Supplementary information file

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S1 Sample Composition

Table S1

Comparison of Sample Composition with Census

	Study I		Study II		Study III		Census
Variables	*n*	%	*n*	%	*n*	%	%
Gender							
Female	258	52%	258	52%	259	52%	51%
Male	242	48%	242	48%	241	48%	49%
Age							
18-24	53	11%	62	12%	58	12%	12%
25-34	95	19%	95	19%	94	19%	17%
35-44	96	19%	80	16%	96	19%	17%
45-54	81	16%	84	17%	83	17%	15%
55-64	97	20%	103	21%	107	22%	16%
65-74	57	12%	64	13%	50	10%	13%
75+	16	3%	10	2%	9	2%	9%
Ethnicity							
White	384	77%	384	77%	384	77%	64%
Asian	30	6%	30	6%	32	6%	6%
Black	64	13%	64	13%	62	12%	12%
Mixed	12	2%	12	2%	12	2%	11%
Other	10	2%	10	2%	10	2%	8%

Note. Census data were obtained from the US Census Bureau (2024). The composition of the samples is similar across all three studies and closely represents the general population of the US. Older people (75+) are underrepresented, and 25-64-year-olds are slightly overrepresented. White people were overrepresented, mixed and other ethnicities underrepresented.

S2 Survey Items and Recall Cues

Table S2

Recall Cues and Full Scales of PSR, R-PSI, Identification, Transportation, and PSI

Recall Cues (random distribution to one of the recall cues varying in intensity & valence):
While you were watching the media content, …
Low intensity: … you engaged very little with this media character, …
Medium intensity: … you somehow engaged with this media character, …
Strong intensity: … you strongly engaged with this media character, …
Negative valence: … and you do not like this media character.
Neutral valence: … and you are rather indifferent to this media character.
Positive valence: … and you like this media character.
Parasocial Relationships (PSR; Tukachinsky, 2011)
If CHARACTER was a real person, …
… I could disclose a great deal of things about myself to CHARACTER.
… I could disclose positive things about myself honestly and fully to CHARACTER.
… I could disclose negative things about myself honestly and fully to CHARACTER.
… I would be able to count on CHARACTER in times of need.
… I would give CHARACTER emotional support.
… I could trust CHARACTER completely.
… CHARACTER would be able to count on me in times of need.
… I would will to share my possessions with CHARACTER.
… I could have a warm relationship with CHARACTER.
… I would promote the well-being of CHARACTER.
Sometimes, I wish I knew what CHARACTER would do in my situation.
Sometimes, I wish I could ask CHARACTER for advice.
I think CHARACTER could be a friend of mine.
Rubin Parasocial Interaction Scale (R-PSI; Rubin & Perse, 1987)
CHARACTER makes me feel comfortable, as if I am with a friend.
I see CHRACTER as a natural, down-to-earth person.
I look forward to watching CHRACTER on the next episode.
If CHARACTER appears on another program, I would watch that program.
CHARACTER seems to understand the kinds of things I want to know.
If I saw a story about CHRACTER in a newspaper or online, I would read it.
I miss seeing CHRACTER when I do not watch episodes over a longer time.
I would like to meet CHARACTER in person.
I feel sorry for CHARACTER when he/she makes a mistake.
I find CHARACTER to be attractive.

Table S2 (Continued)

Recall Cues and Full Scales of PSR, R-PSI, Identification, Transportation, and PSI

Identification (Cohen, 2001)
While viewing the program, I felt as if I was part of the action.
While viewing the program, I forgot myself and was fully absorbed.
I was able to understand the events in the show in a manner similar to that in which CHARACTER understood them.
I think I have a good understanding of CHARACTER.
I tend to understand the reasons why CHARACTER does what he/she does.
While viewing I could feel the emotions CHARACTER portrayed.
During viewing, I felt I could really get inside CHARACTER's head.
At key moments, I felt I knew exactly what CHARACTER was going through.
While viewing, I wanted CHARACTER to succeed in achieving his/her goals.
When CHARACTER succeeded, I felt joy, but when CHARACTER failed, I was sad.
Transportation (Green & Brock, 2000)
While I was watching the show, I could easily picture the events in it taking place.
I could picture myself in the scene of the events described in the show.
I was mentally involved in the show while watching it.
After finishing the show, I found it easy to put it out of my mind. (R)
The show affected me emotionally.
I found myself thinking of ways the show could have turned out differently.
I found my mind wandering while watching the show. (R)
While watching the show, I had a vivid image of the characters.
Experience of Parasocial Interactions (PSI; Hartmann & Goldhoorn, 2011)
While watching the show, I had the feeling that CHARACTER ….
…was aware of me.
…knew I was there.
…knew I was aware of him/her.
…knew I paid attention to him/her.
…knew that I reacted to him/her.
…reacted to what I said or did.

Note. Responses were collected for all concepts with a 5-point Likert scale ranging from 1 = "do not agree at all" to 5 = "agree completely".

S3 Descriptive Statistics

Table S3

Descriptives of the Individual Items for Assessing Parasocial Processing in Study I

Item	*Mean*	*SD*	*Skew*	*Kurtosis*
1) I focused my attention on CHARACTER.	3.74	1.18	-.70	-.39
2) I watched closely what CHARACTER said or did.	3.76	1.16	-.78	-.22
3) I watched closely how CHARACTER behaved.	3.74	1.18	-.74	-.34
4) I tried to understand the acts of CHARACTER.	3.67	1.27	-.71	-.56
5) I intensely thought about CHARACTER's behavior.	3.23	1.29	-.22	-1.01
6) I thoroughly thought about what CHARACTER did.	3.60	1.22	-.61	-.57
7) I often tried to guess what CHARACTER might say next.	2.94	1.35	-.03	-1.22
8) I had ideas about how things would develop for CHARACTER	3.64	1.20	-.77	-.24
9) I thought about what could happen to CHARACTER.	3.80	1.20	-.86	-.15
10) I thought about what connects me with and what distinguishes me from CHARACTER.	2.84	1.42	.08	-1.31
11) I sometimes compared CHARACER's thoughts to mine.	2.80	1.43	.11	-1.34
12) I thought about if I would do things like CHARACTER or not.	3.13	1.42	-.22	-1.27
13) I sometimes felt the same emotions as CHARACTER.	2.94	1.40	-.07	-1.30
14) I could feel the emotions CHARACTER showed.	3.33	1.32	-.40	-.94
15) CHARACTER's feelings were contagious to my feelings.	2.75	1.37	.09	1.27
16) CHARACTER's feelings influenced my own mood.	2.75	1.34	.13	-1.22
17) I felt compassion for CHARACTER.	3.39	1.36	-.47	-.98
18) I felt empathy for CHARACTER.	3.41	1.41	-.53	-1.03
19) I reacted to CHARACTER's behavior with my facial expression.	3.47	1.30	-.52	-.80
20) CHARACTER's behavior triggered my facial expression.	3.42	1.32	-.45	-.94
21) At certain moments, I said something to CHARACTER.	2.24	1.40	.73	-.88
22) I commented out loud on CHARACTER's behavior.	2.87	1.53	.08	-1.49
23) I sometimes gestured towards CHARACTER.	2.25	1.37	.63	-.99
24) CHARACTER's behavior led me to gesture at him/her.	2.32	1.41	.61	-1.03

Table S4

Descriptives of the Individual Items for Assessing Parasocial Processing in Study II

Item	*Mean*	*SD*	*Skew*	*Kurtosis*
1) I watched closely what CHARACTER said or did.	3.92	1.11	-.98	.30
2) I thoroughly thought about what CHARACTER did.	3.73	1.17	-.72	-.29
3) I thought about what could happen to CHARACTER.	3.90	1.14	-1.06	.46
4) I sometimes felt the same emotions as CHARACTER.	3.13	1.38	-.26	-1.20
5) CHARACTER's feelings were contagious to my feelings.	2.87	1.38	-.01	-1.30
6) I felt compassion for CHARACTER.	3.43	1.43	-.50	-1.07
7) I reacted to CHARACTER's behavior with my facial expression.	3.59	1.21	-.63	-.48
8) I commented out loud on CHARACTER's behavior.	2.93	1.52	-.01	-1.50
9) CHARACTER's behavior led me to gesture at him/her.	2.28	1.34	.62	-.90

Table S5

Descriptives of the Individual Items for Assessing Parasocial Processing in Study III

