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# Why Do We Have Internal Dialogues? Development and Validation of the Functions of Dialogues–Revised Questionnaire (FUND-R)

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## ABSTRACT

People are often engaged in internal dialogues. It means that they adopt (at least) two different viewpoints and the utterances formulated (silently or aloud) from these viewpoints respond to one another. Internal dialogues fulfill several important functions. However, this complexity has not been reflected in how the functions of internal dialogues are measured and investigated. To provide a more nuanced picture of the functions of internal dialogues, we developed the Functions of Dialogues–Revised Questionnaire (FUND-R). Study 1 aimed to explore ( $n=248$ ) and confirm ( $n=538$ ) the internal structure of the FUND-R. Study 2 ( $n=341$ ) was designed to reconfirm this structure and examine reliability and validity of the method. In Study 1 the FUND-R has been confirmed to have six subscales, measuring six functions of internal dialogues: Analyzing, Bonding, Self-Knowing, Fantasizing, Ruminating, and Testing. Study 2 reconfirmed the structure and revealed high reliability and validity of the FUND-R. Validity was assessed via convergence with personality traits, two types of self-attentiveness, and stress-coping styles. The analysis of criterion validity also included comparison of FUND-R scores across different interlocutors, and situations discussed in dialogues. The FUND-R has been confirmed as a reliable and valid measure of functions of internal dialogues for use in research settings.

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## Introduction

What is an internal dialogue? We assume that a person is engaged in an internal dialogue when they adopt (at least) two different viewpoints and the utterances formulated (silently or aloud) from these viewpoints respond to one another (Puchalska-Wasył, 2019, 2020). The mutual reference of utterances formulated from distinct perspectives is one of the main differences between a healthy person's internal dialogue and the pathology of hearing voices in mental illness. For example, according to Lysaker and Lysaker (2002), in schizophrenia, instead of voices interacting dialogically, there is either an internal cacophony of voices or the self is dominated by

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rigid, non-evolving monologues of one voice. Moreover, in healthy internal dialogue a person may intentionally give voice to or silence a given viewpoint, thus exercising control over it, which is lacking in illness (Puchalska-Wasyl, 2015).

The concept of internal dialogue—understood as a normal and common phenomenon—is rooted in the dialogical self theory (Hermans, 2003; Hermans & Gieser, 2012), according to which the dialogical self is a dynamic multiplicity of relatively autonomous I-positions that represent different viewpoints/perspectives available for a person. Each I-position is shaped in a particular social context and has a voice (the voice of a culture, a community, or a significant other, or one's own voice). As a result, I-positions are intertwined with each other like people in social relationships (Hermans, 2003).

Internal dialogues fulfill several important functions. Brinthaupt et al. (2009) designed the Self-Talk Scale (STS) which allows to measure four functions of self-talk: self-reinforcement, self-criticism, self-management, and social assessment. The self-reinforcement function refers to self-talk concerning positive events (e.g., feeling proud of something one has done). Self-criticism reflects self-talk that focuses on negative events (e.g., criticizing oneself for something one has said or done). Self-management refers to self-regulatory self-talk (e.g., giving oneself instructions about what to do or say). Finally, social assessment refers to self-talk related to a person's social interaction (e.g., imagining how other people responded to the things one said). Brinthaupt and Dove (2012) demonstrated that these four functions depend on age, family configuration (i.e., only child or sibling), and having an imaginary companion in childhood. For example, people who had had an imaginary companion reported more frequent overall self-talk and, additionally, higher levels of self-reinforcing and self-managing self-talk than did those without an imaginary companion.

Oleś is the author of the Internal Dialogical Activity Scale (IDAS; Oleś, 2009) and its revised version (IDAS-R; Oleś et al., 2020), in which internal dialogical activity is defined in terms of engagement in dialogues with imagined figures, continuation or simulation of social dialogical relationships in one's own thoughts, and confrontation of the points of view representing different I-positions relevant for personal and/or social identity (Puchalska-Wasyl et al., 2008). In IDAS-R eight types of internal dialogues is distinguished. They are as follows: (a) identity dialogues, trying to answer questions regarding one's identity, life priorities, and values; (b) supportive dialogues, for which the objective is to provide support and comfort, and sense of closeness; (c) social dialogues, which consist in continuing and ending discussion with others or preparing for a new conversation; (d) ruminative dialogues, in which a person recalls sad or annoying thoughts or memories about hurtful life experiences; (e) confronting dialogues, which focus on situations of disagreements or conflicts, often internal; (f) maladaptive dialogues, which interfere with the performance of tasks; (g) spontaneous dialogues which are the dialogical form of self-awareness; and (h) perspective-changing dialogues, conducted in order to see the difficult situations from different viewpoints. The aforementioned types of internal dialogues were determined empirically (during the construction of the questionnaire). The advantage of this typology is its scope (many types), while its drawback is the fact that the criterion of distinguishing dialogues is heterogeneous: sometimes the criterion seems to be phenomenology of internal dialogical activity and sometimes the criterion is the dialogue function. For example,

social dialogues, depending on their course, can fulfill supportive or ruminative function.

In Oleś's (2009; Oleś et al., 2020) proposition, identity and ruminative inner dialogues are especially important from the perspective of our research presented further. The former type of dialogues fulfills adaptive functions, which means that identity dialogues serve health and promote development. As a confirmation positive correlations between identity dialogues and well-being were found (Puchalska-Wasyl & Zarzycka, 2020a, 2020b). By contrast, the functions of the latter type of dialogues seem to be non-adaptive, because rumination is generally related to self-uncertainty and self-doubt (Trapnell & Campbell, 1999). Two studies have provided support for negative correlations between ruminative inner dialogues and well-being (Puchalska-Wasyl & Zarzycka, 2020a; Zarzycka & Puchalska-Wasyl, 2020).

Puchalska-Wasyl (2006; cf. Puchalska-Wasyl et al., 2008) identified seven key-functions of internal dialogues. She used a list of 24 specific functions potentially fulfilled by internal dialogical activity. The list of functions was determined through theoretical studies and rational analysis of the phenomenon of dialogicality. In this study (Puchalska-Wasyl, 2006), participants first declared their internal interlocutors. They then received the abovementioned list and indicated the occurrence (1) or nonoccurrence (0) of each of the 24 functions in their dialogues with a given interlocutor. Hierarchical cluster analysis on the functions of all the internal interlocutors ( $N=649$ ) allowed the author to identify seven main groups of functions, referred to above as key-functions, namely: support, substitution, exploration, bond, self-improvement, insight, and self-guiding. Support means that the dialogue is a source of hope, sense of security, and meaning in life. If the dialogue is mainly a form of argumentation or catharsis for negative emotions, then it fulfills the substitution function. The dialogue has an exploratory function when it represents a way of seeking new experiences and escaping from dull reality. The dialogue as a source of deep relation with someone close fulfills the bond function. Self-improvement means that the dialogue is a form of warning against a mistake, learning from other people's mistakes, as well as a self-evaluation criterion. Insight indicates that the dialogue serves as a way to gain a new perspective, advice, and distance from a problem. Finally, self-guiding is fulfilled by the dialogue that motivates action and development, guidance in setting new goals, and a source of a sense of control over the situation. All of these functions seem to be generally adaptive, although exploration and substitution can sometimes be non-adaptive—for example, when a person could deal constructively with a problem but instead escapes into an unreal world (exploration), or when they are preparing to repel an imaginary attack from the environment (substitution).

### ***The Functions of Dialogues Questionnaire***

In line with her empirical findings, Puchalska-Wasyl (2016b, 2020) developed the Functions of Dialogues Questionnaire (FUND). FUND comprises 49 items divided into seven subscales, each measuring one of the aforementioned seven key-functions of internal dialogues. Each item is rated on a 5-point Likert scale from 1 (*strongly*

*disagree*) to 5 (*strongly agree*). The subscales' internal consistency (calculated by Cronbach's  $\alpha$ ) were satisfactory: .85 for Support; .75 for Substitution; .77 for Exploration; .88 for Bond; and .80 for Self-Improvement, Insight, and Self-Guiding.

