




# The Longitudinal and Multimodal Age Groups Study of Personality Architecture and Dynamics (SPeADy)

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## Abstract

The “Study of Personality Architecture and Dynamics” (SPeADy) aims at testing theory-based differences between core dispositions and surface characteristics of personality and examining their associations across time and in the context of major life experiences. For this purpose, SPeADy encompasses several constructs, such as Big Five domains and facets, motives, values, religiosity, self-concepts, and life events. SPeADy contains an age groups and an extended twin family study, with the former being this paper’s focus. The longitudinal and multi-rater design of the age groups study allows the empirical examinations of core dispositions of personality on the basis of six criteria. Cutting-edge findings are described. First (2016–2018) and second wave (2018–2020) data are available as a scientific use file. Self-reports were provided by 3,026 participants (60% female; age: 14–89 years). The third data-collection wave ends in 2022. This paper provides an overview of SPeADy’s scientific issues and use for the research community.

## Keywords

personality development, core dispositions, surface characteristics, age groups, longitudinal design, multi-rater study



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### Relevance Statement

The paper presents the SPeADy research project to the research community and highlights its distinct qualities (longitudinal design, informant-reports, variety of psychological constructs) which allow the investigation of various research questions.

### Key Insights

- Introduction of research project with longitudinal design and informant perspectives
- Presentation of six criteria to specify the core of personality
- Outlook on current research projects utilizing SPeADy data

The term ‘personality’ has often been understood, operationalized, and investigated as a rather limited set of trait constructs. This may be attributable to the historically very successful factor-analytic approach (Bartholomew, 1995; Cattell, 1946) based on the well-known psycho-lexical hypothesis (Allport & Odbert, 1936), with which a specific set of trait dimensions—also called personality factors or domains—has been identified (e.g., Ashton & Lee, 2020; Digman, 1990; Goldberg, 1990; Markon et al., 2005). However, this reductionist view on personality is questionable for at least three reasons. First, ‘personality’ is most commonly defined as relatively enduring characteristic patterns of a person’s behavior—including emotions, cognitions, motivations, and behavioral styles—in comparison to a reference group (Baumert et al., 2017; Kandler et al., 2014). This definition has not been sufficiently reflected by the factor-analytically derived trait dimensions, at least not in their common operationalization (Pytlik Zillig et al., 2002; Wilt & Revelle, 2015). Second, the dimensions are descriptive with limited theory-based substance and predictive value (Block, 1995; Eysenck, 1997; Revelle, 1983). Third, past studies found rather moderate structural and etiological overlaps between measures of broad personality trait dimensions and other relatively stable characteristics, such as motives, values, and interests, calling the conceptual broadness and common measures of trait dimensions as a sole core of personality into question (e.g., Hurtado Rúa et al., 2019; Kandler et al., 2014; Parks-Leduc et al., 2015).

A comprehensive model of personality should encompass all characteristics that (1) are conceptually and empirically distinct within a nomological net of psychological constructs (Cronbach & Meehl, 1955) and (2) sufficiently reflect the complete bandwidth of a person’s uniqueness in typical feeling, thinking, striving, and acting. A core set of personality characteristics that are theorized to reflect latent, distinct, dispositional, biologically rooted, and humanly universal characteristics of persons is promising for at least two reasons. First, it allows describing broad personality differences with a parsimonious model. Second, it enables the examination of various correlates or sources of individual differences (e.g., genetic variants, neural structures and functions, several environmental stressors, etc.) to explain why persons feel, think, strive, and act so individually and

consistently across situations and different contexts. However, this raises questions as to how we can differentiate (1) core dispositions to emotions, cognitions, motivations, and behavioral styles from (2) characteristic adaptations of these dispositions in individual environments that emerge from interactions and transactions between dispositions and individual experiences during development (Kandler et al., 2014, 2017).

The *Study of Personality Architecture and Dynamics* (SPeADy) has been designed to test the differentiation between theoretically proposed *core dispositions*—such as the Big Five (DeYoung, 2015) or HEXACO traits (Ashton & Lee, 2020)—and other characteristics, subsumed as *surface characteristics*. Core dispositions (as opposed to surface characteristics) are seen as those characteristics of persons (i.e., traits<sup>1</sup>) that are latent (i.e., cannot be observed directly), dispositional (i.e., predict stable and consistent patterns of feeling, thinking, striving, and behaving), rather biologically rooted (i.e., less environmentally driven), distinct (i.e., construct-valid within a system of other dispositions), and universal (i.e., emerge in every human being irrespective of culture, ethnicity, age, sex, etc.). SPeADy encompasses two study designs: (1) a longitudinal and multi-rater age groups study and (2) a longitudinal and extended twin family study. Details and the value of the SPeADy twin family study have been described elsewhere (Kandler et al., 2019). The current paper presents the design of the age groups study and its usefulness to differentiate core dispositions from surface characteristics based on six theoretically founded criteria. Furthermore, we outline cutting-edge findings, future plans, and the open data access for the broad scientific community.

## Six Criteria to Disentangle Core Dispositions From Surface Characteristics

We outline six empirically testable criteria (see Table 1), which are derived from several theoretical models and have in part been described before (e.g., Asendorpf & Motti-Stefanidi, 2018; Kandler & Rauthmann, 2022; Kandler et al., 2014, 2019; McCrae & Möttus, 2019). As we will outline in the next sections in detail, none of the criteria on its own is sufficient to specify a core disposition, but all are necessary.<sup>2</sup> That is, all criteria need to be met to establish whether or not an individual characteristic can be treated as core disposition.