Item	*Mean*	*SD*	*Skew*	*Kurtosis*
1) I watched closely what CHARACTER said or did.	3.96	1.16	-1.08	.36
2) I thoroughly thought about what CHARACTER did.	3.82	1.19	-.87	-.14
3) I thought about what could happen to CHARACTER.	3.81	1.24	-.95	-.05
4) I sometimes felt the same emotions as CHARACTER.	3.14	1.39	-.26	-1.22
5) CHARACTER's feelings were contagious to my feelings.	2.89	1.38	-.05	-1.29
6) I felt compassion for CHARACTER.	3.37	1.44	-.44	-1.17
7) I reacted to CHARACTER's behavior with my facial expression.	3.63	1.19	-.63	-.45
8) CHARACTER's behavior caused me to comment out loud or to myself.	3.26	1.44	-.34	-1.24
9) CHARACTER's behavior led me to gesture.	2.72	1.42	.23	-1.25

Table S6

Descriptives of the Reference Concepts of Media Character and Content Processing in Study II and III

	Study II				Study III			
Concept	*Mean*	*SD*	*Skew*	*Kurtosis*	*Mean*	*SD*	*Skew*	*Kurtosis*
PSR	3.03	1.25	-.18	-1.15	3.00	1.28	-.17	-1.19
R-PSI	3.23	1.10	-.40	-.87	3.24	1.16	-.36	-1.00
Identification	3.29	.99	-.36	-.61	3.31	1.01	-.38	-.62
Transportation	3.53	.71	-.52	.11	3.58	.70	-.44	-.01
PSI	1.42	.90	2.33	4.79	1.53	1.01	1.93	2.61

Note. PSR = Parasocial Relationships; R-PSI = Rubin-Parasocial Interaction; PSI = Parasocial Interaction.

S4 Supplementary Results Outputs

Table S7

1-factor, 2-factor, and 3-factor CFA Models for the Nine PSP Items in Study II

	M1 1-factor model	M2.1 2-factor model		M2.2 2-factor model		M2.3 2-factor model		M3 3-factor model		
	1 Single trait	1 Cognitive-Affective	2 Conative	1 Cognitive-Conative	2 Affective	1 Cognitive	2 Affective-Conative	1 Cognitive	2 Affective	3 Conative
1) I watched closely how CHARACTER behaved.	.73	.69		.80		.81		.81		
2) I thoroughly thought about what CHARACTER did.	.70	.65		.80		.81		.82		
3) I thought about what could happen to CHARACTER.	.66	.63		.73		.73		.73		
4) I sometimes felt the same emotions as CHARACTER.	.74	.79			.88		.84		.88	
5) CHARACTER's feelings were contagious to my feelings.	.74	.77			.81		.83		.81	
6) I felt compassion for CHARACTER.	.69	.74			.79		.76		.79	
7) I reacted to CHARACTER's behavior with my facial expression.	.52		.67	.57			.42			.72
8) I commented out loud on CHARACTER's behavior.	.34		.64	.39			.28			.62
9) CHARACTER's behavior led me to gesture at him/her.	.40		.65	.39			.37			.60
Model fit indices										
Chi-Square (df, p)	709.79 (27, <.001)	468.16 (26, <.001)		259.03 (26, <.001)		433.63 (26, <.001)		78.64 (24, <.001)		
RMSEA	.20	.18		.13		.16		.09		
SRMR	.11	.09		.08		.11		.05		
CFI	.72	.79		.89		.84		.95		
TLI	.63	.71		.85		.78		.93		
AIC	13,710	13,577		13,380		13,489		13,271		
BIC	13,786	13,657		13,460		13,570		13,359		
aBIC	13,729	13,597		13,400		13,509		13,293		

Note. The dashed lines signify the distinction between the items theoretically aimed at cognitive, affective, and conative PSP as well as the distinction between the statistics of relative model fit (AIC, BIC, and aBIC) and of absolute model fit (RMSEA, CFI, TLI, SRMR). The alternative CFA models are differentiated by the columns and explained within the main paper. Chi-square statistics (with degrees of freedom and p-values) are reported for completeness but, as outlined in the main text, not used for substantive model interpretation due to their sensitivity to sample size. M = Model; PSP = Parasocial Processing; RMSEA = Root Mean Square Error of Approximation; SRMR = Standardized Root Mean Square Residual; CFI = Comparative Fit Index; TLI = Tucker-Lewis Index; AIC = Akaike Information Criterion; BIC = Bayesian Information Criterion; aBIC = sample-size adjusted Bayesian Information Criterion.

Table S8

1-factor, 2-factor, and 3-factor CFA Models for the Nine PSP Items in Study III

	M1 1-factor model	M2.1 2-factor model		M2.2 2-factor model		M2.3 2-factor model		M3 3-factor model		
	1 Single trait	1 Cognitive-Affective	2 Conative	1 Cognitive-Conative	2 Affective	1 Cognitive	2 Affective-Conative	1 Cognitive	2 Affective	3 Conative
1) I watched closely how CHARACTER behaved.	.64	.59		.77		.81		.90		
2) I thoroughly thought about what CHARACTER did.	.67	.62		.80		.81		.82		
3) I thought about what could happen to CHARACTER.	.69	.65		.78		.80		.80		
4) I sometimes felt the same emotions as CHARACTER.	.82	.89			.90		.89		.90	
5) CHARACTER's feelings were contagious to my feelings.	.82	.85			.85		.86		.85	
6) I felt compassion for CHARACTER.	.79	.83			.87		.85		.89	
7) I reacted to CHARACTER's behavior with my facial expression.	.54		.73	.63			.46			.75
8) CHARACTER's behavior caused me to comment out loud or to myself.	.41		.72	.52			.34			.72
9) CHARACTER's behavior led me to gesture.	.53		.77	.57			.48			.74
Model fit indices										
Chi-Square (df, p)	561.03 (27, <.001)	426.45 (26, <.001)		228.94 (26, <.001)		338.63 (26, <.001)		115.87 (24, <.001)		
RMSEA	.23	.18		.13		.18		.07		
SRMR	.12	.11		.07		.12		.04		
CFI	.72	.82		.90		.83		.98		
TLI	.63	.75		.89		.77		.97		
AIC	13,488	13,248		13,039		13,214		12,863		
BIC	13,564	13,328		13,119		13,294		12,951		
aBIC	13,507	13,268		13,059		13,234		12,885		

Note. The dashed lines signify the distinction between the items theoretically aimed at cognitive, affective, and conative PSP as well as the distinction between the statistics of relative model fit (AIC, BIC, and aBIC) and of absolute model fit (RMSEA, CFI, TLI, SRMR). The alternative CFA models are differentiated by the columns and explained within the main paper. Chi-square statistics (with degrees of freedom and p-values) are reported for completeness but, as outlined in the main text, not used for substantive model interpretation due to their sensitivity to sample size. M = Model; PSP = Parasocial Processing; RMSEA = Root Mean Square Error of Approximation; SRMR = Standardized Root Mean Square Residual; CFI = Comparative Fit Index; TLI = Tucker-Lewis Index; AIC = Akaike Information Criterion; BIC = Bayesian Information Criterion; aBIC = sample-size adjusted Bayesian Information Criterion.

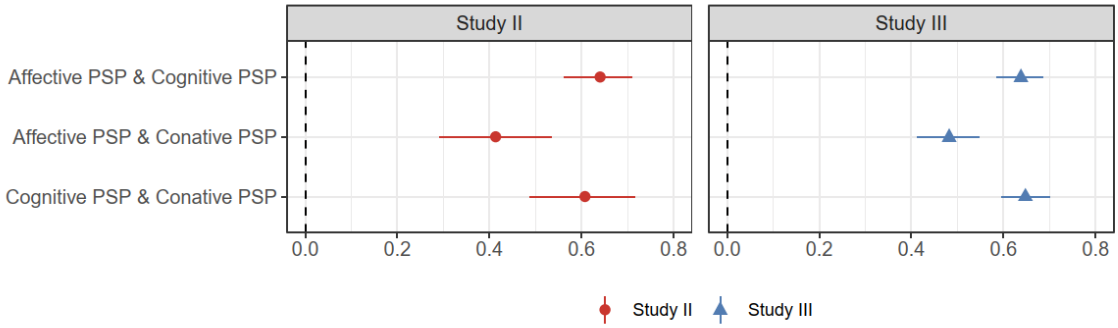
The following Figures S1 and S2 and Tables S9 and S10 complement the main results on the associations between the PSP components and their associations with the theoretical reference concepts of parasocial experiences (i.e., PRS, R-PSI, PSI, identification, and transportation). All confidence intervals were derived using nonparametric percentile bootstrapping, both for the purposes of safeguarding the statistical significance tests against potential biases arising from non-normal distributions of variables (like PSI, see Table S6) and to enable direct tests of the differences between associations.

