

Self-Reflection and the Inner Voice: Activation of the Left Inferior Frontal Gyrus During Perceptual and Conceptual Self-Referential Thinking

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Abstract: Inner speech involvement in self-reflection was examined by reviewing 130 studies assessing brain activation during self-referential processing in key self-domains: agency, self-recognition, emotions, personality traits, autobiographical memory, and miscellaneous (e.g., prospection, judgments). The left inferior frontal gyrus (LIFG) has been shown to be reliably recruited during inner speech production. The percentage of studies reporting LIFG activity for each self-dimension was calculated. Fifty five percent of all studies reviewed indicated LIFG (and presumably inner speech) activity during self-reflection tasks; on average LIFG activation is observed 16% of the time during completion of non-self tasks (e.g., attention, perception). The highest LIFG activation rate was observed during retrieval of autobiographical information. The LIFG was significantly more recruited during conceptual tasks (e.g., prospection, traits) than during perceptual tasks (agency and self-recognition). This constitutes additional evidence supporting the idea of a participation of inner speech in self-related thinking.

Keywords: Self-awareness, self-reflection, self-referential activity, inner speech, self-talk, verbal labeling, left inferior frontal gyrus, language, conceptual self-domains, perceptual self-domains, brain-imaging.

1. INTRODUCTION

Self-referential activity is currently the target of numerous brain-imaging studies aimed at determining what brain areas get reliably activated during self-reflection tasks. The consensus is that the following regions underlie self-related processing: cortical medial structures, which include ventromedial and dorsomedial prefrontal cortex, lateral prefrontal cortex, precuneus, insula, temporoparietal junction, and anterior/posterior cingulate cortex [for reviews, see 1-6].

Ruby and Legrand [7] recently proposed that memory recall and inferential reasoning constitute particular computational ingredients recruited when one is engaged in self-referential processing. That is, most self-reflection tasks employed in brain-imaging studies require one form or another of memory and evaluation involving a certain degree of uncertainty (e.g., does this personality trait apply to me?). Consistent with this hypothesis, most aforementioned brain areas recruited during self-reflection are also activated during memory recall and inferential reasoning.

Another elementary process potentially recruited during self-reflection is the inner voice [8-12]. Verbalizing one's characteristics to oneself or engaging in a complex silent verbal self-analysis is postulated to facilitate the identification, storage, and retrieval of self-information [for details see 13]. Inner speech is known to serve various important cognitive functions [for reviews see 14-16], among which are planning [17], self-regulation [18], self-control [19], and memory [20], including working memory [21]. The idea that one often "thinks" (including about oneself) in words is certainly not new (Plato, cited in [22]);

what is novel is empirical evidence establishing connections between self-reflection and the inner voice. To illustrate, people report talking to themselves mostly about themselves [23]. Various validated frequency measures of self-focus and self-talk significantly correlate [e.g., 24, 25]. Deterioration of inner speech following a left lateralized stroke is associated with self-awareness deficits [10].

Morin and Michaud [26] noted that inner speech production consistently recruits the left inferior frontal gyrus (LIFG) and reported a relatively high incidence of LIFG activation during self-reflection tasks, suggesting inner speech activity during at least some self-information processing. More specifically, this team reviewed 59 brain-imaging studies of self-awareness in the following self-domains: agency, self-recognition, emotions, personality traits, autobiographical memory, and preference judgments. Resting state (REST) studies were also included because of the introspective quality of that state [20]. Fifty-six percent of all studies reviewed identified LIFG and presumably inner speech activity during self-reflection tasks. In addition, the LIFG was more frequently recruited during conceptual self-tasks (e.g., emotions, traits) than during perceptual self-tasks (agency and self-recognition). This possibly suggests that more abstract self-aspects need to be verbalized in order to be fully brought to consciousness.

The main goal of the present meta-analysis was to expand Morin and Michaud's original results [26] by combining them with a new set of brain-imaging studies of self-reflection published since 2006. The overall principle here [reverse inference; see 27] is that researchers can infer what particular thought processes are solicited during a given social cognitive task by concentrating on peripheral structures instead of on a core network. For example, retrieval of autobiographical information often activates

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occipital regions [28]; control tasks typically do not lead to such an activation. Since these areas are known to support visuospatial imagery [29], one may suggest that retrieval of autobiographical memories is at least partially mediated by mental images of the self in the past [30]. Similarly, activation of the LIFG observed in Morin and Michaud's review [26] has been taken as an indication that participants engaged in inner speech during various self-tasks.

The LIFG represents the neurological foundation of both overt and covert speech generation. The LIFG is also referred to as the left ventrolateral prefrontal cortex or left frontal operculum; it includes Brodmann's areas 44, 45, and 47. There is little doubt that the LIFG is implicated in inner speech production. Numerous studies show LIFG activation when participants are asked to silently read single words or sentences, or when undertaking working memory tasks involving covert repetition of verbal material [e.g., 31-33]. Moreover, accidental destruction or temporary disruption (using repetitive transcranial magnetic stimulation) of the LIFG interferes with inner speech [34-36]. Note that other brain areas are associated with inner voice use, among which Wernicke's area, the supplementary motor area, insula, and superior parietal lobe on the left side, as well as right posterior cerebellar cortex [for a review see 37].

It has been proposed that the LIFG serves additional functions besides covert speech *per se*, including cognitive control [38], working memory [39], language unification [40], selection among competing alternatives [41, 42], response inhibition [43], and action understanding [44]. It is conceivable that most, if not all, listed functions above actually require subvocal articulation. For instance, articulatory suppression (i.e., blocking inner speech) negatively affects performance on cognitive control and verbal working memory tasks [45, 46]. Hence the observation of an activation of the LIFG during *both* inner speech production and tasks designed to test the aforementioned functions. In other words, one could argue that LIFG activation most often signifies inner speech use, be it for cognitive control or working memory purposes, or for any other possible reasons, including self-reflection. Given this, and considering the fact that self-tasks presented in the next section most unlikely involve cognitive control, working memory, language unification, selection among competing alternatives, response inhibition, and action understanding, LIFG activity in this review was interpreted as indirect evidence of inner speech use by participants.

The first objective of the present meta-analysis was to determine if LIFG activation is observed in a significant number of brain-imaging studies of self-reflection. Different ways of classifying self-dimensions exist [see 2, 3]. In this paper self-tasks were put into the following self-domains: agency, self-recognition, emotions, personality traits, autobiographical memory, and miscellaneous. This latter category included experiments imaging participants thinking about their intentions, hopes, aspirations, mental states, preferences, as well as self-evaluation and prospection tasks (i.e., thoughts about one's future).

A second aim was to compare LIFG activation in perceptual (agency and self-recognition) and conceptual

(e.g., autobiography, traits) self-domains, where inner speech use is hypothesized to be more important in the latter. Perceptual (sensory) self-information refers to products of one's direct experience with oneself (e.g., the body) or environmental stimuli (e.g., other persons, mirrors) that identify the self. Conceptual self-information constitutes data about the self that is not available to immediate perceptual experience and that presumably requires mental representation to be accessible to consciousness. This division between perceptual and conceptual self-domains echoes the distinction between physical and psychological selves proposed by Gillihan and Farah [2, 47]. Perceptual self-information such as one's face during self-recognition, because of its visual and concrete nature, most probably does not need to be verbally labeled (e.g., "this is my face") to successfully complete the task. Agency tasks typically involve evaluating the degree of one's participation in a given action and thus mostly rely on kinesthetic information. Reflection on more abstract self-dimensions such as past memories and intentions however, possibly entail subvocal speech (e.g., "I spent last summer at my brother's place"; "I want to go swimming") to be fully brought to one's attention.

2. METHOD

English-language papers published between September 2006 and August 2010 were identified from searches using Medline, Psycarticle, and Psycinfo, as well as the Psychology and Behavioral Sciences Collection.¹ The reference section of each article was scrutinized for additional studies. Review articles were also carefully examined. Inclusion criteria for selection of articles were all studies measuring brain activity using hemodynamic methods (Positron Emission Tomography [PET] and functional magnetic resonance imaging [fMRI]) during self-related tasks pertaining to the aforementioned self-domains. Exclusion criteria were: (a) articles using Theory-of-Mind (ToM) tasks, as opposed to purely self-referential tasks [e.g., 48]; (b) electrophysiological studies using event-related potentials, as well as those employing EEG and Transcranial Magnetic Stimulation [e.g., 49]; (c) studies imaging clinical populations exclusively [e.g. 50]; and (d) studies not reporting all areas of activation and uniquely focusing on regions of interest [e.g., 51]. ToM and self-reflection abilities are linked in complex ways [see 52] and common brain areas are recruited when one both introspects and thinks about others' mental states [53]. Nonetheless, ToM abilities fundamentally differ from self-reflection abilities in that the former focuses on other social agents whereas the latter exclusively pertains to the self [54]. This is why we excluded ToM studies from the present meta-analysis.

The application of this selection process led to the identification of 68 articles; we added to these articles 59 previously identified by Morin and Michaud [26] in the same self-domains. These authors used the same search and selection processes describe above for articles published

¹ Keywords were searched in the title of articles. Keywords used were: agency, autobiographical, autobiography, autonomic, brain, cortical, emotion awareness, emotion recognition, fMRI, future thoughts, intentions, introspection, judgments, mental time travel, neural correlates, neural substrates, neuroanatomy, personality traits, PET, preferences, self, self-awareness, self-face, self-processing, self-projection, self-recognition, self-referential, and self-reflection.

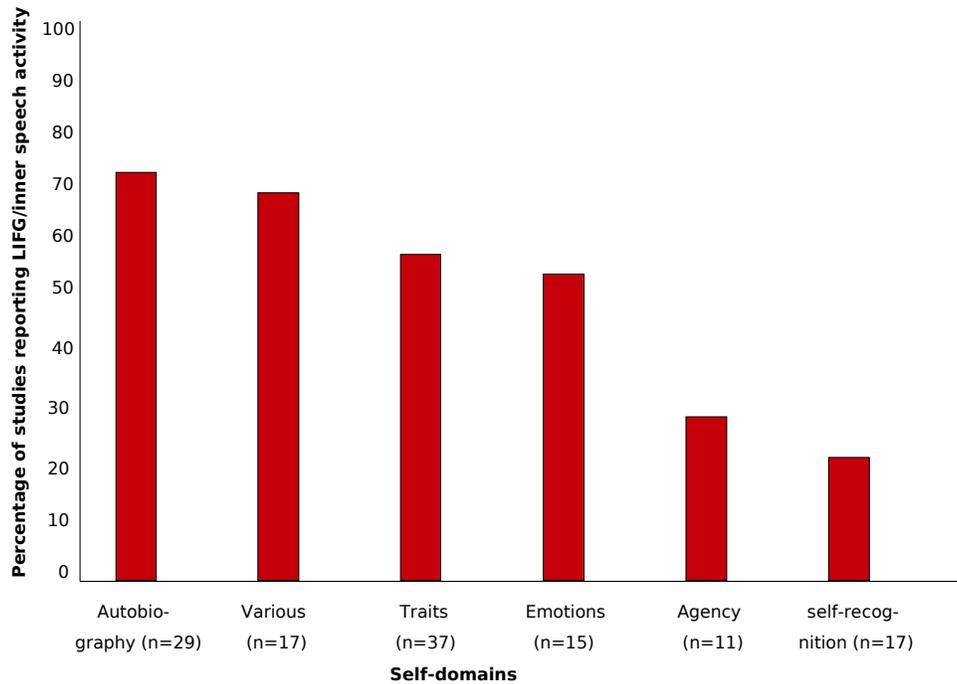


Fig. (1). Percentage of studies in which LIFG activity was observed as a function of self-domains.

Table 1. LIFG Activation Observed in Various Non-Self Domains (Based on 26). Language and Working Memory Domains are not Reported

Domain	N of Studies Reviewed	N of Studies Reporting LIFG Activation (BA 44/45/47)	Percentage of LIFG Activation
Attention	39	3	7.7
Perception	42	8	19
Imagery	18	3	16.7
Non-verbal episodic memory encoding	17	5	29.4
Non-verbal episodic memory retrieval	70	10	14.3
Priming	16	6	37.5
Procedural memory	27	1	3.7
ALL	229	36	15.7

prior to September 2006. In all, we thus examined 127 articles containing 130 individual studies (some papers contained more than one study). Frequency of LIFG activation reported in these articles is presented in the Results section. Note that we uniquely concentrated on LIFG recruitment during *self*-conditions and deliberately ignored *control* conditions because inner speech participation during these control conditions is likely. To illustrate, inner speech use most likely will be recruited during a control task consisting in judging how socially desirable personality traits are, as in Craig *et al.* [55]. As mentioned earlier, inner speech serves various purposes in addition to the processing of self-information; control tasks such as encoding semantic information or making decisions about statements of factual knowledge often recruit subvocal speech. Thus we are not making the claim that inner speech use is special to the self; indeed, recent reviews rather suggest that there is actually little special about or unique to the self [2, 7]. However, we hypothesize that the inner voice represents a privileged cognitive tool the self uses when assessing itself.

3. RESULTS AND DISCUSSION

3.1. Overview

Fig. (1) depicts the percentage of studies in which LIFG activity was observed in all selected self-domains. Seventy two of all 130 studies (55.3%) indicated activation of the LIFG during self-awareness tasks. Percentages for each self-domain were: 76.9 for autobiography, 56.7 for traits, 53.3 for emotions, 27.3 for agency, and 23.5 for self-recognition. The “miscellaneous” self-domain (66.7%) included studies using evaluative judgment tasks involving the assessment of one’s own preferences in order to produce a judgment, REST studies, as well as future-oriented thinking studies.

We submit that 55% represents a significant percentage, especially when compared to LIFG activation percentages that have been observed during various non-self tasks. Cabeza and Nyberg [29] reviewed studies of brain activations in various non-self cognitive domains such as attention and procedural memory. We excluded language

Table 2. Agency studies. (P) = Employed PET

Paper	Self-task	LIFG Activation
Farrer & Frith [58] (P)	Driving circle along T-shaped path either by oneself or experimenter	NO
Farrer <i>et al.</i> [59] (P)	Providing accurate/inaccurate visual feedback while performing hand movements	NO
Knoblich <i>et al.</i> [60]	Deciding temporal delay between hand movements & visual feedback	NO
Leube <i>et al.</i> [61]	See [59]	NO
McGuire <i>et al.</i> [62] (P)	Providing accurate/inaccurate auditory feedback while reading aloud	NO
Powell <i>et al.</i> [63]	Choosing one of 4 deck cards presented on a screen	NO
Ruby & Decety [64] (P)	Imagining self vs other movements	NO
Salomon <i>et al.</i> [56]	Deciding if hand movements are self- or other- generated	NO
Vinogradov <i>et al.</i> [65]	Judging if words were preselected by self or experimenter	YES
Wraga <i>et al.</i> [66]	Imagining rotating one's body	YES
Yomogida <i>et al.</i> [67]	Controlling character's movements/actions with joystick	YES

and working memory studies, and observed that only 16% of 213 studies report LIFG activity (see Table 1). Again, in this perspective an activation of the LIFG in 55% of all self-referential thinking studies reviewed appears significant.

Given the nature of self-tasks reviewed here (see below for descriptions), this LIFG activity most probably reflects inner speech use instead of other possible LIFG functions such as response inhibition or action understanding. These results thus tentatively support the view that the inner voice substantially participates in at least some forms of self-referential processing.

Consistent with the idea of a greater inner speech involvement in conceptual self-domains, we found that 63.7% of all conceptual studies ($n = 102$; autobiography, miscellaneous, emotions, and traits) reported activation of the LIFG, as opposed to 25% of all perceptual studies ($n = 28$) of agency and face/voice self-recognition. This difference is statistically significant, $\chi^2(1) = -3.770$, $p = .005$. This supports the view of a *differential* involvement of inner speech across self-domains, where perceptual self-dimensions (e.g., one's face) can be consciously perceived without words, whereas conceptual self-aspects (e.g., autobiography; prospection) most probably demand verbalization.

3.2. Agency and Self-Recognition

All Tables included below detail (1) the authors of individual articles, (2) self-tasks used, and (3) the presence or absence of LIFG activation. Note that unless otherwise indicated all studies used fMRI imaging technology. Table 2 presents 11 reviewed articles in the agency self-domain. A typical agency study [e.g., 56] invites participants to decide if they are responsible for the movement of their hand [for a review see 57]. Three of the agency studies out of 11 (27.3%) reported LIFG activation.

Table 3 shows 17 reviewed articles in the self-recognition domain. Most self-face recognition studies [e.g., 68] involve participants judging if a face seen on a screen is their own or that of another person [for reviews see 69, 70]. Four self-recognition studies out of 17 (23.5%) reported LIFG activation. Sugiura *et al.*'s observation [71] that "(...) covert naming often accompanies recognition of a familiar face, but rarely occurs during visual self-recognition" (p. 147) is consistent with the notion that self-face recognition

unlikely necessitates verbal labeling. Indeed, multiple brain networks for visual self-recognition have been identified [see 72], none of which include the LIFG).

3.3. Personality Traits

Most early self-reflection studies consisted in asking participants to determine if adjective traits were self-descriptive [e.g., 55, 88]. This represents a simple, straightforward, and yet effective way of inducing self-focus, as one's personality certainly constitutes a central aspect of the self. Twenty one out of 37 personality trait studies (56.7%) reported LIFG activation (see Table 4). Current neuropsychological and brain-imaging evidence suggests that once personality traits have been inferred by reflecting on specific and repeated behavioral instances, their retrieval becomes rather automatic and does not require autobiographical recollection [89]. This could explain why 16 of the reviewed studies did not find brain activity suggestive of verbal processing. It remains unclear why some studies did report the target activation while others did not despite using identical experimental tasks.

3.4. Autobiographical Memory

Remembering past personal events represents a fundamental human mental activity connected in complex ways to auto-noetic consciousness and the self [123-125]. Thinking about one's past and imagining one's future (prospection; see next section) seem to depend on common underlying regions, notably the medial prefrontal cortex and lateral temporal cortices [126]. In a representative study of autobiographical memory [e.g., 127], some of the participants' past personal events are collected prior to scanning and each event gets associated with a verbal or visual cue; cues are then presented during scanning and volunteers are asked to recall the associated events in details. Table 5 shows that 20 of the 26 studies analyzed (76.9%) reported LIFG activation. This constitutes the highest activation rate of all self-domains. Although introspection suggests that we often replay past personal episodes in "pictures", some studies indicate that we also use inner speech when developing self-narratives [128-130]. Indeed, a left ventrolateral activation which includes the LIFG is often observed in autobiographical remembering [28, 131].

Table 3. Self-recognition Studies. (P) = Employed PET

Paper	Self-task	LIFG Activation
Devue <i>et al.</i> [73]	Judging if face is self or other	YES
Kaplan <i>et al.</i> [74]	See [73]	NO
Kircher <i>et al.</i> [75]	See [75]	YES
Kircher <i>et al.</i> [76]	See [73]	YES
Morita <i>et al.</i> [77]	See [73]	NO
Perrin <i>et al.</i> [78] (P)	Listening to one's, unfamiliar, & common names	NO
Platek <i>et al.</i> [79]	See [73]	NO
Platek <i>et al.</i> [80]	See [73]	NO
Platek & Kemp [81]	See [73]	NO
Sachdev <i>et al.</i> [82]	Judging if face & body shape are self or other	NO
Sugiura <i>et al.</i> [83] (P)	See [73]	NO
Sugiura <i>et al.</i> [71]	See [73]	NO
Sugiura <i>et al.</i> [84]	Judging if face & voice are self or other	YES
Sugiura <i>et al.</i> [68]	See [73]	NO
Sui & Han [85]	See [73]	NO
Uddin <i>et al.</i> [86]	Deciding if faces are composites of oneself or other	NO
Uddin <i>et al.</i> [87]	Viewing full body images of self	NO

Table 4. Personality Trait Studies. (P) = Employed PET

Paper	Self-task	LIFG Activation
Blackwood <i>et al.</i> [90]	Judging if various traits, activities & emotions are self-descriptive	NO
Chiao <i>et al.</i> [91]	Judging self-descriptiveness of sentences	NO
Craik <i>et al.</i> [55] (P)	Judging if adjective traits are self-descriptive	YES
D'Argembeau <i>et al.</i> [92]	See [55]	YES
D'Argembeau <i>et al.</i> [93]	See [55]	NO
Farb <i>et al.</i> [94]	See [55]	YES
Fossati <i>et al.</i> [95]	See [55]	NO
Gutchess <i>et al.</i> [96]	See [55]	YES
Han <i>et al.</i> [97]	See [55]	YES
Heatherton <i>et al.</i> [98]	See [55]	YES
Jenkins & Mitchell [99]	See [55]	NO
Kelley <i>et al.</i> [100]	See [55]	YES
Kircher <i>et al.</i> [75]	Judging if adjective traits & physical characteristics are self-descriptive	YES
Kjaer <i>et al.</i> [101] (P)	Silently thinking about one's traits & physical appearance	YES (physical appearance only)
Lemogne, le Bastard, Mayberg, <i>et al.</i> [102]	See [55]	NO
Lemogne, Mayberg, Bergouignan, <i>et al.</i> [103]	See [55]	YES
Lieberman <i>et al.</i> [104]	See [55]	YES
Lou <i>et al.</i> [105] (P)	See [55]	YES
Macrae <i>et al.</i> [106]	See [55]	YES
Modinos <i>et al.</i> [107]	Judging self-descriptiveness of sentences about personal qualities	NO
Moran <i>et al.</i> [108]	See [55]	NO
Moran <i>et al.</i> [109]	See [55]	YES
Ng <i>et al.</i> [110]	See [55]	YES
Ochsner <i>et al.</i> [111]	See [55]	YES

Table 4. contd....

Pfeifer <i>et al.</i> [112]	See [91]	YES
Powell <i>et al.</i> [63]	See [55]	YES
Rameson <i>et al.</i> [113]	See [55]	NO
Ries <i>et al.</i> [114] (P)	See [55]	NO
Schmitz <i>et al.</i> [115]	See [55]	NO
Schmitz <i>et al.</i> [116]	See [55]	NO
Vanderwal <i>et al.</i> [117]	See [55]	YES
Wu <i>et al.</i> [118]	See [55]	NO
Yaoi <i>et al.</i> [119]	See [55]	YES
Yoshimura <i>et al.</i> [120]	See [55]	NO
Zhang <i>et al.</i> [121]	See [55]	NO
Zhu <i>et al.</i> [122]	See [55]	YES

Table 5. Autobiographical Memory Studies. (P) = Employed PET

Paper	Self-task	LIFG Activation
Botzung, Denkova, Ciuciu, <i>et al.</i> [132]	Recalling autobiographical memories (AM) in response to visual cues	YES
Botzung, Denkova & Manning [133]	Assessing self-descriptiveness of past personality traits	NO
Burianova <i>et al.</i> [134]	Recalling last time one experienced event depicted on photograph	YES
Cabeza <i>et al.</i> [135]	Remembering if pictures were taken by self or others	YES
Campitelli <i>et al.</i> [136]	Recalling if chess moves were made by self or other	YES
Conway <i>et al.</i> [137] (P)	Generating AM following presentation of cue words	YES
Daselaar <i>et al.</i> [127]	Recalling AM in response to visual cues	YES
Fink <i>et al.</i> [138] (P)	Listening to & visualizing personal & non-personal AM	NO
Gilboa <i>et al.</i> [28]	Remembering context of recent/remote episodes shown on photographs	YES
Harrison <i>et al.</i> [139]	Recalling sad past personal events	YES
Kelly <i>et al.</i> [140]	Recalling AM of painful & non-painful episodes in response to visual cues	YES
Kross <i>et al.</i> [141]	Recalling AM of negative episodes in response to visual cues	YES
Levine <i>et al.</i> [142]	Listening to verbal descriptions of AM	YES
Loughead <i>et al.</i> [143]	Recalling interpersonal life events	YES
Maguire & Mummery [144] (P)	Indicating if read statements of past personal episodes were participants'	NO
Maguire <i>et al.</i> [50]	See [144]	NO
Maguire & Frith [145]	See [144]	YES
Moran <i>et al.</i> [108]	Viewing words depicting personal semantic information	YES
Oddo <i>et al.</i> [146]	Recalling AM in response to visual cues	NO
Piefke <i>et al.</i> [147]	Remembering positive / negative & old / recent past personal events	YES
Piolino <i>et al.</i> [148] (P)	Recalling unique personal events	YES
Rabin <i>et al.</i> [149]	Recalling personal events in response to visual cues	NO
St-Jacques <i>et al.</i> [150]	Recalling which picture was taken first after picture taking sessions	YES
Spreng & Grady [151]	Recalling personal events in response to visual cues	YES
Summerfield <i>et al.</i> [152]	See [127]	YES
Svoboda & Levine [153]	Recalling personal events in response to auditory cues	YES

3.5. Emotions

The notion that verbal labeling of emotions enhances emotion awareness is not new [see 154]. It seems plausible to suggest that verbally identifying one's feelings through inner speech (e.g., "I feel tired and irritated... actually, I feel angry and disappointed...") helps distinguishing between subtle emotional experiences [13]. Reappraisal represents a

cognitive emotion regulation strategy which consists in rethinking the meaning of affectively charged stimuli or events to decrease their emotional impact. Interestingly, brain-imaging studies of reappraisal consistently show recruitment of ventral portions of the PFC involved in language functions [155]. As shown in Table 6, 8 out of 15 emotion studies (53.3%) reported LIFG activity.