While conducting research using the FUND (Puchalska-Wasyl, 2016a, 2016b, 2020), researchers have noticed at least three weaknesses of the method. (1) The FUND does not measure two important functions (*cf.*, Oleś et al., 2020): expanding knowledge about oneself (self-knowing) and unproductive discussion on the reasons for failure with elements of self-blame (ruminating). (2) The scale is too long, given today's standards of psychological research. (3) The internal structure of the FUND has not been checked. Therefore, we decided to carry out further work on the scale and develop the Functions of Dialogues–Revised Questionnaire (FUND-R) to minimize these shortcomings.

The aims of Studies 1 and 2 presented further were: (1) to establish the internal structure of the FUND-R, a scale that was to measure the main functions of internal dialogues, both adaptive and non-adaptive; (2) to extend a new scale with items measuring two additional functions that the original FUND did not contain: (a) ruminating—non-adaptive function; and (b) self-knowing—adaptive function; and (3) to examine the psychometric properties of the FUND-R: reliability and validity.

### **Generating and refining items**

The initial pool of items to develop the FUND-R was 49 items from the original FUND. We conducted exploratory factor analysis (EFA) based on data from several studies that used the 49-item FUND. The total sample consisted of 318 adults (51.9% of women), aged between 19 and 30 ( $M=21.76$ ,  $SD=1.56$ ) years. Based on the Kaiser criterion (eigenvalue  $> 1$ ), EFA established nine factors explaining 59.27% of the variance. The Kaiser–Meyer–Olkin (KMO) measure of sampling adequacy was .91, which is considered to be a good value (Hair et al., 1999), and Bartlett's test of sphericity was significant ( $\chi^2(1176) = 7489.01$ ,  $p < .001$ ). Then, we selected items with the highest factor loadings to include in each factor. We employed three additional criteria while selecting items: (1) items load onto their primary factor  $> .40$ ; (2) items load onto alternative factors  $< .30$ ; and (3) items demonstrate at least a difference of .20 between their primary and alternative factor loadings (Howard, 2016). After applying the above criteria, the number of items per factor was: eight for F1 (loadings from .815 to .487); four for F2 (loadings from .613 to .548); four for F3 (loadings from .684 to .597); four for F4 (loadings from .660 to .562); four for F5 (loadings from .724 to .510); three for F6 (loadings from .730 to .617); three for F7 (loadings from .678 to .442); four for F8 (loadings from .706 to .428); and two for F9 (loadings from .687 to .592). F1 contained eight items that originally formed two subscales of the FUND (Bond and Support). One factor, F9, was very poorly represented: It contained only two items and, according to the recommendations in the literature (Harvey et al., 1985), it was deemed too low to create a meaningful factor and a reliable subscale. Thus, we dropped both items of factor F9 from the scale. Three factors (F5, F7, and F8) contained an item (5, 17, or 23) that also belonged

to other factors. We reworded these items to better express the content of its specific factor and added them to the initial version of the FUND-R. Two factors (F6 and F7) had only three items each. We generated two new items (one per factor) to complete factors F6 (“... brings me into a better world”) and F7 (“... makes me realize that I can do better”). Based on EFA, we obtained the initial version of the FUND-R, which contained 36 items. We generated an additional 10 items, five for each of two planned new subscales of the FUND-R: self-knowing and ruminating. Thus, we used the initial 46-item FUND-R (Table 1) for Study 1.

## Study 1

### Method

#### Participants

In Study 1, a sample of 786 Poles allows us to get data for exploratory factor analysis (EFA), confirmatory factor analysis (CFA), and initial reliability and validity assessment. The age range in the sample was 18–65 ( $M=28.22$ ,  $SD=9.70$ ) years. Of the 786 participants, 373 were female and 413 were male. The respondents were randomly split into learning (31.5%,  $n=248$ ) and testing (68.5%,  $n=538$ ) subsamples for EFA and CFA, respectively. For EFA, the suggested minimum ratio of 5 participants to 1 item required at least 230 participants (Gorsuch, 1983). Thus, our sample size of 248 was sufficient for this purpose. The age range in the learning subsample was 17–57 ( $M=28.47$ ,  $SD=9.57$ ) years. Of the 248 participants, 114 were female and 134 were male. The suggested sample size for CFA is 5–20 individuals for each parameter estimate (Schumacker & Lomax, 1996); there were 61 parameters to be estimated, and thus the sample size of this study ( $n=538$ ) was appropriate for analysis. The age range in testing subsample was 18–65 ( $M=28.12$ ,  $SD=9.75$ ) years. Of the 538 participants, 259 were females and 279 were males.

#### Procedure

The data were collected through a web survey. The procedure was approved by the Research Ethics Committee at the Institute of Psychology at the authors' university. The informed consent of the participants was implied through survey completion.

We used non-probabilistic convenience sampling to select the sample. In the sample, 24% ( $n=190$ ) were users of the Ariadna online research panel. The remaining 76% ( $n=596$ ) learned about the research project from departmental announcements and from their friends. We asked students of the Faculty of Psychology at our university to invite two adults, a woman and a man, to participate in the study. The purpose of the study and the importance of their contribution was explained to them. Given that the scale at this stage was a little lengthy (46 items) and the completion of the test was preceded by an internal dialogue (with oneself or any real or imagined interlocutor), the link to the online version of the initial FUND-R questionnaire was distributed among only those who were motivated to participate in the whole study.

**Table 1.** The 46-item initial version of the Functions of Dialogues–Revised Questionnaire (FUND-R).

Item number in FUND	Item number in the initial FUND-R version	Item (and its original subscales in the FUND)
New SKN-1	1	... dialogue allows me to get to know myself better
New RUM-1	2	... makes me tired
29	3	... makes me feel like there is someone I can count on (SUP)
25	4	... is a form of maintaining bonds (BON)
41	5	... helps me to see the good side of a situation that is difficult for me (INS)
21	6	... helps me understand which solution to the problem will be the best (SGD)
37	7	... prepares me to repel a possible attack (SUB)
10	8	... is a way to try out prohibited things and their effects (EXP)
2	9	... partially replaces my real contact, which is impossible for various reasons (SUB)
28	10	... sets me new tasks and objectives to achieve (SGD)
12	11	... teaches me not to make the same mistakes (SIM)
New SKN-2	12	... is an attempt to explain who I really am
New RUM-2	13	... serves no good
22	14	... is a source of support for me (SUP)
46	15	... makes me feel needed (BON)
27	16	... helps me to gain distance from issues that concern me (INS)
44	17	... allows me to prepare for an important conversation (SUB)
42	18	... gives me a sense of control over the situation (SGD)
45	19	... is a way to test my behavior and feelings in a situation that I do not know (EXP)
3	20	... allows me to escape from the humdrum reality (EXP)
35	21	... prompts me to exceed my limits (SGD)
47	22	... helps me realize my own mistakes (SIM)
New SKN-3	23	... makes me realize what is really important to me
New RUM-3	24	... means "tearing wounds open"
1	25	... fills me with hope for the future (SUP)
18	26	... allows me to experience closeness with other people (BON)
20	27	... makes decision-making easier, allows me to see the pros and cons of various solutions (INS)
49	28	... allows me to refine the scenario of future actions (SGD)
30	29	... helps me test the strength of my arguments (SUB)
24	30	... gives me a chance to try out what I don't experience in reality (EXP)
31	31	... allows me to let the dream take flight (EXP)
New	32	... makes me realize that I can do better
26	33	... allows me to learn from other people's mistakes (SIM)
New SKN-4	34	... is a way to find out the truth about me and my life
New RUM-4	35	... makes me feel worse
15	36	... helps to give meaning to my life (SUP)
39	37	... gives me the feeling that I have someone to live for (BON)
48	38	... suggests positive behaviors that are worth repeating in a real situation (INS)
38	39	... is a way to test a possible scenario of future events (EXP)
9	40	... helps me find arguments to convince someone (SUB)
23-mod	41	... allows me to say what I can't or <i>don't want to say in a real situation</i> (SUB)
New	42	... brings me into a better world
17-mod	43	... <i>encourages</i> the search for new experiences (EXP)
5-mod	44	... <i>makes</i> my self-assessment <i>easier</i> (SIM)
New SKN-5	45	... is a way to determine my identity
New RUM-5	46	... dwells on a subject in vain

Note. FUND subscales: SUP = Support; SUB = Substitution; EXP = Exploration; BON = Bond; SIM = Self-Improvement; INS = Insight; SGD = Self-Guidance; new subscales: SKN = Self-Knowing; RUM = Ruminating; mod = item modification (changes marked in italics).