Specifically, Figures S1 and S2 summarize and complement the point estimates for the associations between the PSP components (Figure S1) and their associations with the reference concepts (Figure S2) with two-sided 95% confidence intervals. Consequently, confidence intervals not containing zero signify that the respective association significantly differed from zero and positive. Tables S9 and S10 follow on Figures S1 and S2 by providing direct tests of the differences between the associations. To illustrate the rationale of the results summary, consider the tests pertaining to proposition P3 in Study II, reported in Table S9:

> Given that the association between affective and conative PSP was .41 and the one between affective and cognitive PSP was .64, these associations differed by -.23, and given that the association between affective and conative PSP was .41 and the one between affective and cognitive PSP was .61, these associations differed by -.19. Since the corresponding confidence intervals for both differences ([-.34; -.11] and [-.31;-.08], respectively) did not contain zero, both differences were statistically significant at $p < .05$ – thus providing coherent support for P3 (i.e., the association of affective PSP and conative PSO being weaker compared to both PSP components' associations with cognitive PSP).

Figure S1

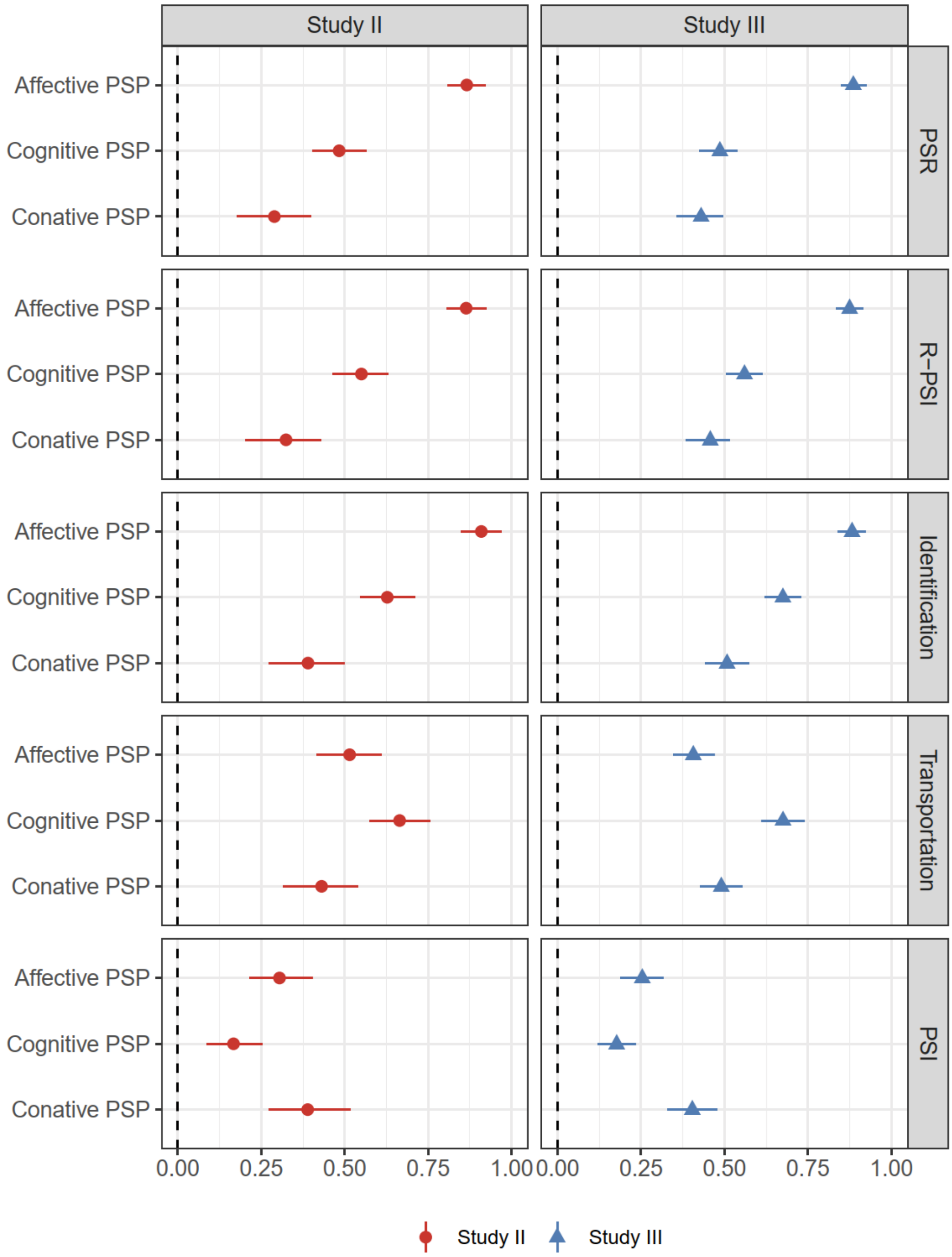
Associations Between Affective, Cognitive, and Conative PSP



Note. The figure complements Figure 1 (Study II) and Figure II (Study III) in the main paper. It summarizes the associations between affective PSP, affective PSP, and conative PSP and complements the point estimates with two-sided 95% confidence intervals. The positioning on the x-axis shows the strength of the association between the individual pairs of PSP components differentiated by the y-axis. 95% confidence intervals were derived using percentile bootstrapping (1,000 bootstrap samples). CIs not containing zero signify that the respective association significantly differed from zero at $p < .05$. Additional significance tests for the differences between the associations are provided in Table S9 and Table S10 below. PSP = Parasocial Processing.

Figure S2

Associations of the PSP Components with Other Concepts



Note. The figure complements Table 3 (Study II) and Table 4 (Study III) in the main paper. The positioning on the x-axis shows the strength of associations between the individual PSP components (differentiated by y-axis) with the reference concepts (differentiated by the rows). Lines are two-sided 95% confidence intervals derived using percentile bootstrapping (1,000 bootstrap samples). CIs not containing zero signify that the respective association significantly differed from zero and positive at $p < .05$. Additional significance tests for the differences between the associations are provided in Table S9 and Table S10 below. PSP = Parasocial Processing; PSR = Parasocial Relationships; R-PSI = Rubin-Parasocial Interaction; PSI = Parasocial Interaction.

Table S9

Significance Tests for the Differences Between the Associations of the PSP Components (Proposition P3) and their Associations with the Other Concepts (Propositions P4–P10) in Study II

Proposition	Association	*r*	Association	*r*	Δ*r*	95% CI
P3	Affective PSP & Conative PSP	.41	Affective PSP & Cognitive PSP	.64	-.23	[-.34;-.11]
	Affective PSP & Conative PSP	.41	Conative PSP & Cognitive PSP	.61	-.19	[-.31;-.08]
P4	Affective PSP & PSR	.86	Cognitive PSP & PSR	.48	.38	[.30;.46]
	Affective PSP & PSR	.86	Conative PSP & PSR	.29	.43	[.30;.56]
P5	Affective PSP & R-PSI	.86	Cognitive PSP & R-PSI	.55	.31	[.24;.38]
	Affective PSP & R-PSI	.86	Conative PSP & R-PSI	.33	.54	[.42;.66]
P6	Affective PSP & Identification	.91	Cognitive PSP & Identification	.63	.28	[.21;.36]
	Affective PSP & Identification	.91	Conative PSP & Identification	.39	.51	[.41;.63]
P7	Cognitive PSP & Transportation	.66	Affective PSP & Transportation	.52	.15	[.07;.23]
	Cognitive PSP & Transportation	.66	Conative PSP & Transportation	.38	.28	[.11;.44]
P8	Conative PSP & PSI	.38	Affective PSP & PSI	.31	.08	[-.02;.18]
	Conative PSP & PSI	.38	Cognitive PSP & PSI	.17	.21	[.13;.32]
P9	Affective PSP & PSR	.86	Cognitive PSP & Transportation	.66	.20	[.10;.30]
	Affective PSP & R-PSI	.86	Cognitive PSP & Transportation	.66	.20	[.10;.29]
	Affective PSP & Identification	.91	Cognitive PSP & Transportation	.66	.24	[.16;.33]
P10	Cognitive PSP & Transportation	.66	Conative PSP & PSI	.38	.28	[.11;.44]

Note. The table complements Table 3 (Study II) in the main paper by following on Figures S1 and S2 in the SM. It provides additional significance tests for the differences between the PSP components' associations (P3) and their associations with the reference concepts (P4–P10). The 95% confidence intervals reported in the last column were derived using percentile bootstrapping (1,000 bootstrap samples) to enable direct tests of the differences between the associations. CIs that do not contain zero signify statistically different associations at $p < .05$. The rationale of the table and how the results relate to our measurement propositions is illustrated within the text preceding Figure S1. PSP = Parasocial Processing; PSR = Parasocial Relationships; R-PSI = Rubin-Parasocial Interaction; PSI = Parasocial Interaction; P = Proposition.