Table 6. Emotion Studies. (P) = Employed PET

Paper	Self-task	LIFG activation
Critchley <i>et al.</i> [156]	Perceiving (or not) feedback delay of one's heartbeat (interoception)	YES
Goldberg <i>et al.</i> [157]	Evaluating emotional experiences produced by images & music	YES
Gusnard <i>et al.</i> [158]	Evaluating one's emotional responses to visual cues	YES
Herwig <i>et al.</i> [159]	See [158]	YES
Jackson <i>et al.</i> [160]	Imagining levels of pain by viewing normal & distorted limbs	YES
Lane <i>et al.</i> [161] (P)	See [158]	YES
Northoff <i>et al.</i> [5]	Evaluating degree of self-relatedness to visual cues	NO
Ochsner <i>et al.</i> [162]	See [158]	YES
Phan <i>et al.</i> [163]	Indicating emotional association with pictures	NO
Schneider <i>et al.</i> [164]	See [5]	NO
Sheline <i>et al.</i> [165]	Reflecting on current emotional experiences	NO
Silani <i>et al.</i> [166]	See [158]	NO
Takahashi <i>et al.</i> [167]	Judging if guilt & embarrassment are present in short sentences	YES (embarrassment only)
Takahashi <i>et al.</i> [168]	Imagining joyful or proud scenarios in response to visual cues	NO
Taylor <i>et al.</i> [169] (P)	Rating aversive & nonaversive pictures	NO

Table 7. Various self-referential Studies. (P) = Employed PET

Paper	Self-task	LIFG Activation
Addis <i>et al.</i> [175]	Pre-experiencing future personal events in response to visual cues	YES
Arzy <i>et al.</i> [176]	Indicating if personal events occurred before/after currently imagined self-location in time	YES
Binder <i>et al.</i> [177]	Resting still with eyes closed	YES
Blackmore <i>et al.</i> [170]	Thinking about intentions & consequential actions in response to presentation of fictive scenarios	NO
Botzung <i>et al.</i> [133]	See [175]	NO
Christoff <i>et al.</i> [178]	See [177]	YES
D'Argembeau <i>et al.</i> [93]	Pre-experiencing future personal events in response to visual cues	NO
D'Argembeau <i>et al.</i> [179]	See [93]	YES
Fransson [180]	See [177]	YES
Jenkins & Mitchell [99]	Judging one's current mental state in response to visual cues	YES
Johnson <i>et al.</i> [181]	Choosing which color one prefers	YES
Johnson <i>et al.</i> [182]	Thinking about hopes & aspirations in response to visual cues	YES
Longe <i>et al.</i> [183]	Imagining being self-reassuring/self-critical after negative fictive scenarios	YES
Mazoyer <i>et al.</i> [184](P)	See [177]	YES
Pan <i>et al.</i> [185]	Presenting positive, negative & neutral evaluative feedback through visual cues	NO
Paulus & Frank [186]	Determine which one of two items one prefers	NO
Pfeifer <i>et al.</i> [187]	Making direct/reflected self-appraisals in response to visual cues	YES
Piech <i>et al.</i> [188]	Judging if one likes or dislikes food	NO
Seeger <i>et al.</i> [189]	See [188]	NO
Spreng & Grady [155]	See [93]	YES
Szpunar <i>et al.</i> [190]	See [175]	NO
Weiler <i>et al.</i> [191]	See [175]	YES
Zysset <i>et al.</i> [192]	Making evaluative judgments of people	YES

3.6. Miscellaneous

Table 7 shows that 16 out of 24 miscellaneous studies (66.7%) reported LIFG activation. Studies in this general category included various forms of self-focus such as intentions, hopes, aspirations, mental states, preferences, self-evaluation, and self-location in time. To illustrate, one study invited volunteers to reflect on their intentions in response to the presentation of fictive scenarios [170]. Also included were studies of mental projections of the self into the future (“mental time travel”, “episodic future thinking”, “future-oriented cognition”, “foresight”) [for reviews see 126, 171, 172]. People report producing both mental images and inner speech when engaging in prospection [173]. The role of language in prospection is increasingly being discussed in the literature [e.g., 124, 174]. Our review of brain-imaging studies of prospection is consistent with these ideas. A typical prospection study invites participants to imagine a future personal event in response to the presentation of a visual cue, e.g., a word (“camping”) or a photograph of a tent to stimulate thoughts about a possible future camping trip [see 151]. Phenomenologically speaking, one can propose that such tasks may trigger an internal dialogue such as “I can smell the odor of the tent... It will be fun to wake up early with the sun... Fishing in the creek nearby too will be fun...”

4. CONCLUSION

One major difference between human and non-human animals is that the former possess language and the ability to engage in self-talk [193]. This ability to verbally communicate with the self in turn is assumed to lead to increased cognitive complexity which includes deeper self-referential processing [194]. This paper presented evidence suggesting that inner speech is often used by participants working on various self-reflection tasks. The data show that speech-for-self when thinking about the self is significant, as 55% as all studies reviewed reported LIFG activation, as opposed to 16% in non-self tasks [29]. This conclusion is acceptable only if one embraces the underlying assumption that LIFG activation indicates inner speech use; this assumption is currently supported by neuropsychological and brain-imaging research. Our results also imply a differential involvement of inner speech across self-domains, where reflection on conceptual self-dimensions seems to rely more on verbalization than reflection on perceptual self-aspects. Sixty four percent of studies pertaining to abstract self-domains such as autobiographical memory and personality traits reported LIFG activation, as opposed to 25% of studies of a more perceptual nature.

One limitation of the approach used here is that it remains possible that the activation of the LIFG observed in some studies may reflect other cognitive mechanisms in addition to, or instead of, inner speech use. Although it is possible that LIFG activation underlies semantic processing during some tasks (e.g., personality traits), it is unlikely that the self-tasks described in the Tables require cognitive control, working memory, language unification, selection among competing alternatives, response inhibition, and action understanding.

One hotly debated issue in the literature is the importance of language (and by extension, of inner speech) for ToM [see 195]. Both ToM and most self-reflection tasks involve making inferences about psychological attributes of people—either self or others. Since inner speech seems to play a role in thinking about oneself, it could also constitute the mental activity underlying thinking about others. Indeed, recent work indicates that ToM development is linked to private speech use in preschoolers [196]; also, children with autism (a condition associated with ToM deficits) underuse inner speech [17]. A large quantity of published brain-imaging studies of ToM exists [for a review see 197]. One promising strategy to further test the hypothesis of inner speech involvement in ToM could consist in calculating the percentage of reported LIFG activation across mental state domains e.g., false belief, deceit, intentions, empathy, desires, and pretence.

CONFLICT OF INTEREST

The authors confirm that this article content has no conflicts of interest.

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REFERENCES

- [1] Feinberg TE. The nested neural hierarchy and the self. *Conscious Cogn* 2011; 20(1): 4-15.
- [2] Gillihan SJ, Farah MJ. Is self special? a critical review of evidence from experimental psychology and cognitive neuroscience. *Psychol Bull* 2005; 131(1): 76-97.
- [3] Northoff G, Heinzel A, de Greck M, Bormpohl F, Dobrowolny H, Panksepp J. Self-referential processing in our brain—a meta-analysis of imaging studies on the self. *Neuroimage* 2006; 15; 31(1): 440-57.
- [4] Northoff G, Qin P, Feinberg TE. Brain imaging of the self—conceptual, anatomical and methodological issues. *Conscious Cogn* 2011; 20(1): 52-63.
- [5] Northoff G, Schneider F, Rotte M, *et al.* Differential parametric modulation of self-relatedness and emotions in different brain regions. *Hum Brain Mapp* 2009; 30(2): 369-82.
- [6] van der Meer L, Costafreda S, Aleman A, David AS. Self-reflection and the brain: a theoretical review and meta-analysis of neuroimaging studies with implications for schizophrenia. *Neurosci Biobehav Rev* 2010; 34(6): 935-46.
- [7] Legrand D, Ruby P. What is self-specific? Theoretical investigation and critical review of neuroimaging results. *Psychol Rev* 2009; 116(1): 252-82.
- [8] DeSouza M, DaSilveira A, Gomes W. Verbalized inner speech and the expressiveness of self-Consciousness. *Qual Res Psychol* 2008; 5(2): 154-70.
- [9] Martínez-Manrique F, Vicente A. “What the...!” The role of inner speech in conscious thought. *J Conscious Stud* 2010; 17(9-10): 141-67.
- [10] Morin A. Self-awareness deficits following loss of inner speech: Dr. Jill Bolte Taylor’s case study. *Conscious Cogn* 2009; 18(2): 524-9.
- [11] Neuman Y, Nave O. Why the brain needs language in order to be self-conscious. *New Ideas Psychol* 2010; 28(1): 37-48.
- [12] Werning M. Descartes discarded? Introspective self-awareness and the problems of transparency and compositionality. *Conscious Cogn* 2010; 19(3): 751-61.
- [13] Morin A. Possible links between self-awareness and inner speech: Theoretical background, underlying mechanisms, and empirical evidence. *J Conscious Stud* 2005; 12(4-5): 115-34.

- [14] Morin A. Inner speech. Encyclopedia of human behavior. 2nd ed. W. Hirstein, Ed. UK: Elsevier 2011.
- [15] Hubbard TL. Auditory imagery: empirical findings. *Psychol Bull* 2010; 136(2): 302-29.
- [16] Vicente A, Martinez Manrique F. Inner speech: Nature and functions. *Philos Compass* 2011; 6(3): 209-19.
- [17] Lidstone JSM, Fernyhough C, Meins E, Whitehouse AJO. Brief report: Inner speech impairment in children with autism is associated with greater nonverbal than verbal skills. *J Autism Dev Disord* 2009; 39(8): 1222-5.
- [18] Vygotsky L. *Thought and Language*. Cambridge, MA: MIT Press 1934.
- [19] Tullett AM, Inzlicht M. The voice of self-control: blocking the inner voice increases impulsive responding. *Acta Psychol (Amst)* 2010; 135(2): 252-6.
- [20] Buckner RL, Andrews-Hanna JR, Schacter DL. The brain's default network: anatomy, function, and relevance to disease. *Ann NY Acad Sci* 2008; 1124: 1-38.
- [21] Marvel CL, Desmond JE. From storage to manipulation: How the neural correlates of verbal working memory reflect varying demands on inner speech. *Brain Lang* 2012; 120(1): 42-51.
- [22] Blachowicz J. The dialogue of the soul with itself. in *Models of the Self*. Gallagher S, Shear J, Eds. Exeter UK: Imprint Academic 1999; pp. 177-200.
- [23] Morin A, Uttl B, Hamper B. Self-reported frequency, content, and functions of inner speech. *Procedia Soc Behav Sci* 2011; 30: 1714-8.
- [24] Schneider JF, Pospeschill M, Ranger J. Does self-consciousness mediate the relation between self-talk and self-knowledge? *Psychol Rep* 2005; 96(2): 387-96.
- [25] Siegrist M. Inner speech as a cognitive process mediating self-consciousness and inhibiting self-deception. *Psychol Rep* 1995; 76(1): 259-65.
- [26] Morin A, Michaud J. Self-awareness and the left inferior frontal gyrus: Inner speech use during self-related processing. *Brain Res Bull* 2007; 74(6): 387-96.
- [27] Poldrack RA. Can cognitive processes be inferred from neuroimaging data? *Trends Cogn Sci* 2006; 10(2): 59-63.
- [28] Gilboa A, Winocur G, Grady CL, Hevenor SJ, Moscovitch M. Remembering our past: functional neuroanatomy of recollection of recent and very remote personal events. *Cereb Cortex* 2004; 14(11): 1214-25.
- [29] Cabeza R, Nyberg L. Imaging cognition II: an empirical review of 275 PET and fMRI studies. *J Cogn Neurosci* 2000; 12(1): 1-47.
- [30] Svoboda E, McKinnon MC, Levine B. The functional neuroanatomy of autobiographical memory: a meta-analysis. *Neuropsychologia* 2006; 44(12): 2189-208.
- [31] Baciú MV, Rubín C, Décorps MA, Segebarth CM. fMRI assessment of hemispheric language dominance using a simple inner speech paradigm. *NMR Biomed* 1999; 12(5): 293-8.
- [32] McGuire PK, Silbersweig DA, Murray RM, David AS, Frackowiak RS, Frith CD. Functional anatomy of inner speech and auditory verbal imagery. *Psychol Med* 1996; 26(1): 29-38.
- [33] McGuire PK, Silbersweig DA, Wright I, Murray RM, Frackowiak RS, Frith CD. The neural correlates of inner speech and auditory verbal imagery in schizophrenia: relationship to auditory verbal hallucinations. *Br J Psychiatr* 1996; 169(2): 148-59.
- [34] Aziz-Zadeh L, Cattaneo L, Rochat M, Rizzolatti G. Covert speech arrest induced by rTMS over both motor and nonmotor left hemisphere frontal sites. *J Cogn Neurosci* 2005; 17(6): 928-38.
- [35] Nixon P, Lazarova J, Hodinott-Hill I, Gough P, Passingham R. The inferior frontal gyrus and phonological processing: an investigation using rTMS. *J Cognitive Neurosci* 2004; 16(2): 289-300.
- [36] Verstichel P, Bourak C, Font V, Crochet G. Langage intérieur après lésion cérébrale gauche: Étude de la représentation phonologique des mots chez des patients aphasiques et non aphasiques. *Neuropsychology J* 1997; 7(3): 281-311.
- [37] Jones SR, Fernyhough C. Neural correlates of inner speech and auditory verbal hallucinations: a critical review and theoretical integration. *Clin Psychol Rev* 2007; 27(2): 140-54.
- [38] Brass M, Derrfuss J, Forstmann B, von Cramon DY. The role of the inferior frontal junction area in cognitive control. *Trends Cogn Sci* 2005; 9(7): 314-6.
- [39] Paulesu E, Frith CD, Frackowiak RS. The neural correlates of the verbal component of working memory. *Nature* 1993; 362(6418): 342-5.
- [40] Hagoort P. On Broca, brain, and binding: a new framework. *Trends Cogn Sci* 2005; 9(9): 416-23.
- [41] Kan IP, Thompson-Schill SL. Effect of name agreement on prefrontal activity during overt and covert picture naming. *Cogn Affect Behav Neurosci* 2004; 4(1): 43-57.
- [42] Thompson-Schill SL, D'Esposito M, Aguirre GK, Farah MJ. Role of left inferior prefrontal cortex in retrieval of semantic knowledge: a reevaluation. *Proc Natl Acad Sci USA* 1997; 94(26): 14792-7.
- [43] Swick D, Ashley V, Turken AU. Left inferior frontal gyrus is critical for response inhibition. *BMC Neurosci* 2008; 9: 102.
- [44] Baumgaertner A, Buccino G, Lange R, McNamara A, Binkofski F. Polymodal conceptual processing of human biological actions in the left inferior frontal lobe. *Eur J Neurosci* 2007; 25(3): 881-9.
- [45] Cragg L, Nation K. Language and the development of cognitive control. *Top Cogn Sci* 2010; 2(4): 631-42.
- [46] Morris N, Jones DM. Memory updating in working memory: the role of the central executive. *Br J Psychol* 1990; 81(2): 111-21.
- [47] Williams D. Theory of own mind in autism: Evidence of a specific deficit in self-awareness? *Autism* 2010; 14(5): 474-94.
- [48] Moriguchi Y, Ohnishi T, Lane RD, *et al*. Impaired self-awareness and theory of mind: an fMRI study of mentalizing in alexithymia. *Neuroimage* 2006; 32(3): 1472-82.
- [49] Heinisch C, Dinse HR, Tegenthoff M, Juckel G, Brüne M. An rTMS study into self-face recognition using video-morphing technique. *Soc Cogn Affect Neurosci* 2011; 6(4): 442-9.
- [50] Maguire EA, Kumaran D, Hassabis D, Kopelman MD. Autobiographical memory in semantic dementia: A longitudinal fMRI study. *Neuropsychologia* 2010; 48(1): 123-36.
- [51] Jenkins AC, Macrae CN, Mitchell JP. Repetition suppression of ventromedial prefrontal activity during judgments of self and others. *Proc Natl Acad Sci USA* 2008; 105(11): 4507-12.
- [52] Dimaggio G, Lysaker PH, Carcione A, Nicolò G, Semerari A. Know yourself and you shall know the other to a certain extent: multiple paths of influence of self-reflection on mindreading. *Conscious Cogn* 2008; 17(3): 778-89.
- [53] Rameson LT, Lieberman MD. Empathy: a social cognitive neuroscience approach. *Soc Person Psychol Compass* 2009; 3(1): 94-110.
- [54] Morin A. Self-awareness and the left hemisphere: the dark side of selectively reviewing the literature. *Cortex* 2007; 43(8): 1068-1073; discussion 1074-1082.
- [55] Craik FIM, Moroz TM, Moscovitch M, *et al*. In search of the self: A positron emission tomography study. *Psychol Sci* 1999; 10(1): 26-34.
- [56] Salomon R, Malach R, Lamy D. Involvement of the intrinsic/default system in movement-related self recognition. *PLoS One* 2009; 4(10): e7527.
- [57] Synofzik M, Vosgerau G, Newen A. I move, therefore I am: a new theoretical framework to investigate agency and ownership. *Conscious Cogn* 2008; 17(2): 411-24.
- [58] Farrer C, Frith CD. Experiencing oneself vs another person as being the cause of an action: the neural correlates of the experience of agency. *Neuroimage* 2002; 15(3): 596-603.
- [59] Farrer C, Franck N, Georgieff N, Frith CD, Decety J, Jeannerod M. Modulating the experience of agency: a positron emission tomography study. *Neuroimage* 2003; 18(2): 324-33.
- [60] Knoblich G, Leube D, Erb M, Kircher TTTJ. Brain networks for identifying one's own actions. Poster presented at 13th Conference of the European Society for Cogn Psychology (ESCoP XIII), Granada, Spain 2003.
- [61] Leube DT, Knoblich G, Erb M, Grodd W, Bartels M, Kircher TTTJ. The neural correlates of perceiving one's own movements. *Neuroimage* 2003; 20(4): 2084-90.
- [62] McGuire PK, Silbersweig DA, Wright I, Murray RM, Frackowiak RS, Frith CD. The neural correlates of inner speech and auditory verbal imagery in schizophrenia: relationship to auditory verbal hallucinations. *Br J Psychiatry* 1996; 169(2): 148-59.
- [63] Powell LJ, Macrae CN, Cloutier J, Metcalfe J, Mitchell JP. Dissociable Neural Substrates for Agentic versus Conceptual Representations of Self. *J Cogn Neurosci* 2010; 22(10): 2186-97.
- [64] Ruby P, Decety J. Effect of subjective perspective taking during simulation of action: a PET investigation of agency. *Nat Neurosci* 2001; 4(5): 546-50.
- [65] Vinogradov S, Luks TL, Simpson GV, Schulman BJ, Glenn S, Wong AE. Brain activation patterns during memory of cognitive agency. *Neuroimage* 2006; 31(2): 896-905.

