



# "You really are an empathic type" - Types in empathy research

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*In this study, we used a configuration frequency analysis (CFA) to find out whether there are certain combinations of characteristics that can be used to define prototypical empathy types. Using a sample of 9,407 participants aged between 10 and 80 years, we were able to find four clearly separated and exhaustive empathy profiles which include all relevant aspects of emotional concern, perspective taking and personal distress and at the same time can be clearly defined in relation to each other. The superordinate patterns "situation-dependent altruists (A)", "high functioning empathy (B)", "low neurotic empathy (C)" and "low empathy (D)" were identified. With these four types, a total of almost 75% of the test subjects can be assigned to the significant empathy profiles, whereby only in profile A there were significantly more female participants than in the other three. For the first time, we were able to create a comprehensive and selective typology for the construct of empathy, with the help of which, for example, the holistic success of empathy training or the motivations of altruistic actions can be better described.*

**Keywords:** empathy profile, configural frequency analysis, emotional concern, perspective taking, personal distress

Typology formation is frequently observed in everyday life: The size of a subject is described as "large, medium or small" or someone is "likeable" or "unlikeable". Typologies are used to make complex situations manageable and controllable. Typologies are also widely used in science. For example, parenting styles are defined as "authoritarian", "authoritative" or "permissive" (Baumrind, 1971), learning types are described as "theorist, practitioner, model student, indifferent or insecure" (Schrader, 2008) or types of bullies are identified (power bullies, pleasure bullies, fear bullies, co-bullies, stress bullies) (Wyrwa, 2017).

Also in *empathy* research, repeated attempts have been made to describe certain types of empathic people, mostly on the basis of latent class analyses. Empathy is understood as a multidimensional construct consisting of affective and cognitive aspects and it is based primarily on the research of Davis (1980; 1983). He names four aspects of empathy, which correlate slightly to moderately with each other (Beven et al., 2004; Cliffordson, 2002; Lauterbach & Hosser, 2007; Paulus, 2009; Siu & Shek, 2005). Two of them are Emotional Concern (EC) and Personal Distress (PD); they are named as *affective* aspects. EC captures the tendency to have other-oriented feelings such as compassion and sympathy for others. PD describes the tendency to feel discomfort (distress) in extremely emotional situations and it is more self-focused as a reaction. The two others are Perspective Taking (PT) and the Fantasy Scale (FS); they are seen as *cognitive* aspects. PT measures the attempt to take

the perspective of another person or to cognitively put oneself in the other person's shoes. The FS transfers this ability to fictional "characters" in films or books. Suggestions to calculate a sum score for empathy in general are made, but are not recommended by Cliffordson (2002), de Corte et al., (2007) or Paulus (2012).

The FS (Fantasy Scale) in particular poses a problem, as the items on this scale contain both affective ("After watching a movie, I feel as if I am one of the characters in the movie") and cognitive ("I can very well imagine the feelings of a person in a novel") formulations. Davis et al. (1994, p. 58) expressed their doubts about the FS by writing: "The thrust of the FS items (...) suggests that the scale should fall under the heading of role taking. However, the fact that virtually all of these items deal with imagining oneself in the place of fictitious characters (...) complicates this interpretation." This criticism is, however, not considered in the attempts to topologize empathy using LCA. In studies on this topic, PT and EC are classified as *other-oriented* and PD and FS as *self-oriented* (Anderson, 2020; Laverdiere et al., 2019; Sobhani, 2019; Wang et al., 2018). Latent Class Analysis (LCA) was used as the method in each of the sources mentioned, the results of which were statistically comprehensible, but did not consider the point of criticism of the unclear affiliation as affective or cognitive in the FS.

Our attempts to replicate the results of Anderson (2020), Laverdiere et al. (2019) or Sobhani, (2019), using samples comparable to those in their studies, all failed. We used three random samples from our total ( $N = 9,408$ ) data set with  $N = 800$ ,  $N = 900$  and  $N = 4,222$ . We applied LCA (3 latent classes were identified, but they were not clearly interpretable) and similar methods such as discriminant analysis, hierarchical (4 aspects of 4 items each, scaling 1-5, number of clusters 3-6 specified) and two-step cluster anal-

yses without specifications, and Q-factor analysis (factorized persons instead of variables), but did these methods did not produce clearly definable and selective categories that could replicate the above-mentioned results.

