The Psychological Flexibility Questionnaire (PFQ): Development, Reliability and Validity

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The Psychological Flexibility Questionnaire (PFQ): Development, Reliability and Validity

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Abstract

The article presents the development of the Psychological Flexibility Questionnaire (PFQ) on the basis of two studies. Reliability was demonstrated by a Cronbach alpha coefficient of 0.918. Convergent validity was confirmed by the findings of a positive correlation between the PFQ and three other related questionnaires.

Introduction

Psychological flexibility refers to the ability to be open, present-focused, and to change or persist in behavior according to changing internal and external circumstances. It is a complex psychological construct encompassing emotional, cognitive and behavioral aspects. Psychological flexibility has demonstrated longitudinal and cross-sectional connections to mental health and resilience, while a lack of psychological flexibility is associated with psychopathology (Galatzer-Levy, Burton, & Bonanno, 2012; Landstra, Ciarrochi, Deane, & Hillman, 2013). Psychological flexibility is simultaneously intrapersonal as well as interpersonal and enables adaptation to ever-changing circumstances. It is a way of expressing the individual’s wish to experience a variety of conditions in the real world, while staying tuned to the variety of “inner voices”. For an individual with a higher level of psychological flexibility, the quest for divergence and changes is an active one, and is perceived as a positive experience.

The importance of the concept to mental health led to vibrant scholarly interest in examining the correlations of psychological flexibility with other psychological traits and outcomes. At the same time, existing assessment tools of psychological flexibility either (1) measure traits that partially overlap with psychological flexibility, i.e., share some aspects with psychological flexibility but diverge in others, therefore, measuring in addition elements that are not directly related to flexibility; or (2) measure psychological flexibility only partially, leaving out important aspects of the trait. Furthermore, the lack of a consistent standard for measuring psychological flexibility makes it hard to link the findings of different studies of psychological flexibility and to integrate the various theoretical as well as empirical studies of psychological flexibility. Therefore, a measurement tool that measures psychological flexibility directly and comprehensively is needed. The current article presents the development of the Psychological Flexibility Questionnaire (PFQ) and evaluates its reliability and validity.

Literature review

Kashdan and Rottenberg (2010) define psychological flexibility as the ability to “recognize and adapt to various situational demands; shift mindsets or behavioral repertoires when these strategies compromise personal or social functioning; maintain balance among important life domains; and be aware, open, and committed to behaviors that are congruent with deeply held values”. Their definition captures two significant points about psychological flexibility: that it is a multifaceted trait, manifesting across many life domains, and that it is a dynamic that expresses itself through “repeated transactions between people and their environmental contexts” (Kashdan & Rottenberg, 2010; Williams, Ciarrochi, & Heaven, 2012).

The concept of psychological flexibility signals a move from “simple, universal accounts or theories of positive versus negative emotions” to a more contextual assessment of the functionality of a specific emotion or coping style. According to the concept, no single experience, emotion or coping style is optimal on its own: its usefulness is tested in relation to other experiences, emotions or coping styles the person possesses, as well as in relation to the specific circumstances that give it its context (Kashdan & Rottenberg, 2010). For example, when confronting someone who persistently is in denial regarding a pressing problem, anger and confrontational styles may be more functional than emotions and coping styles that are normally evaluated as more positive.

An individual’s potential for adaptation is inextricably related to the use of emotion-regulating techniques, i.e., increasing, maintaining and decreasing positive and negative emotions according to changing circumstances. The enhancement of flexible emotional patterns increases the potential for adaptation, which in turn would enable increased wellbeing (Matsumoto,

Since psychological flexibility allows access to a wide range of modes relating to internal and external demands, which in turn increases adjustment to changing reality, we can assume that psychological flexibility will be positively correlated with mental health and well-being. Indeed, studies repeatedly show that psychological flexibility improves mental health (e.g. McCracken, Gutierrez-Martinez, & Smyth, 2013), whether by enhancing the ability to distinguish and identify emotions and thoughts (Landstra, Ciarrochi, Deane, & Hillman, 2013) or by enhancing the ability to shift attention and focus according to changing circumstances (Galatzer-Levy, Burton, & Bonanno, 2012). Lack of flexibility, on the other hand, is associated with depression, anxiety, rumination, worry and inability to plan for distant goals (Kashdan & Rottenberg, 2010; Nolen-Hoeksema, Wisco, & Lyubomirsky, 2008). Since psychological flexibility is correlated with mental health, it is important to aim clinical interventions to enhance psychological flexibility.

