: John	Study partner: Sara
Aforementioned person: Thomas	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Aforementioned person: Peter	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Aforementioned person: Sara	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Aforementioned person: Virgil	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Figure 1. Screenshot of the CAPI interface used by a hypothetical ‘Sports and Friendships’ participant to match alters after a set of name generators.

In survey rounds 2 (Cohort I and II) and 3 (Cohort II), following the four name generators, participants completed an adjacency matrix similar to that of [Fig. 1](#) that indicated whether (unique) alters listed at that timepoint t were the same persons as alters listed at $t-1$, which allowed us to identify created, maintained, and dropped ties.

4.1.1.1. Name generator questions

The four name generator questions administered were:

- “Most people discuss important personal matters with others. When you look back on [*period*], who were the most important people you discussed important issues with? Please provide up to five names (their first name and the first letter of their last name). If you would like, you can also provide nicknames, as long as you know who they are for future reference. Please fill in one name per box.”, tapping into the *Core Discussion Network* (e.g., Burt, 1984; Marsden, 1987; Small et al., 2015)
- “We would also like to discuss the people you study with, such as those you collaborate with on a project or do homework with. When you think back on [*period*], who were the most important people you have studied with. For each person, please fill in one box.”, measuring participants’ *Study Network*.
- “We are curious about your friendships. The people you can count as your closest friends are often few and far between. Who would you count as your closest friends? You can name up to five. Please fill in one person per box.”, measuring participants’ *Best Friends Network*.
- “Some people mainly exercise alone, while others exercise with others. If you look back on [*period*], who are your most important sports partners? Please provide up to five names, entering one person per box.”, capturing participants’ *Core Sports Network* (Franken et al., 2022).

In the first questionnaire given to Cohort I and II participants in September, the first month of the academic year, we asked them to reflect on their social relationships from 6 months before the summer holiday. This approach enabled us to trace the social ties of first-year students before they transitioned to university, while keeping the same timeline for senior students. For Cohort I, we asked about ego’s current ties without specifying a time frame in the second questionnaire (March 2022). For Cohort II, we asked participants to reflect on the first semester of the academic year in the second questionnaire (January, 2023). In the ‘best friends’ name generator, we did not apply a time frame. In the third and final questionnaire of Cohort II (June 2023), we also asked about ego’s current ties without specifying a time frame.

4.1.1.2. Name interpreters

Several pieces of information about each alter from participants were collected (aka name interpreters):

- Socio-demographic characteristics, including age, gender, educational level, and kinship.
- Political opinions: (ego’s perception of) an alter’s placement on the left-right political spectrum, and the extent to which ego and alter (dis)agreed on political topics (e.g., voting choice, opinions, and political topics in the news). This was only asked in survey round 1 in both cohorts.
- Sports behavior: Participants were asked which sport they mostly did with an alter that was mentioned as part of the Core Sports Network name generator, how frequently the alter participated in the sport, and how skilled they are at it.
- Dyadic variables, pertaining to ego’s frequency of contact with and emotional closeness to alter; ego’s physical proximity to alter, and the duration of the tie between ego and alter.

A unique feature of the ‘Sports and Friendships’ study is that name interpreters questions about relational characteristics (i.e., contact frequency and emotional closeness) were also asked about alters that were named at t but not renamed at $t+1$.

4.1.2. Discrete choice experiment

In questionnaire 2 of Cohort I, we piloted a discrete choice experiment with which we aimed to participants’ selection preferences for sports partners on the basis of different alter attributes. This design was later implemented in the large sample I&O Research Panel. For more information on the study design, we refer to ...

4.2. Short questionnaire

Cohort II participants who gave permission to be sent additional questions received a short smartphone questionnaire 1-2 weeks after filling out the second questionnaire (February 2023). The aim of this questionnaire was to gain an understanding of participants’ opinions regarding migration issues and their eco-friendly actions, as well as their estimation of the opinions and actions of their personal network members. We send this questionnaire to Cohort II participants who named at least 5 alters in the second survey round. For each participant, we selected 5 alters, such that different social relationships (i.e., core discussants, friends, study partners, sports partners) and levels of multiplexity were well-represented. We asked participants questions about:

- Their left-right political self-placement.
- Their opinions about multiple statements regarding migration and asylum seekers.
- Their eco-friendly actions (e.g., using public transportation to reduce one’s carbon footprint, shopping second-hand or buying items made with recycled materials, using energy-efficient appliances).
- Their estimation of the opinions and behaviors of the selected alters.

Lastly, participants were asked to invite the selected alters to complete a brief [alter-questionnaire](#). To do so, they could press a button that copied a personalized invitation message and a link to the questionnaire, which they could then send via WhatsApp or email.

4.3. Alter-questionnaire

In this questionnaire, ego’s alters answered similar questions as ego did in the [short questionnaire](#). Alters who were listed as a sports partner were also asked to report both their own and ego’s sports participation frequency and level of proficiency. We also asked alters about dyadic characteristics (i.e., ego-alter contact frequency, emotional closeness).

4.4. Sports records

By signing the digital consent form in the first ego-questionnaire, study participants gave their consent for researchers to use the sports data collected about them by the university sports center. This data includes time-stamped records of their check-ins and check-outs at the university sports center gym, the courses they signed up for and attended, the ticket hours they booked, and their memberships in university affiliated sports organizations.