Table S10

Significance Tests for the Differences Between the Associations of the PSP Components (Proposition P3) and their Associations with the Other Concepts (Propositions P4–P10) in Study III

Proposition	Association	*r*	Association	*r*	Δ*r*	95% CI
P3	Affective PSP & Conative PSP	.48	Affective PSP & Cognitive PSP	.64	-.16	[-.25;-.06]
	Affective PSP & Conative PSP	.48	Conative PSP & Cognitive PSP	.65	-.17	[.27;-.07]
P4	Affective PSP & PSR	.89	Cognitive PSP & PSR	.49	.40	[.32;.48]
	Affective PSP & PSR	.89	Conative PSP & PSR	.43	.46	[.37;.56]
P5	Affective PSP & R-PSI	.87	Cognitive PSP & R-PSI	.55	.31	[.25;.39]
	Affective PSP & R-PSI	.87	Conative PSP & R-PSI	.46	.42	[.44;.50]
P6	Affective PSP & Identification	.88	Cognitive PSP & Identification	.67	.21	[.15;.27]
	Affective PSP & Identification	.88	Conative PSP & Identification	.51	.37	[.29;.46]
P7	Cognitive PSP & Transportation	.67	Affective PSP & Transportation	.41	.27	[.18;.35]
	Cognitive PSP & Transportation	.67	Conative PSP & Transportation	.49	.18	[.11;.38]
P8	Conative PSP & PSI	.40	Affective PSP & PSI	.26	.14	[.07;.22]
	Conative PSP & PSI	.40	Cognitive PSP & PSI	.18	.23	[.14;.31]
P9	Affective PSP & PSR	.89	Cognitive PSP & Transportation	.67	.21	[.10;.32]
	Affective PSP & R-PSI	.87	Cognitive PSP & Transportation	.67	.20	[.09;.31]
	Affective PSP & Identification	.88	Cognitive PSP & Transportation	.67	.21	[.10;.31]
P10	Cognitive PSP & Transportation	.67	Conative PSP & PSI	.40	.27	[.12;.42]

Note. The table complements Table 4 (Study III) in the main paper by following on Figures S1 and S2 in the SM. It provides additional significance tests for the differences between the PSP components' associations (P3) and their associations with the reference concepts (P4–P10). The 95% confidence intervals reported in the last column were derived using percentile bootstrapping (1,000 bootstrap samples); CIs that do not contain zero signify statistically different associations at $p < .05$. The rationale of the table and how the results relate to our measurement propositions is illustrated within the text preceding Figure S1. PSP = Parasocial Processing; PSR = Parasocial Relationships; R-PSI = Rubin-Parasocial Interaction; PSI = Parasocial Interaction; P = Proposition.

S5 Robustness Tests

This section reports the complementary empirical analyses conducted to further probe the robustness of our main results and safeguard their overarching conclusion of the high validity, reliability, and usefulness of the PSP Short Inventory for applied scholars.

S5.1 Exploratory Factor Analysis

Although Studies II and III measured parasocial processing with only nine items rather than – as done in Study I – with 24 items, the results remained similar to the ones of Study I when repeating the exploratory factor analysis (EFA) with the data of both Study II (Table S11) and Study III (Table S12). This further instills confidence in the stability of the factor loading patterns and – as a practical consequence – factorial validity of the PSP Short Inventory (Costello & Osbourne, 2005; Brown & Moore, 2015).

Table S11

Exploratory Factor Analysis of Parasocial Processing Using Data of Study II

	Factor		
Item	*Cog.*	*Aff.*	*Con.*
1) I watched closely how CHARACTER behaved.	**.77**	.07	-.01
2) I thoroughly thought about what CHARACTER did.	**.81**	-.01	.03
3) I thought about what could happen to CHARACTER.	**.72**	.04	-.01
4) I sometimes felt the same emotions as CHARACTER.	-01	**.88**	-.02
5) CHARACTER's feelings were contagious to my feelings.	-.03	**.78**	.20
6) I felt compassion for CHARACTER.	.12	**.76**	-.14
7) I reacted to CHARACTER's behavior with my facial expression.	.39	-.03	**.43**
8) I commented out loud on CHARACTER's behavior.	.13	-.07	**.64**
9) CHARACTER's behavior led me to gesture at him/her.	-.05	.14	**.69**
SS loadings	1.95	1.98	1.13
Proportion variance	.22	.22	.13

Note. The table complements Table 2 in the main paper by reporting the results obtained when submitting the data of Study II (which – in contrast to Study I – captured PSP with 9 rather than 24 items) to EFA. Fully standardized loadings, primary loadings in bold. Principal axis analysis with oblimin rotation. Horizontal lines represent the theoretical distinctions between items aimed at cognitive PSP, affective PSP, and conative PSP. PSP = Parasocial Processing; Cog. = Cognitive; Aff. = Affective, Con. = Conative; SS loadings = Sum of Squared Loadings.

Table S12

Exploratory Factor Analysis of Parasocial Processing Using Data of Study III

	Factor		
Item	*Cog.*	*Aff.*	*Con.*
1) I watched closely how CHARACTER behaved.	**.87**	-.03	-.04
2) I thoroughly thought about what CHARACTER did.	**.76**	.01	.07
3) I thought about what could happen to CHARACTER.	**.71**	.11	.01
4) I sometimes felt the same emotions as CHARACTER.	01	**.88**	.01
5) CHARACTER's feelings were contagious to my feelings.	.05	**.78**	.08
6) I felt compassion for CHARACTER.	-.01	**.90**	-.04
7) I reacted to CHARACTER's behavior with my facial expression.	.20	.02	**.59**
8) CHARACTER's behavior caused me to comment out loud or to myself.	.01	-.09	**.80**
9) CHARACTER's behavior led me to gesture.	-.06	.15	**.73**
SS loadings	1.89	2.25	1.52
Proportion variance	.22	.26	.18

Note. The table complements Table 2 in the main paper by reporting the results obtained when submitting the data of Study III (which – in contrast to Study I – captured PSP with 9 rather than 24 items and operated with the revised conative PSP items 8 and 9) to EFA. Fully standardized loadings, primary loadings in bold. Principal axis analysis with oblimin rotation. Horizontal lines represent the theoretical distinctions between items aimed at cognitive PSP, affective PSP, and conative PSP. PSP = Parasocial Processing; Cog. = Cognitive; Aff. = Affective, Con. = Conative; SS loadings = Sum of Squared Loadings.

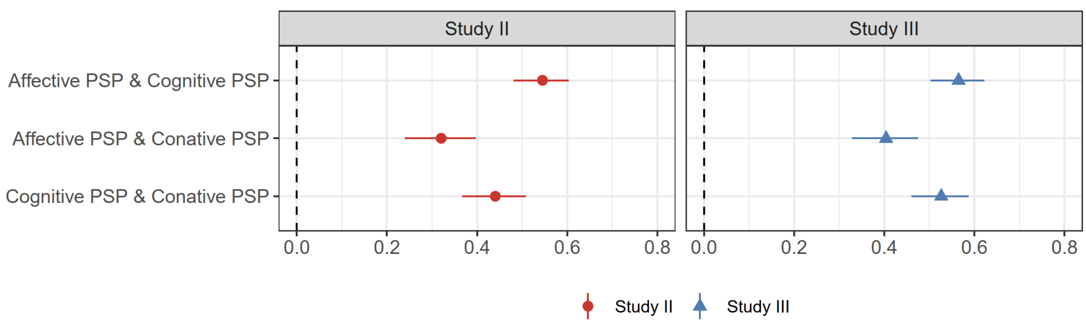
S5.2 Mean Indices of Cognitive, Affective, and Conative PSP

The tests of the PSP components' associations (P1–P3) and their associations with other concepts of media character and content processing (P4–P10) in Study II and Study III rested on the components' direct statistical treatment as latent factors. To ensure that our results and the associated conclusions on nomological, convergent, and discriminant validity are not contingent on the very treatment, we repeated the tests using (manifest) mean indices of cognitive PSP, affective PSP, and conative PSP obtained by averaging the respective triplets of PSP items. The corresponding results are summarized in Figures S3 and S4 and Tables S13 and S14. The summary of the results follows the logic used in the realm of the related Figures S1 and S2 and Tables S9 and S10 in Section S3 above. Accordingly, we refer readers to the text preceding Figure S1 for details on how the different types of analyses relate to and complement each other.