In order to research psychological flexibility, reliable and valid assessment tools are needed. The development of concrete guidelines defining optimal translation of theoretical concepts into measurable units is a necessary bridge between theory and empirical study, vital for accumulation of knowledge (Sfard & Prusak, 2005; Stryker & Burke, 2000).

A review of the literature reveals that most studies that measure psychological flexibility employed one of two categories of measurement tools:

The first category includes tools that measure psychological flexibility only partially, such as the Openness Scale (Norman, 1963), Communication Flexibility Measure (Martin & Rubin, 1994), the Communicative Adaptive Scale of Duran (1983), the Rhetoric Sensibility Scale (Hart, Carlson, & Eadie, 1980), Coping Flexibility (Bonanno et al., 2004; Cheng, 2003) and The Cognitive Flexibility Scale (Martin & Anderson, 1998). The problem with these types of measurement tools is that they leave out important aspects of the trait (Williams, Ciarrochi & Heaven, 2012).

The second category includes tools that measure traits or concepts that partially overlap with psychological flexibility but also include facets unrelated to psychological flexibility, such as “decentering” (McCracken, Gutierrez-Martinez & Smyth, 2013), and the Acceptance and Action Questionnaire II (AAQ-II) tool (Landstra, Ciarrochi, Deane, & Hillman, 2013, p. 5). Likewise, Kashdan & Rottenberg (2010) list the different parallel concepts used to describe psychological flexibility: “psychological flexibility has for the past five decades traveled by a multitude of different names, among them ego-resiliency (Block, 1961), executive control (Posner & Rothbart, 1998), response modulation (Patterson & Newman, 1993), and self-regulation (Carver & Scheier, 2001; Muraven & Baumeister, 2000)”. The problem with these measures is that they measure concepts that may appear similar to flexibility, but include facets that are not relevant to psychological flexibility per se.

The present investigation is an attempt to develop an assessment tool that will measure psychological flexibility comprehensively and exclusively, and to test its validity and reliability.

Method

Design

There were three phases in the development of the PFQ: (1) production of a preliminary questionnaire, (2) construction of the PFQ and assessment of its reliability, and (3) assessment of the of its construct and convergence validity.

The Preliminary Questionnaire

We presented twenty senior and experienced health professionals consisting of psychiatrists, clinical psychologists and clinical social workers general descriptions of psychological flexibility that refer to its emotional, cognitive and behavioral aspects, as presented in the introduction. After they read these definitions, we asked these health professionals to compose a number of sentences that they felt would best illustrate the concept of flexibility. They were also asked to think of additional aspects of personal flexibility and briefly describe them. Their reports were summed up and a total of 60 sentences were subsequently compiled that reflected what our professional cohort believed to be the essence of the term “flexibility”.

Participants

All research subjects were undergraduate students in the school of behavioral and social sciences who gave their informed consent to participate in the study. The studies were approved by the Ethics Committee of the Tel Aviv-Yaffo Academic College.

Constructing the PFQ and assessing its reliability

The preliminary questionnaire constructed on the basis of the input from the health professionals included 60 items and was completed by 90 volunteers (graduate students of behavioral and social
sciences). They were asked to indicate to what extent each sentence characterized them on a Likert scale from 1-6, with 1 = not at all and 6 = very much. Forty items were deleted due to statistical considerations (as detailed in the results section).

Assessment of construct and convergent validity of the PFQ.

**Construct validity:** In order to test PFQ's construct validity, a 20-item questionnaire was given to a second sample of 107 graduate students of behavioral and social sciences. They were asked to describe how much each of the sentences characterized them on the same Likert scale as described above. The reliability index of the questionnaire resulted in alpha Cronbach = 0.918. These students also filled in 3 more similar questionnaires (described below) in order to further establish the validity of the tool.

Since there is no prior theory regarding data structure in regards to this emerging subject, we followed Henson and Roberts’ (2006) recommendations and used exploratory factor analysis to examine the structure of relationships between the items on the questionnaire. Varimax with Kaiser Normalization analysis was used to extract the factors.