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1) Note, a trait is defined as a *characteristic of the person* that can encompass several kinds of characteristics including temperament, motives, values, interests, etc. (see Kandler & Rauthmann, 2022) at several levels of abstraction.

2) We have described one further criterion in Kandler et al. (2019, p. 549): “Genetic variance in surface characteristics should be completely accounted for by the genetic variance in core characteristics”. This criterion, however, can only be tested with the use of genetically informative data, such as the data provided by the SPeADy twin family study. Furthermore, Kandler and Rauthmann (2022) have described the universality criterion (p. 10): “Species-typical traits should be innate to all humans and thus identifiable across cultures, societies, and languages.” This criterion cannot be tested with the SPeADy data at hand alone. For the purpose of examining the universality criterion, SPeADy needs to be extended by adding cross-cultural, cross-national data.

**Table 1**  
Six Criteria to Specify Core Dispositions

Criterion	Explanation	Verbalization of the empirical expectations	Formalization of empirical tests
Cross-time stability	Core dispositions should be more stable over time than situational characteristics (states).	Latent trait variance ( $V_{Trait}$ ) of measures of a core disposition is larger than the state residual variance ( $V_{State} - V_{Trait}$ ).	$V_{Trait} > V_{State} - V_{Trait}$
Cross-contextual consistency (vs. environmentality)	Core dispositions should be consistent across contexts and, thus, less environmentally malleable than contextual surface characteristics.	Environmental influences ( $E$ ) on measures of core dispositions ( $D$ ) are smaller and less probable than environmental influences on contextualized adaptations ( $A$ ). Environmental variance ( $V_E$ ) in core dispositions is smaller.	$E \rightarrow D < E \rightarrow A$ $V_E(D) < V_E(A)$
Cross-rater consensus	Core dispositions should be more similarly observable / assessable by different well-informed rater perspectives across situations and contexts than surface characteristics.	Correlations ( $r$ ) among different raters' reports ( $i$ and $j$ ) within and across time points ( $t$ and $u$ ) are larger for core dispositions ( $D$ ) than for contextualized adaptations ( $A$ ).	$r_{i,j}(D) > r_{i,j}(A)$ $r_{i,jt}(D) > r_{i,jt}(A)$
Direction of causation	Influences from core dispositions on surface characteristics should be more plausible and larger than vice versa.	Measures of core dispositions predict measures of adaptations rather than vice versa. Effects from measures of core dispositions ( $D$ ) on measures of adaptations ( $A$ ) are larger than reverse effects.	$D \rightarrow A > A \rightarrow D$
Mediation of causation	Surface characteristics should act as mediators between core dispositions and environments.	Measures of adaptations ( $A$ ) act as mediators between effects of core dispositions ( $D$ ) on environments ( $E$ ) and reverse effects.	$D \rightarrow A \rightarrow E$ $E \rightarrow A \rightarrow D$
System distinctiveness	Core dispositions should emerge as distinct (divergently valid) characteristics in a set (or system) of several potential core dispositions across diverse methods and samples. Core dispositions should emerge as central nodes in a cluster of highly linked dispositional traits.	If two latent trait measures are redundant, their links (edges) will be strong (e.g., their correlations $r_{DD}$ are substantial and more than a half of their variances overlap). If two latent trait measures are structurally distinct, their links (edges) will be weak (e.g., their correlations $r_{DD}$ are zero or at most moderate). <i>Centrality</i> indices ( <i>strength</i> , <i>closeness</i> , and <i>betweenness</i> ) are comparatively high for measures of core dispositions ( $D_C$ ) in a cluster of several potential core dispositions ( $D_P$ ).	Redundancy: $r_{DD} \geq  .71  (R_{DD}^2 \geq .50)$ Distinctiveness: $r_{DD} <  .71  (R_{DD}^2 < .50)$ $Central(D_C) > Central(D_P)$

## Cross-Time Stability

As a starting point, only relatively enduring characteristics can be termed personality characteristics against the background of most definitions of personality (Baumert et al., 2017; Kandler et al., 2014). Accordingly, core disposition should at least be relatively stable over a considerable time as opposed to situational deviations or observable expressions of individual differences at a given measurement occasion (i.e., states). The revised latent state-trait theory (Steyer et al., 2015) provides a formalized theoretical framework to specify longitudinal variance decomposition models. These models enable us to examine to what extent a repeatedly measured characteristic can be treated as a relatively stable trait or rather as a situational state. Latent traits are modelled as components of more accessible states and, thus, can be seen as expressions of individual dispositions in reliable measures of individual characteristics in situations (i.e., at specific measurement occasions). To treat a specific characteristic as a trait, the latent trait variance component of measures of this characteristic should be considerably larger than the state-specific variance components at specific measurement occasions (beyond random error of measurement). This does not mean that traits are written in stone. To the contrary, as persons can change, their traits (as characteristics of persons) can change. However, in contrast to situationally varying states, trait change can rarely be observed from one day to the next.