First, each respondent was given a following instruction:

Think about a matter that is important to you. It could be a problem or something very positive. This may be an issue that is currently absorbing you. It may also be a matter from the distant past, but such that it still engages your thoughts and you would like to add something else or hear something else... Write briefly about what have you thought about.

Then, the participants answered whether the matter is positive or negative and what it was about. The next instruction was:

Now that you have a specific matter in mind, conduct an internal/imaginary dialogue with anyone or yourself about it. Just remember that in a dialogue with oneself—as in any other dialogue—there are two different voices, two different points of view of the same matter (e.g., I vs. my inner critic; I-good vs. I-bad; I-realist vs. I-idealist, etc.). These viewpoints respond to one another. You can say the dialogue out loud or you can have the dialogue only in your thoughts.

After the dialogue, the respondent was asked with whom they conducted the dialogue. They could give their own answer or mark one of the following: with a person I know personally; with a real person I do not know personally; with a deceased person that I knew personally; with an imaginary character; with myself; or with God. Finally, the subject completed the initial version of the FUND-R while thinking about the dialogue that had just been carried out. Each item was rated on a 5-point Likert scale from 1 (*strongly disagree*) to 5 (*strongly agree*).

There are at least two reasons why we defined in our instruction what an internal dialogue is and triggered a specific dialogue. According to Oleś (2009), people differ in the intensity of their internal dialogues and are aware of these dialogues to different degrees. Therefore, firstly, we decided that at the stage of method development and its validation, a more precise way of identifying the functions of dialogue and their mutual relationships will be the evaluation of one specific important internal dialogue chosen by the participant than the evaluation of a general internal dialogue. Secondly, we assumed that the large group of people participating in our study would allow us to capture representative configurations of dialogue functions present in the population.

### **Data analysis**

First, we explored the database to identify atypical cases or missing values based on Mahalanobis distance. There were no atypical and missing values in the data set. Then, we calculated the measures of central tendency and variability, skewness, and kurtosis.

Next, we divided the whole sample ( $N=786$ ) into two subsamples to explore (learning subsample) and to confirm (testing subsample) the factor structure. We performed a principal component analysis (PCA), followed by varimax rotation on the learning subsample ( $n=248$ ). We verified the assumptions of application with the KMO measure of sampling adequacy (Kaiser, 1970) and Bartlett's test of sphericity. We established a factor loading  $> .40$ , an alternative factor loading  $< .30$ , and a difference of at least  $.20$  between the primary and alternative factor loadings as criteria for factors' item retention, thus omitting those items that did not meet these criteria (Howard, 2016).

In order to confirm the internal structure of the FUND-R we conducted CFA using AMOS (SPSS Version 25, IBM Corp., Armonk, NY, United States). We performed



CFA on the testing subsample ( $n=538$ ) using the maximum likelihood estimation method. We evaluated the goodness of fit of the model by applying different indices: chi-square statistic, the standardized root mean square residual (SRMR), the root mean square error of approximation (RMSEA), and two modification indices—Tucker Lewis index (TLI) and comparative fit index (CFI). We set the TLI and CFI cutoff values as  $> .90$  to get a good adjustment. We set the RMSEA and SRMR cutoff values as  $< .08$  to obtain an acceptable adjustment (Hu & Bentler, 1999).

We analyzed internal consistency using Cronbach's  $\alpha$  and Guttman's  $\lambda_6$ ; we also calculated the corrected item-total correlation and Cronbach's  $\alpha$  if the item was removed. We analyzed intercorrelations of the FUND-R subscales and used one-way analysis of variance (ANOVA) to determine whether there are any statistically significant differences on the means of the FUND-R subscales between groups differing on how they assessed the situation discussed in their internal dialogue and the type of interlocutor in their internal dialogue.

## Results

### Exploratory factor analysis

All items included in the initial FUND-R showed a non-normal distribution ( $p < .001$ ). All the coefficients of skewness were around one (from  $-1.28$  to  $1.15$ ). Thus, the skewness was not strong enough to require further attention (George & Mallery, 2010). The values of kurtosis were also within the acceptable range.

PCA with varimax rotation helped to establish the factorial structure of the FUND-R. PCA was preceded by checking the sample adequacy (KMO = .90; Bartlett's test of sphericity  $\chi^2(1035) = 5951.78$ ,  $p < .001$ ; the lowest MSAs  $\geq .44$ ). Dimensionality analysis based on the Kaiser criterion (eigenvalue  $> 1$ ) showed the nine factors to be separated; it explained 62.27% of variance in the data pool. We excluded three factors because they contained only one or two items or their loadings were  $< .40$ . In each of the six factors left, we selected four items with the highest factor loadings. These fixed number of six factors, with 24 items, explained 54.70% of the total variance. Thus, at this step, we agreed that the FUND-R comprises six factors, with four items each: (1) factor 1, *Analyzing*, explained 28.21% of the total variance; (2) factor 2, *Bonding*, explained 8.83% of the total variance; (3) factor 3, *Self-Knowing*, explained 7.31% of the total variance; (4) factor 4, *Fantasizing*, explained 3.90% of the total variance; (5) factor 5, *Ruminating*, explained 3.67% of the total variance; and (6) factor 6, *Testing*, explained 2.78% of the total variance. Table 2 includes the 24 items of the FUND-R, their factor loadings, eigenvalues, and the percentage of variance explained by each of the factors. We then applied CFA to confirm the factor structure obtained through PCA.

### Confirmatory factor analysis

We used CFA to confirm the factorial structure of the FUND-R. Estimation was carried out by means of the maximum likelihood method. First, we estimated the fit of the 24-item model (Model 1), according to the factorial structure obtained from PCA. The  $\chi^2$  test indicated insufficient fit ( $\chi^2(237, N=538) = 750.11$ ,  $p < .001$ ).

**Table 2.** Exploratory factor analysis showing 24 items and factor loadings from the pattern matrix.

No.	Item	F1	F2	F3	F4	F5	F6
1 (27)	... makes decision-making easier, allows me to see the pros and cons of various solutions	<b>.77</b>	.05	.17	.07	-.12	.16
2 (6)	... helps me understand which solution to the problem will be the best	<b>.69</b>	.13	.05	-.14	-.16	.11
3 (18)	... gives me a sense of control over the situation	<b>.66</b>	.18	.01	.11	-.03	.17
4 (22)	... helps me realize my own mistakes	<b>.66</b>	.02	.38	.11	.08	.16
5 (15)	... makes me feel needed	.06	<b>.83</b>	.09	.20	-.05	-.02
6 (37)	... gives me the feeling that I have someone to live for	.06	<b>.80</b>	.11	.04	.09	.11
7 (26)	... allows me to experience closeness with other people	.08	<b>.79</b>	.03	.07	.07	.04
8 (3)	... makes me feel like there is someone I can count on	.15	<b>.75</b>	.02	.06	-.26	.03
9 (12)	... is an attempt to explain who I really am	.21	.07	<b>.75</b>	.17	-.08	-.01
10 (45)	... is a way to determine my identity	.13	.25	<b>.73</b>	.25	.02	.21
11 (34)	... is a way to find out the truth about me and my life	.34	.22	<b>.61</b>	.24	.16	.15
12 (44)	... makes my self-assessment easier	.28	.19	<b>.60</b>	.07	-.04	.26
13 (20)	... allows me to escape from the humdrum reality	.08	.14	.16	<b>.77</b>	.22	-.03
14 (42)	... brings me into a better world	.07	.31	.12	<b>.73</b>	.07	.13
15 (31)	... allows me to let the dream take flight	.20	.06	.15	<b>.70</b>	.01	.16
16 (41)	... allows me to say what I can't or don't want to say in a real situation	.16	.11	.24	<b>.50</b>	.13	.46
17 (35)	... makes me feel worse	-.08	-.03	-.07	.09	<b>.81</b>	.02
18 (24)	... means "tearing wounds open"	.00	-.09	.04	.17	<b>.74</b>	-.05
19 (2)	... makes me tired	-.06	-.11	.14	-.15	<b>.70</b>	.04
20 (46)	... dwells on a subject in vain	-.23	-.01	.00	.24	<b>.67</b>	-.06
21 (39)	... is a way to test a possible scenario of future events	.35	.05	.11	.10	-.07	<b>.69</b>
22 (40)	... helps me find arguments to convince someone	.40	.05	-.01	.11	-.04	<b>.61</b>
23 (29)	... helps me test the strength of my arguments	.46	.12	.21	-.05	.11	<b>.53</b>
24 (38)	... suggests positive behaviors that are worth repeating in a real situation	.31	.19	.32	.02	-.24	<b>.48</b>
	Eigenvalues	12.97	4.06	3.36	1.80	1.69	1.28
	% of variance	28.21	8.83	7.31	3.90	3.67	2.78
	Cumulative variance	28.21	37.04	44.35	48.25	51.92	54.70

Note. These results are based on principal component analysis with varimax rotation. The numbers of items from the initial Functions of Dialogues-Revised Questionnaire (FUND-R) version are presented in parentheses.