**Convergent validity:** Convergent validity was examined by applying a comparison of the correlations between the PFQ and relevant questionnaires: Dogmatism (Adorno et al., 1950), Generalized Perceived Self-Efficacy (Jerusalem & Schwarzer, 1986; Leganger, Kraft, & Roysamb, 2000), and the Openness Scale (from the FFM developed by Scholte et al. (1997). Specifically, the scale for dogmatism that measures conventionalism, submission to authority, stereotypical thinking, etc., is supposed to relate negatively to the PFQ. A positive correlation is hypothesized between the PFQ and the other two measures, i.e., the Openness Scale (taken from the Five Factor Model, FFM (Scholte et al. 1997)), which measures the extent to which a person is open to new experiences; and the Generalized Self-Efficacy (GSE) scale, which is designed to measure perceived self-efficacy. Psychometric data of the questionnaires is presented below.

Results

**Construction of the PFQ and Assessment of Its Reliability**

The 60-item questionnaire was completed by 90 graduate students: average age of 25 years, 80% female, 2% self-defined as being religious, 71% unmarried, and 84% in their second or third (last) year of behavioral and social sciences studies. The initial reliability index of the questionnaire resulted in an alpha Cronbach score of 0.898. Forty items were deleted due to correlations lower than 0.436 with other items, leaving a revised 20-item questionnaire with an alpha Cronbach score of 0.918 for reliability.

**Assessment of Construct and Convergent Validity of the PFQ**

**Construct Validity:** In order to examine the PFQ’s construct validity, the 20 items were given to a second sample of 107 graduate students in behavioral and social sciences who were demographically similar to the other group of participants: average age of 25 years, 62% female, 4% self-defined as being religious, 70% unmarried. No significant differences were found between the demographic characteristics of both samples.

Factor analysis using a principal components extraction method was performed on the 20 items, identifying 5 factors with eigenvalues greater than one. 66.8% of the total variance was explained. Varimax with Kaiser Normalization was performed to facilitate interpretation of the components. The loadings on each component after rotation showed a fairly clear correspondence between items and components, as shown in Table 1. An examination of the items in each factor revealed that each of the factors related to a significant domain of flexibility as a concept. Two senior psychologists who independently defined these factors fully agreed on the essence of each factor. The factors were defined as follows: (1) positive perception of change: perceiving change as a positive challenge and having the ability to adapt to changes. (5 items); (2) characterization of the self as flexible: the person's self-perception as having a flexible personality, that is attentive and reactive to internal and external changes (5 items); (3) characterization of the self as open and innovative: the person's self-perception as open to and interested in new and different experiences (3 items); (4) a perception of reality as dynamic and changing: reality is seen as relative, changeable, and characterized by conflicts (4 items); (5) a perception of reality as multifaceted: believing that there is more than one way to understand or handle a situation (3 items).

**Convergent Validity.**

The convergence validity of the PFQ was examined by correlation coefficients (Table 2).
expected findings in two of the three questionnaires used in this study. The openness scale correlated positively with flexibility, meaning that a person who is open to new experiences is also flexible. Perceived self-efficacy related positively to flexibility, meaning that a person who perceived himself as being high in self-efficacy will also show high levels of flexibility. However, the rigidity scale failed to correlate significantly with flexibility. We explain this lack of correlation in the discussion.

Discussion

The purpose of the present research was to develop a psychological flexibility questionnaire (PFQ), which is short enough to allow convenient use (yet still be comprehensive), which and to evaluate its reliability and validity. After removing items due to correlations lower than 0.436 with other items, 20 items were left. The 20 items yielded 5 factors, each relating to a significant domain of psychological flexibility: (1) positive perception of change; (2) characterization of the self as flexible; (3) self-characterization as open and innovative; (4) a perception of reality as dynamic and changing, and (5), a perception of reality as multifaceted.

The 5 factors are complementary: a person who positively values change will tend to regard himself as being flexible and open to innovations, while, at the same time, regarding reality as dynamic, changing and multifaceted. Psychological flexibility encompasses a positive view of change, a cognitive ability to perceive changes paired with an emotional ability to contain and regulate their implications, and accordingly resort to a wide and renewing range of behavioral responses.

Separating the concept of flexibility into its different factors is theoretically important as it allows for a comprehensive understanding of the phenomenon and its components.