- [66] Wraga M, Shephard JM, Church JA, Inati S, Kosslyn SM. Imagined rotations of self versus objects: an fMRI study. *Neuropsychologia* 2005; 43(9): 1351-61.
- [67] Yomogida Y, Sugiura M, Sassa Y, *et al.* The neural basis of agency: an fMRI study. *Neuroimage* 2010; 50(1): 198-207.
- [68] Sugiura M, Sassa Y, Jeong H, Horie K, Sato S, Kawashima R. Face-specific and domain-general characteristics of cortical responses during self-recognition. *Neuroimage* 2008; 42(1): 414-22.
- [69] Devue C, Brédart S. The neural correlates of visual self-recognition. *Conscious Cogn* 2011; 20(1): 40-51.
- [70] Platek SM, Wathne K, Tierney NG, Thomson JW. Neural correlates of self-face recognition: an effect-location meta-analysis. *Brain Res* 2008; 1232: 173-84.
- [71] Sugiura M, Watanabe J, Maeda Y, Matsue Y, Fukuda H, Kawashima R. Cortical mechanisms of visual self-recognition. *Neuroimage* 2005; 24(1): 143-9.
- [72] Sugiura M. Cortical networks for visual self-recognition. *Plasma Fusion Res* 2007; 2: S1005.
- [73] Devue C, Collette F, Baiteau E, *et al.* Here I am: the cortical correlates of visual self-recognition. *Brain Res* 2007; 1143: 169-82.
- [74] Kaplan JT, Aziz-Zadeh L, Uddin LQ, Iacoboni M. The self across the senses: an fMRI study of self-face and self-voice recognition. *Soc Cogn Affect Neurosci* 2008; 3(3): 218-23.
- [75] Kircher TT, Senior C, Phillips ML, *et al.* Towards a functional neuroanatomy of self processing: effects of faces and words. *Brain Res Cogn Brain Res* 2000; 10(1-2): 133-44.
- [76] Kircher TT, Senior C, Phillips ML, *et al.* Recognizing one's own face. *Cognition* 2001; 78(1): B1-B15.
- [77] Morita T, Itakura S, Saito DN, *et al.* The role of the right prefrontal cortex in self-evaluation of the face: a functional magnetic resonance imaging study. *J Cogn Neurosci* 2008; 20(2): 342-55.
- [78] Perrin F, Maquet P, Peigneux P, *et al.* Neural mechanisms involved in the detection of our first name: a combined ERPs and PET study. *Neuropsychologia* 2005; 43(1): 12-9.
- [79] Platek SM, Keenan JP, Gallup GG Jr, Mohamed FB. Where am I? The neurological correlates of self and other. *Brain Res Cogn Brain Res* 2004; 19(2): 114-22.
- [80] Platek SM, Loughhead JW, Gur RC, *et al.* Neural substrates for functionally discriminating self-face from personally familiar faces. *Hum Brain Mapp* 2006; 27(2): 91-8.
- [81] Platek SM, Kemp SM. Is family special to the brain? An event-related fMRI study of familiar, familial, and self-face recognition. *Neuropsychologia* 2009; 47(3): 849-58.
- [82] Sachdev P, Mondraty N, Wen W, Gulliford K. Brains of anorexia nervosa patients process self-images differently from non-self-images: an fMRI study. *Neuropsychologia* 2008; 46(8): 2161-8.
- [83] Sugiura M, Kawashima R, Nakamura K, *et al.* Passive and active recognition of one's own face. *Neuroimage* 2000; 11(1): 36-48.
- [84] Sugiura M, Sassa Y, Jeong H, *et al.* Multiple brain networks for visual self-recognition with different sensitivity for motion and body part. *Neuroimage* 2006; 32(4): 1905-17.
- [85] Sui J, Han S. Self-construal priming modulates neural substrates of self-awareness. *Psychol Sci* 2007; 18(10): 861-6.
- [86] Uddin LQ, Kaplan JT, Molnar-Szakacs I, Zaidel E, Iacoboni M. Self-face recognition activates a frontoparietal "mirror" network in the right hemisphere: an event-related fMRI study. *Neuroimage* 2005; 25(3): 926-35.
- [87] Uddin LQ, Davies MS, Scott AA, *et al.* Neural basis of self and other representation in autism: an FMRI study of self-face recognition. *PLoS One* 2008; 3(10): e3526.
- [88] Johnson SC, Baxter LC, Wilder LS, Pipe JG, Heiserman JE, Prigatano GP. Neural correlates of self-reflection. *Brain J Neurol* 2002; 125(8): 1808-14.
- [89] Klein SB, Rozendal K, Cosmides L. A social-cognitive neuroscience analysis of the self. *Soc Cogn* 2002; 20(2): 105-35.
- [90] Blackwood NJ, Bentall RP, Ffytche DH, Simmons A, Murray RM, Howard RJ. Persecutory delusions and the determination of self-relevance: an fMRI investigation. *Psychol Med* 2004; 34(4): 591-6.
- [91] Chiao JY, Harada T, Komeda H, *et al.* Neural basis of individualistic and collectivistic views of self. *Hum Brain Mapp* 2009; 30(9): 2813-20.
- [92] D'Argembeau A, Feyers D, Majerus S, *et al.* Self-reflection across time: cortical midline structures differentiate between present and past selves. *Soc Cogn Affect Neurosci* 2008; 3(3): 244-52.
- [93] D'Argembeau A, Stawarczyk D, Majerus S, *et al.* The neural basis of personal goal processing when envisioning future events. *J Cogn Neurosci* 2010; 22(8): 1701-13.
- [94] Farb NAS, Segal ZV, Mayberg H, *et al.* Attending to the present: mindfulness meditation reveals distinct neural modes of self-reference. *Soc Cogn Affect Neurosci* 2007; 2(4): 313-22.
- [95] Fossati P, Hevenor SJ, Graham SJ, *et al.* In search of the emotional self: an fMRI study using positive and negative emotional words. *Am J Psychiatr* 2003; 160(11): 1938-45.
- [96] Gutchess AH, Kensinger EA, Schacter DL. Aging, self-referencing, and medial prefrontal cortex. *Soc Neurosci* 2007; 2(2): 117-33.
- [97] Han S, Mao L, Gu X, Zhu Y, Ge J, Ma Y. Neural consequences of religious belief on self-referential processing. *Soc Neurosci* 2008; 3(1): 1-15.
- [98] Heatherton TF, Wyland CL, Macrae CN, Demos KE, Denny BT, Kelley WM. Medial prefrontal activity differentiates self from close others. *Soc Cogn Affect Neurosci* 2006; 1(1): 18-25.
- [99] Jenkins AC, Mitchell JP. Medial prefrontal cortex subserves diverse forms of self-reflection. *Soc Neurosci* 2011; 6(3): 211-8.
- [100] Kelley WM, Macrae CN, Wyland CL, Caglar S, Inati S, Heatherton TF. Finding the self? An event-related fMRI study. *J Cogn Neurosci* 2002; 14(5): 785-94.
- [101] Kjaer TW, Nowak M, Lou HC. Reflective self-awareness and conscious states: pet evidence for a common midline parietofrontal core. *Neuroimage* 2002; 17(2): 1080-6.
- [102] Lemogne C, le Bastard J, Mayberg H, *et al.* In search of the depressive self: extended medial prefrontal network during self-referential processing in major depression. *Soc Cogn Affect Neurosci* 2009; 4(3): 305-12.
- [103] Lemogne C, Mayberg H, Bergouignan L, *et al.* Self-referential processing and the prefrontal cortex over the course of depression: a pilot study. *J Affect Disord* 2010; 124(1-2): 196-201.
- [104] Lieberman MD, Jarcho JM, Satpute AB. Evidence-based and intuition-based self-knowledge: an FMRI study. *J Pers Soc Psychol* 2004; 87(4): 421-35.
- [105] Lou HC, Luber B, Crupain M, *et al.* Parietal cortex and representation of the mental Self. *Proc Natl Acad Sci USA* 2004; 101(17): 6827-32.
- [106] Macrae CN, Moran JM, Heatherton TF, Banfield JF, Kelley WM. Medial prefrontal activity predicts memory for self. *Cereb Cortex* 2004; 14(6): 647-54.
- [107] Modinos G, Ormel J, Aleman A. Activation of anterior insula during self-reflection. *PLoS One* 2009; 4(2): e4618.
- [108] Moran JM, Heatherton TF, Kelley WM. Modulation of cortical midline structures by implicit and explicit self-relevance evaluation. *Soc Neurosci* 2009; 4(3): 197-211.
- [109] Moran JM, Macrae CN, Heatherton TF, Wyland CL, Kelley WM. Neuroanatomical evidence for distinct cognitive and affective components of self. *J Cogn Neurosci* 2006; 18(9): 1586-94.
- [110] Ng SH, Han S, Mao L, Lai JCL. Dynamic bicultural brains: fMRI study of their flexible neural representation of self and significant others in response to culture primes. *Asian J Soc Psychol* 2010; 13(2): 83-91.
- [111] Ochsner KN, Beer JS, Robertson ER, *et al.* The neural correlates of direct and reflected self-knowledge. *Neuroimage* 2005; 28(4): 797-814.
- [112] Pfeifer JH, Lieberman MD, Dapretto M. "I know you are but what am I?": neural bases of self- and social knowledge retrieval in children and adults. *J Cogn Neurosci* 2007; 19(8): 1323-37.
- [113] Rameson LT, Satpute AB, Lieberman MD. The neural correlates of implicit and explicit self-relevant processing. *Neuroimage* 2010; 50(2): 701-8.
- [114] Ries ML, Jabbar BM, Schmitz TW, *et al.* Anosognosia in mild cognitive impairment: relationship to activation of cortical midline structures involved in self-appraisal. *J Int Neuropsychol Soc* 2007; 13(3): 450-61.
- [115] Schmitz TW, Kawahara-Baccus TN, Johnson SC. Metacognitive evaluation, self-relevance, and the right prefrontal cortex. *Neuroimage* 2004; 22(2): 941-7.
- [116] Schmitz TW, Rowley HA, Kawahara TN, Johnson SC. Neural correlates of self-evaluative accuracy after traumatic brain injury. *Neuropsychologia* 2006; 44(5): 762-73.
- [117] Vanderwal T, Hunyadi E, Grupe DW, Connors CM, Schultz RT. Self, mother and abstract other: an fMRI study of reflective social processing. *Neuroimage* 2008; 41(4): 1437-46.

- [118] Wu Y, Wang C, He X, Mao L, Zhang L. Religious beliefs influence neural substrates of self-reflection in Tibetans. *Soc Cogn Affect Neurosci* 2010; 5(2-3): 324-31.
- [119] Yaoi K, Osaka N, Osaka M. Is the self special in the dorsomedial prefrontal cortex? An fMRI study. *Soc Neurosci* 2009; 4(5): 455-63.
- [120] Yoshimura S, Ueda K, Suzuki S, Onoda K, Okamoto Y, Yamawaki S. Self-referential processing of negative stimuli within the ventral anterior cingulate gyrus and right amygdala. *Brain Cogn* 2009; 69(1): 218-25.
- [121] Zhang L, Zhou T, Zhang J, Liu Z, Fan J, Zhu Y. In search of the Chinese self: an fMRI study. *Sci China C Life Sci* 2006; 49(1): 89-96.
- [122] Zhu Y, Zhang L, Fan J, Han S. Neural basis of cultural influence on self-representation. *Neuroimage* 2007; 34(3): 1310-6.
- [123] Libby LK, Eibach RP. How the self affects and reflects the content and subjective experience of autobiographical memory. Sedikides C, Spencer S, Eds. New York: Psychology Press 2007; pp. 77-91.
- [124] Markowitsch HJ, Staniloiu A. Memory, autoeonic consciousness, and the self. *Conscious Cogn* 2011; 20(1): 16-39.
- [125] Wheeler MA, Stuss DT, Tulving E. Toward a theory of episodic memory: the frontal lobes and autoeonic consciousness. *Psychol Bull* 1997; 121(3): 331-54.
- [126] Spreng RN, Mar RA, Kim ASN. The common neural basis of autobiographical memory, prospection, navigation, theory of mind, and the default mode: a quantitative meta-analysis. *J Cogn Neurosci* 2009; 21(3): 489-510.
- [127] Daselaar SM, Rice HJ, Greenberg DL, Cabeza R, LaBar KS, Rubin DC. The spatiotemporal dynamics of autobiographical memory: neural correlates of recall, emotional intensity, and reliving. *Cereb Cortex* 2008; 18(1): 217-29.
- [128] Conway MA. Memory and the self. *J Mem Lang* 2005; 53(4): 594-628.
- [129] Larsen SF, Schrauf RW, Fromholt P, Rubin DC. Inner speech and bilingual autobiographical memory: a Polish-Danish cross-cultural study. *Memory* 2002; 10(1): 45-54.
- [130] Schrauf RW. Bilingual inner speech as the medium of cross-modular retrieval in autobiographical memory. *Behav Brain Sci* 25(6): 698-9.
- [131] Nolde SF, Johnson MK, D'Esposito M. Left prefrontal activation during episodic remembering: an event-related fMRI study. *Neuroreport* 1998; 9(15): 3509-14.
- [132] Botzung A, Denkova E, Ciuciu P, Scheiber C, Manning L. The neural bases of the constructive nature of autobiographical memories studied with a self-paced fMRI design. *Memory* 2008; 16(4): 351-63.
- [133] Botzung A, Denkova E, Manning L. Experiencing past and future personal events: functional neuroimaging evidence on the neural bases of mental time travel. *Brain Cogn* 2008; 66(2): 202-12.
- [134] Burianova H, McIntosh AR, Grady CL. A common functional brain network for autobiographical, episodic, and semantic memory retrieval. *Neuroimage* 2010; 49(1): 865-74.
- [135] Cabeza R, Daselaar SM, Dolcos F, Prince SE, Budde M, Nyberg L. Task-independent and task-specific age effects on brain activity during working memory, visual attention and episodic retrieval. *Cereb Cortex* 2004; 14(4): 364-75.
- [136] Campitelli G, Parker A, Head K, Gobet F. Left lateralization in autobiographical memory: An fMRI study using the expert archival paradigm. *Int J Neurosci* 2008; 118(2): 191-209.
- [137] Conway MA, Turk DJ, Miller SL, *et al.* A positron emission tomography (PET) study of autobiographical memory retrieval. *Memory* 1999; 7(5-6): 679-702.
- [138] Fink GR, Markowitsch HJ, Reinkemeier M, Bruckbauer T, Kessler J, Heiss WD. Cerebral representation of one's own past: neural networks involved in autobiographical memory. *J Neurosci* 1996; 16(13): 4275-82.
- [139] Harrison BJ, Pujol J, Ortiz H, Fornito A, Pantelis C, Yücel M. Modulation of brain resting-state networks by sad mood induction. *PLoS One* 2008; 3(3): e1794.
- [140] Kelly S, Lloyd D, Nurmikko T, Roberts N. Retrieving autobiographical memories of painful events activates the anterior cingulate cortex and inferior frontal gyrus. *J Pain* 2007; 8(4): 307-14.
- [141] Kross E, Davidson M, Weber J, Ochsner K. Coping with emotions past: the neural bases of regulating affect associated with negative autobiographical memories. *Biol Psychiatry* 2009; 65(5): 361-6.
- [142] Levine B, Turner GR, Tisserand D, Hevenor SJ, Graham SJ, McIntosh AR. The functional neuroanatomy of episodic and semantic autobiographical remembering: a prospective functional MRI study. *J Cogn Neurosci* 2004; 16(9): 1633-46.
- [143] Loughhead JW, Luborsky L, Weingarten CP, *et al.* Brain activation during autobiographical relationship episode narratives: a core conflictual relationship theme approach. *Psychother Res* 2010; 20(3): 321-36.
- [144] Maguire EA, Mummery CJ. Differential modulation of a common memory retrieval network revealed by positron emission tomography. *Hippocampus* 1999; 9(1): 54-61.
- [145] Maguire EA, Frith CD. Aging affects the engagement of the hippocampus during autobiographical memory retrieval. *Brain* 2003; 126(Pt 7): 1511-23.
- [146] Oddo S, Lux S, Weiss PH, *et al.* Specific role of medial prefrontal cortex in retrieving recent autobiographical memories: an fMRI study of young female subjects. *Cortex* 2010; 46(1): 29-39.
- [147] Piefke M, Weiss PH, Zilles K, Markowitsch HJ, Fink GR. Differential remoteness and emotional tone modulate the neural correlates of autobiographical memory. *Brain* 2003; 126(Pt 3): 650-68.
- [148] Piolino P, Chételat G, Matuszewski V, *et al.* In search of autobiographical memories: A PET study in the frontal variant of frontotemporal dementia. *Neuropsychologia* 2007; 45(12): 2730-43.
- [149] Rabin JS, Gilboa A, Stuss DT, Mar RA, Rosenbaum RS. Common and unique neural correlates of autobiographical memory and theory of mind. *J Cogn Neurosci* 2010; 22(6): 1095-111.
- [150] St Jacques P, Rubin DC, LaBar KS, Cabeza R. The short and long of it: neural correlates of temporal-order memory for autobiographical events. *J Cogn Neurosci* 2008; 20(7): 1327-41.
- [151] Spreng RN, Grady CL. Patterns of brain activity supporting autobiographical memory, prospection, and theory of mind, and their relationship to the default mode network. *J Cogn Neurosci* 2010; 22(6): 1112-23.
- [152] Summerfield JJ, Hassabis D, Maguire EA. Cortical midline involvement in autobiographical memory. *Neuroimage* 2009; 44(3): 1188-200.
- [153] Svoboda E, Levine B. The effects of rehearsal on the functional neuroanatomy of episodic autobiographical and semantic remembering: a functional magnetic resonance imaging study. *J Neurosci* 2009; 29(10): 3073-82.
- [154] Colombetti G. What language does to feelings. *J Conscious Stud* 2009; 16(9): 4-26.
- [155] Ochsner KN, Gross JJ. Cognitive emotion regulation: Insights from social cognitive and affective neuroscience. *Curr Dir Psychol Sci* 2008; 17(2): 153-8.
- [156] Critchley HD, Wiens S, Rotshtein P, Ohman A, Dolan RJ. Neural systems supporting interoceptive awareness. *Nat Neurosci* 2004; 7(2): 189-95.
- [157] Goldberg II, Harel M, Malach R. When the brain loses its self: prefrontal inactivation during sensorimotor processing. *Neuron* 2006; 50(2): 329-39.
- [158] Gusnard DA, Akbudak E, Shulman GL, Raichle ME. Medial prefrontal cortex and self-referential mental activity: relation to a default mode of brain function. *Proc Natl Acad Sci USA* 2001; 98(7): 4259-64.
- [159] Herwig U, Kaffenberger T, Jäncke L, Brühl AB. Self-related awareness and emotion regulation. *Neuroimage* 2010; 50(2): 734-41.
- [160] Jackson PL, Brunet E, Meltzoff AN, Decety J. Empathy examined through the neural mechanisms involved in imagining how I feel versus how you feel pain. *Neuropsychologia* 2006; 44(5): 752-61.
- [161] Lane RD, Fink GR, Chau PM-L, Dolan RJ. Neural activation during selective attention to subjective emotional responses. *Neuroreport* 1997; 8(18): 3969-72.
- [162] Ochsner KN, Knierim K, Ludlow DH, *et al.* Reflecting upon feelings: an fMRI study of neural systems supporting the attribution of emotion to self and other. *J Cogn Neurosci* 2004; 16(10): 1746-72.
- [163] Phan KL, Taylor SF, Welsh RC, Ho S-H, Britton JC, Liberzon I. Neural correlates of individual ratings of emotional salience: a trial-related fMRI study. *Neuroimage* 2004; 21(2): 768-80.
- [164] Schneider F, Bermpohl F, Heinzel A, *et al.* The resting brain and our self: self-relatedness modulates resting state neural activity in cortical midline structures. *Neuroscience* 2008; 157(1): 120-31.

- [165] Sheline YI, Barch DM, Price JL, *et al.* The default mode network and self-referential processes in depression. *Proc Natl Acad Sci USA* 2009; 106(6): 1942-7.
- [166] Silani G, Bird G, Brindley R, Singer T, Frith C, Frith U. Levels of emotional awareness and autism: an fMRI study. *Soc Neurosci* 2008; 3(2): 97-112.
- [167] Takahashi H, Yahata N, Koeda M, Matsuda T, Asai K, Okubo Y. Brain activation associated with evaluative processes of guilt and embarrassment: an fMRI study. *Neuroimage* 2004; 23(3): 967-74.
- [168] Takahashi H, Matsuura M, Koeda M, *et al.* Brain activations during judgments of positive self-conscious emotion and positive basic emotion: pride and joy. *Cereb Cortex* 2008; 18(4): 898-903.
- [169] Taylor SF, Phan KL, Decker LR, Liberzon I. Subjective rating of emotionally salient stimuli modulates neural activity. *Neuroimage* 2003; 18(3): 650-9.
- [170] Blakemore S-J, den Ouden H, Choudhury S, Frith C. Adolescent development of the neural circuitry for thinking about intentions. *Soc Cogn Affect Neurosci* 2007; 2(2): 130-39.
- [171] Quoidbach J, Hansenne M, Mottet C. Personality and mental time travel: a differential approach to autoegetic consciousness. *Conscious Cogn* 2008; 17(4): 1082-92.
- [172] Szpunar KK. Episodic future thought: An emerging concept. *Perspect Psychol Sci* 2010; 5(2): 142-62.
- [173] D'Argembeau A, Renaud O, Van Der Linden M. Frequency, characteristics and functions of future-oriented thoughts in daily life. *Appl Cogn Psychol* 2011; 25(1): 96-103.
- [174] Suddendorf T, Addis DR, Corballis MC. Mental time travel and the shaping of the human mind. *Philos Trans R Soc Lond B Biol Sci* 2009; 364(1521): 1317-24.
- [175] Addis DR, Wong AT, Schacter DL. Remembering the past and imagining the future: common and distinct neural substrates during event construction and elaboration. *Neuropsychologia* 2007; 45(7): 1363-77.
- [176] Arzy S, Collette S, Ionta S, Fornari E, Blanke O. Subjective mental time: the functional architecture of projecting the self to past and future. *Eur J Neurosci* 2009; 30(10): 2009-17.
- [177] Binder JR, Frost JA, Hammeke TA, Bellgowan PS, Rao SM, Cox RW. Conceptual processing during the conscious resting state. A functional MRI study. *J Cogn Neurosci* 1999; 11(1): 80-95.
- [178] Christoff K, Ream JM, Gabrieli JDE. Neural basis of spontaneous thought processes. *Cortex* 2004; 40(4-5): 623-30.
- [179] D'Argembeau A, Xue G, Lu Z-L, Van der Linden M, Bechara A. Neural correlates of envisioning emotional events in the near and far future. *Neuroimage* 2008; 40(1): 398-407.
- [180] Fransson P. Spontaneous low-frequency BOLD signal fluctuations: an fMRI investigation of the resting-state default mode of brain function hypothesis. *Hum Brain Mapp* 2005; 26(1): 15-29.
- [181] Johnson SC, Schmitz TW, Kawahara-Baccus TN, *et al.* The Cerebral Response during Subjective Choice with and without Self-reference. *J Cogn Neurosci* 2005; 17(12): 1897-906.
- [182] Johnson MK, Raye CL, Mitchell KJ, Touryan SR, Greene EJ, Nolen-Hoeksema S. Dissociating medial frontal and posterior cingulate activity during self-reflection. *Soc Cogn Affect Neurosci* 2006; 1(1): 56-64.
- [183] Longe O, Maratos FA, Gilbert P, *et al.* Having a word with yourself: neural correlates of self-criticism and self-reassurance. *Neuroimage* 2010; 49(2): 1849-56.
- [184] Mazoyer B, Zago L, Mellet E, *et al.* Cortical networks for working memory and executive functions sustain the conscious resting state in man. *Brain Res Bull* 2001; 54(3): 287-98.
- [185] Pan X, Hu Y, Li L, Li J. Evaluative-feedback stimuli selectively activate the self-related brain area: an fMRI study. *Neurosci Lett* 2009; 465(1): 90-4.
- [186] Paulus MP, Frank LR. Ventromedial prefrontal cortex activation is critical for preference judgments. *Neuroreport* 2003; 14(10): 1311-5.
- [187] Pfeifer JH, Masten CL, Borofsky LA, Dapretto M, Fuligni AJ, Lieberman MD. Neural correlates of direct and reflected self-appraisals in adolescents and adults: when social perspective-taking informs self-perception. *Child Dev* 2009; 80(4): 1016-38.
- [188] Piech RM, Lewis J, Parkinson CH, *et al.* Neural correlates of appetite and hunger-related evaluative judgments. *PLoS One* 2009; 4(8): e6581.
- [189] Seger CA, Stone M, Keenan JP. Cortical Activations during judgments about the self and an other person. *Neuropsychologia* 2004; 42(9): 1168-77.
- [190] Szpunar KK, Watson JM, McDermott KB. Neural substrates of envisioning the future. *Proc Natl Acad Sci USA* 2007; 104(2): 642-7.
- [191] Weiler JA, Suchan B, Daum I. When the future becomes the past: Differences in brain activation patterns for episodic memory and episodic future thinking. *Behav Brain Res* 2010; 212(2): 196-203.
- [192] Zysset S, Huber O, Ferstl E, von Cramon DY. The anterior frontomedian cortex and evaluative judgment: an fMRI study. *Neuroimage* 2002; 15(4): 983-91.
- [193] Morin A. What are animals conscious of? In: Smith J, Mitchell RW, Schneider MS, Eds. *Minds of Animals*. (In Press).
- [194] Edelman GM, Gally JA, Baars BJ. Biology of consciousness. *Front Psychol* 2011; 25: 2.
- [195] Garfield JL, Peterson CC, Perry T. Social cognition, language acquisition and the development of the theory of mind. *Mind Lang* 2001; 16(5): 494-541.
- [196] Femyhough C, Meins E. Private speech and theory of mind: Evidence for developing interfunctional relations. In: Winsler A, Fernyhough C, Montero I, Eds. *Private speech, executive functioning, and the development of verbal self-regulation*. New York, NY US: Cambridge University Press 2009; pp. 95-104.
- [197] Carrington SJ, Bailey AJ. Are there theory of mind regions in the brain? A review of the neuroimaging literature. *Hum Brain Mapp* 2009; 30(8): 2313-35.

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KNOW THYSELF AND BECOME WHAT YOU ARE: A EUDAIMONIC APPROACH TO PSYCHOLOGICAL WELL-BEING

ABSTRACT. In an effort to strengthen conceptual foundations of eudaimonic well-being, key messages from Aristotle's *Nicomachean Ethics* are revisited. Also examined are ideas about positive human functioning from existential and utilitarian philosophy as well as clinical, developmental, and humanistic psychology. How these perspectives were integrated to create a multidimensional model of psychological well-being [Ryff, C.D.: 1989a, *Journal of Personality and Social Psychology* 57(6), pp. 1069–1081] is described, and empirical evidence supporting the factorial validity of the model is briefly noted. Life course and socioeconomic correlates of well-being are examined to underscore the point that opportunities for eudaimonic well-being are not equally distributed. Biological correlates (cardiovascular, neuroendocrine, immune) of psychological well-being are also briefly noted as they suggest possible health benefits associated with living a life rich in purpose and meaning, continued growth, and quality ties to others. We conclude with future challenges in carrying the eudaimonic vision forward.