The normalized  $\chi^2$  (CMIN/df = 3.165) was acceptable (<5; Wheaton et al., 1977). The RMSEA (.063, 95% CI [.058, .069]) and SRMR (.067) demonstrated satisfactory fit. The CFI (.905) was > .90, but TLI was only .889. To check whether we could improve the model fit, we inspected the modification indices. This indicated that Testing loaded item 41 (“... allows me to say what I can’t or don’t want to say in a real situation”), which was contrary to our expectation, because we expected item 41 to be a part of the Fantasizing factor. Thus, we introduced a cross-loading between Testing and item 41 into the model (Model 2 Adj.). After introducing this cross-loading, the model fit indices were better than those of the base model (CMIN(236) = 679.14,  $p < .001$ ; CMIN/df = 2.878; SRMR = .061; RMSA = .059, 95% CI [.054, .064]; TLI =

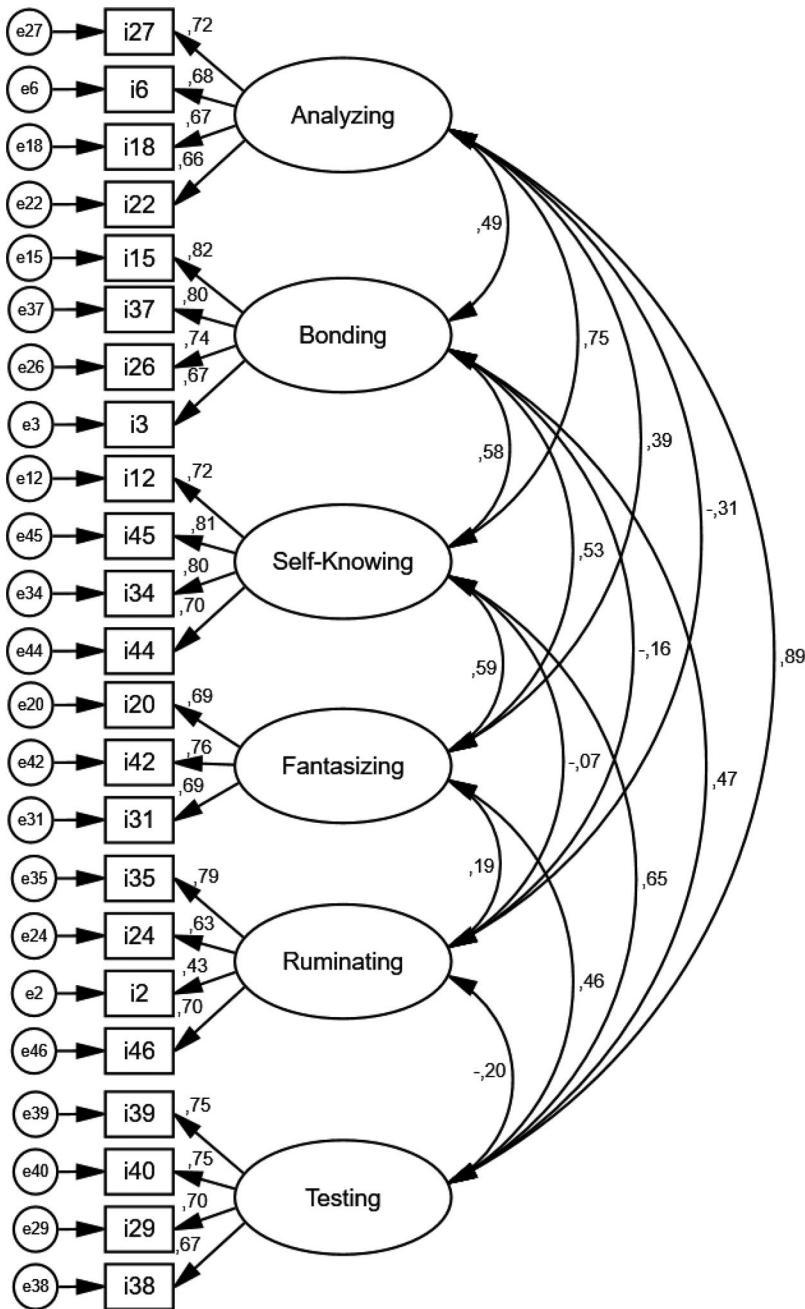
**Table 3.** Results of confirmatory factor analyses of alternative solutions of the Functions of Dialogues–Revised Questionnaire (FUND-R).

Solution	<i>n</i>	$\chi^2$ (df)	<i>p</i>	$\chi^2$ /df	RMSEA [95% CI]	TLI	CFI	SRMR
Model 1 24-items	538	750.11 (237)	< .001	3.165	.063 [.058, .069]	.889	.905	.067
Model 2 Adj. 24-items	538	679.14 (236)	< .001	2.878	.059 [.054, .064]	.904	.918	.061
Model 3 23-items	538	616.44 (215)	< .001	2.867	.059 [.054, .064]	.908	.922	.061

.904; and CFI = .918). However, the cross-loading was relatively high for item 41 (.42), higher than its own loading (.27), a finding that proves item 41 is not a reliable indicator for Fantasizing. We decided to remove item 41 from the scale and estimate the fit of the 23-item model (Model 3). The global goodness-of-fit indices between the model and data were satisfactory. Although the chi-square test indicated an insufficient fit ( $\chi^2$  (215,  $N=538$ ) = 616.44,  $p < .001$ ), it is clear that this statistic is too restrictive and, in big samples, very often indicates the necessity of rejecting the model (Bentler & Bonett, 1980). The normalized  $\chi^2$  (CMIN/df = 2.867) was < 5 (Wheaton et al., 1977). The RMSEA .059 (95% CI [.054, .064]) and SRMR (.061) demonstrated a satisfactory fit. As per the strategy of presenting goodness-of-fit indices, introduced by Hu and Bentler (1999), if RMSEA is  $\leq .06$  and SRMR is  $\leq .09$  or lower, the model fit should be accepted. Table 3 includes the CFA results of alternative solutions for the FUND-R. Figure 1 presents graphical representation of the final 23-item factor structure model.

To conclude, the FUND-R has a six-factor structure comprising six subscales, which are interpreted as follows.

- Analyzing—By analyzing the situation, the internal dialogue allows one to see one's own mistakes, helps ones to see the pros and cons of different solutions, and thus allows one to understand which solution will be the best; it facilitates decision-making and gives one a feeling of greater control over the situation.
- Bonding—The dialogue allows one to experience a closeness with another person who is currently not there; it makes one feel that there is a person one can count on or it makes the dialoguing person feel needed and gain the feeling that they have someone for whom they can live.
- Self-Knowing—The dialogue is a form of searching for the truth about oneself and one's own life; it helps to assess oneself; it is a way of defining one's identity.
- Fantasizing—The dialogue allows one to give in to one's dreams, takes the dialoguing person to a better world, sometimes being an escape from the routine or hardships of everyday life.
- Ruminating—The dialogue is a form of rumination: The problem undertaken in the dialogue is unsuccessfully explored, which tires the person and worsens their well-being.
- Testing—The dialogue helps to test the strength of one's own arguments; it suggests positive behaviors that are worth repeating in a real situation; it is a way to test a possible scenario of future events; it helps to find arguments to convince someone.



