



RESEARCH ARTICLE

IS FANTASY AN AFFECTIVE OR COGNITIVE PART OF EMPATHY? AN ANALYSIS OF  
THE FANTASY SCALE IN EMPATHY RESEARCH

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DOI: <http://dx.doi.org/10.24327/ijrsr.20241511.0956>

ARTICLE INFO

Article History:

Received 17<sup>th</sup> September 2024

Received in revised form 29<sup>th</sup> September, 2024

Accepted 11<sup>th</sup> October, 2024

Published online 28<sup>th</sup> November 2024

Key words:

Empathy, Interpersonal Reactivity Index, fantasy scale, affective empathy, cognitive empathy

ABSTRACT

The aim of this study was to examine whether fantasy should be categorized as a cognitive or affective factor in empathy measurement. The categorization is not uniform in the literature, so that an empirical test using a representative sample can provide clarity. Our sample consisted of 10,303 subjects aged between 10 and 88 years. We used the German version of the Interpersonal Reactivity Index, the Saarbrücker Persönlichkeitsfragen SPF. The Fantasy Scale has a significantly higher correlation with Empathic Concern and should therefore be assumed to be an affective component of empathy. In addition, our data showed that women had significantly higher FS scores than men, which would also indicate a more affective interpretation of the scale, as women are generally considered to be more affectively empathic. In addition, we were able to demonstrate a significant decrease in Fantasy with increasing age, especially with women, which also points to an affective interpretation.

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INTRODUCTION

Empathy as “the ability to understand and share the internal states of others” (Saxena et al., 2017, p. 765) is currently regarded in research as a multidimensional construct consisting of affective and cognitive components. This is best represented in the theory of Davis (1980, 1983), who describes four aspects of empathy. The affective side of empathy is described by the aspects of Empathic concern (EC) and Personal Distress (PD). Empathic concern “refers to ‘other-oriented’ feelings of sympathy and concern for unfortunate others, and personal distress refers to ‘self-oriented’ feelings of personal anxiety and unease in tense interpersonal settings” (Ingoglia et al., 2016, p. 461). The cognitive aspects of empathy are described by the Perspective Taking (PT) and the Fantasy Scale (FS). The Perspective-Taking (PT) scale measures the tendency to adopt the point of view of other people in everyday life, the Fantasy (FS) Scale measures the tendency to transpose oneself into the feelings and actions of fictitious characters in books, movies, and plays (Davis, 1983, p. 117).

An open question in the context of empathy is the interpretation

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of the Fantasy Scale as an affective or cognitive scale. The argument for the latter classification is the formulation of some items, which describe a reaction to the transfer into fictitious characters (“I can very well *imagine* the feelings of a person in a novel” / “When I see a good film, I can very easily *transfer* myself into the main character”) / “When I read an interesting story or a good book, I try to *imagine* how I would feel if the events happened to me.”) and are therefore very close to the construct of Perspective Taking. On the other hand, there are item formulations like “After seeing a film, I *feel* as if I am one of the characters from that film” or “I really get *involved* with the *feelings* of the characters in a novel” which clearly describe an affective process. When asking questions about identification or empathy with fictional characters in books or films, it is essential to engage cognitively and emotionally with the story in which the character appears. Davis himself acknowledged some problems with this subscale. The Fantasy Scale measures people’s tendency to put themselves into fictional situations using their imagination. Putting oneself into another person’s situation should be a part of Perspective Taking. But the fact that the other person is a character in a fictional story makes the Fantasy Scale difficult to interpret (Nomura & Akai, 2012). That’s exactly how De Corte et al. (2007) see it when they formulate the difficulties to characterise it along the affective-cognitive dimension.