KEY WORDS: autonomy, environmental mastery, eudaimonia, personal growth, positive relations with others, purpose in life, self-acceptance

INTRODUCTION

Eudaimonia, a term that is simultaneously difficult to spell, pronounce, and understand, is the new buzzword in studies of happiness and well-being. I (C. Ryff) encountered eudaimonia nearly two decades ago and first used the term to challenge prevailing conceptions of subjective well-being focused on assessments of feeling good, contentment, and life satisfaction (Andrews and Withey, 1976; Bradburn, 1969; Bryant and Veroff, 1982; Diener, 1984). Drawing on the work of Waterman (1984), I argued that Bradburn's (1969) seminal research on *The Structure of Psychological Well-Being* rested on a mistaken

translation of ancient texts, specifically Aristotle's *Nichomachean Ethics*, written in 350 B.C. In these essays, Aristotle stated that the highest of all goods achievable by human action was "eudaimonia." Bradburn, along with others (e.g., utilitarian philosophers from the 19th century) translated the term to mean happiness. Accompanying empirical assessments, as noted above, measured the extent to which people feel good, contented, or satisfied with their lives. The problem with this formulation, however, was that it suggested equivalence between hedonia and eudaimonia, something that was deeply contrary to Aristotle's distinction between the satisfaction of right and wrong desires. Even more troubling was that the essence of eudaimonia – the idea of striving toward excellence based on one's unique potential – was left out. This observation was central to my efforts to articulate a conception of psychological well-being (PWB) that was explicitly concerned with the development and self-realization of the individual (Ryff, 1989a).

Given current interest in the juxtaposition of hedonism and eudaimonism (e.g., Ryan and Deci, 2001), it seems wise to revisit the ancients and their descendants in hopes of bringing core meanings of eudaimonia into sharper focus. Thus, in the first section below, we re-examine the writings of Aristotle on the topic of what constitutes the highest of all human goods, and also draw on the work of others who have tried to distill his key messages. In the second section, we discuss "theoretical intermediaries" – namely, other philosophers (existential, utilitarian) or psychologists (developmental, clinical, humanistic) whose work helps to elaborate meanings of positive human functioning. The objective in so doing is to show the various forms that well-being can take, while simultaneously to make clear the full scope of prior thinking that informed the Ryff (1989a) model of PWB.

Following the conceptual recapitulation, we briefly highlight select empirical findings that have emerged from this model of psychological of well-being, with emphasis given to two primary points. The first is that well-being, construed as growth and human fulfillment, is profoundly influenced by the surrounding contexts of people's lives, and as such, that the opportunities for self-realization are not equally distributed. The second point

is that eudaimonic well-being may be consequential for health by promoting effective regulation of multiple physiological systems. Finally, we conclude with observations about intellectual tensions in the study of eudaimonic well-being and suggest that finding that which is “intermediate,” as advised by Aristotle, may offer a constructive way forward.

ARISTOTLE AND EUDAIMONIA: WHATEVER WAS HE SAYING?

The *Nichomachean Ethics* (translated by Ross, 1925) are replete with strange terms (e.g., “moral incontinence”), grammatical obscurities, digressions and winding argumentative sequences, all of which led Johnston (1997) to wonder whether we are dealing with notes retrieved from the waste basket. Nonetheless, sprinkled along the way sparkling insights and exquisitely distilled thoughts. Many readers may also be sustained by a deep appreciation for how hard Aristotle was thinking in his effort to answer the fundamental question of human existence: how should we live? He refused to rely on cant or religious dogma, and instead, sought to build a reasoned argument with well-articulated propositions and carefully defined terms. This was demanding work, such that even Aristotle occasionally ran out of steam, ending some chapters with phrases like “so much for these questions.”

In evaluating the substance of Aristotle’s text, it is important to remember that his objective was not to discern the nature of human well-being; rather, it was to formulate an ethical doctrine that would provide guidelines for how to live. As such, some observations are pertinent to the task at hand, while others are not. Clearly, his opening question: “What is the highest of all goods achievable by human action?” is spot-on for any examination of what constitutes a well-lived life. And, his opening answer, issued over 2000 years ago, is remarkably cogent for current inquiries about human well-being:

“Both the general run of men and people of superior refinement say that it [the highest of all goods achievable by action] is happiness, and identify living well and faring well with being happy; *but with regard to what happiness is they differ*, and the many do not give the same account as the

wise. For the former think it is some plain and obvious thing, like pleasure, wealth, or honor” (Aristotle/Ross, 1925, p. 5).

Much of the *Ethics* is then devoted to disabusing the reader of the idea that happiness consists of satisfying appetites, something he likened to a “life suitable to beasts” (p. 6), or of money-making, or political power, or even amusement and relaxation, reminding us that “serious things are better than laughable things” (p. 263). In challenging the mass of mankind which is “quite slavish in their tastes” (p. 6), he spoke of a dramatically different alternative in which the highest human good was “*activity of the soul in accordance with virtue*, and if there be more than one virtue, in accordance with the best and most complete.” (p. 11).

This assertion then brought Aristotle to the next point in the argument: what is the nature of virtue? It is here that his answers are particularly trenchant for contemporary scholars of well-being. A first key meaning of virtue in his view is that it is a kind of mean, aiming at what is *intermediate*:

“Both fear and confidence and appetite and anger and pity and in general pleasure and pain may be felt both too much and too little, and in both cases not well; but to feel them at the right times, with reference to the right objects, towards the right people, with the right motive, and in the right way, is what is both intermediate and best, and this is characteristic of virtue.” (p. 38).

He then elaborates many other examples of the appropriate middle ground in Book II, Chapter 7 – with regard to money, we are to avoid excess and tasteless vulgarity at one extreme, but also deficiency and niggardliness at the other; with regard to honor, too much leads to vanity, while too little results in undue humility; with regard to “giving amusement,” excess is buffoonery, and the man who falls short is a boor; and with regard to pleasantness toward others, the obsequious flatterer is at one extreme and the quarrelsome, surly person at the other. Thus, virtue for Aristotle was a state of character concerned with choice in which deliberate actions are taken to avoid excess or deficiency.

However, the good life for him was not just about achieving the mean in all modes of conduct. It clearly involved more, and

this is where his writings convey the essential message of eudaimonia: “If happiness is activity in accordance with virtue, it is reasonable that it should be in accordance with the *highest virtue; and this will be that of the best thing in us.*” (p. 263). These words bring into high relief Aristotle’s strongly teleological perspective – namely, the highest human good involves activities that are goal-directed and have purpose. Most importantly, the essential end point (telos) is *to achieve the best that is within us.* As paraphrased by Johnston (1997): “The excellence of the human being is thus going to be associated with growth towards some final realization of his or her true and best nature.” (p. 6).

To summarize, Aristotle was clearly not concerned with the subjective states of feeling happy. Rather, his conception of the highest good towards which we all should be reaching was the task of self-realization, played out individually, each according to his or her own disposition and talent. He was also explicitly concerned with action, not just abstract ideas: “we must become just by doing just acts, and temperate by doing temperate acts” (p. 34). A further point is that Aristotle recognized that other needs must be met as well if we are to achieve the best that is within us: “one will also need external prosperity; for our nature is not self-sufficient for the purpose of contemplation, but our body also must be healthy and must have food and other attention” (p. 268). At the same time, he reminded that “we can do noble acts without ruling earth and sea; for even with moderate advantages one can act virtuously” (p. 268). Finally, it should be noted that Aristotle’s essays covered many more topics (e.g., justice, intellectual virtues, friendship) than are summarized here.

The most thoroughgoing distillation of Hellenic eudaimonism in contemporary scholarship is David Norton’s *Personal Destinies: A Philosophy of Ethical Individualism* (1976). Norton begins by paying tribute to the Athenians, specifically the “coherent sensibility of that astonishing culture” (p. 31), and then describes eudaimonism as an ethical doctrine wherein each person is obliged to know and live in truth to his *daimon* (a kind of spirit given to all persons at birth), thereby progressively actualizing an excellence (from the Greek word “arête”)

consistent with innate potentialities. In his words, eudaimonia translates to “meaningful living conditioned upon self-truth and self-responsibility” (p. xi). It is thus the essence of the two great Greek imperatives: first, to “know thyself” (a phrase inscribed on the temple of Apollo at Delphi), and second, to “choose yourself” or “become what you are” (p. 16).

Adopting a critical perspective, Norton also reminds us that the Hellenic scholars did not believe all human beings were invested with potential excellences in the form of daimons. Instead, they exempted several major classes such as slaves, possible women [he notes Aristotle’s approving citation of the line by Sophocles “A modest silence is a woman’s crown” (p. 32)], and perhaps artisans and tradesmen. Further, the Hellenic conception did not give all daimons equivalent worth; rather, they were arranged hierarchically, such that in their final perfection, some individuals would be superior to others. Norton’s thoughtful book also provides links between eudaimonism, “from its wellspring in ancient Greece” (p. 42) and other philosophical views (Kierkegaard, Nietzsche, Sartre) as well as psychological accounts of self-actualization (Maslow), some of which are elaborated below.

THEORETICAL INTERMEDIARIES: ELABORATING MEANINGS OF HUMAN FULFILLMENT

Aristotle’s central point, namely that the ultimate aim in life is to strive to realize one’s true potential, was accompanied by considerably more detail about virtue, defined as finding the middle ground between excess and deficiency, than about virtue, defined as making the most of one’s talents and capacities. For the task of articulating substantive specifics of self-realization, I (C. Ryff) thus drew on my training as a life-span developmental psychologist, wherein numerous accounts of human growth and development were available (Bühler, 1935; Bühler and Massarik, 1968; Erikson, 1959; Neugarten, 1968, 1973). These were valuable for describing the developmental tasks and challenges that confront individuals at different life stages. Ideas from existential and humanistic psychology (Allport, 1961; Frankl and Lasch, 1959/1992; Maslow, 1968; Rogers, 1962) were also useful

for their reminders that finding meaning and purpose in life is sometimes difficult in a world that is seems meaningless, or horrific (e.g., times of war, Nazi concentration camps). Stated otherwise, existential views brought eudaimonia face-to-face with adversity, something on which the *Nichomacean Ethics* was surprisingly silent. Finally, formulations from clinical psychology were incorporated, particularly those few accounts that attempted to define mental health in positive terms rather than focus on dysfunction (Jahoda, 1958; Jung, 1933).

Other input came from the writings of two utilitarian philosophers, namely, John Stuart Mill and Bertrand Russell, both of whom agreed wholeheartedly with Aristotle that subjective feelings of happiness are not the ultimate target. Mill's (1893/1989, p. 117) message, in fact, was that happiness would never be achieved if made an end in itself:

“Those only are happy, I thought, who have their minds fixed on some object other than their own happiness, on the happiness of others, on the improvement of mankind, even on some art or pursuit, followed not as a means, but as itself and ideal end. Aiming thus at something else, they find happiness by the way.”

Russell (1930/1958), in turn, emphasized that happiness is not something that just happens to us, like having ripened fruit fall effortlessly into the mouth, but rather is something for which we must strive and work hard, hence his title *The Conquest of Happiness*. For Russell, happiness depended most importantly on “zest,” by which he meant having active interest and engagement in life, and by “affection,” by which he meant having meaningful bonds of love with significant others.

The central challenge in working with all of the above perspectives was the task of integrating them into some coherent whole. This was a progressive process (see Ryff, 1982, 1985, 1989b), wherein the objective was to identify recurrent themes or points of convergence in these many formulations of positive functioning. Figure 1 offers a visualization of what resulted from this distillation. In the center of the figure are the six key dimensions of PWB, each of which represent frequently endorsed aspects of what it means to be healthy, well, and fully functioning. Surrounding the six dimensions are their

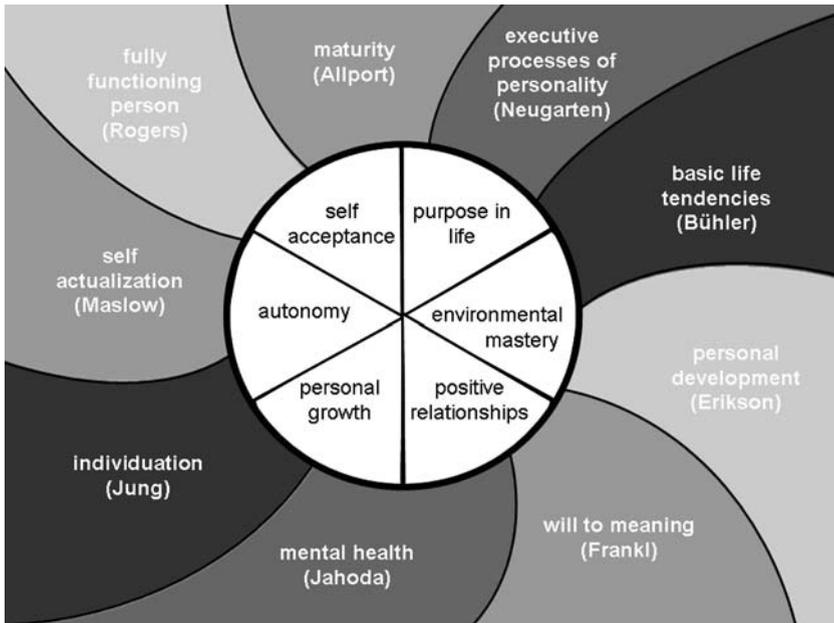


Figure 1. Core dimensions of pwb and their theoretical foundations.

conceptual underpinnings, noted briefly above. How each of the six dimensions grew out of the integration of these prior perspectives is detailed below.

Self-Acceptance

The Greeks admonished that we should know ourselves; that is, strive to accurately perceive our own actions, motivations, and feelings. But many of the above formulations emphasized something more, namely, the need to have positive self-regard. This is defined as a central feature of mental health (Jahoda) as well as a characteristic of self-actualization (Maslow), optimal functioning (Rogers), and maturity (Allport). Life-span theories also emphasized the importance of acceptance of self, including one's past life (Erikson, Neugarten). The process of individuation (Jung) further underscored the need to come to terms with the dark side of one's self (the shadow). Thus, both Erikson's formulation of ego integrity and the Jungian individuation emphasized a kind of self-acceptance that is notably richer than standard views of self-esteem. It is a kind of self-evaluation that

is long-term and involves awareness, and acceptance of, both personal strengths and weaknesses.

Positive Relations with Others

All of the above perspectives describe the interpersonal realm as a central feature of a positive, well-lived life. Aristotle's *Ethics*, for example, included lengthy sections on friendship and love, Mill's autobiography offered much detail about the great love of his life, and Russell saw affection as one of the two great sources of happiness. Jahoda, in turn, considered the ability to love to be a central component of mental health, while Maslow described self-actualizers as having strong feelings of empathy and affection for all human beings and the capacity for great love, deep friendship, and close identification with others. Warm relating to others was also posed as a criterion of maturity (Allport). Adult developmental stage theories (Erikson) emphasized the achievement of close unions with others (intimacy) as well as the guidance and direction of others (generativity). Beyond all of these perspectives, philosophical accounts of the "criterial goods" of a well-lived life (Becker, 1992) underscored the primacy of love, empathy, and affection. From a cultural perspective, there is near universal endorsement of the relational realm as a key feature of how to live (see Ryff and Singer, 1998).

Personal Growth

Of all the aspects of well-being, it is personal growth that comes closest in meaning to Aristotle's eudaimonia, as it is explicitly concerned with the self-realization of the individual. This part of positive functioning is thus dynamic, involving a continual process of developing one's potential. Self-actualization, as formulated by Maslow, and elaborated by Norton, is centrally concerned with realization of personal potential, as is Jahoda's positive conception of mental health. Rogers also described the fully functioning person as having openness to experience in which s/he is continually developing and becoming, rather than achieving a fixed state wherein all problems are solved. Life-span theories (Buhler, Erikson, Neugarten, Jung) also give

explicit emphasis to continued growth and the confronting of new challenges at different periods of life.

Purpose in Life

This dimension of well-being draws heavily on existential perspectives, especially Frankl's *search for meaning* vis-à-vis adversity. His logotherapy concerned itself directly with helping people find meaning and purpose in their life travails and suffering. Creating meaning and direction in life is also the fundamental challenge of living authentically according to Sartre. While these views tend to emphasize the will to meaning in the face of what is awful, or absurd in life, themes of purpose are also evident in other literatures less focused on darkness. Russell's emphasis on zest, for example, is fundamentally about actively engaging in and having a reflective stance toward life. Jahoda's definition of mental health gave explicit emphasis to the importance of beliefs that give one a sense of purpose and meaning in life. Allport's definition of maturity included having a clear comprehension of life's purpose, which included a sense of directedness and intentionality. Finally, life-span developmental theories refer to the changing purposes or goals that characterize different life stages, such as being creative or productive in midlife, and turning toward emotional integration in later life.

Environmental Mastery

Jahoda defined the individual's ability to choose or create environments suitable to his/her psychic conditions as a key characteristic of mental health. Life-span developmental theories also emphasize the importance of being able to manipulate and control complex environments, particularly in midlife, as well as the capacity to act on and change surrounding world through mental and physical activities. Allport's criteria of maturity included the capacity to "extend the self," by which he meant being able to participate in significant spheres of endeavor that go beyond the self. Together, these perspectives suggest that active participation in and mastery of the environment are important ingredients of an integrated framework on positive

psychological functioning. Although this area of well-being appears to have parallels with other psychological constructs, such as sense of control and self-efficacy, the emphasis on finding or creating a surrounding context that suits one's personal needs and capacities is unique to environmental mastery.

Autonomy

Many of the conceptual frameworks underlying this multidimensional model of well-being emphasize qualities such as self-determination, independence, and the regulation of behavior from within. Self-actualizers, for example, are described as showing autonomous functioning and a "resistance to enculturation" (Maslow). The fully functioning person described by Rogers has an internal locus of evaluation, whereby one does not look to others for approval, but evaluates oneself by personal standards. Individuation is also described as involving a "deliverance from convention" (Jung), in which one no longer belongs to the collective beliefs, fears, and laws of the masses. The existential idea of living in "bad faith" (Sartre, 1956) similarly conveys the importance of self-determination and living authentically, rather than following the dogma or dictates of others. Finally, life-span developmentalists (Erikson, Neugarten, Jung) wrote about the importance of turning inward in the later years of life, and relatedly, gaining a sense of freedom of the norms governing everyday life. This aspect of well-being is undoubtedly the most western of all of the above dimensions.

The preceding conceptual distillation required the development of empirical tools to operationalize the aspects of PWB described above. The process therein is briefly described below, followed by a select summary of research findings using the PWB assessment scales.

EMPIRICAL TRANSLATION: ASSESSMENT TOOLS AND SELECT FINDINGS

Measuring PWB and Evaluating its Validity

The development and evaluation of self-report scales to measure the above six dimensions of well-being was guided by the

construct-oriented approach to personality assessment (Wiggins, 1980). Of key importance in the empirical translation is the presence of psychological theory that specifies the constructs of interest. Based on such theory, as summarized in the previous section, the first step in the scale construction process is to define high and low scorers on each of the six dimensions. Such definitions are provided in Table I. Multiple independent writers then composed self-descriptive items that fit with these definitions and that could be applicable to both sexes as well as adults of any age. Initial item pools were large (e.g., approximately 80 items for each scale). These were then culled using criteria of face validity (i.e., ambiguity or redundancy of item, lack of fit with scale definition, lack of distinctiveness with items from other scales, inability to produce a variable response, and whether all aspects of the guiding definitions had been covered).

The reduced item pools (32 items per scale, divided between 16 positively and negatively scored items) were then administered to the initial research sample of young, middle, and old-aged adults (Ryff, 1989a). Item-to-scale correlations were then computed to refine the item pools. The construct-oriented approach requires that each item correlate more highly with its own scale than another scale. Items failing to meet this criterion, or that had low correlations with their own scale, were deleted. This evaluation process was iterative – i.e., items from each scale were eliminated one at a time and then the entire process was repeated, given that each item deletion meant the overall scale had been empirically reconfigured. The process was terminated, when each scale had been reduced to 20 items, divided equally between positively and negatively scored items. Additional psychometric evaluations (e.g., test–retest reliability, internal consistency) were also provided for scales of this length.

Since that original publication, multiple investigations have examined the factorial validity of the theory-based model of PWB. Five such studies (Cheng and Chan, 2005; Clarke et al., 2001; Ryff and Keyes, 1995; Springer and Hauser, in press; van Dierendonck, 2004), all using confirmatory factor analyses, have

TABLE I
Definitions of theory-guided dimensions of well-being

Self-acceptance

High scorer: Possesses a positive attitude toward the self; acknowledges and accepts multiple aspects of self including good and bad qualities; feels positive about past life

Low Scorer: Feels dissatisfied with self; is disappointed with what has occurred in past life; is troubled about certain personal qualities; wishes to be different than what he or she is

Positive relations with others

High scorer: Has warm, satisfying, trusting relationships with others; is concerned about the welfare of other others; capable of strong empathy, affection, and intimacy; understands give and take of human relationships

Low scorer: Has few close, trusting relationships with others; finds it difficult to be warm, open, and concerned about others; is isolated and frustrated in interpersonal relationships; not willing to make compromises to sustain important ties with others

Personal growth

High scorer: Has a feeling of continued development; sees self as growing and expending; is open to new experiences; has sense of realizing his or her potential; sees improvement in self and behavior over time; is changing in ways that reflect more self-knowledge and effectiveness

Low scorer: Has a sense of personal stagnation; lacks sense of improvement or expansion overtime; feels bored and uninterested with life; feels unable to develop new attitudes or behaviors

Purpose in life

High scorer: Has goals in life and a sense of directedness; feels there is meaning to present and past life; holds beliefs that give life purpose; has aims and objectives for living

Low scorer: Lacks a sense of meaning in life; has few goals or aims; lacks sense of direction; does not see purpose of past life; has no outlook or beliefs that give life meaning

Environmental mastery

High scorer: Has a sense of mastery and competence in managing the environment; controls complex array of external activities; makes effective use of surrounding opportunities; able to choose or create contexts suitable to personal needs and values

Low scorer: Has difficulty managing everyday affairs; feels unable to change or improve surrounding context; is unaware of surrounding opportunities; lacks sense of control over external world

TABLE I
(Continued)

Autonomy

High scorer: Is self-determining and independent; able to resist social pressures to think and act in certain ways; regulates social pressures to think and act in certain ways; regulates behavior from within; evaluates self by personal standards

Low scorer: Is concerned about the expectations and evaluations of others; relies on judgments of others to make important decisions; conforms to social pressures to think and act in certain ways

shown that the best-fitting model is, in fact, the theory-guided six factor model. Included in this mix are three nationally representative samples, two from the U.S. (MIDUS, Midlife in the U.S.; NSFH, National Survey of Families and Households), and one from Canada (CSHA, Canadian Study of Health and Aging). Other sources of evidence are also relevant for evaluating the validity of the well-being scales, such as how they correlate with other psychological constructs as well as sociodemographic and biological factors, and how they vary over time (longitudinal analyses). Summaries of these findings are available elsewhere (Ryff and Singer, in press). Select findings from this research are briefly discussed below.