**Figure 1.** Confirmatory factor analysis of the six-factor model for the Functions of Dialogues–Revised Questionnaire (FUND-R). See Table 1 for the items that correspond to the labels.

**Internal consistency**

We assessed the FUND-R reliability using Cronbach’s  $\alpha$  and Guttman’s  $\lambda_6$  (Sijtsma, 2009), because Cronbach’s  $\alpha$  is neither a measure of how well a test measures one thing nor the greatest lower bound for reliability (Revelle & Condon, 2019). Table 4 shows the coefficients estimated in Study 1 and in Study 2 presented further.

**Table 4.** Reliability indicators for the Functions of Dialogues–Revised Questionnaire (FUND-R) subscales.

FUND-R	<i>k</i>	Study 1 ( <i>N</i> =786)				Study 2 ( <i>N</i> =341)			
		<i>M</i>	<i>SD</i>	$\alpha$	$\lambda_6$	<i>M</i>	<i>SD</i>	$\alpha$	$\lambda_6$
Analyzing	4	3.89	0.78	.78	.73	3.73	0.62	.79	.75
Bonding	4	3.24	0.93	.85	.81	3.30	0.82	.84	.80
Self-Knowing	4	3.57	0.94	.84	.80	3.48	0.71	.83	.79
Fantasizing	3(4)	3.17	1.07	.77	.69	3.51	0.82	.83	.80
Ruminating	4	2.50	0.89	.73	.69	2.62	0.76	.80	.75
Testing	4	3.79	0.83	.79	.75	3.62	0.83	.79	.74

Note. The number of Fantasizing subscale items in Study 2 is given in parentheses.

All Cronbach's  $\alpha$ s were  $\geq .73$  and all Guttman's  $\lambda_6$ s were  $\geq .69$ . Thus, the FUND-R subscales' reliability is acceptable (Revelle & Condon, 2019). The corrected item–total correlations were between .31 and .42 (Analyzing), .40 and .54 (Bonding), .41 and .55 (Self-Knowing), .35 and .37 (Fantasizing), .31 and .43 (Ruminating), and .30 and .45 (Testing). Removing any item did not improve the subscales' reliability, except for the Ruminating subscale (removing an item, which in the initial FUND-R version was numbered item 2, slightly increased Cronbach's  $\alpha$  to .75).

### Convergent validity

We examined the convergent validity of the FUND-R using (1) intercorrelations of the FUND-R subscales; (2) comparison of the FUND-R subscale scores among groups depending on how they assessed the situation (positive, negative, or ambivalent) in their internal dialogue; and (3) comparison of the FUND-R subscale scores among groups depending on the type of interlocutor in their internal dialogue (oneself, another person, and God). The analysis of intercorrelations was conducted on the testing subsample ( $n = 538$ ).

The remaining two analyses were carried out on a group of 589 and 590 people, respectively, because such number of respondents in Study 1 completed the qualitative data necessary to make the required categorizations.

We expected that the validity of the FUND-R would be confirmed by an intercorrelation pattern, in which the subscales measuring adaptive functions (including Analyzing, Bonding, Self-Knowing, and Testing) correlate positively with each other and negatively (or do not correlate) with the non-adaptive function of Ruminating. We also hypothesized that the Fantasizing subscale can measure adaptive or non-adaptive functions depending on the wider context of personality traits or type of situation to which they refer (Sánchez-Bernardos et al., 2015), so it was difficult to predict how this function would correlate with the others.

Considering the evaluation of the situations discussed in internal dialogues, we assumed that the validity of the FUND-R would be confirmed by the following pattern of results: an internal dialogue referring to negative situation fulfills Ruminating to a higher degree than a dialogue referring to positive situation; and an internal dialogue referring to a positive situation fulfills Bonding to a higher degree than the dialogue referring to negative situation. Given the interlocutor type, the validity of the FUND-R would be confirmed when Bonding is significantly lower in dialogues with oneself than in dialogues with other person or God; and

**Table 5.** Intercorrelations among the Functions of Dialogues–Revised Questionnaire (FUND-R) subscales.

FUND-R	Analyzing	Bonding	Self-Knowing	Fantasizing	Ruminating
Analyzing	–				
Bonding	.55***	–			
Self-Knowing	.62***	.56***	–		
Fantasizing	.31***	.43***	.47***	–	
Ruminating	–.23***	–.18***	–.07	.13**	–
Testing	.71***	.48***	.55***	.36***	–.16***

Note. This analysis was conducted on the testing subsample ( $n = 538$ ).  
 \*\*\* $p < .001$ , \*\* $p < .01$ .

**Table 6.** Comparison of the functions of internal dialogues (measured by FUND-R) in positive, negative, and ambivalent situations.

FUND-R	Positive (P) $n = 139$		Negative (N) $n = 220$		Ambivalent (A) $n = 230$		$F(2, 586)$	$p$	Scheffe test		
	$M$	$SD$	$M$	$SD$	$M$	$SD$			P:N	N:A	P:A
Analyzing	4.07	0.73	3.86	0.73	3.98	0.83	3.14	.044	.052		
Bonding	3.02	1.15	2.58	1.05	2.92	1.13	8.66	.001	.001	.005	
Self-Knowing	3.61	1.03	3.41	0.95	3.67	0.94	4.43	.012		.016	
Fantasizing	3.15	1.11	3.03	1.15	3.22	1.11	1.65	.194			
Ruminating	1.97	0.77	2.59	0.92	2.47	0.93	21.57	.001	.001		.001
Testing	4.04	0.73	3.78	0.78	3.81	0.87	4.98	.007	.012		.031

Self-Knowing is significantly higher in dialogues with oneself than in dialogues with another person.

Table 5 shows the correlational analysis results. As we expected, Analyzing, Bonding, and Testing correlated positively with all other subscales except Ruminating, with which they correlated negatively. Self-Knowing correlated positively with all other subscales except Ruminating, with which it did not correlate. As we have previously mentioned, the Analyzing, Bonding, Testing, and Self-Knowing subscales measure adaptive functions, whereas the Ruminating subscale measures non-adaptive functions of inner dialogues. Hence, we consider that the pattern of correlations confirmed the scale validity. Fantasizing correlated positively with all other subscales, both adaptive and non-adaptive. This finding supports our predictions that this subscale, depending on the context, can measure adaptive as well as non-adaptive functions of internal dialogues. It is worth mentioning that two out of three items in this subscale (item 20: “... allows me to escape from the humdrum reality”; item 31: “... allows me to let the dream take flight”), come from the Exploration subscale (FUND), which in line with our previous remarks (see Introduction) can measure both adaptive and non-adaptive functions. For example, when a person could deal constructively with a problem but instead escapes into an unreal world, this activity is non-adaptive. On the other hand, fantasizing can be a relaxing and/or creative activity (item 42: “... brings me into a better world”).

Table 6 presents the FUND-R subscale scores for people whose internal dialogue referred to positive, negative, or ambivalent situations. As we expected, the ANOVA indicated that Ruminating was the lowest in a positive situation and significantly lower than in negative and ambivalent situations ( $ps = .001$ ). At the same time, Bonding was

significantly lower in a negative compared with a positive ( $p = .001$ ) or an ambivalent ( $p = .005$ ) situation. Thus, these findings seem to confirm the validity of the FUND-R. Analogical analyses conducted separately in groups of women and men (Table 6A and 6B in the [supplementary material](#)) also confirmed our expectations: Ruminating was fulfilled to a higher degree by internal dialogues referring to negative than positive situations; and Bonding was fulfilled to a higher degree by dialogues referring to positive than negative situations. When analyzing the whole group we also found that Self-Knowing was significantly higher in ambivalent situations than in a negative ones ( $p = .016$ ). Testing was the highest in a positive situation and significantly higher than in negative ( $p = .012$ ) and ambivalent ( $p = .031$ ) situations. We also observed a tendency that Analyzing was higher in a positive compared with a negative situation ( $p = .052$ ). These outcomes show that situations the participants consider to be positive (not negative) are most strongly related to such adaptive functions like analyzing or testing. This suggests that people in their internal (imagined) dialogues quite often treat positive situations as model situations, which after analyzing and testing, can be implemented.