Davis developed the Interpersonal Reactivity Index (IRI) to

measure empathy according to this multidimensional approach (Davis, 1980). The questionnaire was translated into many languages and in some cases shortened and revised in terms of test theory, with the FS being considered affective in some studies and cognitive in others. The FS is regarded as a more affective scale at Cliffordson (2002, p. 58: "The FS at XY is regarded as a more affective scale"), Fernández et al. (2011, p. 179: "interrelations among the dimensions of the IRI, as well as EC with FS") or (Gilet et al., 2013, p. 45: "FS positively correlated with both EC or PD"). The more cognitive categorisation is found at De Corte et al. (2007, p. 253: "the remaining six FS items all assess the tendency to imagine oneself in another person's position") or at Paulus (2023, p. 2928: "to put himself in the place of characters in novels or films").

One last aspect is the development of empathy over the life-span. While affective factors have high heritability scores (EC = .61; PD = .58; FS = .62) according to Melchers et al. (2016), this is significantly lower for cognitive components (PT = .38; Reading the mind in the eye test = .49), as these are subject to the usual cognitive development processes. Thus, if FS is subject to strong changes within the lifespan, this could also indicate a more cognitive component of empathy.

In this study, we want to use a representative sample to

**Table 1.** Correlation of the 4 empathy factors (upper half) and the confidence intervals based on Fisher's r-to-z transformation with bias adjustment (lower half)

	EC	PT	FS	PD
EC	1	.456**	.486**	.193**
PT	.441 to .471	1	.362**	-.065**
FS	.472 to .501	.345 to .378	1	.159**
PD	.174 to .212	-.084 to -.046	.140 to .178	1

\*\* : p < 0.01; EC = empathic concern, PT = perspective taking, FS = fantasy scale, PD = personal distress

investigate whether

1. FS correlates more highly with EC (affective) or with PT (cognitive) and
2. whether the scores of FS changes with increasing age of the test subjects.

**METHODOLOGY**

**Sample**

Our sample consisted of 10,303 subjects aged between 10 and 88 years (M = 26.59, s = 10.89), 68.4% of whom were female and 31.6% male.

**Measures**

We use the German version of the Interpersonal Reactivity Index, the Saarbrücker Persönlichkeitsfragen SPF (Paulus, 2009, 2012). This is a revised version of the English original, but reduced to 16 items, 4 per factor, with a 5-point response scale from "never" (1) to "always" (5). The German version has good internal quality criteria (all Cronbach's alpha > .75) and high validity ((Koller & Lamm, 2015; Paulus, 2009, 2012, 2016). Similar to the English version, the four subscales also correlate moderately with each other in the German version, between r = -.06 and r = .49. The test has been used in many studies on empathy and is also available online for self-testing at <https://www.cpaulus.de/spf.html>. The data collected online

was checked for plausibility before processing and data sets without variance (5,5,5,5,...), without complete or meaningless information on age and gender and occupation or multiple tests in succession (recognizable by the time of administration) or at late times after 10 p.m. were not included.

It should be noted that in the course of the test revision (Paulus, 2009), items of the FS factor were also deleted due to the reduction in the number of items. The complete list of items is attached in the appendix. The score is calculated by adding the items belonging to a factor; the max score of each factor is 20. The formation of a general empathy sum score is generally not recommended (Cliffordson, 2001, 2002; Paulus, 2012; Rogers et al., 2007)

**RESULTS**

**Correlations**

Table 1 shows the correlations between the four empathy components. The correlation between EC and FS is significantly higher than between PT and FS, as the confidence intervals do not overlap. This result suggests that FS in the German version should be interpreted as affective rather than cognitive. The revision of the questionnaire reduced the number of items from 7 to 4 items per factor. As can be seen in table 2, the remaining items correlate more highly with EC than with PT, which

suggests that the more cognitively formulated items 2, 12 and 15 are also perceived as affective by the subjects.

**Table 2.** Correlations of the FS scale items with the factors Empathic concern (EC) and Perspective Taking (PT)

Item number	02	07	12	15
EC	.411**	.329**	.421**	.382**
PT	.324**	.172**	.304**	.354**

\*\* : p < .01

**Sex differences**

**Table 3** Sex differences at the fantasy scale

	sex	N	Mean	Std. Deviation
FS	male	3257	13.00	3.641
	female	7046	14.54	3.514

As shown in table 3, the FS score is significantly higher in female subjects than in male subjects (t[6137.05] = 20.287, p < .001, Cohen's d = .436). Women are therefore better able to identify with fictional characters or to slip into their role.