The results in Figure S3, Figure S4, and Tables S13 and S14 yielded coherent additional evidence for the robustness and meaningfulness of our analyses. Specifically, while generally lower (and thereby yet more in line with P2) when calculated using the mean indices, the associations between affective, cognitive, and conative PSP remained significantly positive throughout (P1) and the association between affective and conative PSP remained weaker than both PSP components' associations with cognitive PSP (P3; see also the significance tests in Tables S13 and S14).

Figure S3

Associations Between Mean Indices of Affective, Cognitive, and Conative PSP

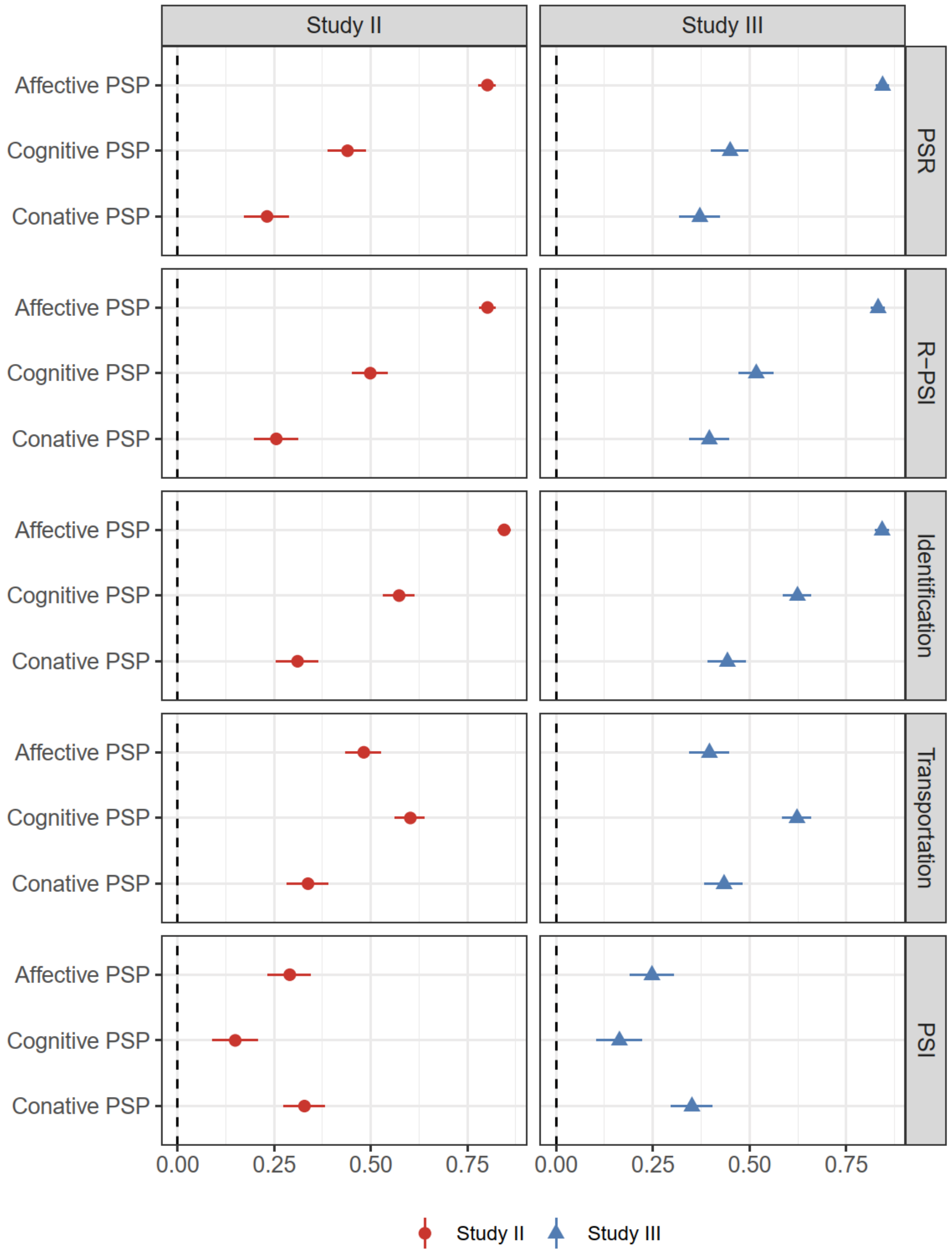


Note. The figure complements the CFA results in Figure 1 (Study I) and Figure II (Study II) in the main paper. It reports the associations between affective PSP, affective PSP, and conative PSP obtained when averaging the respective triplets of PSP items into mean indices. The positioning on the x-axis shows the strength of the association between the individual pairs of PSP components differentiated by the y-axis. Lines are two-sided 95% confidence intervals so intervals not containing zero signify that the respective association was significantly different from zero at $p < .05$. Additional significance tests for the differences between the associations are provided in Tables S13 and S14 below. PSP = Parasocial Processing.

The associations of the PSP components with the theoretical reference concepts of media character and content processing were similarly robust against using the mean indices – both in terms of the associations' (positive) sign, the associations' strength as well as in terms of the differences between the associations (see Figure S4 and the associated significance tests for the differences between the associations in Tables S13 and S14). PSR (P4), R-PSI (P5), and identification (P6) remained most strongly associated with affective PSP; transportation with cognitive PSP (P7); PSI with conative PSP (P8); and while the associations of both PSR, R-PSI, and identification were stronger than the association of transportation with cognitive PSP (P9), the association of transportation with cognitive PSP was stronger than the one of PSI with conative PSP (P10).

Figure S4

Associations Between Mean Indices of Affective, Cognitive, and Conative PSP with Other Concepts of Media Character and Content Processing



Note. The figure complements Table 3 (Study I) and Table 4 (Study II) in the main paper. It summarizes the associations between the PSP components with other concepts obtained when averaging the respective triplets of PSP items into mean indices. The positioning on the x-axis shows the strength of the association between the individual PSP components (differentiated by the y-axis) and the reference concepts (differentiated by the rows). Lines are two-sided 95% confidence intervals so CIs not containing zero signify that the respective association was significantly different from zero and positive at $p < .05$. Additional significance tests for the differences between the associations are provided in Tables S13 and S14 below. PSP = Parasocial Processing; PSR = Parasocial Relationships; R-PSI = Rubin-Parasocial Interaction; PSI = Parasocial Interaction.

Table S13

Significance Tests for the Differences Between the Associations of the Mean Indices of the PSP Components (P3) and their Associations with the Other Concepts (P4–P10) in Study II

Proposition	Association	*r*	Association	*r*	Δ*r*	95% CI
P3	Affective PSP & Conative PSP	.32	Affective PSP & Cognitive PSP	.54	-.22	[-.31;-.13]
	Affective PSP & Conative PSP	.32	Conative PSP & Cognitive PSP	.44	-.12	[-.20;-.05]
P4	Affective PSP & PSR	.80	Cognitive PSP & PSR	.43	.36	[.29;.44]
	Affective PSP & PSR	.80	Conative PSP & PSR	.23	.57	[.48;.66]
P5	Affective PSP & R-PSI	.80	Cognitive PSP & R-PSI	.50	.30	[.24;.48]
	Affective PSP & R-PSI	.80	Conative PSP & R-PSI	.25	.55	[.47;.63]
P6	Affective PSP & Identification	.85	Cognitive PSP & Identification	.57	.27	[.21;.34]
	Affective PSP & Identification	.85	Conative PSP & Identification	.31	.54	[.45;.62]
P7	Cognitive PSP & Transportation	.60	Affective PSP & Transportation	.48	.12	[.04;.19]
	Cognitive PSP & Transportation	.60	Conative PSP & Transportation	.34	.26	[.18;.35]
P8	Conative PSP & PSI	.33	Affective PSP & PSI	.29	.04	[-.04;.11]
	Conative PSP & PSI	.33	Cognitive PSP & PSI	.15	.18	[.10;.24]
P9	Affective PSP & PSR	.80	Cognitive PSP & Transportation	.60	.20	[.13;.27]
	Affective PSP & R-PSI	.80	Cognitive PSP & Transportation	.60	.20	[.13;.27]
	Affective PSP & Identification	.85	Cognitive PSP & Transportation	.60	.24	[.18;.31]
P10	Cognitive PSP & Transportation	.60	Conative PSP & PSI	.33	.27	[.17;.37]

Note. The table complement Figure S3 and Figure S4 in the SM. It provides additional significance tests for the differences between the PSP components' associations (P3) and their associations with the reference concepts (P4–P10) obtained when using mean indices of the PSP components. The 95% confidence intervals reported in the last column were derived using percentile bootstrapping (1,000 bootstrap samples); CIs that do not contain zero signify statistically different associations at $p < .05$. The rationale of the results presentation is explained in the text preceding Figure S1 in Section S3 above. In line with the results from the latent variable modelling approaches in the main paper, P8 was only partially supported in Study II because the difference between the association of conative PSP & PSI from the association of affective PSP and PSI only became significant in Study III. PSP = Parasocial Processing; PSR = Parasocial Relationships; R-PSI = Rubin-Parasocial Interaction; PSI = Parasocial Interaction; P = Proposition.