Table 7 presents the FUND-R subscale scores for people whose internal dialogues were conducted with three types of interlocutors, namely: oneself, another person, and God. It should be mentioned that for “another person,” we collected three categories of interlocutors: someone I know personally ( $n=199$ ); someone real I do not know personally ( $n=19$ ), and someone imagined ( $n=26$ ). We merged these three categories because each of them referred to the other, while the last two categories were relatively few in number. The category “a deceased person that I knew personally” was not represented in any of the respondents’ internal dialogues. As we expected, the ANOVA indicated that the Bonding function was significantly lower in dialogues with oneself compared with dialogues with another person or God ( $ps = .001$ ). Moreover, Bonding was higher in dialogues with God than with another person ( $p = .011$ ). In line with our expectations, Self-Knowing was significantly higher in dialogues with oneself than in dialogues with another person ( $p = .001$ ). We also observed a tendency that Self-Knowing was higher in dialogues with God than with another person ( $p = .057$ ). These findings seem to confirm the validity of the FUND-R. Analogical analyses conducted separately in groups of women and men (Table 7A and 7B in the [supplementary material](#)) also confirmed our expectations: Bonding was significantly lower in dialogues with oneself than in dialogues with other person or God; and Self-Knowing was significantly higher in

**Table 7.** Comparison of the functions of internal dialogues (measured by FUND-R) depending on the type of the internal interlocutor.

FUND-R	Oneself (O)		Another person (A)		God (G)		$F(2, 587)$	$p$	Scheffe test		
	$n = 307$		$n = 244$		$n = 39$				O:A	A:G	O:G
	$M$	$SD$	$M$	$SD$	$M$	$SD$					
Analyzing	4.05	0.73	3.86	0.80	3.84	0.86	4.48	.010	.019		
Bonding	2.49	0.98	3.09	1.15	3.64	1.07	34.05	.001	.001	.011	.001
Self-Knowing	3.71	0.91	3.34	1.01	3.74	1.02	10.83	.001	.001	.057	
Fantasizing	3.28	1.07	2.94	1.18	3.23	1.07	6.47	.002	.001		
Ruminating	2.45	0.91	2.37	0.93	2.19	0.91	1.63	.197			
Testing	3.91	0.77	3.82	0.82	3.67	1.04	1.88	.154			



dialogues with oneself than in dialogues with another person. Taking the whole group into account we also found that Analyzing was higher in dialogues with oneself than in dialogues with another person ( $p = .019$ ). Similarly, Fantasizing was significantly higher in dialogues with oneself than in dialogues with others ( $p = .001$ ).

## Study 2

The aim of Study 2 was to generate data to further assess the validity of the FUND-R. First, similarly to Study 1, in Study 2 we conducted CFA to confirm the internal structure of the FUND-R after one of the three experimental items was added interchangeably to the Fantasizing subscale which was shorter than the other subscales. Additionally, we assessed the FUND-R reliability with Cronbach's  $\alpha$  and Guttman's  $\lambda_6$  (Sijtsma, 2009). We also calculated Cronbach's  $\alpha$  if the item was removed. We assessed convergent validity using intercorrelations of the FUND-R subscales and Pearson correlations between the FUND-R subscales and the external variables (personality traits, self-attentiveness, and coping) previously selected as criterion variables.

## Method

### Participants

In the sample of 341 Poles, 178 were female and 163 were male. The age range was 25–54 ( $M = 40.03$ ,  $SD = 8.64$ ) years. All the respondents were users of the Ariadna online research panel.

### Procedure and measures

The data were collected through a web survey. The procedure was approved by the Research Ethics Committee at the Institute of Psychology at the authors' university. The participants provided informed consent by completing the survey.

Each participant in Study 2 was given the following instruction to complete the FUND-R:

People often discuss in their thoughts with themselves or have imaginary conversations with others (e.g., friend, beloved person, enemy, God, etc.). This allows him/her to better understand the situation, find a better solution to the problem, prepare for the anticipated events, experience bonds, etc. The following statements describe what people might think about their internal dialogues. Please recall now the last situation in which you imagined a conversation with someone or had a dialogue with yourself. Then read each of the statements below carefully and indicate the answer that best expresses your thinking about the imagined/internal dialogue you recalled. Use the following scale: 1—*strongly disagree*; 2—*disagree*; 3—*no opinion*; 4—*agree*; 5—*strongly agree*.

This instruction, like the instruction in Study 1, refers to a specific dialogue. However, in Study 1, the issue addressed in the dialogue was supposed to be important, whereas in Study 2 no such requirement was made. Additionally, in Study 1, the respondent was asked to conduct an internal dialogue before completing the FUND-R, while in Study 2 he/she was only asked to recall his/her last internal

dialogue. The instruction in Study 2 was simplified, and the change was due to our assumption that FUND-R can measure the functions of different internal dialogues, regardless of the importance of the issue discussed in them.

As a result of the analyses of Study 1, only 3 items remained in the Fantasizing subscale, while in other subscales there were 4 items. To remove this disproportion we decided to generate three new experimental items, include them in the 23-item FUND-R in Study 2, and test the FUND-R properties with each of these items. The three items were as follows: "... lets me break away from the routine of my life" (1E), "... lets me forget about the strains of life" (2E), and "... relaxes me" (3E).

Apart from FUND-R, participants were asked to fill in three other questionnaires, which are described below.

### ***Big Five Markers—International Personality Item Pool (IPIP-BFM-20)***

This is a shortened version of Lewis Goldberg's IPIP-BFM-50 questionnaire, which contains 50 items. The IPIP-BFM-20 questionnaire contains 20 items, four for each scale. The respondent gives an answer on a 5-point Likert scale from 1 (*describes me completely incorrectly*) to 5 (*describes me completely correctly*). The IPIP-BFM-20 questionnaire measures five personality traits in the lexical tradition: extroversion, agreeableness, conscientiousness, emotional stability, and intellect. We used a Polish adaptation of the IPIP-BFM-20 (Topolewska et al., 2014). In this study, Cronbach's  $\alpha$  for the subscales were as follows: .83 for Extroversion, .67 for Agreeableness, .70 for Conscientiousness, .78 for Emotional Stability, and .70 for Intellect.

### ***The Rumination-Reflection Questionnaire (RRQ)***

This is a measure designed by Trapnell and Campbell (1999), who proposed a distinction between rumination and reflection. The RRQ comprises 24 items, to which responses are given using a 5-point Likert scale ranging from 1 (*strongly disagree*) to 5 (*strongly agree*). The items are assigned to two scales concerning heightened attention to the self: (1) Rumination measures self-attentiveness motivated by perceived threats, losses, or injustices to the self (12 items); (2) Reflection measures self-attentiveness motivated by curiosity or epistemic interest in the self (12 items). We used a Polish adaptation of the RRQ (Słowińska et al., 2014). In this study, Cronbach's  $\alpha$  for the Rumination subscale was .83, and for the Reflection subscale it was .76.

### ***The Coping Inventory of Stressful Situations (CISS)***

This questionnaire was designed by Endler and Parker (1990). The CISS comprises 48 statements about different behaviors that people can exhibit in stressful situations. The respondent assesses items using a 5-point Likert scale ranging from 1 (*never*) to 5 (*very often*). There are three subscales: (1) Emotion-oriented coping (16 items); (2) Task-oriented coping (16 items); and (3) Avoidance-oriented coping (16 items). Avoidance-oriented coping comprises of two subscales: Engaging in substitutive activities, and Seeking social contacts. We used a Polish adaptation of the CISS (Szczeplaniak et al., 1996). In this study, Cronbach's  $\alpha$  for the subscales was as follows: .92 for Emotion-oriented coping, .90 for Task-oriented coping, .86 for Avoidance-oriented coping, .83 for Engaging in substitutive activities, and .80 for Seeking social contacts.