**Differences between different age groups**

To examine the changes within the FS with increasing age of the



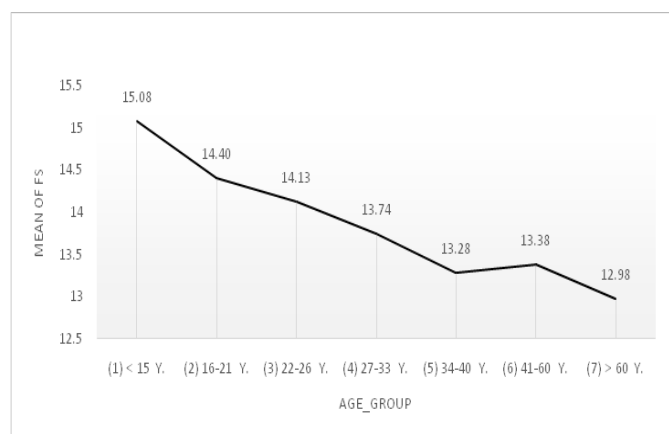
test subjects, we formed age groups based on developmental-psychological life phases such as puberty, adolescence, young adulthood, and later adulthood.

**Table 4.** Descriptives of the FS scores in age groups.

FS			
Age groups	N	Mean*	s
(1) < 15 Y.	420	15.08 <sup>a</sup>	3.697
(2) 16-21 Y.	3932	14.40 <sup>ab</sup>	3.675
(3) 22-26 Y.	2425	14.13 <sup>bc</sup>	3.424
(4) 27-33 Y.	1438	13.74 <sup>cd</sup>	3.518
(5) 34-40 Y.	813	13.28 <sup>d</sup>	3.762
(6) 41-60 Y.	1173	13.38	3.618
(7) > 60 Y.	102	12.98	3.734
Total	10303	14.06	3.626

\*: Same indices differ significantly at the .05 level

The mean values of the FS correlate significantly with the age groups (*Spearman's*  $\rho = -.126, p < .001$ ). Figure 1 shows the continuous decline in FS scores ( $F_{6, 10296} = 28.478; p < .001; \eta^2 = .016$ ) with increasing age, which clearly indicates a cognitive change in the lifespan. There is therefore a steady decrease in the scores until adulthood, after which there is no further significant change.



**Figure 1.** Mean scores of FS in the age groups

The decline in FS scores is due in particular to the decline in scores among female subjects (cf. Table 4).

## CONCLUSION

The aim of this study was to examine whether fantasy should be categorized as a cognitive or affective factor in empathy measurement. The categorization is not uniform in the

literature, so that an empirical test using a representative sample can provide clarity. FS has a significantly higher correlation with empathic concern and should therefore be assumed to be an affective component of empathy. This result is in line with other studies on smaller samples, such as De Corte et al. (2007) or Ingoglia et al., (2016). In addition, our data showed that women had significantly higher FS scores than men, which would also indicate a more affective interpretation of the scale, as women are generally considered to be more affectively empathic. Studies by Baron-Cohen (2002) or Lawrence et al. (2004) showed that female brains have greater empathic capacities than male brains, which, according to Decety and Jackson (2004), can be attributed to evolutionary processes of parental behavior. Women can recognize emotions faster and better than men (Bek et al., 2022; Cattaneo et al., 2018) and react more quickly to emotional stimuli (Kuypers et al., 2017). De Corte et al. (2007) describe the FS in their affective interpretation as the “pure” empathy scale. The content of the FS is aimed at fictional characters, particularly in literature and films. People who enjoy reading are better able to understand the feelings of novel characters (Gernsbach et al., 1992), especially their emotional changes in the course of the story (Vega, 1996).