Psychosocial and Sociodemographic Correlates of PWB

Social scientists have linked the above aspects of well-being to many psychological constructs, such as identity status (Helson and Srivastava, 2001), self-enhancing cognitions (Taylor et al., 2003a, b), emotion regulation (Gross and John, 2003), personality traits (Lopes et al., 2003; Schmutte and Ryff, 1997), personal goals (Carr, 1997; Riediger and Freund, 2004), values (Sheldon, 2005), coping strategies (Kling et al., 1997), social comparison processes (Heidrich and Ryff, 1993; Kwan et al., 2003), and spirituality (Kirby et al., 2004; Wink and Dillon, 2003). Others have examined associations between well-being and life experiences, such as early parental loss or parental divorce (Maier and Lachman, 2000), growing up with an alcoholic parent (Tweed and Ryff, 1991), trauma disclosure (Hemenover, 2003), community relocation (Smider et al., 1996), caregiving (Marks,

1998), and change in marital status (Marks and Lambert, 1998). Collectively, these investigations speak to the diverse interests researchers bring to the topic of well-being, and thereby, to the many factors that may influence positive functioning conceptualized under the eudaimonic umbrella, broadly defined.

We will focus on sociodemographic correlates of well-being, namely, how PWB varies by age and socioeconomic status of respondents. The reasons are to underscore the life course dynamics of well-being as well as the opportunity structures, or lack thereof, surrounding the challenge of “becoming what you are.” Both receive insufficient attention in current psychological inquiries. With regard to age, Figure 2 shows cross-sectional age differences in well-being among young, middle, and older aged adults from the MIDUS (Midlife in the U.S.) national survey. The age diversity of well-being for both men and women is immediately apparent. Some aspects show incremental profiles with age (e.g., autonomy, environmental mastery), while others show sharply decremental profiles from young adulthood to old age (e.g., purpose in life, personal growth), and still others show little age variation (e.g., positive relations with others, self-acceptance – only for women). These patterns have been replicated across multiple studies, including those with community samples and nationally representative samples (Ryff, 1989a, 1991; Ryff and Keyes, 1995) as well as with instruments of dramatically different length (e.g., 3-item scales, 20-item scales).

What is as yet unknown is whether the patterns represent aging changes, or cohort differences, although other longitudinal analyses (over shorter age periods) have documented that PWB does, indeed, change with aging, particularly as individuals negotiate life challenges and life transitions, such as caregiving or community relocation (Kling et al., 1997a, b; Kwan et al., 2003). With regard to the sharply downward trajectories for purpose in life and personal growth, the two most eudaimonic aspects of well-being, we have emphasized current societal challenges in providing older persons with meaningful roles and opportunities for continued growth. Sociologists have termed this the “structural lag” problem, in which contemporary social institutions lag behind the added years of life that

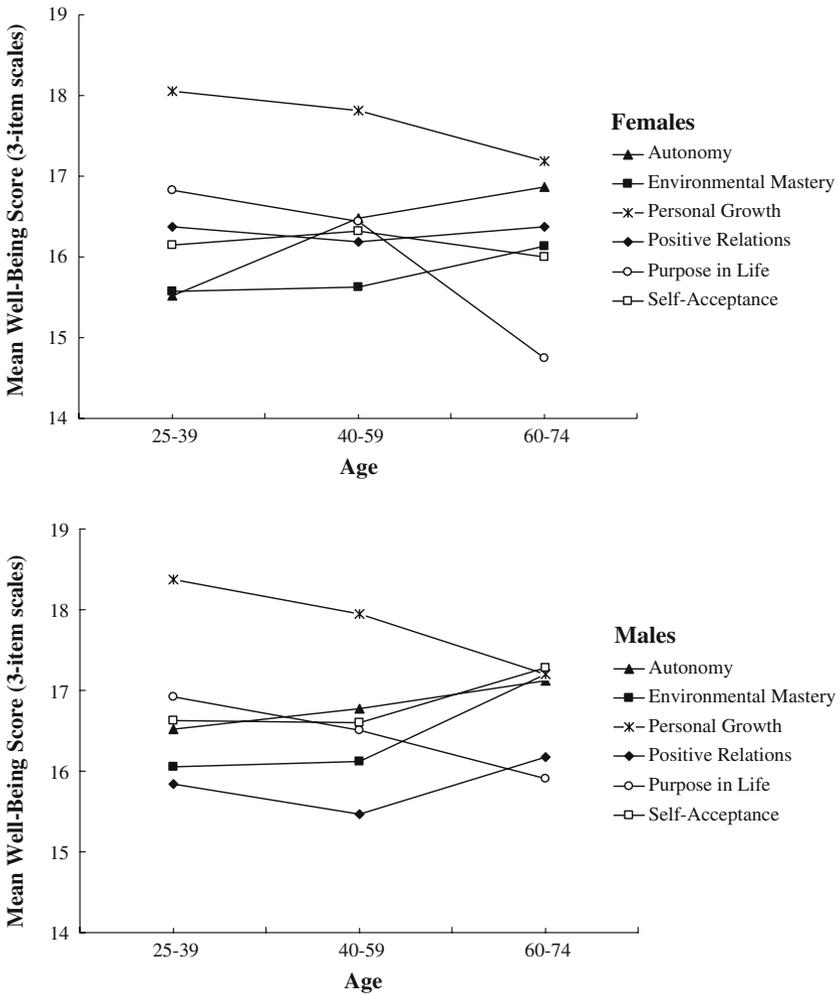


Figure 2. Age differences in PWB. (Source: MIDUS National Survey).

many now experience (Riley et al., 1994). Related to such ideas, Greenfield and Marks (2004), using MIDUS data, focused on older persons who occupied few major roles and found that those who engaged in formal volunteering had higher levels of purpose in life than those lacking both major roles and volunteer experiences.

Whether or not the surrounding context nurtures self-realization is partly illuminated by examining how reported well-being varies depending on individuals' socioeconomic status, such as their

levels of education, income, or occupational status. Figure 3 arrays scores on the six dimensions of well-being among females and males in MIDUS as a function of their educational attainment. The story is clear: PWB and educational standing are strongly positively linked, with the association being especially pronounced for personal growth and purpose in life, the two pillars of eudaimonia. These findings bring into high relief Dowd’s (1990) observation that the opportunities for self-realization are

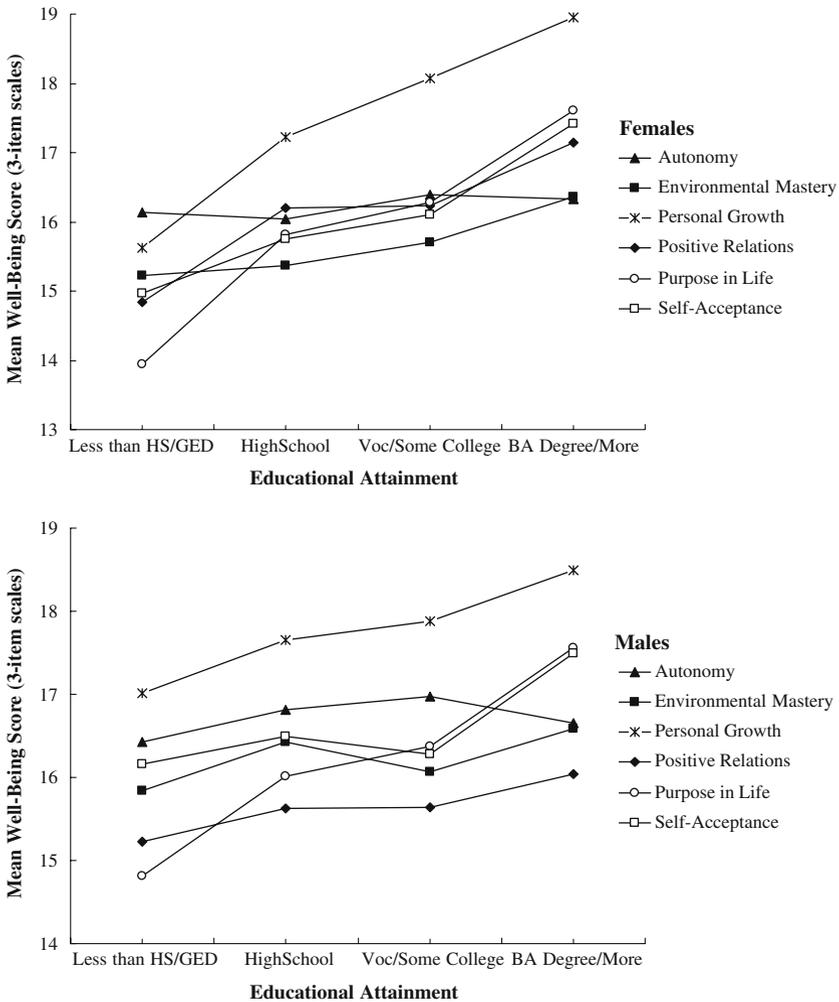


Figure 3. Educational differences in PWB. (Source: MIDUS National Survey).

not equally distributed, but occur via the allocation of resources, which enable only some to make the most of their talents and capacities.

Aristotle missed this point, although the Greeks did differentiate society into subgroups of people, some of whom were thought to possess the essential daimon, and others not. In the present era, there is greater awareness of problems of social inequality and their implications for health (Adler et al., 1999). Our research on educational disparities in PWB (Marmot et al., 1997, 1998) adds to this literature, by showing that those at the low end of the SES hierarchy are not only more likely to succumb to disease and disability, they also suffer from diminished opportunities to make the most of their lives. As detailed in the biological section below, we see the two as linked – i.e., thwarted self-realization may be a critical part of the complex biopsychosocial processes that contribute to early morbidity and mortality.

Nonetheless, it is important to note deviations from these patterns, which *on average*, link higher PWB to higher standing in the social hierarchy. Our work has shown remarkable resilience among some who lack socioeconomic advantage and/or have been confronted with significant life challenges (Markus et al., 2004; Ryff et al., 2004b; Singer and Ryff, 1997, 1999; Singer et al., 1998). We have also found such resilience among racial/ethnic minorities (Ryff et al., 2003). These studies are valuable for documenting the meaning-making and growth-producing effects of adversity, thus bringing empirical substance to Frankl's (1959/1992) vision. Regarding Hellenic eudaimonia, such findings challenge the view that realizing the highest human good is the exclusive terrain of privileged segments of society.

Biological Correlates of PWB: The Positive Health Agenda

Within moral philosophy, deontological theories rest on principles of obligation (from the Greek word *deon*, meaning duty). Consequentialist theories, in contrast, focus on the outcome or consequences to define right moral action. Aristotle's formulation of the highest human good as eudaimonia may well be primarily deontological; that is, it is a purely conceptual

argument.¹ We are, however, intrigued with the idea of bringing empirical defense to the argument that some kinds of human goods are perhaps better than others. One such realm of consequentialist evidence pertains to biology and human health (Singer and Ryff, 2001). That is, if eudaimonic well-being truly is the to right way to live, presumably it will benefit their health, both in terms of health behaviors (e.g., those experiencing self-realization may take better care of themselves), but also with regard to neurobiological processes that underlie their phenomenological experiences of growth and development. This perspective also provides a useful antidote to medical models of health, focused exclusively on illness and disease (Ryff and Singer, 1998). Our alternative approach suggests that progress toward understanding *positive* human health follows from first assessing human flourishing (i.e., PWB, as formulated within the eudaimonic tradition) and then probing its neurobiological substrates. The key hypothesis in such inquiry is that having high levels of purpose, growth, and quality ties to others, etc. is part of what keeps people healthy, even in the face of challenge. A first step in testing the hypothesized protective features of PWB is thus to examine its neurobiological correlates.

Our work therein has just begun, but preliminary findings are promising. In a sample of aging women (Ryff et al., 2004a) we correlated the six dimensions of PWB with diverse biomarkers (cardiovascular, neuroendocrine, immune) and found evidence of numerous links supporting our guiding predictions. Older women with higher levels of personal growth and purpose in life had, for example, better neuroendocrine regulation – i.e., they started the day with lower levels of salivary cortisol and stayed lower throughout the day, compared to older women with lower levels of growth and purpose. We found that those with higher levels of life purpose had lower inflammatory markers (i.e., sIL-6r, the soluble receptor for interleukin-6). Those with higher levels of environmental mastery, positive relations with others, and self-acceptance, in turn, showed lower levels of glycosylated hemoglobin (a marker for insulin resistance). Personal growth and purpose in life were also significantly positively correlated with HDL cholesterol, the “good “ cholesterol.

Finally, we included objectively measured sleep assessments and found that those with higher levels of environmental mastery experienced longer periods of REM sleep and faster entry into REM sleep. Longer periods of REM sleep were also evident for those with higher levels of positive relations with others, which along with high purpose in life was also significantly correlated with less body movement during sleep.

Extending these findings, Friedman et al. (2005) has documented the interplay between well-being and sleep in predicting inflammatory factors in older women. Those with both low levels of interpersonal well-being and poor sleep efficiency had the highest levels of interleukin-6, in contrast to those with positive profiles on one or both of these factors. In a sample of midlife adults, Urry et al. (2004) examined the neural correlates of well-being, and found that those with higher levels of PWB (all scales except autonomy) had greater left than right superior frontal activation (referred to EEG asymmetry), compared to those with lower well-being. This pattern of cerebral activation asymmetry has been previously linked to more positive dispositional styles and reduced likelihood of depression. Thus, eudaimonic well-being appears to be tied to more adaptive patterns of brain circuitry. Although limited by small samples and cross-sectional data, the above findings offer promising evidence that eudaimonic well-being is linked with better neuroendocrine regulation, better immune function, lower cardiovascular risk, better sleep, and more adaptive neural circuitry.

SUMMARY: CONSTRUCTIVE TENSIONS AND FINDING THAT WHICH IS INTERMEDIATE

Our primary objective in this paper has been to revisit the philosophical and theoretical roots of eudaimonia so as to clarify how its central ideas infuse the study of human well-being. Whether we have done justice to these ideas, or fully utilized them to advance theoretical and empirical understanding of self-realization and human fulfillment is for others to evaluate. Also needed is thoughtful evaluation of how our perspective overlaps with, or is distinctive from, other flowers blooming in

psychology's eudaimonic garden (see Ryan and Deci, 2001 and other contributors to this special issue).

We conclude with observations about "constructive tensions" that come with the territory of studying human well-being. A central one pertains to the competing pulls of self versus other in formulating what it means to function optimally. In some circles, the human potential movement itself was seen as little more than an arena of narcissistic self-spelunking and ego-diving (see Ryff, 1985). Preoccupations with personal growth were depicted as crippling basic social institutions (e.g., the family), and thus ensued countervailing calls to elevate social responsibility and concern for others as the highest good. A further tension inherent in any effort to formulate ultimate ideals for human conduct is the pull between universalism versus relativism (see Ryff and Singer, 1998). Are there multiple forms of eudaimonic well-being – distinct varieties of self-realization nurtured by different societal contexts and culturally distinct ways of being (Diener and Suh, 2000; Kitayama and Markus, 2000). Or, is there a single formulation that applies to our species as a whole?

These challenging questions draw on the values and moral philosophies (implicit or explicit) of those who choose to study, if not, promote, human well-being. In reflecting on these tensions, we were struck anew by Aristotle's admonishment to seek "that which is intermediate." Following such guidance, we should avoid excess and extremes, whether it be a kind of well-being that is so solipsistic and individualist as to leave no room for human connection and the social good, or a version that is so focused on responsibilities and duties outside the self that inherent talents and capacities are neither recognized nor developed. Similarly, we are not well-served by rigid, tightly constrained formulations of how selves are realized any more than we benefit from a relativistic buffet in which any type of well-being goes. Moreover, even with regard to the dimensions of eudaimonic well-being we put forth (e.g., personal growth, self-knowledge, purposeful living), there are possible extremes in which self-realization spins out of control at great cost to others, or where responding to the expectations of others eliminates the capacity for autonomy.

Thus, we close with renewed appreciation for the idea of *balance*, both as a conceptual guide and as an empirical reality that scholars of well-being need to better understand. This will require that we peer deeply into what levels of well-being contribute to flourishing individual lives as well as optimally functioning social institutions. We will thus be required to address issues, such as what constitutes too little, or too much, life purpose? Or, what is too little, or not enough, self-knowledge? Questions such as these could not be more timely for the scientific study of human well-being where current inquiry is now poised to predict important empirical outcomes (e.g., the health of individuals, their families, and their communities) based on reported levels of eudaimonic well-being.

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NOTE

¹ We are grateful to Alan Waterman for pointing out this distinction.

REFERENCES

- Adler, N.E., M.G. Marmot, B.S. McEwen and J. Stewart 1999, Socioeconomic Status and Health in Industrialized Nations: Social, Psychological, and Biological Pathways, 896(New York Academy of Sciences, New York, NY).
- Allport, G.W. 1961, Pattern and Growth in Personality, (Holt, Rinehart, & Winston, New York, NY).
- Andrews, F.M. and S.B. Withey 1976, Social Indicators of Well-Being: America's Perception of Life Quality, (Plenum Press, New York, NY).
- Aristotle: 1925, The Nicomachean Ethics (Oxford University Press, New York, NY) D. Ross, Trans.
- Becker, L.C.: 1992, 'Good lives: Prolegomena', Social Philosophy and Policy 9, pp. 15-37.

- Bradburn, N.M. 1969, *The Structure of Psychological Well-Being*, (Aldin, Chicago, IL).
- Bryant, F.B. and J. Veroff: 1982, 'The structure of psychological well-being: A sociohistorical analysis', *Journal of Personality and Social Psychology* 43, pp. 653–673.
- Bühler, C.: 1935, 'The curve of life as studied in biographies', *Journal of Applied Psychology* 43, pp. 653–673.
- Bühler, C. and Massarik, F. (eds.) 1968, *The Course of Human Life*, (Springer, New York, NY).
- Carr, D.S.: 1997, 'The fulfillment of career dreams at midlife: Does it matter for women's mental health?', *Journal of Health and Social Behavior* 38, pp. 331–344.
- Cheng, S.-T. and A.C.M. Chang: 2005, 'Measuring psychological well-being in the Chinese', *Personality and Individual Differences* 38(6), pp. 1307–1316.
- Clarke, P.J., V.W. Marshall, C.D. Ryff and B. Wheaton: 2001, 'Measuring psychological well-being in the Canadian Study of Health and Aging', *International Psychogeriatrics* 13(Suppl 1), pp. 79–90.
- Diener, E.: 1984, 'Subjective well-being', *Psychological Bulletin* 95, pp. 542–575.
- Diener, E. and E.M. Suh: 2000, Measuring subjective well-being to compare the quality of life of cultures, in E. Diener and M. Suh (eds.), *Culture and Subjective Well-Being* (The MIT Press, Cambridge, MA), pp. 3–12.
- Dowd, J.J.: 1990, 'Ever since Durkheim: The socialization of human development', *Human Development* 33, pp. 138–159.
- Erikson, E.H.: 1959, 'Identity and the life cycle: Selected papers', *Psychological Issues* 1, pp. 1–171.
- Frankl, V.E. and I. Lasch: 1992, *Man's Search for Meaning: An Introduction to Logotherapy* (Beacon Press, Boston, MA). Original published 1959.
- Friedman, E.M., M. Hayney, G.D. Love, H. Urry, M.A. Rosenkranz, R.J. Davidson, B.H. Singer and C.D. Ryff: 2005, 'Plasma interleukin-6 in aging women: Links to positive social relationships and sleep quality', *Proceedings of the National Academy of Sciences* 102, pp. 18757–18762.
- Greenfield, E.A. and N. Marks: 2004, 'Formal volunteering as a protective factor for older adults' psychological well-being', *Journals of Gerontology: Series B: Psychological Sciences and Social Sciences* 59B(5), pp. S258–S264.
- Gross, J.J. and O.P. John: 2003, 'Individual differences in two emotion regulation processes: Implications for affect, relationships, and well-being', *Journal of Personality and Social Psychology* 85(2), pp. 348–362.
- Heidrich, S.M. and C.D. Ryff: 1993, 'The role of social comparison processes in the psychological adaptation of elderly adults', *Journal of Gerontology: Psychological Sciences* 48, pp. P127–P136.
- Helson, R. and S. Srivastava: 2001, 'Three paths of adult development: Conservers, seekers, and achievers', *Journal of Personality and Social Psychology* 80(6), pp. 995–1010.

- Hemenover, S.H.: 2003, 'The good, the bad, and the healthy: Impacts of emotional disclosure of trauma on resilient self-concept and psychological distress', *Personality and Social Psychology Bulletin* 29(10), pp. 1236–1244.
- Jahoda, M.: 1958, *Current Concepts of Positive Mental Health*, (Basic Books, New York, NY).
- Johnston, I.: 1997, *Lecture on Aristotle's Nicomachean Ethics* [Electronic version], from <http://www.mala.bc.ca/~johnstoi/>.
- Jung, C.G.: 1933, *Modern Man in Search of a Soul*; W.S. Dell & C.F. Baynes, Trans. (Harcourt, Brace & World, New York, NY).
- Kirby, S.E., P.G. Coleman and D. Daley: 2004, 'Spirituality and well-being in frail and nonfrail older adults', *Journals of Gerontology: Series B: Psychological Sciences and Social Sciences* 59B(3), pp. P123–P129.
- Kitayama, S. and H.R. Markus: 2000, The pursuit of happiness and the realization of sympathy: Cultural patterns of self, social relations, and well-being, in E. Diener and E.M. Suh (eds.), *Culture and Subjective Well-Being* (The MIT Press, Cambridge, MA), pp. 113–161.
- Kling, K.C., C.D. Ryff and M.J. Essex: 1997a, 'Adaptive changes in the self-concept during a life transition', *Personality and Social Psychology Bulletin* 23(9), pp. 981–990.
- Kling, K.C., M.M. Seltzer and C.D. Ryff: 1997b, 'Distinctive late-life challenges: Implications for coping and well-being', *Psychology and Aging* 12(2), pp. 288–295.
- Kwan, C.M.L., G.D. Love, C.D. Ryff and M.J. Essex: 2003, 'The role of self-enhancing evaluations in a successful life transition', *Psychology and Aging* 18(1), pp. 3–12.
- Lopes, P.N., P. Salovey and R. Straus: 2003, 'Emotional intelligence, personality, and the perceived quality of social relationships', *Personality and Individual Differences* 35, pp. 641–658.
- Maier, E.H. and M.E. Lachman: 2000, 'Consequences of early parental loss and separation for health and well-being in midlife', *International Journal of Behavioral Development* 24(2), pp. 183–189.
- Marks, N.F.: 1998, 'Does it hurt to care? Caregiving, work-family conflict, and midlife well-being', *Journal of Marriage and The Family* 60(4), pp. 951–966.
- Marks, N.F. and J.D. Lambert: 1998, 'Marital status continuity and change among young and midlife adults: Longitudinal effects on psychological well-being', *Journal of Family Issues* 19, pp. 652–686.
- Markus, H.R., C.D. Ryff, K.B. Curhan and K.A. Palmersheim: 2004, In their own words: Well-being at midlife among high school-educated and college-educated adults, in O.G. Brim C.D. Ryff and R.C. Kessler (eds.), *How Healthy are We?: A National Study of Well-Being at Midlife* (The University of Chicago Press, Chicago, IL), pp. 273–319.
- Marmot, M., C.D. Ryff, L.L. Bumpass, M. Shipley and N.F. Marks: 1997, 'Social inequalities in health: Next questions and converging evidence', *Social Science and Medicine* 44(6), pp. 901–910.