In testing for convergent validity, a positive correlation was found between the flexibility questionnaire and the openness scale (Scholte et al. 1997), and between the questionnaire and the generalized self-efficacy scale (Jerusalem & Schwarzer, 1986; Leganger, Kraft, & Roysamb, 2000). The questionnaire also demonstrates satisfactory inner consistency scores and construct validity scores. Based on the results of this research, we conclude that the Psychological Flexibility Questionnaire (PFQ) can successfully measure psychological flexibility directly and comprehensively.

Unexpectedly, no correlation was found between the flexibility questionnaire and the questionnaire on authoritarian/rigid personality (Adorno et al., 1950). A possible explanation for this is that the authoritarian/rigid personality questionnaire and the personality type to which it refers (i.e., authoritarian personality) are the products of a specific cultural background and circumstances that are not relevant to contemporary culture (Fukuyama, 1992).

It is important to note that the ability to be flexible and modify behavior does not indicate a lack of internal consistency (Funder, 2006). The opposite may be true: a strong and coherent sense of self may be needed to avoid fear of changes. Just as pluralism does not indicate anarchy, a multitude of internal voices does not contradict a consolidated personal identity. In fact, flexibility may enable a person to build resilience and to develop a "spine" suitable to changing conditions, facilitating better adjustment to a changing reality.

Life is full of developmental changes, such as entering adolescence or old age, becoming a parent, marriage or being promoted at work. Negative events such as a death of a close relative, divorce, losing a job and other significant losses are also unavoidable. Psychological flexibility can facilitate coping with phases and events - positive and negative - that life presents, functioning as a catalyst for processes of mental growth and development. (Bond & Bunce, 2003; Broenen, 2005; Eggerth, 2008; Hollenstein, 2006; Kashdan & Rottenberg, 2010; Landstra et al. 2013). Although the capacity for flexible coping appears early in life, it can be changed over time in response to environmental interactions (Bonanno & Mancini, 2008). Therefore, the development and improvement of personal flexibility can be regarded as important and as an appropriate therapeutic goal.

The PFQ is relevant and can be implemented in a number of settings: in therapeutic settings, it can help determine the suitability of different patients to different types of psychotherapies. For example, Hatchett & Han (2006) found that a patient's level of "openness" (as measured by the "openness" scale of the Big Five Theory) was positively correlated with his expectations for active participation during the course of therapy. The fact that the questionnaire is comprised of 5 elements can enable a psychotherapist/researcher to construct a "profile" of the patient's flexibility, and help him focus psychotherapy to strengthen weaker elements of his psychological flexibility. The questionnaire can also be utilized to measure the affectivity of psychotherapy in enhancing the patient's flexibility. Additionally, the PFQ might be relevant to many fields outside psychotherapy. Future studies could examine its
application in human resources (screening for psychological flexibility might improve employee recruitment, predicting candidates' potential adaptation to the position, especially in cases of positions that require flexibility), in education (development of educational methods, etc.), and a range of other fields.

Further research on larger and diverse samples, examining flexibility under a wide range of circumstances, would enrich the understanding of flexibility as a theoretical concept and its practical implications.

References

28. Nolen-Hoeksema, S., Wisco, B. E., & Lyubomirsky,


## Illustrations

### Illustration 1

Table 1: Factor analysis: rotated component matrix, variance explained and reliability of each component