In the present study, we attempt to use a configuration frequency analysis (CFA) according to Krauth (1985; 1993), Krauth and Lienert (1973), and Eye and Wiedermann (2022). We used Holm's correction for the alpha-levels to find profiles or "types" that consider the theoretical implications and can describe clearly distinguishable and theoretically explainable results.

## METHOD

### Participants

The sample consisted of 9,407 participants aged between 10 and 80 years (mean age = 26.5 years,  $SD = 10.85$ ), 68.5% of whom were female.

### Measures

We used the SPF (Saarbrücker Persönlichkeitsfragebogen zur Empathie [Saarbrücker empathy personaliy questionnaire]), the German version of the Interpersonal Reactivity Index (IRI) (Davis, 1983) according to Paulus (2009), which reflects the factorial structure of the IRI very well, but uses a reduced number of items (16 instead of 28 items) and has good quality criteria (Cronbach's alpha between .75 and .79). The Interpersonal Reactivity Index (IRI) is based on the empathy theory of Davis (1980) and it measures the four earlier mentioned aspects of empathy: *perspective taking* (PT), describing the cognitive ability to adopt and comprehend a person's point of view in a situation; the *fantasy scale* (FS), referring to a viewer's emotional response to fictional characters in movies, books or games; egocentric, mostly negative emotional states in emotionally tense situations are captured by the *personal distress* scale (PD), whereas actually empathizing and sympathizing with the emotions of a counterpart is expressed in the *emotional concern* scale (EC). Similar to the English version, the four subscales also correlate moderately with each other in the German version, between  $r = -.06$  and  $r = .49$ . Each subscale consists of 4 items, which are added to form an aspect sum for evaluation. Further information can be found in Paulus (2009; 2012; 2016; 2023). The current data set can be made available on request.

### Procedure

#### *The configural frequency analysis (CFA)*

CFA is a multivariate, non-parametric method for detecting types and syndromes which are defined according to their significant frequency of occurrence. Types are identified on the basis of the patterns (= configurations) of characteristic values that the individuals exhibit. If significantly more people with a certain configuration are observed in the population than expected, this indicates the presence of a type.

Table 1. Frequencies in % ( $N = 9,407$ )

	low	high
Emotional Concern (EC)	22.0	78.0
Perspective Taking (PT)	25.6	74.4
Personal Distress (PD)	64.1	35.9

The following basic assumptions are made: The determination of types is based on chi-square analyses. It is recommended that no more than 3 - 4 characteristics per aspect (for example "high", "medium", "low") are considered (Krauth, 1985; 1993) and a large sample size is necessary because the number of empirical cell counts is often too small. The calculation is carried out by comparing empirical ( $f(b)$ ) and expected ( $f(e)$ ) cell counts, whereby a significance correction according to Krauth (1993) is carried out due to many individual tests. Combinations in which  $f(b) > f(e)$  are referred to as "type", combinations with  $f(e) > f(b)$  as "anti-type". Antitypes are mandatory if types are present, as the sum of the probabilities of occurrence must be equal to 1. Antitypes cannot be interpreted in terms of content and are to be regarded as a methodological artifact (Krauth & Lienert, 1973) since their occurrence is only due to the fact that the basic assumption of independence of the characteristics must be guaranteed and types are present at the same time.

To apply the CFA, we must first convert the continuous variables EC, PT, and PD into categorical values (e.g., "high vs. low"). FS was not included in the analysis because its theoretical classification as affective or cognitive is not clear, as mentioned above (Davis, 1994).

There are several ways to convert to categories: A previous splitting based on the standard deviations ( $-1s \leq \text{mean} \leq +1s$ ) with the resulting categories "low", "medium", and "high" led to 17 different types, which were not clearly distinguishable in terms of content and therefore did not allow a clear definition. The theoretically justified splitting at the median (value 12) resulted in two classes per aspect: "low" and "high". The resulting empirical cell counts expressed in percentages are shown in Table 1.