Importantly, cross-time stability is a necessary but not sufficient prerequisite to rule out that a characteristic is a surface characteristic because *adaptations* (i.e., context-dependent surface characteristics, see below) can be as stable as traits or even more stable. Hence, further criteria are necessary to disentangle adaptations from traits.

## Cross-Contextual Consistency

Adaptations are often defined as “habitual reactions that people have learned in response to their specific social, cultural, and physical environments” (Henry & Möttus, 2020, p. 270). They can be seen as surface characteristics which may appear as relatively stable behavioral repertoire, but in a specific environment and, thus, context-dependent. As a consequence, surface characteristics in the meaning of adaptations to specific contexts should be malleable due to contextual influences (Kandler et al., 2014). In contrast, traits are not only seen as stable over longer periods of time (*stability criterion*), but also consistent across diverse situational conditions and contextual settings (*consistency criterion*; cf. environmentality criterion by Kandler et al., 2019). Thus, they are expected to be less prone to environmental influences. This trait-adaptation differentiation is common to several theoretical models, such as Five-Factor Theory (McCrae & Costa, 2008), Cybernetic Big Five Theory (DeYoung, 2015), or the three-layer model of personality (McAdams & Pals, 2006, see also Henry & Möttus, 2020, for an overview). The differential *environmentality* of traits and adaptations can be tested empirically with longitudinal data of characteristics of persons and measures of persons’ environments

(e.g., see [Asendorpf & Motti-Stefanidi, 2018](#); [Kandler & Rauthmann, 2022](#)). However, measurement issues need to be considered, because estimates of cross-time stability and cross-contextual consistency of measures of psychological characteristics can be biased due to random and systematic error of measurement.

### Cross-Rater Consensus

Substantial systematic measurement error (due to the method of measurement or rater biases) can lead to high stability and consistency in mono-method studies ([Geiser & Lockhart, 2012](#)), even though the psychological characteristic in question is less stable and not consistent across environmental conditions and settings. In contrast, substantial random measurement error (due to low reliability of the psychological measure) can lead to low stability and consistency, even though the psychological characteristic is actually stable and consistent. We, thus, need adequate (at least reliable and at best valid) measures that encompass relevant information of a defined personality construct beyond random error of measurement and non-random indicator-specific or method-specific artifacts. Characteristics that show high stability over longer intervals of time and high cross-contextual consistency can be more accurately perceived and more similarly assessed by independent observers ([Human & Biesanz, 2013](#)). Therefore, a common latent variable across different informant reports represents a more accurate reflection ([Funder, 1991](#); [McCrae & Mõttus, 2019](#)) of a stable and consistent characteristic (i.e., the latent trait) rather than of more contextually varying surface characteristics (i.e., adaptations) because the cross-rater measurement of the latter is more dependent on the context (e.g., work, family, etc.) of the rater perspective (e.g., colleague, relative, etc.). Hence, the cross-time cross-informant correlations can be expected to be larger for traits than for adaptations.

### Direction of Causation

The fulfillment of the three aforementioned criteria allows implications to the extent to which measurements of persons' characteristics can be considered stable, consistent, and consensually valid traits (vs. states and adaptations). However, these criteria alone are not sufficient to establish the dispositional nature of traits, which are often conceptualized as endogenous dispositions or basic tendencies that should account for stability and consistency in individuals' behaviors and experiences ([McAdams, 2015](#); [McCrae & Costa, 2008](#)). Although bidirectional associations are allowed in most theoretical models ([Asendorpf & Motti-Stefanidi, 2018](#); [DeYoung, 2015](#); [McAdams & Pals, 2006](#)), it follows from these theories that influences from traits on adaptations are more plausible or more frequent and stronger than the reverse effects. In other words, dispositions should predict adaptations rather than vice versa ([Kandler et al., 2014, 2019](#)). This *direction-of-causation* criterion works in compliance with the *stability* and *consistency* criteria because effects from adaptations will be less plausible (or even impossible), if a trait is less

changeable (or even unchangeable). However, as we already mentioned above, a trait is not written in stone, but can change due to both biologically anchored maturation and (or) social, cultural, or physical environmental influences. Also, adaptations can be as stable as or even more stable than traits depending on the stability of adaptation-related contextual influences. Recursive sequences of contextual influences can trigger processes that, in turn, can lead to long-term trait changes (Wrzus & Roberts, 2017).

### Mediation of Causation

Only in case of non-perfect (mean-level, individual, or rank-order) stability and consistency of traits at least over longer periods of time, we can expect that traits can mutually transact with environments. On that condition, adaptations act as mediators between environmental influences and dispositions—the basic assumption of the Disposition-Adaptation-Environment model (Asendorpf & Motti-Stefanidi, 2018). This central idea is also common to several other theoretical models, such as the three-layer model of personality (McAdams & Pals, 2006), the Cybernetic Big Five Theory (DeYoung, 2015), and the Five-Factor Theory of personality (McCrae & Costa, 2008). In these conceptions, (characteristic) adaptations are seen as environmentally shaped expressions of (basic dispositional) traits in specific environmental settings and conditions or as products of trait-environment interactions and transactions (McAdams, 2015; McCrae & Sutin, 2018). As a consequence, adaptations can act as mediators of effects from dispositions on environments as well as reverse effects from environments on trait change. The *mediation-of-causation* criterion can be tested with multivariate longitudinal modeling allowing for cross-lagged effects between measures of dispositions, adaptations, and environments across at least three measurement occasions. Both the *direction-of-causation* and the *mediation-of-causation* criteria need to be fulfilled to establish the dispositional nature of personality traits. From this perspective, only traits (but not adaptations or states) can reflect core dispositions.