In addition, we were able to demonstrate a significant decrease in FS with increasing age, which might point to a cognitive interpretation since cognitive factors of empathy are subject to a significantly stronger genetic cause of variance differences than affective factors, as described at Melchers et al. (2016). However, these authors also found a negative correlation between FS and age in their sample aged between 17 and 58 years ( $r = -.37, p < .001$ ). This is in contrast to the findings of Davis and Franzoi (1991), who found no changes in the FS scale, at least for the period of adolescence but inline with the (longitudinal) studies of Eysenck et al. (1985), Ze et al. (2014) or Paulus (2023). In line with these previous studies, it is assumed that general empathy declines somewhat over the course of life, particularly in women (Helson et al., 2002).

The correlation of FS with EC and PT could indicate a two-part process in which, when reading a book or watching a film, active cognitive engagement with the story must take place at the beginning (the beginning of a novel or film usually drags on for a while before the story as such begins to become exciting) before affective empathy with the characters can take place. So you have to “get to know each other first”.

FS could also be interpreted as a measure of a person’s sensitivity. After all, those who are already able to engage emotionally with fictitious, non-living and real people could be more quickly and more strongly addressed in their willingness

**Table 5.** Changes within the FS scale separated by sex

Dependent Variable: FS							
sex		Sum of Squares	df	Mean Square	F	Sign.	Partial Eta Squared
male	Contrast	501.727	6	83.621	6.691	<.001	.004
	Error	128581.349	10289	12.497			
female	Contrast	1053.394	6	175.566	14.049	<.001	.008
	Error	128581.349	10289	12.497			

Each F tests the simple effects of age\_group within each level combination of the other effects shown. These tests are based on the linearly independent pairwise comparisons among the estimated marginal means.



to react empathically to living people. People who read a lot can recognize sensitive social signals better than others (Mar et al., 2006). „Empathy expressed for real people has been shown to bear similarities to that for fictional characters” (Namba et al., 2021, p. 790).

But is it even necessary to make this separation and when is it interesting? If a total score for empathy were created, which is not recommended (Cliffordson, 2002; Ingoglia et al., 2016; Paulus, 2012), the affective component would be significantly overrepresented compared to the single cognitive factor PT. In studies on gender differences in empathy, however, it would be important to interpret FS as affective, as the changes in FS in women in particular can provide an explanation for the general decline in empathy scores.

## LIMITATIONS

The greatest limitation of the study is the reduction in the number of items in the German version of the IRI used here compared to the original. However, this had no influence on the correlations between the factors, which corresponded to the correlations of most other studies that worked with the complete or reduced number of items of the IRI (Beven et al., 2004; Briganti et al., 2018; Davis, 1980; Fernández et al., 2011; Gilet et al., 2013; Ingoglia et al., 2016; Koller & Lamm, 2015; Lauterbach & Hosser, 2007; Siu & Shek, 2005).

Another limitation is the very large number of subjects. With very large samples such as the one used here, even the smallest differences become highly significant, meaning that the significance of the differences can easily be overestimated. However, this bias can be minimized somewhat by using measures of effect size.

Our data is based on anonymous questionnaire surveys. The extent to which the aspect of social desirability influences the correctness of the answers can never be ruled out. The susceptibility of the German version of the IRI is not very high (Paulus, 2019), although it should be noted that this falsification of responses is more likely to occur in non-anonymous surveys or in content-sensitive topics such as aggression or sexuality (Paulhus, 1984, 1991; Paulhus & Reid, 1991; Winkler et al., 2006).

There is no conflict of interest.