## RESULTS

The identification of the empathy types (and anti-types) was done by counting the different combinations of empathy aspects, making use of their categorizations into high and low. Table 2 shows the results of the identification into types and antitypes, with their respective characteristics. In the EC, PT, and PD columns, the table gives the 8 theoretically possible combinations of the aspects EC, PT and PD using the categorical values high vs. low ( $2 \times 2 \times 2$ ). To determine the so-called types, the empirical cell counts (how many persons showed this combination of aspects; see the next column in Table 2) are compared with the expected cell counts under the hypothetical assumption of independence of the three characteristics (to calculate the expected cell frequencies, see Spiel & von Eye (2000, p. 515) and the types tested for significant deviations using chi-square tests.

Table 2. Significant types of configurations (empathy patterns)

Type	EC	PT	PD	Empirical cell counts	Expected cell counts	Standardized residuals	p-values for the standardized residuals	Test statistic for the asymptotic binomial test: after von Eye	p-values for the asymptotic binomial test	Alpha level for the Holm correction	Types
<b>A</b>	<b>H</b>	<b>H</b>	<b>H</b>	<b>2172</b>	<b>1957,74</b>	<b>4,84</b>	<b>0,000</b>	<b>5,44</b>	<b>0,000</b>	<b>0,025</b>	<b>Type</b>
<b>B</b>	<b>H</b>	<b>H</b>	<b>L</b>	<b>3776</b>	<b>3497,37</b>	<b>4,71</b>	<b>0,000</b>	<b>5,94</b>	<b>0,000</b>	<b>0,012</b>	<b>Type</b>
	H	L	H	635	673,93	-1,50	0,060	-1,55	0,059	0,050	
	H	L	L	750	1203,94	-13,08	0,000	-14,01	0,000	0,007	Antitype
	L	H	H	226	553,71	-13,92	0,000	-14,35	0,000	0,010	Antitype
	L	H	L	824	989,16	-5,25	0,000	-5,55	0,000	0,016	Antitype
<b>C</b>	<b>L</b>	<b>L</b>	<b>H</b>	<b>343</b>	<b>190,61</b>	<b>11,03</b>	<b>0,000</b>	<b>11,15</b>	<b>0,000</b>	<b>0,008</b>	<b>Type</b>
<b>D</b>	<b>L</b>	<b>L</b>	<b>L</b>	<b>681</b>	<b>340,51</b>	<b>18,45</b>	<b>0,000</b>	<b>18,79</b>	<b>0,000</b>	<b>0,006</b>	<b>Type</b>

Note: L = low, H = high; "Type" refers to the combinations of characteristics whose observed cell frequency is significantly greater than the expected one (e.g., type A:  $2172 > 1957.75$ ;  $p < .000$ ), "antitype" refers to the combinations that occur significantly less frequently than expected (e.g., the combination H\*L\*L:  $750 < 1203.94$ ;  $p < .000$ ); A more detailed explanation of the individual column contents can be found at Üçkardeş F. (2022, p. 487).

Table 3. Empathy profiles according to Anderson (2020)

	Empathy patterns
1 Low empathy	EC ↓, PT ↓, PD ↓
2 Cognitive empathy*	PT ↑, PD ↓
3 high functioning empathy	EC ↑, PT ↑, PD ↓
4 high affective empathy	PD ↑

Note: ↑: higher mean aspect scores (H); ↓: lower mean aspect scores (L); \*) profile 2 (Cognitive empathy) is moderate other-oriented

To describe the types, we use the profile descriptions according to Anderson (2020) and Sobhani (2019) and expand their definition. Anderson as well as Sobhani suggested the four empathy profiles as shown in Table 3: 1) a 'low empathy' profile (marked by the lowest scores on all subscales); 2) a 'cognitive empathy' profile (marked by the perspective taking facet being the highest and personal distress facet being the lowest); 3) a 'high functioning empathy' profile (characterized by high levels of perspective taking, empathic concern and fantasy, and a very low level of personal distress) ....., and 4) the 'high affective empathy' profile (contains the highest level of personal distress out of any of the profiles) (Anderson, 2020, p. 34 & 36).

As can be seen in Table 3, those empathy patterns do not include all aspect groupings in their description, but completely disregard the characteristics of EC (pattern 2) or EC and PT (pattern 4) in patterns 2 and 4. This means that these two patterns are not complete. The lack of EC and PT is a major shortcoming, as these two components form the main aspects in the concept of empathy.