### System Distinctiveness

All the aforementioned criteria cannot exclude the redundancy of two potentially different traits or the divergence of two potentially equivalent traits. Thus, they cannot establish the system distinctiveness of a disposition. Distinct constructs of persons' characteristics are necessary to parsimoniously but sufficiently reflect the wide bandwidth of "core" personality differences and to avoid jingle and jangle fallacies<sup>3</sup>. Thus, once we have identified measures of individual characteristics as dispositional traits based on the aforementioned criteria, it is an important next step to establish whether or rather to what extent these potential dispositions are distinct from or redundant with each other.

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3) Jingle fallacy: Mistaken assumption that two different phenomena are identical because of the same label. Jangle fallacy: Mistaken assumption that two identical phenomena are different because of different labels.

In this regard, the well-known multitrait-multimethod approach is useful to establish the construct validity of dispositional traits (Campbell & Fiske, 1959). It can be based on confirmatory factor analyses (Eid et al., 2003; Funder, 1991), which allow the examination of structural convergence versus divergence of trait scores across different indicators and methods of measurement beyond random and systematic error of measurement. High convergence (e.g., more than a half of trait variance overlaps) between two trait measures may indicate one common latent trait.

These analyses can be complemented by network analyses, which allow important insights in the distinctiveness (versus redundancy) of traits based on clustering coefficients of network nodes without relying on latent factor models (Costantini et al., 2015). A low clustering coefficient of a trait in a system of traits (i.e., a node in a network) can be seen as operationalization of this trait's low redundancy (i.e., high distinctiveness). A high clustering coefficient of a trait indicates its redundancy with other traits in the meaning of an overlap of these traits' predictions (or reflections) of individual differences. In terms of parsimony, these traits could be assembled into one common latent trait, comparable to a factorial approach. For example, anxiety and depressiveness could be combined to negative emotionality. Alternatively, we can estimate which of the highly clustered traits reflects the most important node in the network cluster (i.e., anxiety or depressiveness). In other words, we can quantify the most central disposition within a cluster of potential core dispositions. Centrality can be captured as combination of at least three centrality indices: Strength, closeness, and betweenness (Costantini et al., 2015). A strength-central trait can directly influence many other traits or can be influenced by them. A closeness-central trait can more quickly (directly or indirectly) influence other network traits or can be quickly influenced by them. And a betweenness-central trait is relevant for the speed of effects and size of connections between other network traits. Thus, network analyses—in particular dynamic network analyses based on longitudinal data—can help to detect central traits in the meaning of core dispositions to the degree that (1) their stability predicts the stability of the system structure, (2) their change predicts faster and larger network changes, and (3) their removal from the system cannot be tolerated without substantial network alteration.

## The Longitudinal and Multi-Rater Design of SPeADy

The combination of longitudinal and multi-rater designs allows us to differentiate, organize, and integrate several conceptualizations of personality characteristics on the basis of the six proposed criteria (see Table 1). These characteristics encompass broad concepts of personality dimensions (e.g., Big Five and HEXACO domains), but also more specific personality characteristics (e.g., value priorities, control beliefs, and self-esteem). The design of the age groups study enables researchers to test all criteria and, thus, to falsify existing theoretical differentiations between personality characteristics, such as the differentiation between *basic tendencies* and *characteristic adaptations* in the Five-Fac-



tor Theory (McCrae & Costa, 2008), or at least to proof the adequacy of their usual operationalization. Moreover, based on a conceptualization of ‘personality’ as a dynamic system of core dispositions and surface characteristics, which may itself stabilize or change over time and may be more or less consistent or adaptive across situations and contexts, SPeADy enables unique implications for an integration of different personality characteristics into a broad model of personality differences and development.

Extending a longitudinal design by including multiple measures of personality-relevant constructs and perspectives from multiple raters helps us to overcome limitations of usual longitudinal mono-method and cross-sectional multi-method studies. In the following, we will describe the current state of data collection and the design-specific prerequisites and advantages to address the six outlined criteria. Thus, the paper serves as quasi-preregistered report and reference for all future studies that apply the six criteria on the SPeADy age groups data to differentiate core dispositions from surface characteristics of personality.

## The SPeADy Age Groups Data and Design

The study was set out to include three measurement occasions, with two years between measurement occasions for each participant, and encompass self- and informant reports on personality-relevant as well as environmental characteristics of individuals from different age groups with a minimum age of 14 years.

### Initial Sample Recruitment and Data Collection

The first wave (W1) of data collection started in January 2016. The primary recruitment efforts were to reach a balanced and representative sample of male and female participants of different ages ( $\geq 14$  years). Participants were recruited via leaflets, posters, promotion stands in city centers, and media calls among other recruitment routes. Potential participants either received an email invitation including a weblink to the online questionnaire, using Questback’s Unipark ([www.unipark.com/en](http://www.unipark.com/en)), or the paper-and-pencil questionnaire via mail. Most participants took part online (87%). Participants had to give their informed consent in order to take part and completed the online questionnaire on average in about 50 minutes ( $M = 51.40$ ,  $SD = 42.88$ ,  $Mdn = 45.03$ ). With the omission of extreme values outside 1.5 times the interquartile range, participants needed about 45 minutes on average for completion ( $M = 46.43$ ,  $SD = 17.50$ ,  $Mdn = 43.64$ ).