- Marmot, M.G., R. Fuhrer, S.L. Ettner, N.F. Marks, L.L. Bumpass and C.D. Ryff: 1998, 'Contribution of psychosocial factors to socioeconomic differences in health', *Milbank Quarterly* 76(3), pp. 403–448.
- Maslow, A.H. 1968, *Toward a Psychology of Being*, 2nd ed. (Van Nostrand, New York, NY).
- Mill, J.S. 1989, *Autobiography* (Penguin, London, England). Original work published 1893.
- Neugarten, B.L.: 1968, The awareness of middle age, in B.L. Neugarten (ed.), *Middle Age and Aging* (University of Chicago Press, Chicago, IL), pp. 93–98.
- Neugarten, B.L.: 1973, Personality change in late life: A developmental perspective, in C. Eisendorfer and M.P. Lawton (eds.), *The Psychology of Adult Development and Aging* (American Psychological Association, Washington, DC), pp. 311–335.
- Norton, D.L. 1976, *Personal Destinies: A Philosophy of Ethical Individualism*, (Princeton University Press, Princeton, NJ).
- Riediger, M. and A.M. Freund: 2004, 'Interference and facilitation among personal goals: Differential associations with subjective well-being and persistent goal pursuit', *Personality and Social Psychology Bulletin* 30(12), pp. 1511–1523.
- Riley, M.W., R.L. Kahn and A. Foner 1994, *Age and Structural Lag*, (Wiley, New York, NY).
- Rogers, C.R.: 1962, 'The interpersonal relationship: The core of guidance', *Harvard Educational Review* 32(4), pp. 416–429.
- Russell, B. 1958, *The Conquest of Happiness* (Liveright, New York, NY). Original work published 1930.
- Ryan, R.M. and E.L. Deci: 2001, 'On happiness and human potentials: A review of research on hedonic and eudaimonic well-being', *Annual Review of Psychology* 52, pp. 141–166.
- Ryff, C.D.: 1982, 'Successful aging: A developmental approach', *The Gerontologist* 22, pp. 209–214.
- Ryff, C.D.: 1985, Adult personality development and the motivation for personal growth, in D. Kleiber and M. Maehr (eds.), *Advances in Motivation and Achievement: Vol. 4, Motivation and Adulthood* (JAI Press, Greenwich, CT), pp. 55–92.
- Ryff, C.D.: 1989a, 'Happiness is everything, or is it? Explorations on the meaning of psychological well-being', *Journal of Personality and Social Psychology* 57(6), pp. 1069–1081.
- Ryff, C.D.: 1989b, 'Beyond Ponce de Leon and life satisfaction: New directions in quest of successful aging', *International Journal of Behavioral Development* 12, pp. 35–55.
- Ryff, C.D.: 1991, 'Possible selves in adulthood and old age: A tale of shifting horizons', *Psychology and Aging* 6(2), pp. 286–295.
- Ryff, C.D. and C.L.M. Keyes: 1995, 'The structure of psychological well-being revisited', *Journal of Personality and Social Psychology* 69(4), pp. 719–727.

- Ryff Keyes, C.D. C.L.M. and D.L. Hughes: 2003, 'Status inequalities, perceived discrimination, and eudaimonic well-being: Do the challenges of minority life hone purpose and growth?', *Journal of Health and Social Behavior* 44(3), pp. 275–291.
- Ryff, C.D. and B.H. Singer: 1998, 'The contours of positive human health', *Psychological Inquiry* 9(1), pp. 1–28.
- Ryff, C.D. and B.H. Singer: in press, Best news yet for the six-factor model of well-being. *Social Science Research*.
- Ryff, C.D., B.H. Singer and G.D. Love: 2004a, 'Positive health: Connecting well-being with biology', *Philosophical Transactions of the Royal Society of London B* 359, pp. 1383–1394.
- Ryff, C.D., B.H. Singer and K.A. Palmersheim: 2004b, Social inequalities in health and well-being: The role of relational and religious protective factors, in O.G. Brim C.D. Ryff and R.C. Kessler (eds.), *How Healthy are We?: A National Study of Well-Being at Midlife* (University of Chicago Press, Chicago, IL), pp. 90–123.
- Sartre, J.P. 1956, *Being and Nothingness*, (Philosophical Library, Oxford, England).
- Schutte, P.S. and C.D. Ryff: 1997, 'Personality and well-being: Reexamining methods and meanings', *Journal of Personality and Social Psychology* 73(3), pp. 549–559.
- Sheldon, K.M.: 2005, 'Positive value change during college: Normative trends and individual differences', *Journal of Research in Personality* 39(2), pp. 209–223.
- Singer, B.H. and C.D. Ryff: 1997, Racial and ethnic equalities in health: Environmental, psychosocial, and physiological pathways, in B. Devlin S.E. Feinberg D. Resnick and K. Roeder (eds.), *Intelligence, Genes, and Success: Scientists Respond to the Bell Curve* (Springer-Verlag Publications, New York, NY), pp. 89–122.
- Singer, B.H. and C.D. Ryff: 1999, Hierarchies of life histories and associated health risks, in N.E. Adler and M. Marmot (eds.), *Socioeconomic Status and Health in Industrial Nations: Social, Psychological, and Biological Pathways* 896(New York Academy of Sciences, New York, NY), pp. 96–115.
- Singer, B.H., C.D. Ryff, D. Carr and W.J. Magee: 1998, Life histories and mental health: A person-centered strategy, in A. Raftery (ed.), *Sociological Methodology* (American Sociological Association, Washington, DC), pp. 1–51.
- Singer, B.H. and C.D. Ryff 2001, *New Horizons in Health: An Integrative Approach*, (National Academy Press, Washington, DC).
- Springer, K.W. and R.M. Hauser: in press, 'An assessment of the construct validity of Ryff's scales of psychological well-being: Method, mode, and measurement effects', *Social Science Research*.
- Smider, N.A., M.J. Essex and C.D. Ryff: 1996, 'Adaptation to community relocation: The interactive influence of psychological resources and contextual factors', *Psychology and Aging* 11(2), pp. 362–372.

- Taylor, S.E., J.S. Lerner, D.K. Sherman, R.M. Sage and N.K. McDowell: 2003a, 'Are self-enhancing cognitions associated with healthy or unhealthy biological profiles?', *Journal of Personality and Social Psychology* 85, pp. 605–615.
- Taylor, S.E., J.S. Lerner, D.K. Sherman, R.M. Sage and N.K. McDowell: 2003b, 'Portrait of the self-enhancer: Well adjusted and well liked or mal-adjusted and friendless?', *Journal of Personality and Social Psychology* 84(1), pp. 165–176.
- Tweed, S. and C.D. Ryff: 1991, 'Adult children of alcoholics: Profiles of wellness and distress', *Journal of Studies on Alcohol* 52, pp. 133–141.
- Urry, H.L., J.B. Nitschke, I. Dolski, D.C. Jackson, K.M. Dalton and C.J. Mueller et al.: 2004, 'Making a life worth living: Neural correlates of well-being', *Psychological Science* 15(6), pp. 367–372.
- van Dierendonck, D.: 2004, 'The construct validity of Ryff's Scales of Psychological Well-Being and its extension with spiritual well-being', *Personality and Individual Differences* 36(3), pp. 629–643.
- Waterman, A.S. 1984, *The Psychology of Individualism*, (Praeger, New York, NY).
- Wiggins, J.S. 1980, *Personality and Prediction: Principles of Personality Assessment*, (Addison-Wesley, Menlo Park, CA).
- Wink, P. and M Dillon: 2003, 'Religiousness, spirituality, and psychosocial functioning in late adulthood: Findings from a longitudinal study', *Psychology and Aging* 18(4), pp. 916–924.

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The Inner Voice

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ABSTRACT

The inner voice- we all know what it is because we all have it and use it when we are thinking or reading, for example. Little work has been done on it in our field, with the notable exception of Brian Tomlinson, but presumably it must be a cognitive phenomenon which is of great importance in thinking, language learning, and reading in a foreign language.

The inner voice will be discussed as a cognitive psychological phenomenon associated with short-term memory, and distinguished from the inner ear. The process of speech recoding will be examined (the process of converting written language into the inner voice) and the importance of developing the inner voice, as a means of both facilitating the production of a new language and enhancing the comprehension of a text in a foreign language, will be emphasized.

Finally, ways of developing the inner voice in beginning and intermediate readers of a foreign language will be explored and recommended.

KEYWORDS: Inner voice, inner ear, inner speech, L2 reading, working memory, phonological loop

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I. THE INNER VOICE IN OUR NATIVE LANGUAGE

We are all familiar with the inner voice, as it accompanies our thinking, but although it is perhaps our most familiar companion, it is very difficult to specify exactly what it is. It is perhaps most often identified with the voice of the spirit or the conscience (the ‘still small voice’ of the Bible), or in a related sense, the voice of the ‘real you’; indeed, Vygotsky (1986 [1934]) argues that inner speech (we will be using the terms ‘inner voice’ and ‘inner speech’ interchangeably here, although the latter may imply a Vygotskian point of view) helps the individual to constitute his or her very inner life. In this sense, the inner voice is often the voice of integrity that reminds us of our principles.

The inner voice is also what we think with, this language-productive module in our heads that works so unceasingly that we sometimes may wonder whether it is possible to shut it up! This irrepressibility makes us ask ourselves sometimes whether it is possible to think without language. At times the inner voice seems to be faint, as language impinges only slightly on our thoughts, while other modularities such as the visual take over. At other times it echoes in our heads as we perform complex operations such as mental arithmetic. We can even see it at work in other people as their speech organs form the shapes of words that we do not hear. But it rarely, if ever, seems to go away completely. From the time that it develops in tandem with our faltering efforts to express ourselves in early childhood, it remains with us for the rest of our lives. Some types of meditation are techniques to stop, even if only temporarily, the continual twitter of the inner voice, so that we may contemplate our existence without its constant interpolation. In psychotic interludes the inner voice may appear to take on an external reality of its own, and to take on a number of different identities, so that people possessed may speak of their ‘voices’. Indeed, we all may have different voices or perspectives on our inner voice. We may, for example, address ourselves as ‘I’, ‘you’, or ‘we’, depending on the situation (willingly imposed or unwillingly imposed obligation, for example). While we are reading, we may also hear different voices from different characters, particularly where the language and orthography indicate a particular dialect. It is hard to imagine hearing the voice of Huckleberry Finn in an English accent while reading the book.

I.1. Working Memory and the Phonological Loop

Working memory, which may in general be identified with short-term memory (simply a more general term), is described by Baddeley (2003a: 6) as “a temporary storage system

which underpins our capacity for thinking”. The most widely accepted model (Baddeley & Hitch, 1974, Baddeley, 2001) consists of four components, as illustrated in Fig. 1.

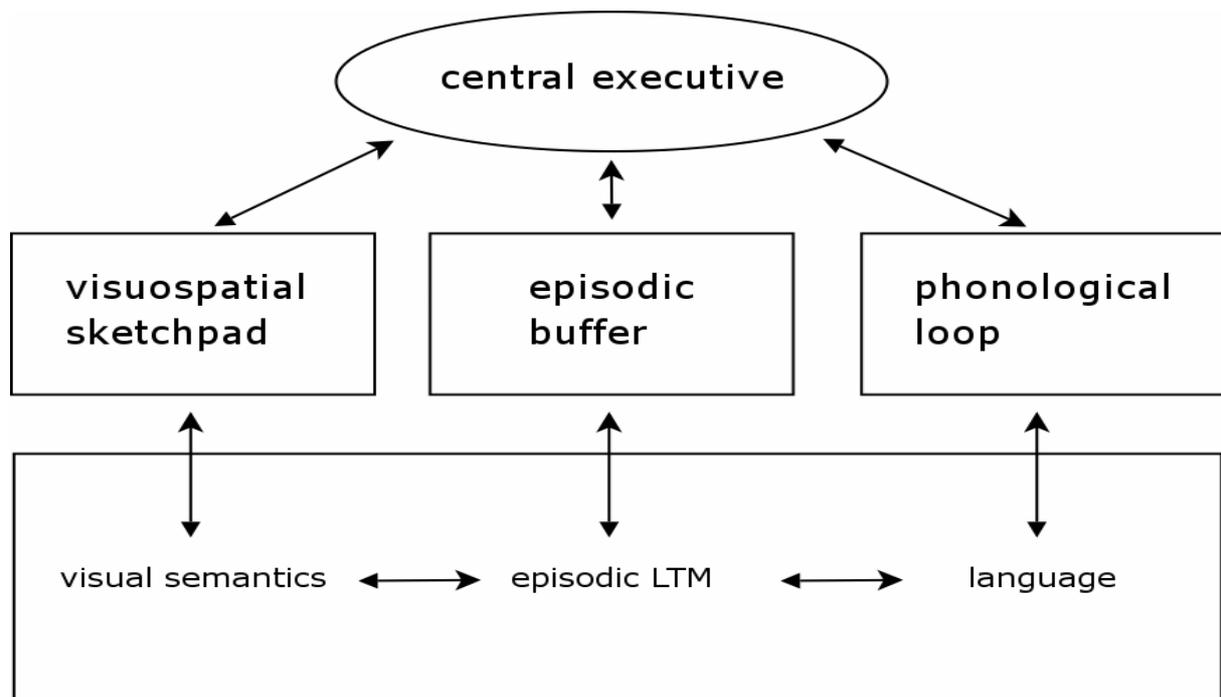


Figure 1: Working Memory, from Baddeley 2003b

The central executive is akin to attention, the visuo-spatial scratchpad deals in the short term with visual images, the phonological loop with auditory information, and the episodic buffer temporarily combines the information from the senses to create a multisensory impression of what is happening. The timescale of working memory is in the region of 1-2 seconds, as long as it takes, say, to put a proposition together as a thought, and in this sense it is useful to think of it as the cognitive ‘present’, constantly changing with our thoughts and impressions. Indeed, since William James (1890) there have been thinkers who identify close-knit relationships between short-term memory and consciousness (e.g. Baars, 1997, Crick & Koch, 1998).

I.2. Inner Ear and Inner Voice

The phonological loop can be divided into two parts- a short-term phonological store (inner ear), which retains the traces of speech attended to, and an articulatory rehearsal mechanism (inner voice), which assembles speech in preparation for its delivery. It is not clear to what extent these two elements are separate or aspects of the same thing, but there is evidence that they are associated with different areas of the brain- Brodmann's area 44 and Broca's area respectively (Baddeley 2003a: 1.1). It can also be demonstrated that the inner ear can still operate while articulation is repressed. Rayner and Pollatsek (1989), cited in Eysenck & Keane (1995, p. 312) point out: "...it is possible to have phonological coding without the appropriate subvocal articulation- if you read a text while saying 'the the the' over and over again, it is still possible to hear your own voice." This points to the existence of both an inner voice and an inner ear as separate, if related, phenomena.

II.3 Sociocultural theory

In sociocultural theory (Vygotsky 1978), developing learners move from an 'intermental' (social) to an 'intramental' (psychological) state. Learners acquire language through co-operative activity (as in task-based learning), directed interactive behavior (as in 'scaffolding'), and internalisation of speech patterns ('inner speech') (Mitchell & Myles 1998). Children playing, for example, will talk to themselves (private speech), but later this becomes internalised as inner speech. An important element of Vygotsky's theory is mediation, where language is seen as a tool mediating between us and the outside world in the same way as a pencil and paper help us to do an arithmetic problem. Once speech has been internalised, it may return into the public domain under the pressure of an unexpected event, or a particularly knotty problem. Mental arithmetic is an example of a situation where the inner voice may become externalised. Vygotsky (1986: 249, cited in McCafferty & Ahmed, 2000: 201) characterises inner speech thus:

In inner speech words die as they bring forth thought. Inner speech is to a large extent thinking in pure meanings. It is a dynamic, shifting, unstable thing, fluttering between word and thought, the two more or less stable, more or less firmly delineated components of verbal thought.

Vygotsky also differentiated inner speech from interactive speech in two ways. Firstly, the syntax is reduced. The example he gives is of someone waiting for a bus. When the bus arrives, the inner speech mechanism would not say something like “The bus for which I was waiting has arrived.”, but something more like “Coming”. Secondly, inner speech is different semantically, words having private meanings which amount to the sum total of one’s experience with them, rather than their public currency (McCafferty & Ahmed, 2000, 201).

II. INNER VOICE AND EAR IN FIRST-LANGUAGE READING

Huey (1908), in the first classic study of reading, expresses the viewpoint (primary memory being James’s (1890) precursor of short-term memory):

The carrying range of inner speech is considerably larger than that of vision... The inner subvocalisation seems to hold the word in consciousness until enough others are given to combine with it in touching off the unitary utterance of the sentence which they form... It is of the greatest service to the reader or listener that at each moment a considerable amount of what is being read should hang suspended in the primary memory of the inner speech.

Huey, 1908, cited in Eysenck & Keane, 1995: 312

It appears that both inner ear and inner voice may be used in reading, though not necessarily so (in speed reading, for example, it may be actively discouraged, as it may slow down the pace). The evidence reviewed in Eysenck & Keane (1995: 312-4) indicates that “inner speech plays a useful role in comprehension unless the text is very easy.” (314). The most obvious function of inner speech in reading comprehension is probably “...that of holding information about words and about word order in working memory so as to reduce the memory load in comprehension.” (315). Another possible function is “...that it may provide the prosodic structure (e.g. rhythm, intonation, stress) that is lacking in written text but present in spoken language.” (315).

II.1 Phonological recoding

In the previous section we discussed inner speech as a spontaneously occurring cognitive phenomenon- a vehicle for thought. In reading there are two significant differences. In thought, the elements of inner speech are instantly available; in reading, access to the inner

voice or ear is indirect- signals enter the brain by the visual route, and then may be encoded into phonological form. Secondly, thought is a productive activity, generally accompanied by subvocalisation. Reading, whilst it is not passive, is receptive, and therefore the inner ear, as well as the inner voice, is involved. We have already seen that articulatory suppression does not suppress the auditory store, so it is likely in reading that when the articulatory component of the phonological loop is engaged, the auditory component is working too.

The short-term phonological store (inner ear) receives inputs from the phonological modality of the reading process, and is used perhaps to monitor more affective and interpersonal aspects of language, especially where the text has resemblances to speech. It would therefore be of more importance in reading poetry and drama. It also appears to direct us to meaning by endowing the (hitherto) written word with the prosody of speech. The articulatory rehearsal mechanism is used by the fluent reader only when reading difficult texts, in a quest for meaning. The probable reason for this is that the working memory as a whole is overloaded, and needs the extra capacity as back-up (Eysenck, 1986: 84). There is evidence that when subjects are trained to suppress the laryngeal muscle activity which is associated with subvocalisation during reading, there is no effect on comprehension while reading easy passages, but comprehension of complex prose suffers (Hardyck & Petrinovich, 1970).

It is well known that the progression from beginning to fluent reading is accompanied by a process of automatisisation (Laberge & Samuels 1974; McLeod & McLaughlin, 1986; Schneider & Schiffrin, 1977). Thus early efforts to 'sound out' words from orthographic cues by means of phonological recoding gradually become automatised with repetition- the sight of a word becomes automatically associated with its sound via the phonological route.

III. THE INNER VOICE IN A FOREIGN LANGUAGE

There is evidence that a good short-term memory (measured by span, for example, how long a telephone number can you repeat back to me?) is a significant predictor of foreign language learning proficiency:

...Service (1992) ... studied the acquisition of English as a second language by young Finnish children, finding that children with good immediate verbal memory proved to be better at language learning than those with short spans, not only when measured by vocabulary, but also by acquisition of syntax. Similar results have been found for adult learners of a second language, in the case of both vocabulary and syntax by both

adults (Atkins & Baddeley, 1998; Gathercole, Service, Hitch, Adams, & Martin, 1999) and children (Service, 1992).

(Baddeley, 2003a: 1.2)

In addition, Baddeley, Pappagno & Vallar (1988) found that a patient with short-term memory deficit failed to learn anything whatever in a foreign language but performed equally with others in learning word-pair associations in her native language. Pappagno, Valentine & Baddeley (1991) found that articulatory suppression (for example repeating “the the the” continually) inhibited learning in a foreign language, but not in the native language (cited in Baddeley 2003a: 1.2).

Vocal, or internally subvocalised, rehearsal seems, then, to be a significant factor in learning a new language, and a good short-term memory lends its possessor an advantage in foreign language acquisition.

At this point the research seems to run out and one is thrown back onto introspection and hearsay. Whenever I have learnt a new language, there comes a stage where an inner voice in the new language begins to come into its own. I regard this as something of a breakthrough- a breakthrough period, not a breakthrough point. There are some features of this worth remarking on:

1. There is definitely a motivational factor. If one does not like the target language, then there is no reason to think in it. For this reason among others many people do not progress very far in a language they are learning for reasons that do not include their own enthusiasm for the process.
2. Thinking in a language provides practice which is arguably as good as speaking it. Processes as important as automatism continue to operate and one's proficiency continues to develop.
3. When one is out of the environment in which the language is spoken, thinking in it keeps the language alive and prevents one from going 'rusty'.
4. When one is thinking in a different language, one takes on a slightly different personality. This may be partly because, in a Vygotskian sense, we associate the language with a different series of gestures and actions, and partly because a language in itself carries different assumptions and connotations with it and prevents us from expressing ourselves in exactly the same way as we would in our native language.

Also, there seems to be a folk belief that once you think in a language you can really speak it. People when asking one how well one can speak a language may well ask if one thinks in it, or is able to think in it, as if this provides confirmation of proficiency. This takes us right back to the idea of the inner voice being the voice of the true self or the spirit-Vygotsky's 'inner life', and it is not uncommon for people to feel threatened by the encroachment on their identity of a foreign voice, as I have found from informal discussions with students.

IV. INNER VOICE AND EAR IN FOREIGN LANGUAGE READING

A significant difference between learning to read in a foreign language and learning to read in one's native language is that in a foreign language one will generally have little familiarity with the phonology or prosody of the target language which one is learning to read. Setting aside the case of ideographic writing systems, which would need a study of their own, one generally proceeds along a scale from an interlanguage based on one's sounding-out of the new language according to one's preconceptions (likely to be based on L1) through progressively more accurate forms of interlanguage until one reaches the limit of one's proficiency or inclination to learn. In first-language reading the reader already has a phonological store with which to associate written words. The development of inner voice and ear while reading in a foreign language, however, depends on the development of an automatised phonological store in the target language, which comes about through a process resembling that described above.

We have seen that inner ear and voice come into play increasingly as the text becomes more challenging to the reader. Subjectively I am aware of a far more intense and laborious sounding of the words taking place in the mind's ear when reading in a foreign language than in my native language- even when, as in the case of Latin, it is a language I have never heard. The difficulty of the task places a heavy load on working memory, which marshals to its aid all the capacity it can find. Inner ear and inner voice are much more likely to be present in foreign language reading because of the cognitive load entailed.

Harris and Coltheart (1986) identify four phases in the process of learning to read for native speakers. The third and fourth of these are:

- (c) The phonological recoding phase, where children are able to successfully identify nonsensical pseudo-sentences (for example "Tell me blue he went") as nonsense, but

unable to do so where they contain homophones (for example “Tell me wear he went”) (Doctor & Coltheart, 1980).

(d) The orthographic phase, by which time children are able to identify sentences containing homophones, such as “Tell me wear he went” as nonsensical. (Doctor & Coltheart, 1980).

The orthographic phase is necessary in English because of spelling irregularities and homophones, and in any language with regular phoneme-grapheme correspondence, such as Turkish or Spanish, this problem will not exist, there will be no homophones, and the orthographic phase will be unnecessary, except in as far as the reader’s dialect differs from the standard.

V. PEDAGOGIC IMPLICATIONS

Not only in reading, but in language learning as a whole, the development of inner voice and ear in that language is of importance. In reading in a foreign language, inner voice and ear are most likely to be brought into service to deal with the cognitive load the activity demands in a quest for meaning. So how can we develop inner voice and ear in language learners?

Speech is primary, and in native language acquisition of course we are all very familiar with the spoken language before we start to read. In a foreign language we need to avoid introducing difficult reading texts too early. In general the approaches used in English language textbooks for children are good: at an early stage do plenty of oral work with contextualised language, and only place upon the learner a light reading load.

At lower levels, always introduce the written form of the word after the spoken form, and don’t introduce unfamiliar language in reading texts.

To develop the inner ear, do lots of work at lower levels that emphasises the prosody of the language. Rhymes, chants (e.g. jazz chants) and games like “Who stole the cookie?” are good for this.