## Results

### Confirmatory factor analysis

The internal structure of the FUND-R was further confirmed after one of the three experimental items was added interchangeably to the Fantasizing subscale. First, item 1E was added and it was the best fitting 24-items model (RMSEA = .067, TLI = .90, CFI = .91, SRMR = .058). When item 2E (RMSEA = .072, TLI = .88, CFI = .90, SRMR = .064) or 3E (RMSEA = .074, TLI = .87, CFI = .89, SRMR = .066) was added, the model presented less satisfactory values of fit indices. Thus, 24-items solution with 1E item (“... lets me break away from the routine of my life”) was the one demonstrating satisfactory fit.

### Internal consistency

First, the reliability of the 3-item Fantasizing subscale was established and it was checked how this reliability changes when we add one of the experimental items. For the 3-item Fantasizing subscale, the reliability was  $\alpha = .81$  and did not change when 2E or 3E items were added. However, when item 1E was added, the reliability increased to  $\alpha = .83$ . Taking this fact into account, and abovementioned CFA results, the item: “... lets me break away from the routine of my life” was included in the final version of the Fantasizing subscale. All further analyses took this item into account. Then, the reliability indicators for the remaining subscales were calculated. Both the Cronbach's  $\alpha$  and Guttman's  $\lambda_6$  coefficients obtained in Study 2 were  $> .70$  (Table 4, Study 2). Thus, the FUND-R subscales' reliability is acceptable (Revelle & Condon, 2019). Removing any item did not improve the subscales' reliability, except for the Analyzing subscale (removing item 8 slightly increased Cronbach's  $\alpha$  to .81).

### Convergent validity

First we assessed convergent validity using intercorrelations of the FUND-R subscales (Table 8). Similarly to Study 1 we found that the subscales measuring adaptive functions (Analyzing, Bonding, Self-Knowing, and Testing) correlated positively with each other. The non-adaptive function of Ruminating did not correlate with any of them. It also turned out that Fantasizing subscale, which potentially measures both adaptive and non-adaptive functions, in Study 2 correlated positively with all the subscales measuring adaptive functions and did not correlate with the non-adaptive function of Ruminating. Similar results were found in groups of men and women analyzed separately. The only exception in the female group was that Analyzing correlated negatively with Ruminating (Table 8A in the supplementary material). Thus, the validity of the FUND-R was reconfirmed by the aforementioned intercorrelation pattern. Additionally, we examined the convergent validity of the FUND-R using the correlations between the FUND-R subscales and the results of the other scales measuring personality traits (IPIP-BFM-20), self-attentiveness (RRQ), and coping (CISS). This choice of methods can be puzzling: the last three questionnaires measure “general” tendencies, whereas the FUND-R was intended to measure the functions of a specific dialogue. However, it should be added that engaging in internal dialogues is treated as a trait-like personality disposition and measured in accordance with the individual differences

**Table 8.** Descriptive statistics and bivariate correlations among the FUND-R, IPIP-BFM-20, RRQ, and CISS subscales.

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	
1 Analyzing	–																		
2 Bonding	.52***	–																	
3 Self-Knowing	.73***	.68***	–																
4 Fantasizing	.50***	.52***	.51***	–															
5 Ruminating	-.09	.02	-.02	.02	–														
6 Testing	.80***	.38***	.65***	.48***	-.01	–													
7 E	.12*	.21***	.14**	.05	-.16**	.08	–												
8 A	.26**	.20**	.28**	.12*	-.20***	.22***	.37***	–											
9 C	.11*	.11*	.09	.05	-.14**	.12*	.14*	.18**	–										
10 ES	-.04	-.10*	-.12*	-.20***	-.43***	-.03	.35***	.08	.17***	–									
11 I	.17**	.02	.20***	.05	-.35***	.17***	.39***	.38***	.17**	.27***	–								
12 Rumination	.12*	.04	.10	.23***	.36***	.15**	-.26***	-.09	-.20***	-.62***	-.18**	–							
13 Reflection	.42***	.17**	.41***	.26***	-.07	.38***	-.04	.22***	.00	-.13*	.33***	.25***	–						
14 Task	.44***	.19***	.29***	.20***	-.11*	.43***	.23***	.20***	.31***	.17**	.34***	-.03	.24***	–					
15 Emotion	.17**	.17**	.21***	.30**	.44***	.17**	-.20***	-.13*	-.24**	-.68***	-.26***	.59***	.19**	.02	–				
16 Avoidance	.22***	.40***	.33***	.27***	.09	.13*	.34***	.14*	-.10	-.05	.02	.01	.21***	.27***	.88***	–			
17 Substitute	.10	.29***	.23***	.24**	.22***	.04	.16**	-.03	-.21***	-.14**	-.12*	.05	.02	.01	.35***	.37***	–		
18 Contact	.29***	.38***	.32***	.19***	-.15**	.18**	.49***	.35***	.11*	.13*	.23***	-.09	.13*	.42***	-.01	.74***	.255	–	
M	3.73	3.30	3.48	3.47	2.62	3.62	3.00	3.71	3.60	2.84	3.59	3.29	3.19	3.63	2.89	2.76	2.55	3.06	–
SD	0.62	0.82	0.71	0.78	0.76	0.63	0.88	0.63	0.73	0.78	0.66	0.74	0.65	0.51	0.67	0.59	0.71	0.77	0.77

Note. E = Extroversion, A = Agreeableness, C = Conscientiousness, ES = Emotional Stability, I = Intellect, Task = Task-oriented coping, Emotion = Emotion-oriented coping, Avoidance = Avoidance-oriented coping, Substitute = Engaging in substitutive activities, Contact = Seeking social contacts.

\*\*\*  $p < .001$ , \*\* $p < .01$ , \* $p < .05$ .

approach (Oleś, 2009). In that context, we assumed that specific dialogue and its functions can be rooted in a more general tendency to engage in certain types of dialogue.

Considering the definitions of constructs measured by the IPIP-20, the RRQ, and the CISS, we hypothesized that the validity of the FUND-R would be confirmed by the following pattern of results: Fantasizing correlates positively with Engaging in substitutive activities; Bonding correlates positively with Seeking social contacts and Extroversion; Self-Knowing correlates positively with Reflection; Ruminating correlates negatively with Emotional Stability and positively with Emotion-oriented coping, and Rumination; and Analyzing and Testing correlate positively with Task-oriented coping and Conscientiousness. The findings fully confirmed our expectations in the whole group (Table 8). Similar results were found in groups of men and women analyzed separately. The only exception in the male group was that Analyzing and Testing did not correlate with Conscientiousness (Table 8A in the [supplementary material](#)).

## Discussion

According to the dialogical self theory (Hermans, 2003; Hermans & Gieser, 2012) an internal dialogue is a normal and common phenomenon. People conduct internal dialogues in various situations, and their internal dialogues differ in terms of a topic and with whom they engage as an interlocutor. But why do people conduct internal dialogues? Previous studies (Oleś, 2009; Oleś et al., 2020; Puchalska-Wasyl, 2006, 2016a, 2016b; Puchalska-Wasyl et al., 2008) have shown that internal dialogues usually fulfill adaptive functions. They are a way of analyzing the past and preparing for future situations. They are a form of learning the truth about oneself, as well as a source of motivation, support, and a sense of connection with others. Finally, they can be a kind of relaxation or cathartic treatment of negative emotions, but sometimes they also take the form of non-adaptive rumination. Given that internal dialogues perform such complex and important functions, there was a need to develop a comprehensive, economical, and reliable measure that allows researchers to assess these various functions. In this context, we proposed the FUND-R.

We presented the development of the FUND-R, a self-report measure of six functions of internal dialogues: Analyzing, Bonding, Self-Knowing, Fantasizing, Ruminating, and Testing. We provided evidence for its psychometric qualities. The initial processes of item generation and refinement led to a 24 item FUND-R, whose psychometric characteristics can be considered satisfactory. The statistical fit to a six-factor model was acceptable in both presented studies. The FUND-R subscales showed good reliability, as confirmed by Cronbach's  $\alpha$  and Guttman's  $\lambda_6$  coefficients. These findings support the use of the FUND-R as a reliable measure of functions fulfilled by internal dialogues.