Each participant who provided a self-report (i.e., the target) was asked to provide contact information of one or more well-acquainted informants (e.g., good friend, partner, relative) that were potentially willing to provide independent informant reports on the target. These informants were subsequently invited for participation and instructed to rate their acquaintances (the targets) on the same constructs based on an informant

version of the questionnaire. Targets were compensated for their participation once they were rated by at least one informant. Their incentives included a scientifically sound personality profile based on their self-ratings on the 60-item HEXACO Personality Inventory-Revised (Ashton & Lee, 2009; Moshagen et al., 2014) and a 10 euro voucher for various online shops. Informants were also compensated with a 10 euro voucher and could also participate in a voucher raffle.

Participants' contact data were collected and stored independently of their research data. These pseudonymized data sets can only be linked via participants' individual alphanumeric codes, which were generated by targets themselves. The individual codes were solely used to generate the personality profiles based on semi-automatized R-coded runs and to match the longitudinal and multi-rater data sets. This procedure ensured that participants' personal information was not directly linked to their responses on the research questionnaire, in line with the ethics committee vote.

In total, 1,701 targets and 1,187 informants participated in the age groups study in W1. Twins' family members participating in the SPeADy twin family study (see Kandler et al., 2019) also provided self-ratings on the same constructs and a few of them were rated by informants as well. Therefore, although the family members did not initially belong to the age groups study, their ratings were incorporated into this data set as well. The collective number of targets was thus 2,406 and that of informants was 1,212. The target sample cannot be considered as representative of the general German population, but can be seen as heterogeneous with regard to age, sex, family status, and education (see Table 2). The age of participants ranged from 14 years to 89 years with an average of 40.46 years ( $SD = 18.23$ ). Informants were mostly either relatives, friends, or spouses and knew the targets very well or well (95%; see Figure 1). On average, informants were acquainted with the targets for 19.34 years ( $SD = 14.33$ , Range: 0–70).

**Table 2**

*Descriptive Statistics*

Variable	Wave 1		Wave 2	
	<i>n</i>	%	<i>n</i>	%
<b>Age groups in years</b>				
14–20	323	13	142	10
21–30	682	28	320	21
31–45	382	16	215	14
46–60	647	27	522	35
> 60	372	16	299	20
<b>Sex</b>				
Female	1482	62	900	60
Male	924	38	598	40

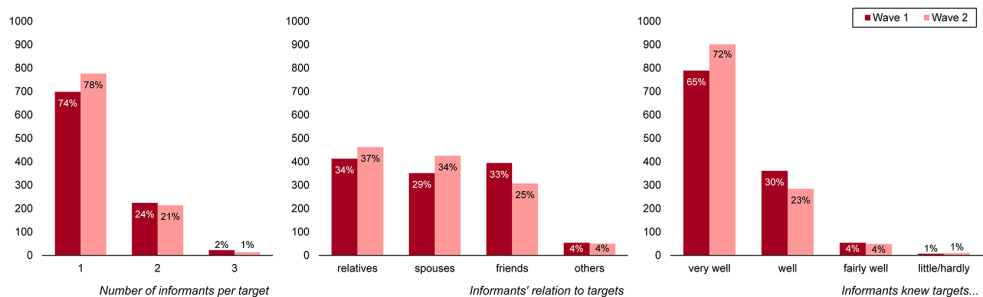
Variable	Wave 1		Wave 2	
	<i>n</i>	%	<i>n</i>	%
<b>Family status</b>				
Unwed	1145	48	601	40
Married	996	41	736	49
Divorced/separated	201	8	115	8
Widowed	64	3	45	3
<b>Educational level</b>				
At school	106	4	40	3
School-leaving qualification <sup>a</sup>	142	6	66	4
Secondary school certificate <sup>b</sup>	391	16	228	15
Polytechnic degree <sup>c</sup>	253	11	139	9
High school graduation <sup>d</sup>	531	22	307	21
Academic degree	921	38	659	44
Others	48	2	51	3
No school-leaving qualification	9	< 1	6	< 1

Note. German terms are provided in the specific notes.

<sup>a</sup>Volks-/Hauptschulabschluss. <sup>b</sup>Realschulabschluss/Mittlere Reife. <sup>c</sup>Fachhochschulreife. <sup>d</sup>Abitur/Hochschulreife.