Rehearsal for the use of the public voice should be good training for the inner voice, and as long as it is not done prematurely, and is based on language that has been carefully listened to as well as read, so learning poems or parts in plays should be useful. At lower levels, reading aloud by learners is not a good idea unless it has been prepared, and a spoken version of the text can be referred to. There is one exception to this: unprepared

reading aloud by students can be used as a powerful diagnostic tool by teachers (Goodman, 1982a, b; Wallace, 1989). The level of a reader's comprehension, for example, can often be surmised by listening to their stress, intonation, and the way they divide the text into chunks.

Not only do we need to develop the inner voice and ear, but we also want to make sure that they are as close to the target language as possible. Because of irregularities of spelling in English, we need to make sure that learners go through the equivalent of Harris and Coltheart's "orthographic phase" (1986). In order to do this, the following are useful:

Again at lower levels, have learners see the written form and hear the spoken form at the same time. The teacher can read the text aloud while students follow silently. Dhaif (1990) found that reading aloud to a class of FL learners while they followed the text enhanced comprehension when compared to silent reading. This confirms L1 research (Elley, 1989, Hillman, 1975; McCormick, 1981) and was favoured by the students themselves. Listening to the rhythm and intonation of a teacher or recording gives the listener/reader valuable information about the way a skilled reader chunks text into telling information units. The importance that intonation may have is emphasised by Goodman: "The ability to read with natural intonation is related to comprehension" (1964: 1). Training in phoneme-grapheme correspondences is an important area and more work on homophones needs to be included in the syllabus.

The exercise of dictation, with the demands it makes on the phonological loop and the chunking mechanism, may be useful in the development of working memory capacity in the foreign language, as well as raising awareness of phoneme-grapheme correspondences. Another useful exercise which, unlike dictation, actually involves the skill of reading, would be 'reading dictation', where the chunks of a text for dictation are presented on flashcards for a very short period of time, say one second, and the learners have to read, encode (probably phonologically) in short-term memory, and write down what they have read.

Tomlinson (2001) makes a number of useful suggestions in this area. He begins by noting:

In L1 the inner voice develops naturally at the same time as (or possibly even before) the external voice. In L2 the external voice is given primacy from the very beginning, and it is imposed on and inhibits the inner voice, thus slowing down thought and retarding creativity. Instead of demanding public performance in the L2 from the very beginning, we should encourage learners to talk to themselves in private, egocentric speech. But even before that we should allow them the privacy and silence to develop an inner voice by

providing them with opportunities to listen to the L2. They can respond mentally, physically or even in the L1; but they must be given time to think, and they must not be forced to perform in a public voice without having an inner voice available to help them to prepare.

This is an argument for a silent period, and indeed, the first stage in developing inner voice and ear is necessarily through listening. There is also a psychological argument that students should not be forced to use public speech before they are ready.

His suggestions for the development of the inner voice come under the following headings (in italics with my comments following):

Listen and don't repeat. This again is an argument for a silent period. But there is repeating and repeating. When one observes children using songs and rhymes in their L1 development it seems clear that they enjoy repeating and this rote-learning of aspects of the sound system of their language is beneficial to them and develops their phonological awareness.

Expose students to colloquial unplanned speech. It has already been pointed out that the inner voice uses a reduced syntax. Much formal writing uses an artificially complex register in accordance with socially (that is public voice rather than inner voice) accepted norms. Some written language, for example legal language, is not really designed to be rehearsed by the inner voice at all. Initially, then, exposure to colloquial, unplanned speech will be beneficial, but one should also bear in mind the role of the inner voice as an *aide-memoire* in reading difficult, complex texts. At a more advanced level, then, one reads whatever one has to read and uses inner ear and voice to help out with the cognitive load.

Limit the use of drills. Again, there are drills and drills. Many of the songs and rhymes which children love are drill-like, whether they be of the "One man went to mow..." or the "Partridge in a pear tree" variety. There are also meaningful activities which are drill-like in the sense that they intensively repeat the same language. Many guessing games are like this, and can be meaningful and fun.

Avoid premature reading activities. Yes, in particular avoid introducing texts which are too difficult or, at lower levels, which introduce language which has not yet been met in the spoken form.

Avoid bland and neutral ESL readers. Yes, but there are plenty of good readers out there to help the learners develop their reading skills. Once a learner can read for pleasure, the

battle to develop inner ear and voice has already been half won. Reading for pleasure in a foreign language almost inevitably involves the participation of the inner ear, and most probably the inner voice as well. If learners are in an environment where they can find texts they are motivated to read at a level which is suitable for them, then this will greatly help the development of inner voice and ear as long as the voice/ear resembles the target language sufficiently closely.

Encourage L1 in L2 classes. ‘Encourage’ is perhaps too strong a word. In my experience students don’t need any encouragement! However this may not be as true in the Far East, where Tomlinson was teaching. In an ideal situation L1 is used optimally where appropriate to assist with scaffolding, strategic translations, and so on. Then it can certainly be a help.

VI. CONCLUSION

The inner voice and the inner ear (the phonological loop) are familiar constant companions, and vital components of short-term memory, which is itself what underpins our thinking, and therefore much of our learning. Although they have been relatively neglected in the literature until recently, there is now evidence that they play an important part in foreign language learning and comprehension. They appear to do this by:

- aiding the memory as the reader progresses through a text
- Providing extra cognitive space for the processing of difficult texts
- Possibly facilitating semantic access by providing prosodic clues
- Possibly monitoring affective and interpersonal aspects of language

At a certain stage of language proficiency, around intermediate level, the inner voice emerges gradually as a spontaneous and autonomous phenomenon- thinking in the language, which is popularly regarded as a sign of proficiency in it. Before this stage inner ear and inner voice may be developed in the following ways:

- Introducing the spoken form of words before the written form at lower levels.
- Using rhymes, chants and games which emphasise the prosody of the language.
- Learning poems and parts in plays.
- Reading texts aloud by the teacher while learners follow the written text.
- Training learners in phoneme-grapheme correspondences.
- Dictation.

- Avoiding texts whose level of difficulty is beyond the learners.
- Exposing learners to colloquial unplanned speech.

REFERENCES

- Atkins, P.W.B. & Baddeley, A.D. (1998). Working memory and distributed vocabulary learning. *Applied Psycholinguistics* 19, 537–552
- Baars, B.J. (1997). Contrastive Phenomenology: A Thoroughly Empirical Approach to Consciousness. In N.J. Block (Ed.) *The Nature of Consciousness: Philosophical Debates*. Cambridge, Mass.: MIT Press, pp. 187-202.
- Baddeley, A.D., (2001). Is working memory still working?. *American Psychologist* 56, 851–864.
- Baddeley, A.D., (2003a). Working Memory: An Overview. *Journal of Communication Disorders* 36:3, 189-208.
- Baddeley, A. (2003b). Working memory: looking back and looking forward. *National Review of Neuroscience*, 4: 10, 829–839.
- Baddeley, A. D., & Hitch, G. J. (1974). Working memory. In G. A. Bower (Ed.), *Recent advances in learning and motivation* (Vol. 8,), New York: Academic Press, pp. 47–90.
- Baddeley, A.D., Papagno, C. & Vallar, G., (1988). When long-term learning depends on short-term storage. *Journal of Memory and Language* 27, 586–595.
- Crick, F. & Koch, C. (1998). Consciousness and Neuroscience. *Cerebral Cortex* 8:2, 97-107.
- Dhaif, H. (1990). Reading aloud for comprehension. *Reading in a Foreign Language* 7:1, 457-464.
- Doctor, E.A. & Coltheart, M. (1980). Children's use of phonological encoding when reading for meaning. *Memory and Cognition* 8, 195-209.
- Elley, W.B. (1989). Vocabulary acquisition from listening to stories. *Reading Research Quarterly* 24, 174-187.
- Eysenck, M. (1986). Working Memory. In G. Cohen, M. Eysenck & M. Levin (Eds.) *Memory: A Cognitive Approach*. Milton Keynes: Open University Press.
- Eysenck, M., & Keane, M. (1995). *Cognitive Psychology: A Student's Handbook*. (3rd ed.). Hove: Psychology Press.
- Gathercole, S.E., Service, E., Hitch, G.J., Adams, A.M. & Martin, A.J., (1999). Phonological short-term memory and vocabulary development: Further evidence on the nature of the relationship. *Applied Cognitive Psychology* 13, 65–77.
- Goodman, K. (1964). *A Linguistic Study of Cues and Miscues in Reading*. ERIC: ED015087.

- Goodman, K. (1982a). Analysis of Oral Reading in Miscues: Applied Psycholinguistics in Language and Literacy. In F.V. Gollasch (Ed.) *Selected Writings of Kenneth S. Goodman Volume One: Process, Theory and Research*. Boston: Routledge & Kegan Paul.
- Goodman, K. (1982b). Miscues: Mirrors on the Reading Process in Language and Literacy. In F.V. Gollasch (Ed.) *Selected Writings of Kenneth S. Goodman Volume One: Process, Theory and Research*. Boston: Routledge & Kegan Paul.
- Hardyck, C.D. & Petrinovich, L.R. (1970) Subvocal speech and comprehension level as a function of the difficulty level of reading material. *Journal of Verbal Learning and Verbal Behaviour* 9, 647-52.
- Harris, M., & Coltheart, M. (1986). *Language Processing in Children and Adults*. London: Routledge & Kegan Paul.
- Hillman, J. (1975). *Reading aloud to children: a rationale*. ERIC, ED. 172152.
- Huey, E.B. (1908) [1968]. *The Psychology and Pedagogy of Reading*. Cambridge, Mass.: MIT Press.
- James, W. (1890). *Principles of Psychology*. New York: Holt.
- Laberge, D. & Samuels, S. J. (1974). Toward a theory of automatic information processing in reading. *Cognitive Psychology* 6, 293-323.
- McCafferty, S.G. & Ahmed, M.K. (2000). The Appropriation of Gestures of the Abstract by L2 Learners. In J.P. Lantolf (Ed.), *Sociocultural Theory and Second Language Learning*. Oxford: OUP.
- McCormick, S. (1981). *Reading aloud to pre-schoolers aged 3-6: A Review of Research*. ERIC ED. 199657.
- McLeod, B. & McLaughlin, B. (1986). Restructuring or Automaticity? Reading in a Second Language. *Language Learning* 36, 105-23.
- Mitchell, R. & Myles, F. (1998). *Second Language Learning Theories*. London: Arnold.
- Papagno, C., Valentine, T. and Baddeley, A.D. (1991). Phonological short-term memory and foreign-language vocabulary learning. *Journal of Memory and Language* 30, 331-347.
- Rayner, K., & Pollatsek, A. (1989). *The Psychology of Reading*. London: Prentice-Hall.
- Schneider, W. & Shiffrin, R.M. (1977). Controlled and automatic human information processing: I: Detection, Search and Attention. *Psychological Review*, 84, 1-190.
- Service, E., (1992). Phonology, working memory, and foreign-language learning. *Quarterly Journal of Experimental Psychology* 45: 1, 21-50.
- Tomlinson, B. (2001). The Inner Voice: A Critical Factor in L2 Learning. *Journal of the Imagination in Language Learning and Teaching, Volume VI*. Retrieved May 1 2008 from <http://www.njcu.edu/cll/Vol6/tomlinson.html>

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Inner and outer voices in the present moment of family and network therapy

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Dialogue in the polyphony of inner and outer voices in the present moment of family therapy is analysed. In Western Lapland a focus on social networks and dialogues in the meeting with families has proved to be effective in psychotic crises.

Introduction

In this paper three main themes are considered. First, I analyse the importance of the present moment in family therapy. Second, I explore the polyphony of voices as the main aspect of human psychology and its meaning for family therapy dialogue. Third, the effectiveness of dialogism in the treatment of psychotic problems will be illustrated in the province of Western Lapland in Finland.

The present moment

Open dialogue describes both organizing the psychiatric practice for severe crises and dialogues in meetings with the family and the rest of the client's social network. For therapists the main challenge becomes being present and responding to every utterance. We are living in the 'once occurring participation in being' (Bakhtin, 1993).

Tom Andersen (2007) was preoccupied by three different realities of our practices as clinicians. In the 'either-or' reality we handle issues that are visible but dead in the sense that they are exactly defined and the definitions remain the same in spite of the context. In the 'both-and' reality we deal with issues for which many simultaneous descriptions are possible. These issues are living and visible. This is the case, for instance, in the family therapy discussion when we make space for different voices to become heard without considering one point of

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view to be right and another wrong. The most interesting may be the 'neither-nor' reality, in which things are invisible but living. We experience something as taking place, but we do not have an exact linguistic description for it. We may say that it is neither this nor that, but I know that something is taking place. As an example, Andersen gives handshaking. It is something that happens in our embodied participation in the session, yet it is not commented on by words but remains as our embodied experience of the present moment.

Daniel Stern (2004) in emphasizing the importance of the present moment is critical of descriptions of psychotherapy and psychoanalysis that focus on clients' narratives. The therapist is seen as the one giving meanings to patients' stories, in different schools in different ways. Therapy deals with explicit knowledge in linguistic descriptions. Stern proposes moving from explicit knowledge to the implicit knowing that happens in the present moment as embodied experience, and mainly without words. We live in it. The present moment is a short one, varying between one and ten seconds, lasting on average three seconds.

Stern is describing individual psychotherapy. In the type of family therapy that focuses on generating dialogues this means shifting the focus from the content of narratives to the present moment when narratives are told. Therapists and clients live in a joint embodied experience that happens before the client's experiences are formulated in words. As in dialogue on the whole an intersubjective consciousness emerges. Our social identity is constructed by adapting our actions to those of others. For Bakhtin, knowing myself is only possible by seeing ourselves through the eyes of the other. I see myself through others' eyes (Bakhtin, 1990). In Bakhtin's view if we want to see ourselves as living persons while looking at our reflection in the mirror, we adapt others' eyes to do that. Living persons emerge in real contact with each other and adapt to each other as in a continuous dance in automatic movements without controlling their behaviour in words.

Intersubjectivity

The intersubjective quality of our consciousness is shown in the mother-baby communication studies conducted by Colwyn Trevarthen (1990). Trevarthen's careful observations of parents and infants demonstrate that the original human experience of dialogue emerges in the first few weeks of life, as parent and child engage in an exquisite dance of mutual emotional attunement by means of facial

expressions, hand gestures and tones of vocalization. This is truly a dialogue: the child's actions influence the emotional states of the adult, and the adult, by engaging, stimulating and soothing, influences the emotional states of the child. Bråten (1992, 2007) describes the Virtual Other as an innate part of the baby's mind that in a way waits for a dialogue with the Actual Other. If the Actual Other is not present, the dialogue emerges with the Virtual Other. Near relations take place in the mode of felt immediacy, in feelings that are felt in a pre-linguistic form. David Trimble has been analysing the importance of Trevarthen's and Bråten's studies for family and network interventions (Seikkula and Trimble, 2005).

In every meeting two histories happen. The first is the history generated by our presence as embodied living persons. We adapt ourselves to each other and create a multi-voiced polyphonic experience of the shared incident. Salgado and Hermans (2005) point out that we cannot call this 'experience', because experience already presumes psychological meaning that is included by the Other or Otherness in the situation. It is our embodied experience for which manifold meanings emerge based on the number of participants in the situation. Family sessions as such already include several family members and often two or three therapists. Most of this history takes place without words, but not all. The words that refer to our presence in this conversation often include the most important emotions connected to those voices of our lives that deal with difficult experiences. We may, for example, describe and reflect on our feelings about the specific situation we are talking about.

The second history in the same situation occurs in the stories that living persons tell of their life. Stories always refer to the past, they never can reach the very present moment, since when the word is formulated, and when it becomes heard, the situation in which it was formulated has already passed. Integrating the two aspects of the same moment it becomes evident what focus on dialogue can add into narrative orientation. While comparing narrative and dialogical approaches in family therapy, Roger Lowe (2005, p.70) stated that:

The conversational style . . . simply follows the conversation, while the narrative and solution-focused styles often attempt to lead it. The conversational style strives to remain dialogical, while the solution-focused and narrative styles may become monological (e.g., when therapists attempt to 'story' clients' lives according to a planned agenda).

Compared to narrative and solution-focused therapies, in dialogical approaches the therapists' position becomes different. Therapists are no longer interventionists with some preplanned map for the stories that clients are telling. Instead, their main focus is on how to respond to clients' utterances as answers are the generators for mobilizing one's own psychological resources, since 'for the word (and consequently for a human being) there is nothing more terrible than a lack of response' (Bakhtin, 1984, p.127). Respecting the dialogical principle that every utterance calls for a response, team members strive to answer what is said.

Answering does not mean giving an explanation or interpretation, but, rather, demonstrating in a therapist's response that one has noticed what has been said and, when possible, opening up a new point of view on what has been said. This is not a forced interruption of every utterance to give a response, but an adaptation of one's answering words to the emerging natural rhythm of the conversation. Team members respond as fully embodied persons, with genuine interest in what each person in the room has to say, avoiding any suggestion that someone may have said something wrong. As the process enables network members to find their voices, they also become respondents to themselves. For a speaker, hearing her own words after receiving the comments that answer them enables her to understand more of what she has said. Using the everyday language with which clients are familiar, team members' questions facilitate the telling of stories that incorporate the mundane details and the difficult emotions of the events being recounted. By asking other network members' comments on what has been said, team members help create a multi-voiced picture of the event.

When the team is not present

To illustrate the importance of the once occurring event of being, a transcript of a therapy session is given. Pekka (P) had been hospitalized after a home visit that the crisis intervention team had made the previous week. In the meeting it appeared that P had been violent towards his mother. In the following sequence, this occasion is described. T1 and T2 stand for the two therapists.

T1: *I thought that it happened during the last two weeks, not before.*

T2: *Was it a threat or even worse?*

T1: *Hitting, I thought that P hit his mother.*

T2: *Was P drunk or did he have a hangover?*

P: *No, I was sober.*

T2: *Sober.*

T1: *I understood that P had tried to ask his mother something?*

P: *Well, it was last weekend; the police came to us. She was drunk. When she didn't say anything and started to make coffee in the middle of the night, and I asked . . . I went out and came into the kitchen, and she turned round and said that I wasn't allowed to speak of it. Then I slapped her. She ran out into the corridor and started screaming. I said that there is no need to scream, why can't she tell And then I calmed down. At that point I got the feeling And the police came and the ambulance. But in some way I have a feeling, that it is, of course, it is not allowed to hit anyone. But there are, however, situations . . .*

T1: *Was that the point when you went into primary care?*

P: *Yes it happened just before that.*

T2: *Why didn't she say that the police came round?*

P: *What?*

T2: *Why didn't she say that police had been at your place the previous night?*

P: *It wasn't the previous night, it was last weekend. I was thinking, all the time I am thinking these strange things and I knew that they were not true. But when you think about them for a while, after that you have the feeling that things like that can really happen. It is too much All you can think about are all kind of trifling matters.*

T2: *And it all started last weekend, this situation?*

T1: *Yes.*

When the patient was describing the situation in confused language, unable to use unambiguous description, he ended by saying, 'it is not allowed to hit anyone'. He had an origin of an inner dialogue to deal with what he had done. But the team did not respond to this, instead continuing to question him about how he contacted the healthcare system. Team members actually focused in on the content of his story of what had happened instead of being present in the very moment and answering Pekka's reflections of his own behaviour. This was not an isolated example, given that in the next utterance, when the patient continued his self-reflection on his 'strange things' (meaning hallucinations), the team did not help him to construct more words for this specific experience he was speaking about. In this short sequence there were two utterances, which were not answered,

and in which the team members focused more on the story than on the presences and consequently no dialogue emerged. The case is described in a study (Seikkula, 2002), in which it was found that not responding and thus helping to generate dialogue in severe psychotic crises can actually be related to generally poor outcome in the treatment.

Polyphonic self – voices

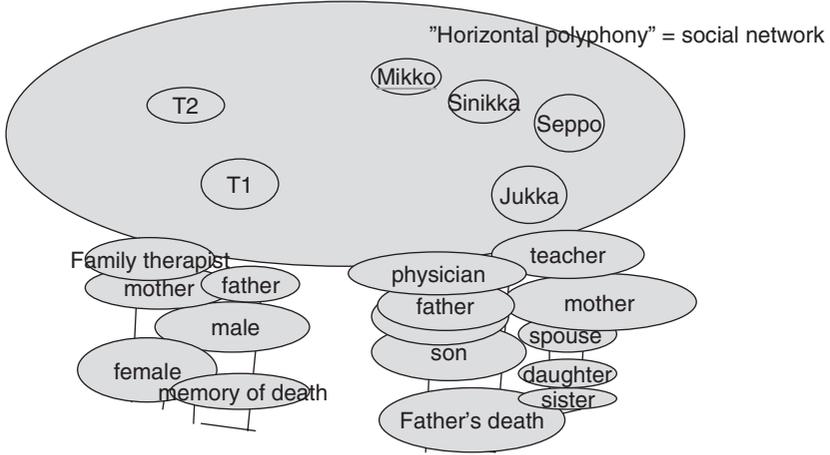
Seeing our consciousnesses as intersubjective abandons the frames of looking at individuals as subjects of their lives in the way that the coordinating centre of our actions would exist within the individual. Instead, a description of the polyphonic self is generated. This is the core content of Bakhtin's work, but he was not the first one to speak of the polyphonic self. In fact, Plato in his early works saw self as a social construction. He said:

When the mind is thinking, it is simply talking to itself, asking questions and answering them, and saying yes or no. When it reaches a decision – which may come slowly or in sudden rush – when doubt is over and the two voices affirm the same thing, then we call that 'its judgement'.

(Plato, *Theaetetus*, 189e–190a)

The mind is voices speaking to each other; it is an ongoing process of dialogues instead of looking at one core self. What we name as personality and psychological being takes place in this inner conversation between voices. Voices are the speaking personality, the speaking consciousness (Bakhtin, 1984; Wertsch, 1991). Personality is not a psychological structure inside us, but actions that happen in speaking, and in this way the human consciousness is generated. Stiles (2002) has tried to operationalize the idea of voices by noting that 'Voices are traces and they are activated by new events that are similar or related to the original event' (p. 92). All our experiences leave a sign in our body, but only a minimal part of these ever become formulated into spoken narratives. In formulating these into words they become voices of our lives. Instead of speaking of unconsciousness into which those experiences and emotions that we cannot deal with are repressed, it is more accurate to speak of non-conscious experiences (Stern, 2004). When experiences are formulated into words, they are no longer unconscious (Bakhtin, 1984).

There is not only one form of polyphony, but words that are spoken openly and in inner dialogue mean different things for our therapy



- "Vertical polyphony" = inner voices

Figure 1. Illustration of horizontal and vertical polyphony

session. Psychologist Kauko Haarakangas (1997) described horizontal and vertical polyphony (Figure 1).

The horizontal level of the polyphony includes all those present in the conversation. A kind of conversation community is generated. Everyone has its own voice and if we want to mobilize the psychological resources of each one present, everyone should have the right to utter them in their own way. Figure 1 illustrates a case. Father Pekka was referred to psychotherapy owing to his deep depression that had led to a severe suicide attempt. His wife and two adult sons were present. The richness of the family therapy conversation becomes evident if we focus on those voices that are not seen but are present in each one's inner dialogues. These voices of the vertical polyphony become 'switched on' depending on themes of dialogues. In this case Pekka was occupied by his job as a doctor, because he had difficulties taking care of his duties. He was also occupied by his marital problems, by being a father to his two sons and especially by his own father and his memory. The memory of his father was actualized even though his father had died when he was only 10 years old, forty-five years ago. In Figure 1, an illustration is given of the voices of Pekka and his wife Liisa.