Table S14

Significance Tests for the Differences Between the Associations of the Mean Indices of the PSP Components (P3) and their Associations with the Other Concepts (P4–P10) in Study III

Proposition	Association	*r*	Association	*r*	Δ*r*	95% CI
P3	Affective PSP & Conative PSP	.40	Affective PSP & Cognitive PSP	.56	-.16	[-.09;-.24]
	Affective PSP & Conative PSP	.40	Conative PSP & Cognitive PSP	.53	-.12	[-.20;-.05]
P4	Affective PSP & PSR	.84	Cognitive PSP & PSR	.45	.39	[.33;.47]
	Affective PSP & PSR	.84	Conative PSP & PSR	.36	.47	[.39;.56]
P5	Affective PSP & R-PSI	.83	Cognitive PSP & R-PSI	.52	.32	[.25;.38]
	Affective PSP & R-PSI	.83	Conative PSP & R-PSI	.39	.44	[.36;.51]
P6	Affective PSP & Identification	.84	Cognitive PSP & Identification	.62	.22	[.16;.28]
	Affective PSP & Identification	.84	Conative PSP & Identification	.44	.40	[.33;.48]
P7	Cognitive PSP & Transportation	.62	Affective PSP & Transportation	.40	.23	[.15;.30]
	Cognitive PSP & Transportation	.62	Conative PSP & Transportation	.43	.19	[.11;.26]
P8	Conative PSP & PSI	.35	Affective PSP & PSI	.25	.10	[.04;.17]
	Conative PSP & PSI	.35	Cognitive PSP & PSI	.16	.19	[.13;.24]
P9	Affective PSP & PSR	.84	Cognitive PSP & Transportation	.62	.22	[.14;.29]
	Affective PSP & R-PSI	.83	Cognitive PSP & Transportation	.62	.21	[.13;.28]
	Affective PSP & Identification	.84	Cognitive PSP & Transportation	.62	.22	[.15;.29]
P10	Cognitive PSP & Transportation	.62	Conative PSP & PSI	.35	.27	[.18;.37]

Note. The table complement Figure S3 and Figure S4 in the SM. It provides additional significance tests for the differences between the PSP components' associations (P3) and their associations with the reference concepts (P4–P10) obtained when using mean indices of the PSP components. The 95% confidence intervals reported in the last column were derived using percentile bootstrapping (1,000 bootstrap samples); CIs that do not contain zero signify statistically different associations at $p < .05$. The rationale of the results presentation is explained in the text preceding Figure S1 in Section S3 above. In line with the results from the latent variable modelling approaches, all propositions were unequivocally supported when using the final PSP Short Inventory in Study III. PSP = Parasocial Processing; PSR = Parasocial Relationships; R-PSI = Rubin-Parasocial Interaction; PSI = Parasocial Interaction; P = Proposition.

S5.3 Measurement Invariance

While our main analyses coherently supported high validity and reliability of the PSP Short Inventory, recent methodological literature has highlighted that survey scales should be additionally safeguarded by establishing measurement invariance or – alternatively speaking – measurement equivalence before being used in applied research and, in particular, for assessing and comparing phenomena across different population segments (e.g., Clark & Donnellan, 2021; Guenole & Brown, 2014; Kline, 2005; Rocabado et al., 2020; Wing-Yee Tse et al., 2024).[1] Notably, this concerns assessments of both the levels of phenomena like – in our case – PSP (i.e., how strongly different people engage in PSP and, more specifically, in affective, cognitive, and conative PSP) as well as assessments of their associations with antecedent and consequential concepts (i.e., determinants and effects of PSP and its components more specifically). To this end, CFA bears with the additional major advantage of enabling particularly thorough inquiries of whether and in what specific regards scales can be used in applied research because they satisfy different levels of measurement invariance. Following this recent methodological perspective, it is common and best practice to sequentially assess measurement invariance across four levels:

1. Configural invariance is the most basic form of measurement invariance. It is the prerequisite for any meaningful comparison of concepts across groups. It requires scales to have the same factor structure across groups. That is, both the number of factors needs to be the same and the individual scale items need to load on the same factors.
2. Metric invariance, which is also called “weak” invariance, requires configural invariance plus equal factor loadings across groups. That is, items do not just have to load on the same factors but have to also load on these factors with similarly high strength. Metric invariance is particularly important from the viewpoint of scholars who aim at causal inferences; it is the necessary requirement for meaningful assessment of the associations between antecedent and consequent concepts (and any other relation).[2]
3. Scalar invariance, which is also called “strong” invariance is predicated on weak invariance. It presupposes metric invariance plus equal item intercepts across the groups. In essence, this means that scales do not suffer from systematic response biases due to,

[1] While we prelude our empirical assessment of the PSP Short Inventory’s measurement invariance with a brief and non-technical introduction to familiarize readers with the basic requirements and practical implications of different types of measurement invariance, we refer readers with an interest in technical and statistical backgrounds to the various existing excellent textbooks and reviews.

[2] It is needless to say that scalar (“strong”) is also of relevance for scholars aiming at causal inferences, e.g., when comparing the levels of PSP across experimental groups.

e.g., differential item functioning or additive (acquiescence) response style. If scalar invariance is supported, scales cannot only be used for comparing the associations between concepts but also their levels (e.g., the questions of whether and to what extent some media users' PSP is specifically higher than the one of others).

4. Strict invariance is the highest form of measurement variance. It requires scalar invariance plus equality of error variance and covariances across groups. In essence, this means that scales measure the concepts of theoretical interest with the same precision across groups. This is a particularly important consideration from the viewpoint of applied scholars who do not want to use latent variable modelling techniques like CFA. Strict measurement invariance implies that scales can be meaningfully used for the purposes of constructing, e.g., (manifest) sum or mean index variables without risking error-prone theoretical conclusions due to apple-to-orange comparisons.

While methodologists have generally highlighted that – not least due to the theoretical and practical demands of applied researchers – comprehensive scales should meet all four levels of (configural, metric, scalar, and strict) invariance, they have also generally highlighted that this is mostly not the case in the social sciences. Indeed, it is after all only a very small minority of thoroughly validated survey scales that ultimately succeed in meeting the gold standard of strict measurement variance.

To enable a thorough understanding of whether and in what specific regards the PSP Short Inventory meets the requirements of measurement invariance, we (a) assess measurement variance across each of the four levels of configural, metric, scalar, and strict invariance; (b) follow and expand on the CFAs of both Study II and Study III; (c) account for different types of audience segments by assessing measurement invariance across both genders (i.e., men and women), age groups (i.e., participants aged 40 or lower; aged 41 to 61; and aged 62 or older), and ethnicities (i.e., white and non-white participants)[3]; as well as (d) consider each of the statistics of absolute model fit (RMSEA, CFI, TLI, SRMR) and relative model fit (AIC, BIC, aBIC) used for evaluating the (single-group) CFA models in the main paper. The corresponding results of the invariance tests are summarized by Table S15 (Study II) and Table S16 (Study III). To illustrate the tables' rationale, take an initial look at the results for gender in Table S15 (Study II). Specifically, we see three main patterns:

[3] Participants with black, Asian, mixed and other ethnicities were merged into a larger category of non- white participants because mixed and other ethnicities accounted only for small shares of participants (see Table S1).