<table>
<thead>
<tr>
<th>Item number</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>10. I often find a change to be a challenge</td>
<td>.781</td>
<td>.112</td>
<td>.221</td>
<td>.168</td>
<td>.027</td>
</tr>
<tr>
<td>3. When times are hard, even very hard, I am able to remember that there are better times ahead</td>
<td>.765</td>
<td>.083</td>
<td>.103</td>
<td>.088</td>
<td>.190</td>
</tr>
<tr>
<td>2. In situations of changeable reality I am able to initiate the required changes</td>
<td>.641</td>
<td>-.086</td>
<td>.080</td>
<td>.157</td>
<td>.380</td>
</tr>
<tr>
<td>15. I feel ready to accept future changes</td>
<td>.629</td>
<td>.358</td>
<td>.238</td>
<td>.278</td>
<td>.019</td>
</tr>
<tr>
<td>14. I recognize myself as someone who is able to change his/her position and modify him/herself accordingly</td>
<td>.431</td>
<td>.377</td>
<td>.206</td>
<td>.290</td>
<td>.068</td>
</tr>
<tr>
<td>18. It is easy for me to think of ways of conduct that are very unconventional</td>
<td>-.027</td>
<td>.804</td>
<td>.023</td>
<td>.248</td>
<td>.123</td>
</tr>
<tr>
<td>20. When given an assignment I am able to come up with original ways of completing it, in comparison with how I used to approach it before</td>
<td>.115</td>
<td>.719</td>
<td>.229</td>
<td>-.040</td>
<td>.331</td>
</tr>
<tr>
<td>17. When I encounter difficulties in achieving a goal, I am able to try numerous different solutions</td>
<td>.342</td>
<td>.613</td>
<td>.356</td>
<td>.091</td>
<td>.244</td>
</tr>
<tr>
<td>19. I feel open to changes</td>
<td>.520</td>
<td>.556</td>
<td>.172</td>
<td>.076</td>
<td>.14</td>
</tr>
<tr>
<td>------------------------------</td>
<td>------</td>
<td>------</td>
<td>------</td>
<td>------</td>
<td>-----</td>
</tr>
<tr>
<td>16. At times I can make significant decisions, based on my need to change</td>
<td>.417</td>
<td>.463</td>
<td>.344</td>
<td>.198</td>
<td>.28</td>
</tr>
<tr>
<td>8. I am an open person in comparison with others</td>
<td>.213</td>
<td>-.039</td>
<td>.745</td>
<td>.125</td>
<td>.26</td>
</tr>
<tr>
<td>11. I think of myself as a person who is attentive to a variety of different messages and ideas</td>
<td>.247</td>
<td>.313</td>
<td>.738</td>
<td>.022</td>
<td>-.11</td>
</tr>
<tr>
<td>13. It is important to me to learn from each and every person</td>
<td>.121</td>
<td>.436</td>
<td>.720</td>
<td>.105</td>
<td>-.02</td>
</tr>
<tr>
<td>1. Reality is never absolute</td>
<td>.128</td>
<td>.006</td>
<td>-.036</td>
<td>.849</td>
<td>.14</td>
</tr>
<tr>
<td>9. Reality has many different aspects</td>
<td>.292</td>
<td>.224</td>
<td>.045</td>
<td>.775</td>
<td>.05</td>
</tr>
<tr>
<td>7. In a disagreement there are always numerous possible solutions - you just have to find them</td>
<td>.079</td>
<td>.085</td>
<td>.410</td>
<td>.629</td>
<td>.31</td>
</tr>
<tr>
<td>12. I find it easy to acknowledge reality's multiversity of manifestations, manifestations that may often be significantly divergent, or even conflict with one another</td>
<td>.418</td>
<td>.314</td>
<td>.190</td>
<td>.473</td>
<td>.00</td>
</tr>
<tr>
<td>4. Concepts may possess different meanings when perceived in different contexts</td>
<td>.137</td>
<td>.317</td>
<td>-.039</td>
<td>.158</td>
<td>.74</td>
</tr>
<tr>
<td>5. There are usually many possible ways to do things</td>
<td>.170</td>
<td>.338</td>
<td>.022</td>
<td>.232</td>
<td>.70</td>
</tr>
<tr>
<td>6. I am open to experiencing the different and the exceptional</td>
<td>.205</td>
<td>.023</td>
<td>.506</td>
<td>.008</td>
<td>.63</td>
</tr>
<tr>
<td>Variance explained</td>
<td>38.8%</td>
<td>8.5%</td>
<td>7.5%</td>
<td>6.3%</td>
<td>5.6%</td>
</tr>
</tbody>
</table>

1- positive perception of change; 2 - characterization of the self as flexible; 3 - characterization of the self as open and innovative; 4 - perception of reality as dynamic and changing; 5 - a perception of reality as multifaceted
Illustration 2

Table 2: Correlations between flexibility and the questionnaires used for validation

<table>
<thead>
<tr>
<th>Efficacy</th>
<th>Openness</th>
<th>Dogmatism</th>
</tr>
</thead>
<tbody>
<tr>
<td>.461*</td>
<td>.355*</td>
<td>.050</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Pearson Correlation</td>
</tr>
<tr>
<td>.000</td>
<td>.000</td>
<td>.610</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Significance (2-tailed)</td>
</tr>
<tr>
<td>107</td>
<td>106</td>
<td>105</td>
</tr>
<tr>
<td></td>
<td></td>
<td>N</td>
</tr>
</tbody>
</table>

*Correlation is significant at the 0.01 level (2-tailed).