Based on our data, we can describe empathy profiles more fully by taking all three aspects into account. In doing so, we consider findings from the empathy-altruism hypothesis (Batson, 1987; Batson & Ahmad, 2001; Batson et al., 2009; Batson et al., 1981; Batson & Oleson, 1991), which describes in particular the important role of PD, which can have an inhibiting effect on altruistic action under certain circumstances, for example, whether or not an escape from the situation is possible (Batson et al., 1987). It is therefore important to include all three aspects in every pattern.

In addition to the profiles "high functioning empathy" and "low empathy" shown in Table 3, we can add two further combinations, as given in Table 4. Pattern A in Table 4 reflects the influence of PD as described by Batson et al. (1987). We therefore call people with this configuration "situation-dependent altruists (A)". They have high affective (EC) and cognitive (PT) empathy aspects, but these can be influenced by PD depending on the situation. These individuals will provide help if escape from the emergency situation is not possible and they also have the time or ability to help, otherwise their high distress will tend to advise them to flee. Furthermore, pattern C, on the other hand, describes people who have neither clear affective nor cognitive empathy traits, but are characterized by high PD. High distress can be a sign of neuroticism, as these two variables correlate quite strongly with each other (Paulus, 2016;  $r = .57$ ,  $p < .01$ ). We therefore refer to this empathy type as "low neurotic empathy (C)".

In order to better determine the gender distribution within the profiles, we drew a random sample from our data set with an equal number of male and female subjects ( $N =$

Table 4. Empathy profiles according to CFA

	Empathy patterns	%
A Situation-dependent altruists	EC ↑, PT ↑, PD ↑	23.09
B High functioning empathy	EC ↑, PT ↑, PD ↓	40.14
C low neurotic empathy	EC ↓, PT ↓, PD ↑	3.65
D Low empathy	EC ↓, PT ↓, PD ↓	7.24

Note: ↑: higher mean aspect scores (H); ↓: lower mean aspect scores (L)

Table 5. Profile x sex crosstabulation (gender-adjusted random sample,  $N = 5,928$ )

Profiles	sex				Chi-Square ( $df = 1$ )
	male		female		
	count	%	count	%	
A	433	36,8	743	<b>63,2</b>	2,157.18 ***
B	1182	<b>51,3</b>	1122	48,7	293.92 ***
C	129	<b>53,5</b>	112	46,5	5,003.19 ***
D	345	<b>64,0</b>	194	36,0	3,968.03 ***

Note: \*\*\*:  $p < .001$

5,928). Table 5 shows the frequencies of male and female subjects per profile. Profiles B, C, and D occur more frequently among men, while profile A appears to be more typically female. One possible explanation for this different distribution of genders across the profiles could be the significantly higher correlation between PD and neuroticism in women ( $r = .62, p < .01$ ) than in men ( $r = .49, p < .01$ ) (Paulus, 2016).

### Conclusion

It is argued that previous studies on profiling empathic people show major weaknesses in terms of content, even if they were carried out methodologically correctly. The profiles found are not exhaustive, do not consider the unclear content of the aspect FS and do not include all aspect classes in the profile formation. For example, the profile "high affective empathy" is only represented by the aspect PD, although theoretically EC also belongs to the affective aspect. In our study, using a configural frequency analysis, we were able to demonstrate four clearly separate and exhaustive empathy profiles that include all relevant aspects and at the same time can be clearly defined in relation to each other. We describe the superordinate patterns "situation-dependent altruists (A)", "high functioning empathy (B)", "low neurotic empathy (C)" and "low empathy (D)". With these four types, we can assign a total of almost 75% of the test subjects to the significant empathy profiles. Only profile A is more common in women than in men.

Further experimental studies with dependent variables such as helping behavior or accuracy of perspective taking could provide helpful information for understanding the profiles. It would also be good to be able to show how EC, PT, and PD interact with each other. Another interesting question is whether empathy training aimed specifically at improving PT (Paulus, 2023; Paulus & Meinken, 2022a; 2022b) might also be able to bring about profile changes. This requires further research in the field of profiling in empathy research.

Some limitations of the study should not go unmentioned. For example, with very large samples such as the one used here, even minimally small differences are already significant, which can normally be determined using effect sizes. However, the CFA method used here does not allow the determination of effect sizes using the usual methods. In addition, although the densification based on the scale center is theoretically justifiable, it is nevertheless arbitrary, especially since the distributions of the aspect values are not always normally distributed. Further validation or replication of the results shown here would therefore be desirable.

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