> With the slight exception of the TLI (whose values remained slightly below the desired threshold of .95 with some of the less parsimonious models and the not yet perfect scale in Study II), (a) the multigroup CFA model did not only show good absolute fit to begin fit, establishing configural invariance across genders. Rather, (b) the good absolute fit also persisted across all other levels of invariance; and (c) the AIC, BIC, and aBIC values for the metric, scalar, and strict models were not higher compared to the corresponding values of the configural model – meaning that since the item loadings, intercepts as well as error variance and covariances were highly similar across genders, their statistical equation due to the metric, scalar, and strict models did not worsen but, if anything, actually improved the model fit. Thus, the results supported not only configural invariance of the PSP Short Inventory but also metric invariance, scalar invariance, and strict invariance.

Looking at Tables S15 and S16 more generally, we see that these three main patterns were highly consistent and coherent across tests; they readily and unequivocally generalized across all invariance tests for both gender, age groups, and ethnicities. The only notable exception were the TLI values which – as indicated above – remained slightly below the threshold of .95 with some of the models in Study II yet unequivocally met this threshold for good absolute fit with the final scale used in Study III.[4] Therefore, the results coherently reinforced and yielded robust additional evidence for the high feasibility of the PSP Short Inventory. Since the PSP Short Inventory meets highest psychometric standards of (strict) measurement invariance, it enables sophisticated assessments of PSP across audience segments, both in terms of their levels of PSP as well as its determinants and effects.

[4] The results of the robustness test were, in turn, thoroughly robust against assessing the differences between the multi-group CFA models using alternative $\Delta\chi^2$-tests.

Table S15

Tests of Measurement Invariance Using Data of Study II

		RMSEA	CFI	TLI	SRMR	AIC	BIC	aBIC
Gender	Configural invariance	.08	.96	.94	.05	13,326	13,589	13,389
	Metric invariance	.08	.96	.94	.05	13,319	13,547	13,375
	Scalar invariance	.07	.96	.95	.05	13,311	13,513	13,360
	Strict invariance	.07	.96	.96	.05	13,302	13,467	13,443
Age groups	Configural invariance	.08	.96	.94	.05	13,269	13,648	13,362
	Metric invariance	.08	.96	.95	.06	13,259	13,587	13,340
	Scalar invariance	.07	.96	.95	.06	13,245	13,522	13,313
	Strict invariance	.07	.95	.95	.07	13,243	13,445	13,293
Ethnicity	Configural invariance	.09	.95	.93	.05	13,325	13,578	13,387
	Metric invariance	.08	.95	.94	.05	13,321	13,548	13,377
	Scalar invariance	.08	.95	.94	.05	13,315	13,517	13,365
	Strict invariance	.07	.95	.95	.06	13,303	13,467	13,344

Note. The rationale of the table is explained within the text. Cell entries are statistics of absolute (RMSEA, CFI, TLI, SRMR) and relative model fit (AIC, BIC, aBIC) for multi-group CFA models testing configural, metric, scalar, and strict invariance across genders, age groups, and ethnicity. CFA = Confirmatory Factor Analysis; RMSEA = Root Mean Square Error of Approximation; CFI = Comparative Fit Index; TLI = Tucker-Lewis Index; SRMR = Standardized Root Mean Square Residual; AIC = Akaike Information Criterion; BIC = Bayesian Information Criterion; aBIC = sample-size adjusted Bayesian Information Criterion.

Table S16

Tests of Measurement Invariance Using Data of Study III

		RMSEA	CFI	TLI	SRMR	AIC	BIC	aBIC
Gender	Configural invariance	.07	.97	.96	.04	12,889	13,142	12,951
	Metric invariance	.07	.98	.97	.04	12,882	13,109	12,938
	Scalar invariance	.07	.97	.97	.05	12,877	13,079	12,927
	Strict invariance	.06	.97	.97	.04	12,874	13,042	12,916
Age groups	Configural invariance	.07	.98	.97	.04	12,862	13,241	12,955
	Metric invariance	.06	.98	.97	.05	12,850	13,178	12,931
	Scalar invariance	.06	.98	.98	.05	12,836	13,114	12,905
	Strict invariance	.06	.98	.98	.05	12,823	13,025	12,873
Ethnicity	Configural invariance	.07	.97	.96	.04	12,889	13,142	12,952
	Metric invariance	.07	.97	.97	.04	12,889	13,116	12,945
	Scalar invariance	.07	.97	.96	.05	12,889	13,092	12,939
	Strict invariance	.07	.97	.97	.05	12,879	13,043	12,919

Note. The rationale of the table is explained within the text; additional technical details can be found in the note to the related Table S15. Due to a slightly higher AIC (= 12,881) value of the strict-invariance model compared to the scalar-invariance model, one item residual had to be freed to achieve unequivocal support for strict invariance for gender across all seven statistics. RMSEA = Root Mean Square Error of Approximation; CFI = Comparative Fit Index; TLI = Tucker-Lewis Index; SRMR = Standardized Root Mean Square Residual; AIC = Akaike Information Criterion; BIC = Bayesian Information Criterion; aBIC = sample-size adjusted Bayesian Information Criterion.

S5.4 Correlated Unique Factors vs. Second-Order CFA Models

By operating with three correlated unique (first-order) factors, the CFAs in the main paper directly supported the theoretical conceptualization of PSP as a multifaceted and inherently three-fold concept with three related but distinct components of cognitive, affective, and conative PSP (for related recent assessments from other fields, see, e.g., Fawzi, 2019; Kretzschmar et al., 2016; Mangold, 2024; McAuley and White, 2011; Miyake et al., 2000). This was, among others, mirrored by the circumstances of the PSP components sharing only a minority of their variance with each other; the PSP components showing substantially varied associations with both each other and with other core concepts of users' processing of media characters and content (like PSI, PSR, or transportation); and these associations and their differences being not only statistically significant but also coherently in line with the theoretical state-of-the-art and our measurement propositions (P1 to P10). To further probe the appropriateness of the conceptualization of PSP as a three-fold concept and its measurement by the PSP Short Inventory, we complemented the main analyses with the additional investigation of second-order CFA models. Considering that the individual PSP components were positively associated with each other, this is an important additional consideration to substantiate further and safeguard that PSP is not just a single general trait or – less methodologically speaking – a propensity to either engage in all kinds of reactions to media characters and parasocial experiences or to generally refrain from doing so (e.g., Brown, 2015; Kline, 2005; Koch et al., 2015; Mangold, 2018; Paek & Cole, 2019; Prochazka & Schweiger, 2019).

The robustness test leverages the opportunity of Studies II and III, which have collected not only PSP but also measures for various other core concepts (PSR, R-PSI, EPSI, identification, and transportation). This is a particularly important matter when evaluating concepts that comprise three factors. Namely, when considering such concepts in isolation, any second-order CFA model with three first-order factors on the one hand and the corresponding CFA model with three correlated first-order factors on the other hand will always exhibit the same fit statistics, irrespective of whether one or the other model is more appropriate (e.g., Brown, 2015; Kline, 2005). To overcome this methodological challenge, we specifically compare two models. For one, we build and expand on the models with three correlated unique factors from the main paper. To this end, we integrate the measures for the reference concepts (i.e., PSR, R-PSI, EPSI, identification, and transportation) and allow the PSP components to correlate with these concepts. Consequently, the model tests the core tenet that the distinction between affective, cognitive, and conative PSP is theoretically meaningful and substantially important to consider in applied research because the PSP components synthesize and link the other concepts' main foci to users' immediate reactions to media characters. For the other, we estimate a second-order model that treats affective, cognitive, and conative PSP as (first-order) factors loading on a single general (second-order) factor and which only allows the general factor to correlate with the reference concepts. Consequently, the model tests the alternative assumption that because affective, cognitive, and conative PSP are ultimately only different types of indicators of a single underlying general trait, a single variable is sufficient to account for the associations of PSP with other concepts of parasocial experiences (for statistical and psychometric backgrounds, see, e.g., Eid & Koch, 2014; Eid et al., 2017; Koch et al., 2017).

Table S17 summarizes the fit statistics obtained for these models when estimating them with Study II and III data. The results unequivocally supported the superiority of the model with three correlated unique factors. Its AIC, BIC, and aBIC values were unexceptionally lower than the corresponding values for the second-order models. The models with three correlated unique factors also exhibited good absolute fit according to all statistics with both data sets. In contrast, the second-order models did not show good absolute fit according to the corresponding statistics (i.e., RMSEA, CFI, TLI, SRMR).[5] Consequently, the robustness test yielded empirical support for the theoretical conceptualization of PSP as a multifaceted concept with three related yet distinct components of affective, cognitive, and conative PSP. Because these PSP components capture meaningful true score variance and relate the main foci of various other core concepts to users' reactions to media characters, neglecting the differences between the components leads to theoretical oversimplifications that cannot adequately account for the nomological framework of research on media users' parasocial experiences and their multiplexity.