5. Study population and response rates

Our target population consists of students at the research or vocational university of a Dutch city who took an annual subscription at the university sports center and who, during their online registration at the sports center, ticked a box giving permission to be sent invitations to participate in scientific research. The services of the university sports center provided us with a list of students, their names and mail addresses. We made a selection. For the selection criteria, see the [Cohort I](#) and [Cohort II](#) sections. Selected students were invited for the first ego-questionnaire via mail. They were referred to our website, for more information on the project, a consent form, and a link to the questionnaire. To increase response rates for the first questionnaire, we raffled of 10 annual subscriptions at the sports center for the next academic year (worth 123 and 134 Euro, for the respective cohorts). For subsequent survey tasks (i.e., additional ego-questionnaire rounds, and the short questionnaire), they received 5 Euro vouchers. We sent 2 reminders for each ego-questionnaire.

5.1. Cohort I

Here, we selected from those who gave consent to be approached for research, the first-time subscribers at the sports center, who have Dutch as their first language ($N = 1725$). Our aim was to select first-year students, but since the sports center could not filter on this information, those who had just subscribed were chosen instead. However, in the first questionnaire these participants filled out, it was seen that roughly 40 % of the responses were not first-years and were excluded. Additionally, an opt-out link was included in the invitation mail for those who were not eligible for participation due to not being a first-year student. After two months of the first invitation, more than 200 people had opted out. This showed that Cohort I’s list of potential participants did not include mostly first-years. See [Fig. 2](#) for the flow diagram of this study cohort.

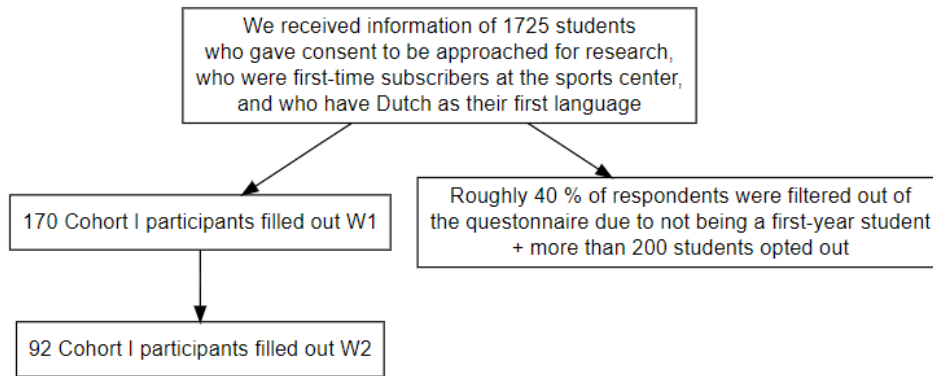


Figure 2. Flow diagram of Cohort I participants through the study.

5.2. Cohort II

In Cohort II, we selected from the list provided by services of the university sports center all students who have Dutch as their first language. We excluded those who participated in Cohort I and those that opted out ($N = 5227$). (...). See [Fig. 3](#) for the flow diagram of this study cohort.

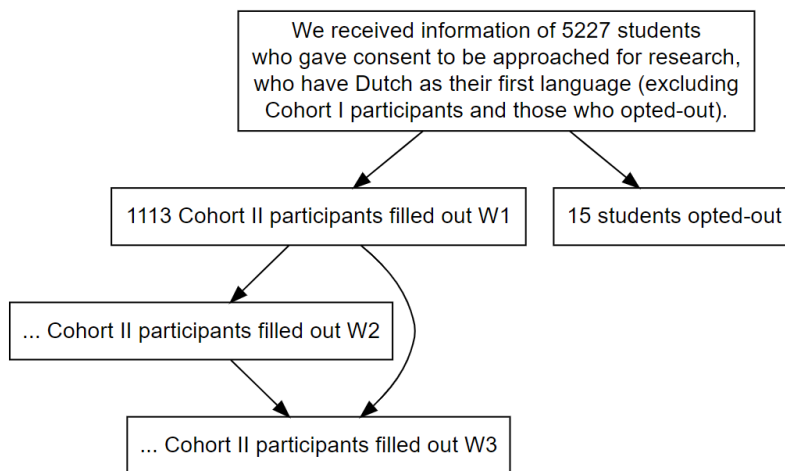


Figure 3. Flow diagram of Cohort II participants through the study.

5.3. Response summary

[Include response table]

6. Supplementary material

Researchers can access the following materials, via: [URL]

Data files: Public data-sets/R data-objects for each wave:

- wave1_public.RData
- wave2_public.RData
- wave3_public.RData
- wave4_public.RData
- wave5_public.RData

LimeSurvey questionnaires:

- wave1_questionnaire.pdf
- wave2_questionnaire.pdf
- wave3_questionnaire.pdf
- wave4_questionnaire.pdf
- wave5_questionnaire.pdf

LimeSurvey survey structure files:

- wave1_surveystructure.lss
- wave2_surveystructure.lss
- wave3_surveystructure.lss

- wave4_surveystructure.lss
- wave5_surveystructure.lss

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8. Acknowledgements