We also confirmed twice convergent validity of the questionnaire using intercorrelations of the FUND-R subscales. The subscales measuring adaptive functions (Analyzing, Testing, Bonding, and Self-Knowing) correlated positively with each other. At the same time they did not correlate or correlated negatively with the non-adaptive function of Ruminating. In addition, in Study 1 we found that the Fantasizing subscale correlated positively with all other subscales, both adaptive and non-adaptive, whereas

in Study 2 this subscale did not correlate with non-adaptive function of Ruminating. These findings support our predictions that the Fantasizing subscale, depending on the context, can measure adaptive as well as non-adaptive functions of internal dialogues. Namely, fantasizing can serve important functions in everyday life such as relaxing, breaking the routine of everyday life, and generating visions of desirable future. At the same time, fantasizing can “lead away” from the situation and allow some individuals to become absorbed in the worlds they create to such an extent that they can become detached from social interactions (Sánchez-Bernardos et al., 2015). This is consistent with our finding that Fantasizing is positively related to an avoidance-oriented coping mechanism, especially to engaging in substitutive activities (Endler & Parker, 1990).

The convergent validity of the FUND-R was also confirmed by stating the fact that in situations perceived by people as negative, the Ruminating function of internal dialogues is stronger than in situations considered as positive. This is understandable given that we found this function related to low emotional stability (a tendency to be anxious and worried) and to rumination defined as self-focused attention, which implies the continuous analysis of situations linked with the sense of threat, harm or loss (Trapnell & Campbell, 1999). As opposed to Ruminating, Bonding was stronger in positive compared with negative situations. At the same time the Bonding function was significantly stronger in dialogues with another person or God, than in dialogues with oneself, which results from the very essence of the bond. This is also consistent with the fact that Bonding correlates positively with extroversion (tendency to establish relationships) and coping by seeking social contacts (Endler & Parker, 1990; Topolewska et al., 2014). In turn, dialogues with oneself more strongly fulfilled the Self-Knowing function compared with dialogues with another person. This can be explained by the fact that, as we observed, Self-Knowing was positively associated with reflection defined by Trapnell and Campbell (1999) as self-attentiveness motivated by curiosity or epistemic interest in the self. Taken together, the analyses provided good evidence for convergent validity of the FUND-R subscales.

Since the instructions for the FUND-R used in Studies 1 and 2 were different, the question arises as to what instruction we recommend to other researchers who wish to use this method. In our opinion, the instruction from Study 2 can be considered standard:

People often discuss in their thoughts with themselves or have imaginary conversations with others (e.g., friend, beloved person, enemy, God, etc.). This allows him/her to better understand the situation, find a better solution to the problem, prepare for the anticipated events, experience bonds, etc. The following statements describe what people might think about their internal dialogues. Please recall now the last situation in which you imagined a conversation with someone or had a dialogue with yourself. Then read each of the statements below carefully and indicate the answer that best expresses your thinking about the imagined/internal dialogue you recalled. Use the following scale: 1—*strongly disagree*; 2—*disagree*; 3—*no opinion*; 4—*agree*; 5—*strongly agree*.

The above instruction asks to recall the last situation in which a respondent imagined a conversation with someone or had a dialogue with himself/herself. The instruction from Study 1 is recommended when the researcher wants to initiate an internal

dialogue on important issues in order to assess its functions with the FUND-R. The questions about whether the situation discussed in the dialogue was positive or negative or with whom the dialogue was conducted should then be omitted, as we needed the answers to these questions at the method validation stage, but they are not necessary to complete the FUND-R. Regardless of the instruction used, it is important to note that the FUND-R allows us to assess the intensity of the six internal dialogue functions (subscale scores), but the overall score is not calculated.

Our validation studies showed that different functions were more (or less) likely to be used for different dialogue targets (self, other, God). In this context, one might wonder if FUND-R could be used to determine how people use dialogues differently depending on the targets underlie them. It seems that the instruction we propose as standard can be modified to measure the functions of dialogues with a specific type of interlocutor. For example, to measure the functions of specific dialogues with God, it would be sufficient to replace the sentence "Please recall now the last situation in which you imagined a conversation with someone or had a dialogue with yourself" with the sentence "Please recall now the last situation in which you had a dialogue with God." Such modifications of the instruction will allow in future research to compare the functions of dialogues conducted with different types of interlocutors.

Both instructions used in our studies refer to specific internal dialogue. The question arises, however, whether one can use the FUND-R to measure the functions served by people's typical internal dialogues. We think it is worth testing in future research whether the structure and other features of the FUND-R remain intact when we try to make the measure "general." This could be done by changing the prompt to "My typical internal dialogues..." and the items to "allow," "help," "make," "are," etc., and by removing from the instructions the statement: "Please recall now the last situation in which you imagined a conversation with someone or had a dialogue with yourself. Then." Admittedly, at the stage of FUND-R development and its validation, the respondent was asked about the functions of one specific dialogue of his/her choice. At the same time, we made the assumption that a large group of participants in our study would allow us to capture representative configurations of dialogue functions occurring in the population. This assumption let us to believe that the use of FUND-R will be possible not only with regard to one specific dialogue, but also for dialogues conducted by a person in general. Additionally, what confirms this conviction is the fact that when testing convergent validity in Study 2, in line with our expectations, the functions of a specific dialogue correlated with general tendencies. This suggests that specific dialogue and its functions can be rooted in the more general tendency to engage in certain types of dialogue.

Of course, the pool of variables that could verify the validity of FUND-R has not been exhausted, which may be considered as a weakness of our research. For example, using the Self-Talk Scale (STS; Brinthaup et al., 2009), one would expect the Ruminating subscale of FUND-R to correlate positively with the Self-Criticism and Social Assessment subscales (STS), whereas Analyzing and Testing (FUND-R) to correlate positively with Self-Management (STS). In turn, Ruminative and Identity Dialogues as subscales of the Internal Dialogical Activity Scale-Revised (IDAS-R; Oleś et al., 2020) should positively correlate with Ruminating and Self-Knowing (FUND-R), respectively, whereas



Supportive and Social Dialogues (IDAS-R) should positively correlate with Bonding (FUND-R). As for the other subscales of IDAS-R (Confronting, Maladaptive, Spontaneous, and Perspective-Changing Dialogues), and Self-Reinforcement as a subscale of STS, they were not expected to play an important role for the validation of FUND-R. Adding the extra 56 items making up the IDAS-R and STS would have been an excessive burden for the respondents in Study 2, therefore the use of these methods was abandoned. However, these scales are worth using along with FUND-R in future research.

Another limitation of our studies concerns sampling. Both samples included adults from the Polish cultural context. In the future, it will be important to examine the reliability and validity of the FUND-R in other cultures.

### Conflict of interest

The authors declare no conflict of interest.

### Consent to participate

Informed consent was obtained from all individual participants included in the study.

### Ethical approval

All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards. The Research Ethics Committee at The John Paul II Catholic University of Lublin approved the study.

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## Appendix

### FUND-R items and their belonging to subscales.

No.	My internal dialogue...	Subscale
1	... allows me to escape from the humdrum reality	Fantasizing
2	...helps me understand which solution to the problem will be the best	Analyzing
3	... makes me feel like there is someone I can count on	Bonding
4	... is an attempt to explain who I really am	Self-Knowing
5	... makes me tired	Ruminating
6	... helps me test the strength of my arguments	Testing
7	... allows me to let the dream take flight	Fantasizing
8	... gives me a sense of control over the situation	Analyzing
9	... makes me feel needed	Bonding
10	... is a way to find out the truth about me and my life	Self-Knowing
11	... means "tearing wounds open"	Ruminating
12	... suggests positive behaviors that are worth repeating in a real situation	Testing
13	... brings me into a better world	Fantasizing
14	... helps me realize my own mistakes	Analyzing
15	... allows me to experience closeness with other people	Bonding
16	... makes my self-assessment easier	Self-Knowing
17	... makes me feel worse	Ruminating
18	... is a way to test a possible scenario of future events	Testing
19	... lets me break away from the routine of my life	Fantasizing
20	... makes decision making easier, allows me to see the pros and cons of various solutions	Analyzing
21	... gives me the feeling that I have someone to live for	Bonding
22	... is a way to determine my identity	Self-Knowing
23	... dwells on a subject in vain	Ruminating
24	... helps me find arguments to convince someone	Testing

Note. Each item is rated on a 5-point Likert scale: 1—*strongly disagree*; 2—*disagree*; 3—*no opinion*; 4—*agree*; 5—*strongly agree*.