[5] The results of the robustness test were, in turn, thoroughly robust against considering the associations between PSP and the five theoretical reference concepts individually rather than – as done by the models in Table S17 – jointly accounting for them, irrespective of using the data of Study II or the data of Study III. While the model with correlated unique factors exhibit good absolute fit and relative better fit that the second-order model across each of the resulting ten additional tests, the second-order model did not adequately account for the associations of PSP with any of the reference concepts.

Table S17

Fit of CFA Models with Correlated Unique Factors vs. Second-Order Factor

	Study II		Study III	
	Correlated unique factors	*Second-order*	*Correlated unique factors*	*Second-order*
AIC	18,091	18,285	17,459	17,714
BIC	18,308	18,457	17,674	17,886
aBIC	18,144	18,327	17,512	17,756
RMSEA	.07	.10	.06	.11
CFI	.97	.92	.98	.93
TLI	.95	.89	.96	.89
SRMR	.05	.09	.04	.09

Note. The rationale of the table is explained within the text. Cell entries are fit statistics for alternative models operating with three correlated unique factors of affective, cognitive, and conative PSP and operating with a single second-order factor and three first-order factors of affective, cognitive, and conative PSP (loading on the second-order factor). The dashed line differentiates between the statistics of relative and absolute model fit. CFA = Confirmatory Factor Analysis; AIC = Akaike Information Criterion; BIC = Bayesian Information Criterion; aBIC = sample-size adjusted Bayesian Information Criterion; RMSEA = Root Mean Square Error of Approximation; CFI = Comparative Fit Index; TLI = Tucker-Lewis Index; SRMR = Standardized Root Mean Square Residual.

S6 Overview of Reference Propositions

Table S18

Overview of the Tested Reference Propositions

Reference Proposition	S I	S II	S III
P1: The associations of cognitive, affective, and conative PSP are positive throughout.		X	X
P2: The associations of cognitive, affective, and conative PSP are imperfect throughout (i.e., below 1).		X	X
P3: Affective PSP and conative PSP are less strongly associated with each other than with cognitive PSP.		X	X
P4: PSR is more strongly associated with affective PSP than with cognitive PSP and conative PSP.		X	X
P5: R-PSI is more strongly associated with affective PSP than with cognitive PSP and conative PSP.		X	X
P6: Identification is more strongly associated with affective PSP than with cognitive PSP and conative PSP.		X	X
P7: Transportation is more strongly associated with cognitive PSP than with cognitive PSP and affective PSP.		X	X
P8: PSI is more strongly associated with conative PSP than with affective PSP and cognitive PSP.		X	X
P9: Transportation is less strongly associated with (cognitive) PSP than PSR, R-PSI, and identification with (affective) PSP.		X	X
P10: PSI is less strongly associated with (conative) PSP than transportation with (cognitive) PSP.		X	X

Note. Since Study I was primarily exploratory and did not formally test these propositions, no entries are marked for Study I. PSP = Parasocial Processing; PSR = Parasocial Relationships; R-PSI = Rubin-Parasocial Interaction; PSI = Parasocial Interaction; P = Proposition; S = Study.

References Online Supplementary Materials

Brown, T. A. (2015). Confirmatory factor analysis for applied research. Guilford publications.

Brown, T. A., & Moore, M. T. (2012). Confirmatory factor analysis. In R. H. Hoyle (Ed.), *Handbook of Structural Equation Modeling* (pp. 361–379). Guilford Press.

Clark, D. A., & Donnellan, M. B. (2021). What if apples become oranges? A primer on measurement invariance in repeated measures research. In *The handbook of personality dynamics and processes* (pp. 837-854). Academic Press.

Cohen, J. (2001). Defining identification: A theoretical look at the identification of audiences with media characters. *Mass Communication and Society, 4*(3), 245–264. https://doi.org/10.1207/S15327825MCS0403_01

Costello, A. B., & Osborne, J. W. (2005). Best practices in exploratory factor analysis: Four recommendations for getting the most from your analysis. *Practical Assessment, Research & Evaluation, 10*(7), 1–9. https://doi.org/10.7275/jyj1-4868

Eid, M., & Koch, T. (2014). The meaning of higher-order factors in reflective measurement models. *Measurement: Interdisciplinary Research and Perspectives, 12*, 96–101. https://doi.org/10.1080/15366367.2014.943591

Eid, M., Geiser, C., Koch, T., & Heene, M. (2017). Anomalous results in *G*-factor models: Explanations and alternatives. *Psychological Methods, 22*(3), 541–562. https://doi.org/10.1037/met0000083

Fawzi, N. (2019). Untrustworthy news and the media as 'enemy of the people?' How a populist worldview shapes recipients' attitudes toward the media. *The International Journal of Press/Politics, 24*(2), 146–164. https://doi.org/10.1177/1940161218811981

Green, M. C., & Brock, T. C. (2000). The role of transportation in the persuasiveness of public narratives. *Journal of Personality and Social Psychology, 79*(5), 701–721. https://doi.org/10.1037/0022-3514.79.5.701

Guenole, N., & Brown, A. (2014). The consequences of ignoring measurement invariance for path coefficients in structural equation models. *Frontiers in Psychology, 5*(980), 1–16. https://doi.org/10.3389/fpsyg.2014.00980

Hartmann, T., & Goldhoorn, C. (2011). Horton and Wohl revisited: Exploring viewers' experience of parasocial interaction. *Journal of Communication, 61*(6), 1104–1121. https://doi.org/10.1111/j.1460-2466.2011.01595.x

Koch, T., Holtmann, J., Bohn, J., & Eid, M. (2018). Explaining general and specific factors in longitudinal, multimethod, and bifactor models: Some caveats and recommendations. *Psychological Methods, 23*(3), 505. https://doi.org/10.1037/met0000146

Kretzschmar, A., Neubert, J. C., Wüstenberg, S., & Greiff, S. (2016). Construct validity of complex problem solving: A comprehensive view on different facets of intelligence and school grades. *Intelligence*, *54*, 55-69. https://doi.org/10.1016/j.intell.2015.11.004

Mangold, F. (2018). Personality strength revisited: An evaluation of the structure of Noelle-Neumann's personal influence-scale. *Publizistik, 1*(62), 61–82. https://doi.org/10.1007/s11616-016-0308-2

Mangold, F. (2024). Improving media trust research through better measurement: An item response theory perspective. *Journal of Trust Research, 14*(1), 8–38. https://doi.org/10.1080/21515581.2023.2229791

McAuley, T., & White, D. A. (2011). A latent variables examination of processing speed, response inhibition, and working memory during typical development. *Journal of Experimental Child Psychology*, *108*(3), 453–468. https://doi.org/10.1016/j.jecp.2010.08.009

Miyake, A., Friedman, N. P., Emerson, M. J., Witzki, A. H., Howerter, A., & Wager, T. D. (2000). The unity and diversity of executive functions and their contributions to complex "frontal lobe" tasks: A latent variable analysis. *Cognitive Psychology*, *41*(1), 49–100. https://doi.org/10.1006/cogp.1999.0734

Paek, I., & Cole, K. (2019). *Using R for item response theory model applications*. Routledge. https://doi.org/10.4324/9781351008167

Prochazka, F., & Schweiger, W. (2019). How to measure generalized trust in news media? An adaptation and test of scales. *Communication Methods and Measures, 13*(1), 26–42. https://doi.org/10.1080/19312458.2018.1506021

Rocabado, G. A., Komperda, R., Lewis, J. E., & Barbera, J. (2020). Addressing diversity and inclusion through group comparisons: a primer on measurement invariance testing. *Chemistry Education Research and Practice*, *21*(3), 969–988. https://doi.org/10.1039/D0RP00025F

Rubin, A. M., & Perse, E. M. (1987). Audience activity and soap opera involvement. A uses and effects investigation. *Human Communication Research, 14*(2), 246–268. https://doi.org/10.1111/j.1468-2958.1987.tb00129.x

Tse, W. W. Y., Lai, M. H., & Zhang, Y. (2024). Does strict invariance matter? Valid group mean comparisons with ordered-categorical items. *Behavior Research Methods, 56*(4), 3117–3139. https://doi.org/10.3758/s13428-023-02247-6

Tukachinsky, R. (2011). Para-romantic love and para-friendships: Development and assessment of a multiple-parasocial relationships scale. *American Journal of Media Psychology, 3*(1/2), 73–94.

US Census Bureau. (2024). *United States Census Bureau*. Census.Gov. https://www.census.gov/en.html