**Figure 1**

*Descriptive Statistics on Available Informant Data of Wave 1 and 2 Regarding Number of Informant Reports per Target and Informants' Relation and Closeness to Targets*



## Further Waves and Panel Stability

The second wave (W2) of data collection followed directly after the completion of W1 in January 2018. With the transition from W1 to W2, the reward system was adjusted in that targets were compensated with their personality profile irrespective of a participation by an informant. The reason behind this modification was to incentivize targets more effectively without additional monetary costs. Some measures were excluded and new instruments were included during the progression of the three waves (see the sec-

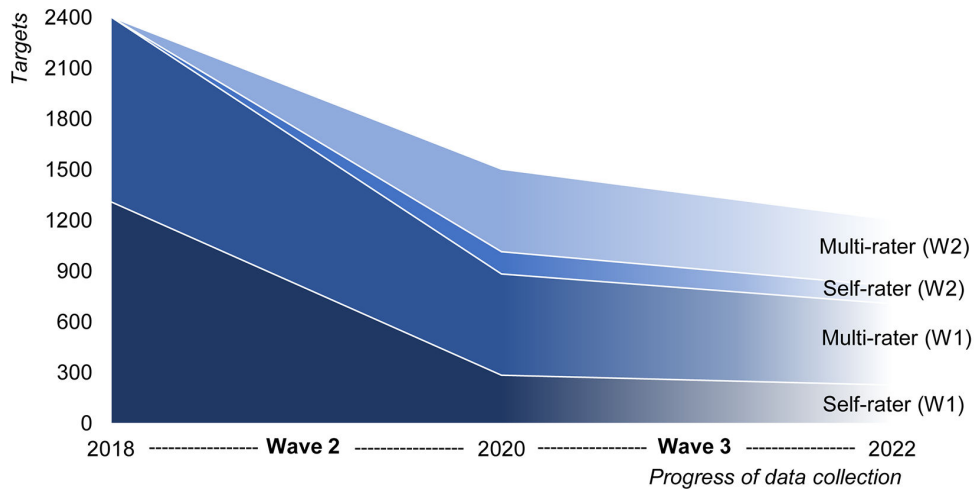
tion Measurement Instruments). The omission of several instruments as part of the panel stability strategy guaranteed a more economical administration time, which was subsequently reduced to about half an hour in W2 for the research questionnaire ( $M = 34.82$ ,  $SD = 14.90$ ,  $Mdn = 32.32$ ). Completion time without values outside 1.5 times the interquartile range was very similar:  $M = 33.17$ ,  $SD = 11.27$ ,  $Mdn = 31.53$ . Additionally, small modifications took place to establish more clarity for participants while completing the questionnaire. Targets were invited within three-month intervals two years after their first participation. This ensured that each target's time interval between W1 and W2 was approximately two years. Informants were not asked to participate again. Rather, targets could freely choose to name the same or different well-informed acquaintances.

To counteract dropout and mitigate sample attrition, new targets that had not participated in W1 were recruited (see Figure 2). However, the primary effort was to ensure panel stability and attract a second participation of all W1 targets with at least one informant report. For this purpose, targets who did not participate following an invitation were reminded via email, phone, or by postal letter. We also sent out semiannual newsletters with small raffles and interesting descriptive analyses of the SPeADy data. In total, 885 targets participated a second time (82% online) and 620 targets participated for the first time in W2 (91% online). The mean age of targets in W2 was 44.82 years ( $SD = 17.90$ ) and ranged from 14 to 91 years. See Table 2 for additional demographical statistics. Overall, 1,246 informants participated (3% more than in W1). As in W1, informants were mainly either relatives, spouses, or friends and mostly indicated to know the targets very well or well (95%; see Figure 1). On average, informants knew the targets for 21.62 years ( $SD = 14.33$ ; Range: 0–70).

The third wave (W3) started in February 2020 and continues until January 2022 based on the same recruitment strategy. The questionnaire design was again slightly modified. The only content-wise adjustment was the inclusion of five items regarding quantitative and qualitative aspects of the relationship between targets and informants. For example, informants were asked how often they had discussed personal topics with the targets during the last 12 months (quantity). Additionally, they indicated to what extent the target shares his or her thoughts and views with them and to what extent they know the target's interests and habits (quality). The full three-wave data set will be available in spring 2022.

**Figure 2**

Number of Targets (i.e., Self-Rating Participants) Providing Either Self-Rater or Multi-Rater (i.e., Self-Rater and Informant) Data Across Waves of Data Collection



*Note.* The progress of data collection reflects the renewed participation of targets who first participated in wave 1 (W1) and the first and renewed participation of targets who participated in wave 2 (W2). Wave 3 data are conservatively estimated (drop-out rate of 20%).

## Measurement Instruments

SPeADy encompasses a wide array of measures capturing various personality constructs, such as broad and more nuanced personality trait concepts, motives, values, interests, morality, religiosity, and self-related concepts. It further comprises various environmental settings and conditions, such as religious affiliation, family and employment status, and life events. A list of all measures can be found in [Table 3](#). Note that some instruments were excluded (as part of the panel stability strategy) and new instruments were introduced during the progression of the three waves. For example, the BFI-2 was dropped after the first assessment wave, while the HEXACO-60 was maintained for every wave of data collection. Whereas the BFI-2 captures the Big Five personality domains and 15 facets, the HEXACO is conceptually broader and encompasses six personality dimensions and 24 facets. As there is substantial construct-related and structural overlap between the six-dimensional HEXACO framework and the broad domains Emotional Stability, Extraversion, Openness, Agreeableness, and Conscientiousness of the Big Five framework, we decided in favor of the HEXACO-60. Although the inclusion of a sixth personality domain Honesty-Humility alters the architecture of Agreeableness and Emotional Stability (Emotionality in the HEXACO framework), the high conceptual and empirical overlaps allow researchers to use the HEXACO-60 to prove Big-Five-related hypotheses regarding

the associations between dispositional traits and characteristic adaptations (DeYoung, 2015; McAdams, 2015; McCrae & Costa, 2008).