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APPENDIX

German/English version of the SPF

	Wie häufig trifft die geschilderte Situation auf Sie zu?	Nie selten manchmal of timmer				
	How often does the situation described apply to you?	Never	rarely	sometimes	often	always
e	Ich empfinde warmherzige Gefühle für Leute, denen es weniger gut geht als mir. I often have tender, concerned feelings for people less fortunate than me.	1 (- -)	2 (-)	3 (o)	4 (+)	5 (+ +)
f	Die Gefühle einer Person in einem Roman kann ich mir sehr gut vorstellen. I really get involved with the feelings of the characters in a novel.	1 (- -)	2 (-)	3 (o)	4 (+)	5 (+ +)
d	In Notfallsituationen fühle ich mich ängstlich und unbehaglich. In emergency situations, I feel apprehensive and ill-at-ease.	1 (- -)	2 (-)	3 (o)	4 (+)	5 (+ +)
p	Ich versuche, bei einem Streit zuerst beide Seiten zu verstehen, bevor ich eine Entscheidung treffe. I try to look at everybody's side of a disagreement before I make a decision.	1 (- -)	2 (-)	3 (o)	4 (+)	5 (+ +)
e	Wenn ich sehe, wie jemand ausgenutzt wird, glaube ich, ihn schützen zu müssen. When I see someone being taken advantage of, I feel kind of protective towards them.	1 (- -)	2 (-)	3 (o)	4 (+)	5 (+ +)
d	Ich fühle mich hilflos, wenn ich inmitten einer sehr emotionsgeladenen Situation bin. I sometimes feel helpless when I am in the middle of a very emotional situation.	1 (- -)	2 (-)	3 (o)	4 (+)	5 (+ +)
f	Nachdem ich einen Film gesehen habe, fühle ich mich so, als ob ich eine der Personen aus diesem Film sei. After seeing a play or movie, I have felt as though I were one of the characters.	1 (- -)	2 (-)	3 (o)	4 (+)	5 (+ +)
d	In einer gespannten emotionalen Situation zu sein, macht mir Angst. Being in a tense emotional situation scares me.	1 (- -)	2 (-)	3 (o)	4 (+)	5 (+ +)
e	Mich berühren Dinge sehr, auch wenn ich sie nur beobachte. I am often quite touched by things that I see happen.	1 (- -)	2 (-)	3 (o)	4 (+)	5 (+ +)
p	Ich glaube, jedes Problem hat zwei Seiten und versuche deshalb beide zu berücksichtigen. I believe that there are two sides to every question and try to look at them both.	1 (- -)	2 (-)	3 (o)	4 (+)	5 (+ +)
e	Ich würde mich selbst als eine ziemlich weich I would describe myself as a pretty soft-hearted person. herzige Person bezeichnen.	1 (- -)	2 (-)	3 (o)	4 (+)	5 (+ +)
f	Wenn ich einen guten Film sehe, kann ich mich sehr leicht in die Hauptperson hineinversetzen. When I watch a good movie, I can very easily put myself in the place of a leading character.	1 (- -)	2 (-)	3 (o)	4 (+)	5 (+ +)
d	In heiklen Situationen neige ich dazu, die Kontrolle über mich zu verlieren. I tend to lose control during emergencies.	1 (- -)	2 (-)	3 (o)	4 (+)	5 (+ +)

	Wie häufig trifft die geschilderte Situation auf Sie zu?	Nie selten manchmal of timmer				
	How often does the situation described apply to you?	Never	rarely	sometimes	often	always
p	Wenn mir das Verhalten eines anderen komisch vorkommt, versuche ich mich für eine Weile in seine Lage zu versetzen. When I'm upset at someone, I usually try to "put myself in his shoes" for a while.	1 (- -)	2 (-)	3 (o)	4 (+)	5 (+ +)
f	Wenn ich eine interessante Geschichte oder ein gutes Buch lese, versuche ich mir vorzustellen, wie ich mich fühlen würde, wenn mir die Ereignisse passieren würden. When I am reading an interesting story or novel, I imagine how I would feel if the events in the story were happening to me.	1 (- -)	2 (-)	3 (o)	4 (+)	5 (+ +)
p	Bevor ich jemanden kritisiere, versuche ich mir vorzustellen, wie ich mich an seiner Stelle fühlen würde. Before criticizing somebody, I try to imagine how I would feel if I were in their place.	1 (- -)	2 (-)	3 (o)	4 (+)	5 (+ +)

**How to cite this article:**

Christoph M. Paulus .(2024). Is fantasy an affective or cognitive part of empathy? An analysis of the Fantasy Scale in empathy research. *Int J Recent Sci Res.*15(11), pp.5067-5073.

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