**Table 3***Measurement Instruments*

Measurement Instrument	No. of items	Wave 1	Wave 2	Wave 3
<b>Demographics</b>				
Age, sex, nationality, education	4	X	X	X
<b>Personality trait models</b>				
BFI-2 (Five-Factor model)	60	X		
HEXACO-60 (HEXACO model)	60	X	X	X
<b>Self-related concepts</b>				
HSWBS (affective well-being)	6	X	X	X
SWLS (cognitive well-being)	5	X	X	X
RSES (self-esteem)	3	X	X	X
IE-4 (control beliefs)	4	X	X	X
ASKU-3 (self-efficacy beliefs)	3	X	X	X
OPS-Scales (control strategies)	7	X		
MacArthur SSS (subj. social status)	1	X		
Picture-anchored AR (attractiveness)	1	X		
Nonanchored AR (attractiveness)	1	X	X	X
<b>Motives and interests</b>				
SIT (interests)	30	X		
UMS-24 (motives)	24	X	X	X
AI: Personal growth (motive)	5	X	X	X
AI: Health (motive)	5	X		
<b>Morality, values and religiosity</b>				
MFQ-21 (morality)	21	X		
PVQ-57-RR (values)	57	X	X	X
Z7 (religiosity)	7	X	X	X
<b>Environmental characteristics</b>				
Family and relationship status	4	X	X	X
Religious affiliation	1	X	X	X
Employment and training status	4	X	X	X
Major life events (incl. rated controllability and valence)	72		←X	←X

*Note.* X: included instrument in the respective wave; ←X: retrospective reports on life events experienced within the intervals between measurement occasions. BFI-2: Big Five Inventory 2 (adapted from Danner et al., 2019; Soto & John, 2017); HEXACO-60: 60-item HEXACO Personality Inventory-Revised (Ashton & Lee, 2009; Moshagen et al., 2014); HSWBS: Habitual Subjective Well-Being Scale (Dalbert, 1992); SWLS: Satisfaction With Life Scale (Diener et al., 1985; Glaesmer et al., 2011); RSES: Rosenberg Self-Esteem

Scale (Rosenberg, 2015; adapted from Thönissen et al., 2014); IE-4: 4-Item-Scale for the Assessment of Internal and External Control Beliefs (Kovaleva, 2012; Kovaleva et al., 2012); ASKU-3: Short Scale for Measuring General Self-Efficacy Beliefs (Beierlein et al., 2012); OPS-Scales: Optimization in Primary and Secondary Control – A Multiscale Questionnaire (adapted from Heckhausen et al., 1998); MacArthur SSS: MacArthur Scale of Subjective Social Status (<https://macses.ucsf.edu/research/psychosocial/usladder.php>; Adler et al., 2000); Picture-anchored AR: Picture-anchored Attractiveness Rating (Kemper et al., 2012); Nonanchored AR: Nonanchored Attractiveness Rating (developed for SPeADy); SIT: Situative Interest Test (<https://www.stangl-taller.at/ARBEITSBLAETTER/TEST/SIT/beschreibung.shtml>); UMS-24: Unified Motive Scales (Schönbrodt & Gerstenberg, 2012); AI: Aspirations Index (Klusmann et al., 2005); MFQ-21: 21-item Moral Foundations Questionnaire (adapted from [www.moralfoundations.org/questionnaires](http://www.moralfoundations.org/questionnaires)); PVQ-57RR: Portrait Value Questionnaire (<https://mindcultureevolution.com/revised-portrait-value-questionnaire-57rr/>; Schwartz et al., 2012); Z7: Centrality of Religiosity Scale (Huber & Huber, 2012). Family and relationship status comprise partnership status and length, marital status, and number of biological children. Employment and training status comprise types of employment, unemployment, training, and voluntary services. Major life events were measured based on a Life Event Check List specifically developed for SPeADy. The check list, inspired by Kandler and Ostendorf (2016), includes 21 given life event categories and three optional events to be named by the targets.

As of W2, the survey incorporates a list of 21 categories of major life events (e.g., pregnancy, birth or adoption of a child, severe conflict with a person, life-threatening experiences, entering a romantic relationship, significant personal success, health issues). Additionally, up to three other life events not mentioned in the list could be provided by the participants. Targets were asked which events they had experienced within the last two years. Additionally, they rated the subjective controllability on a 3-point scale (1 = *not controllable*; 2 = *partly controllable*; 3 = *controllable*) and the individual valence of these events (in retrospect) on a 7-point scale ranging from *highly negative* (-3) to *highly positive* (+3).

## Current Investigations and Preliminary Findings

The SPeADy age groups study enables the specification of core dispositions and surface characteristics of personality against the background of the six criteria and a selective but representative set of personality-relevant measures captured in SPeADy. While most criteria can only be examined with a longitudinal design (see Table 1), initial examinations regarding the *cross-rater consensus* or *system* criteria were already possible with the cross-sectional data of Wave 1. In the following, we subsume recent findings regarding the structural convergence (versus divergence) between personal value priorities and moral concerns.

## Value Priorities and Moral Concerns: Redundant or Distinct Constructs?

Despite substantial theoretical overlap between the concepts of Schwartz's theory of basic human values (Schwartz et al., 2012) and Haidt's theory on moral foundations (Haidt & Joseph, 2008), empirical studies on the links between values and morality are sparse. According to considerations regarding fundamental world beliefs, we expected common dimensions underlying the measures of both conceptual models. More specifically, we expected that conservation versus openness-to-change value priorities (*Conservation*) would be structurally convergent with moral binding foundations (*Binding*) and that self-transcendence versus self-enhancement value priorities (*Self-transcendence*) would be structurally convergent with moral individualizing foundations (*Individualizing*). We investigated the convergence and divergence by performing, among others, confirmatory multitrait-multirater factor analyses (Zapko-Willmes et al., 2021). The analyses thus took the *cross-rater consensus* criterion into account and examined the *system distinctiveness* criterion. These latent variable analyses across self- and informant reports allowed us to disentangle common variance from specific variance due to rater perspectives (consensually valid vs. rater-specific components), construct specificity, and error of measurement. They gave us a first insight into the structural redundancy (versus distinctiveness) of both classes of constructs: Value orientations and moral foundations.

For Conservation and Binding, the largest proportion of common variance in self- and informant reports was attributable to a common factor (Conservation: 61–73%, Binding: 43–48%). Approximately a third of variance in Binding was, however, explained by a Binding-specific factor (30–34%) with no Conservation-specific variance. Thus, Conservation and Binding showed structural convergence, but also construct-specific aspects also considerably contributed to individual differences in Binding foundations. The largest proportion of variance in Self-transcendence was primarily construct-specific (59–72%), with small to moderate components accounted for by the common factor with Individualizing (14–17%). In contrast, no Individualizing-specific component was found, while variance in Individualizing was largely explained by a common factor (34–60%) and rater-specific perspectives (40% by self-reports and 66% by informant reports). The comparably moderate consensually valid variance component in Individualizing scores was completely embedded within the construct-valid Self-transcendence variance.

These findings point to value priorities and moral concerns as considerably empirically related but distinct constructs or at least distinct expressions of the same underlying core disposition. Future studies will add further conceptually related constructs, such as Openness to Experience and Honesty-Humility, and will analyze the longitudinal SPeADy data against the background of other criteria, such as the *direction-of-causation* and *mediation-of-causation* criteria. These will provide further insight into the extent to which value priorities, moral foundations, or other empirically related characteristics serve as core disposition or rather surface characteristics of personality.



## Beyond the Major Aim of SPeADy: Tracking Age Trends in Motives

The primary aim of SPeADy is to run analyses on the basis of the six criteria to disentangle core dispositions and surface characteristics. However, the availability of and access to SPeADy data is not limited to those research questions. Other investigations are possible, such as multi-rater studies on sex and age differences within and across measurement occasions. For example, little is known about age trends in explicit (i.e., conscious) motives—or major life goals—across the lifespan beyond self-reports. According to lifespan theories, young individuals' motives are oriented towards personal growth and success (e.g., Brandtstädter et al., 2010; Carstensen, 2006; Ebner et al., 2006; Freund et al., 2010). With age, however, individuals increasingly strive to protect established structures, for example, in terms of social relationships (Lang, 2000). Thus, younger persons can be expected to strive more strongly for personal growth, achievement, and power than older individuals, whereas older individuals may have priorities for fewer but closer relationships and may focus more on health protection motives.

Richter (2020) analyzed self-reports and informant reports separately to examine their respective associations with age. In addition, she focused on explicit motives modelled as (consensually valid) latent variables based on the covariance between self- and informant reports in a multivariate multi-rater model to correct for measurement error, rater-specific biases, and interrelations between several motives. Age trends of self- and informant reports were largely comparable. This contrasts with prior beliefs that persons' motivations are less observable to others and only accessible through introspection. Across all analyses and in line with expectations, health protection and intimacy motives tended to increase and affiliation and personal growth tended to decrease with age, especially in the elderly. However, contrary to the expectation, the intimacy motive of middle-aged individuals showed a negative association with age. Moreover, while older females showed the expected lower levels of achievement and power motives than younger females, males' power and achievement motives did not show significant age differences. These findings point to more nuanced motive-age associations, which may foster the revision of theories on age trends in motives. The examination of well-informed acquaintances provided incrementally valid information on age trends in targets' explicit motives beyond self-reports. Apart from this, the use of the full longitudinal SPeADy design (as soon as the data collection of the third wave will have been finished), will allow a disentanglement of age (or cohort) effects from time effects.

## Future Perspectives and Open Data

The highlighted cutting-edge results should portray and underscore the value of the multimodal SPeADy data within and beyond the major aims of the SPeADy project. A broad spectrum of research questions can be investigated with the age groups study data due

to the longitudinal multi-rater design and the use of numerous measurement instruments covering a wide range of research topics. The broad age range of participants allows comparisons between different cohorts, while the longitudinal design of SPeADy (with data collection of the third wave in progress) enables more specific *direction-of-causation* and *mediation-of-causation* examinations. Reports from well-informed acquaintances prove a valuable contribution in this context as they provide an important perspective in addition to introspection and allow to control for biases specific to self-raters (Richter, 2020).

Our data set is freely available for interested researchers as scientific use file. The data can be used against or beyond the background of the major aims of SPeADy outlined in this paper. The interested reader should send a short outline of his or her research plans based on the SPeADy data. Please refer to the SPeADy homepage for more details on data availability and user agreement: <http://www.speady.de/studies/?lang=en>.

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