Important aspects of the polyphony are the voices of each therapist. Therapists participate in the dialogue in the voices of their profes-

sional expertise, being a doctor, psychologist, having training as family therapists and so on. In addition to the professional voices, the therapists participate in the dialogue in their personal, intimate voices. If a therapist has experienced the loss of someone near to her, these voices of loss and sadness become a part of the polyphony, not in the sense that therapists would speak of their own experiences of death, but in the way they adapt themselves to the present moment. How they sit, how they look at the other speakers, how they change their intonation and so on. Inner voices become a part of the present moment, not so much of the stories told. Therapists' inner voices of their own personal and intimate experiences become a powerful part of the joint dance of dialogue.

Main elements of open dialogue meeting

The activity of constructing new shared language, incorporating the words that network members bring to the meetings and the new words that emerge in the dialogue among team and network members affords a healing alternative to the language of symptoms or of difficult behaviour. It is the task of the team to cultivate a conversational culture, which respects each voice and strives to hear all of them.

The meetings are organized with as little preplanning as possible. One or more team members act as host for the meeting. With everyone sitting together in the same room, in the beginning, the professional helpers share the information they may have about the problem. The one in charge then offers an open-ended question, asking who would like to talk and what would be best to talk about. The form of the questions is not preplanned; on the contrary, through careful attunement to each speaker, therapists generate each next question from the previous answer (e.g. by repeating the answer word for word before asking the question or by incorporating into the language of the next question the language of the previous answer). It is critically important for the process to proceed slowly in order to provide for the rhythm and style of each participant's speech and to ensure that each person has a place created in which he or she is invited and supported to have his or her say. As many voices as possible are incorporated into the discussion of each theme as it emerges. Professionals may propose reflective conversation within the team whenever they deem it adequate. After each reflective sequence, network members are invited to comment on what they heard. When closing the meeting, the participants are encouraged to say if there is something they want to add.

Each meeting concludes with a summary of what has been discussed and what decisions have been or should be made.

After team members have entered the conversation by adapting their utterances to those of the patient and her nearest relations, the network members may in time come to adapt their own words to those of the team. If one discovers that one is heard, it may become possible to begin to hear and become curious about others' experiences and opinions. Together, team and network members build up an area of joint language, in which they reach agreement about the particular use of words in the situation.

Effectiveness of open dialogues in the treatment of psychosis

Dialogism is the basic quality of the psychiatric system in the Finnish Western Lapland. To make it possible, some basic principles of the treatment may be defined. The treatment should (1) start immediately after contact with the psychiatric unit in the province. The first meeting should be organized within twenty-four hours after the contact. (2) The social network should be included in every case from the very beginning for the entire treatment period. (3) Treatment response should be adapted in a flexible way to the varying and unique needs of each family. (4) Psychiatric units should guarantee the responsibility and psychological continuity by mobilizing a case-specific team for each process. This team takes charge of the entire process for as long as necessary, both in inpatient and outpatient settings. (5) By increasing safety during the first days of the crisis it is aimed at increasing resources for tolerating uncertainty in the situation, in which no ready-made rapid solutions exist. This is done by primarily focusing on (6) dialogicity in the meetings. The main aim is to generate a new joint language for experiences that do not yet have words and live in symptoms.

Open Dialogue is one of the most studied approaches to severe psychiatric crisis in Finland. Since 1988, there have been several studies of treatment outcome and qualitative studies analysing the development of the dialogue itself in the meeting (Haarakangas, 1997; Keränen, 1992; Seikkula, 1994; 2002; Seikkula *et al.*, 2003, 2006). Since this approach was institutionalized, the incidence of new cases of schizophrenia in Western Lapland has declined (Aaltonen *et al.*, 1997).

In a quasi-experimental study of first-episode psychotic patients, Western Lapland was part of a Finnish national API (Integrated

Treatment of Acute Psychosis) multicentre project conducted by the Universities of Jyväskylä and Turku together with STAKES (State Center for Development and Research in Social and Health Care) (Lehtinen *et al.*, 2000). The inclusion period for all non-affective psychotic patients (*DSM-III-R*) in the province was April 1992 through March 1997. As one of three research centres, Western Lapland had the task of starting treatment without beginning neuroleptic drugs. This was compared to three other research centres which used drugs in a standard way, most often at the very beginning of the treatment. In Western Lapland, 58 per cent of the patients were diagnosed with schizophrenia.

In the comparison of the patients with schizophrenia who participated in Open Dialogue versus those who had treatment as usual in another psychiatric unit in another province of Finland, the process of the treatment and the outcomes differed significantly. The Open Dialogue patients were hospitalized less frequently, and three of these patients required neuroleptic drugs, in contrast to 100 per cent of the patients in the comparison group. At the two-year follow-up, 82 per cent had no, or only mild non-visible psychotic symptoms compared to 50 per cent in the comparison group. Patients in the Western Lapland site had better employment status, with 23 per cent living on disability allowance compared to 57 per cent in the comparison group. Relapses occurred in 24 per cent of the Open Dialogue cases compared to 71 per cent in the comparison group (Seikkula *et al.*, 2003). A possible reason for these relatively good prognoses was the shortening of the duration of untreated psychosis (DUP) to 3.6 months in Western Lapland, where the network-centred system has emphasized immediate attention to acute disturbances before they become hardened into chronic conditions. DUP has been reported to vary between one to three years in a treatment-as-usual setting (Larsen *et al.*, 1998; Kalla *et al.*, 2002).

In a five-year follow-up with all psychotic patients the results had remained the same. In Table 1 the outcomes of open dialogues in Western Lapland are compared to a study revealing information of a treatment as usual in Stockholm, Sweden. What is surprising is that there actually exist few five-year follow-up studies on the whole. Comparing Western Lapland to a big city such as Stockholm includes problems of demographic differences between these two sites.

In the Svedberg *et al.* (2001) study in Stockholm, 54 per cent of participants were diagnosed with schizophrenia, which was about the same as in the ODAP group. In Stockholm, the mean age seemed to

TABLE 1 Comparison of five-year follow-up studies of first-episode psychotic patients in Western Lapland and Stockholm

	ODAP Western Lapland 1992–1997 N = 76	Stockholm* 1991–1992 N = 71
Diagnosis: Schizophrenia	59%	54%
Other non-affective psychosis	41%	46%
Mean age (years)		
female	26.5	30
male	27.5	29
Mean length of hospitalization (days)	31	110
Neuroleptics used	33%	93%
- ongoing	17%	75%
GAF at f-u	66	55
Disability allowance or sick leave	19%	62%

Note: *Svedberg *et al.* (2001).

be higher (30 years compared to 27 years in the ODAP group). This may indicate that in Stockholm the duration of untreated psychosis (DUP) was longer. The mean of hospitalization was 110 days with the Stockholm patients compared to thirty-one days with the ODAP group patients. Neuroleptic drugs were used in 93 per cent of cases in the Stockholm group compared to 33 per cent in the ODAP group. As an outcome, 62 per cent of the patients treated in Stockholm were living on a disability allowance compared to 14 per cent in the ODAP group.

Conclusions of the comparison need to be drawn with caution because we did not have any control of the differences of population in these two areas. The Stockholm results, however, are similar to other five-year follow-up studies conducted in a treatment-as-usual setting. For example, in a study in the Netherlands, Linszen *et al.* (2001) found that following an active psychosocial programme when patients had returned to treatment as usual, only 25 per cent managed without at least one relapse and their social functioning level was poor. Taking this into account, a suggestion may be made that Open Dialogue has given new promising aspects in the treatment of acute psychosis.

Concluding remarks

In this presentation I have aimed at describing the importance of focusing on the present moment in meeting with family and the social

network. Every conversational situation is lived in two simultaneous histories, namely in the one lived and in the one storied. Especially if we want to focus on generating dialogue as the primary form of psychotherapy, the importance of the polyphony of the voices becomes evident compared, for instance, to systemic family therapy that focuses on elements of family structure or family rules. In every form of psychotherapy dialogue is important, but often dialogue is regarded as a form of communication. That is one aspect of dialogue, but in this paper it is seen as the basic way of engaging with others actually and virtually in the way that forms the mind. Mind is not seen as an independent element of human psychological structure, but an ongoing process from one second to another between living persons. Dialogue is communication, but it is also the relation and process of forming oneself.

It is not a simple task to connect basic ideas of human life into a description of family therapy. What is common is the fact that in family therapy dialogue a multi-voice reality is constructed by the presence of more than one client and often more than one therapist. Polyphony of the voices becomes relevant in focusing on the dialogue itself, how to answer utterances in every present moment. Giving the example of the psychiatric system developed in the Finnish Western Lapland, the polyphony of voices and dialogism has become the basis of the practice. In systematic follow-ups the effectiveness of treatment of first-episode psychotic patients has been proved. This illustrates perhaps the fact that in dialogue own psychological resources of families are mobilized more than compared to systems that rely on the guidance of professional experts. In the studies this was seen when comparing open dialogues to treatment as usual.

Being involved in many projects for developing social network orientation, what is surprising is the often difficult process of learning to be in dialogue with our clients and our colleagues in the meetings. Perhaps as therapists we are so used to thinking so much about being skilful in methods and interventions that it is difficult to see the simplicity. All that is needed is to be present and to guarantee that each voice becomes heard.

References

- Aaltonen, J., Seikkula, J., Alakare, B., Haarakangas, K., Keränen, J. and Sutela, M. (1997) *Western Lapland project: A comprehensive family- and network centered community psychiatric project. ISPS*. Abstracts and lectures 12–16 October 1997 (p.124). London: ISPS.

- Andersen, T. (2007) Human participating: human 'being' is the step for human 'becoming' in the next step. In H. Anderson and D. Gehart (eds), *Collaborative Therapy: Relationships and Conversations that Make a Difference*. New York: Routledge/Taylor & Francis. New York: Norton.
- Bakhtin, M. (1984) *Problems of Dostojevskij's Poetics. Theory and History of Literature: Vol. 8*. Manchester: Manchester University Press.
- Bakhtin, M. (1990) *Art and Answerability: Early Philosophical Essays of M. M. Bakhtin*, trans. Vadim Liapunov. Austin: University of Texas Press.
- Bakhtin, M. (1993) *Toward a Philosophy of the Act*, trans. Vadim Liapunov. Austin: University of Texas Press.
- Bråten, S. (1992) The virtual other in infants' minds and social feelings. In A. H. Wold (ed.), *The Dialogical Alternative: Towards a Theory of Language and Mind*. Oslo: Scandinavian University Press.
- Bråten, S. (2007) *Dialogens speil i barnets og språkets utvikling*. Oslo: Abstrakt forlag.
- Haarakangas, K. (1997) Hoitokokouksen äänet. The voices in treatment meeting. A dialogical analysis of the treatment meeting conversations in family-centred psychiatric treatment process in regard to the team activity. English Summary. *Jyväskylä Studies in Education, Psychology and Social Research*, **130**: 119–126.
- Kalla, O., Aaltonen, J., Wahlstroem, J., Lehtinen, V., Cabeza, I. and Gonzalez de Chaevez, M. (2002) Duration of untreated psychosis and its correlates in first-episode psychosis in Finland and Spain. *Acta Psychiatrica Scandinavica*, **106**: 265–275.
- Keränen, J. (1992) The choice between outpatient and inpatient treatment in a family centred psychiatric treatment system. English summary. *Jyväskylä Studies in Education, Psychology and Social Research*, **93**: 124–129.
- Larsen, T., Johannesson, J. and Opjordsmoen, S. (1998) First-episode schizophrenia with long duration of untreated psychosis. *British Journal of Psychiatry*, **172**: 45–52.
- Lehtinen, V., Aaltonen, J., Koffert, T., Rökkölöinen, V. and Syvälahti, E. (2000) Two year outcome in first-episode psychosis treated according to an integrated model. Is immediate neuroleptisation always needed? *European Psychiatry*, **15**: 312–320.
- Linszen, D., Dingemans, P. and Lenior, M. (2001) Early intervention and a five year follow up in young adults with a short duration of untreated psychosis: ethical implications. *Schizophrenia Research*, **51**: 55–61.
- Lowe, R. (2005) Structured methods and striking moments: using question sequences in 'living' ways. *Family Process*, **44**: 65–75.
- Salgado, J. and Hermans, H. (2005) The return of subjectivity: from a multiplicity of selves to the dialogical self. *Applied Psychology: Clinical Section*, **1**: 3–13.
- Seikkula, J. (1994) When the boundary opens: family and hospital in co-evolution. *Journal of Family Therapy*, **16**: 401–414.
- Seikkula, J. (2002) Open dialogues with good and poor outcomes for psychotic crisis. Examples from families with violence. *Journal of Marital and Family Therapy*, **28**: 263–274.
- Seikkula, J. and Trimble, D. (2005) Healing elements of therapeutic conversation: dialogue as an embodiment of love. *Family Process*, **44**: 461–475.
- Seikkula, J., Alakare, B., Aaltonen, J., Holma, J., Rasinkangas, A. and Lehtinen, V. (2003) Open Dialogue approach: treatment principles and preliminary results

- of a two-year follow-up on first episode schizophrenia. *Ethical Human Sciences and Services*, **5**: 163–182.
- Seikkula, J., Alakare, B., Aaltonen, J., Haarakangas, K., Keränen, J. and Lehtinen, K. (2006) Five years experiences of first-episode non-affective psychosis in Open Dialogue approach: treatment principles, follow-up outcomes and two case analyses. *Psychotherapy Research*, **16**: 214–228.
- Stern, D. (2004) *The Present Moment in Psychotherapy and Every Day Life*. New York: Norton & Co.
- Stiles, W. B. (2002) Assimilation of problematic experience. In J. C. Norcross (ed.), *Psychotherapy Relationships that Work: Therapist Contributions and Responsiveness to Patients*. New York: Oxford University Press.
- Svedberg, B., Mesterton, A. and Cullberg, J. (2001) First-episode non-affective psychosis in a total urban population: a 5-year follow-up. *Social Psychiatry*, **36**: 332–337.
- Trevarthen, C. (1990) Signs before speech. In T. A. Seveok and J. Umiker-Sebeok (eds), *The Semiotic Web*. Amsterdam: Mouton de Gruyter.
- Wertsch, J. (1991) *Voices of the Mind: A Sociocultural Approach to Mediated Action*. London: Harvester/Wheatsheaf.

INNER VOICE EXPERIENCES:
AN EXPLORATORY STUDY OF
THIRTY CASES

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Throughout human history, the "voice within" has been described in religion, history, psychology, fiction, and myth. The psychological literature on these experiences has largely focused on individuals often seen as pathological, while the religious literature focuses on individuals considered inspired or possessed. Surprisingly little attention has been directed to the inner voice experiences of adults not in either of these groups. This study of selected reports of inner voice experiences describes an exploratory investigation, and suggests a foundation for further research into the experience.

The term "inner voice" refers to a significant subjective experience—the actual perception of a voice speaking internally and / or a vaguer "felt sense" of some inner communication. Just as the external voice communicates between one human being and another, the inner voice may communicate intra-psychically between one level of the psyche and another (Van Dusen, 1981).

*a
significant
subjective
experience*

PERSPECTIVES ON "INNER VOICES"

Traditional psychology and medicine have long viewed "hearing voices" as equivalent to auditory hallucinations and thus as psychopathologic. This judgment has relegated the inner voice experience to the realms of pathology and abnormal stimuli. Similarly, in ordinary usage, the tone of an expression such as, "You must be hearing things," illustrates how a negative connotation creates reluctance to report inner *voice* experiences. Unless an individual is careful to translate a subjective

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experience of the inner voice into more acceptable terms, he/she may risk being labeled a misguided visionary, or a psychotic (Heery, 1988).

Children have an easier time with an inner voice. They move more easily between different levels of perception, creating imaginary companions, for example. Selective permeability has not yet been impressed on them and the cognitive grids they acquire in the process of socialization have not yet narrowed their range of perceptions (Heinze, 1985). Adults generally place no negative value on such childhood experiences, although the child is expected to "outgrow" such experiences after a while.

There is currently an increasing interest in the transpersonal dimension of human experience (Grof, 1985). Terms such as *superconscious* (Assagioli) are being used to suggest different levels of being within the individual. According to Assagioli (1965, p. 113), "Transpersonal Will is an expression of the Transpersonal Self and operates from the superconscious levels of the psyche. It is its action which is felt by the personal self, or 'I; as a 'pun' or 'call'."

a
striving
toward
fulfillment

The interplay of these intrapsychic levels may express itself as the experience of an inner voice. This experience should not be classified as pathological, but rather be considered as a striving toward fulfillment of various aspects of the individual.

Many individuals who report a sense of the inner voice describe it as a strong, positive directive force in their lives (Raphael-Staude, 1977). It gives them the inner certainty to withstand the conformity demands of the external world. Carl Jung speaks of it as the "call" of a higher principle:

What, in the last analysis, induces a man to choose his own way and so climb out of unconscious identity with the mass as out of a fog bank It is what is called "vocation." ... Who has vocation hears the voice of the inner man. . . . To have vocation means in the original sense *to be addressed by a voice*. We find the clearest examples of this in the Confessions of the Old Testament Prophets. Nor is this merely an ancient manner of speech, as is shown by the confessions of historic personalities such as Goethe and Napoleon, to mention two familiar examples, who made no secret of their feeling of vocation. Now, vocation, or the feeling of vocation, is not perchance the prerogative of great personalities, but also belongs to the small ones ... (quoted in Assagioli, 1973, p. 115).

This concept of "call" or vocation as expounded by Jung appears to be closely akin to the Hindu and Buddhist concept of *dharma*, righteousness. *Dharma* literally means the univer-

sal law of nature, which, if violated, causes serious imbalance. This cosmic law is manifest not only in the natural world but also in the human world in conduct which supports the individual's progress toward full unfoldment (Heinze, 1982). There have been individuals who speak quite openly of the inner voice as the source of their conviction and authority. Mahatma Gandhi, both a spiritual and political leader, relied on "inner voice" as his primary guidance in life. Gandhi described the inner voice as full of power and authority. A year before his death the voice told him. "You are on the right track, move neither to your left, nor right. but keep to the straight and narrow" (Chatterjee, 1984, p. 99).

In the fifth century B.C. Socrates told of a voice that had spoken to him at crucial moments since his childhood. He referred to this voice as his "daemon," a spirit of that intermediate world where communication passes between the divine and the human (O'Brien, 1967). This voice "always forbids [when there is danger] but never commands [when there is no danger] me to do anything [am going to do" (Jaspers, 1964, p. 10). For Socrates, the voice did not bring knowledge or suggest definite action, but merely said "no" when necessary. These two examples point to a major difference in inner voices: one with more mystical elements, and another working through the level of the superego.

*mystical
elements
and
the level
of
superego*

The history of the world's major religions makes it clear that saints, sages, prophets, and teachers (such as Moses, Mohammed, and Teresa of Avila) have relied heavily on the inner voice as their inspiration, their guidance, and their authority. The inner voice experiences of these men and women have had tremendous impact on our world. But just as psychotics and schizophrenics have no monopoly on the inner voice, neither do saints and sages. Ordinary men and women in that broad continuum between these two extremes also report hearing inner voices. This study deals with the inner voice experiences of thirty adult men and women who are neither saints nor psychotics.

METHOD

Thirty subjects, all reporting having had inner voice experiences, participated in this study. Fifteen subjects, known to the author to have had inner voice experiences, were selected, and fifteen subjects were randomly selected from 50 respondents to a questionnaire on inner voice experience mailed to two hundred subjects on a psychological-educational mailing list in California.

The subjects' experiences of "inner voice" were explored in a naturalistic manner, allowing the various aspects of their experience to emerge with as little observer contamination as possible. My intention was to explore their experience in depth-especially its positive relationship to their exterior life.

I gathered demographic data from and administered the Thematic Apperception Test to these subjects, and conducted individual subject interviews (DeVos, 1975; Bugental, 1966). All thirty subjects were interviewed twice, with approximately two weeks between first and second interviews. The format was the same for all subjects, and the interval between the two interviews gave respondents an opportunity to reflect on the first interview and report any additional insights.

DATA ANALYSIS

*natural
groupings
of
inner
voice
experiences*

The demographic, TAT, and interview data were analyzed to discover natural groupings of inner voice experiences.

Nine subjects (18 interviews) were selected as representative of the thirty subjects interviewed. This selection included a variety of inner voice experiences, occurring under varying circumstances, and a wide range of occupations, incomes, education levels, and life styles. The material was analyzed by the author, and a colleague who had extensive experience in evaluating subjective interview data. We independently read verbatim transcripts of the interviews, along with my notes of intonation patterns and silences during the interviews. We met and discussed our findings. There were some very obvious areas of agreement, and for those areas we questioned, we went directly back to the transcripts and tapes for clarification. Fairly stable categories of inner voice experiences began to emerge.

Three major categories of inner voice experiences emerged from the first nine interviews, and these were used as guidelines to analyze the data from the remaining interviews, refining and redefining the categories in the process. In addition, the results of the TAT were used to build a fuller picture of the subjects. The author and two colleagues with two and five years of experience in TAT evaluation reviewed the TAT results to determine if and how the material supported the three emerging categories of inner voice experiences.

The three categories in their final form are:

1. Inner voice experiences as a fragmented part of the self.
2. Inner voice experiences characterized by dialogue providing guidance for growth of the individual,
3. Inner voice experiences where channels opened toward and beyond a higher self.

THREE CASE STUDIES

The following case studies represent each category of inner voice experience. The identities of the respondents have been disguised to protect their anonymity.

Inner Voice Experiences as Fragmented Parts of the Self

Eric is a thirty-three-year old liberal arts college graduate, married, with two children. His former job involved managerial work, but he is now unemployed and living with his wife and children at his in-laws. He has begun to study for his teaching credential, and is studying social work as well. His hesitation to commit to a career and support his family suggests that he is still fragmented in major areas of his life.

*fragmented
parts
of
the
self*

Eric reported the inner voice as having control over some situations, including leaving his last job, as if he had abdicated his free will to it.

I was absolutely a victim of the whole thing. I just sat back and the thing [inner voice] did it to me and I didn't have a vote about it. It was another takeover.

The experiences Eric reported led him in a positive direction, but he denies that the inner voice is a part of him. He sometimes questions its guidance but feels strongly that the inner voice has the final say in the matter.

I had stopped some relationships that were getting real negative, and I didn't have the courage to do that, but I got myself into the situation and a voice-over just came out of my voice and I said things that destroyed the relationship. I mean it [inner voice] finished the relationship, which was the appropriate and healthy thing to do at the time. I, in my individual personage, didn't know how to do that, so the voice took over.

Eric's inner voice experiences strongly suggest an expression of fragmented parts of himself, and this fragmentation seems to be leading him toward integration.

Inner Voice Experiences Characterized by Dialogue Providing Guidance for Individual Growth

Ruby is a married thirty-eight-year-old former educational consultant. Within the last year she has left consulting and is devoting her life to painting.

My inner voice is what tells me when to paint, when it's time and when it's not time, and when it would be futile. And my inner voice gave me the direction about quitting my job and doing what I'm doing with painting.

Note the emphasis here on dialogue with the inner voice, rather than its dictates, as in Eric's case.

I checked that [what I'm doing with painting] out a Jot. Last spring I was given an opportunity to apply for a state grant and become a consultant, and it seemed on the outside to me a real exciting possibility, but when I checked it out with my voice, my voice said "absolutely not," that it would get in the way of my painting. . . it wouldn't have given me time for painting, so what I see it [inner voice] really doing a lot now is directing me more towards my original intent, which was to paint.

*guidance
for
inner
growth*

Ruby's change in profession is a direct result of her inner voice experiences. Note Ruby's phrase, "I checked it out with my voice." Ruby engaged in dialogues with the inner voice, actively using it for guidance in releasing creative energy; quite different from Eric's resignation to the dictates of his inner voice.

Inner Voice Experiences Where Channels Opened Toward and Beyond a Higher Self

Rob is a sixty-three-year-old writer and counselor, with three grown children. He lost a fourth child twenty-four years ago in a sudden illness. Rob resolved this loss slowly. He feels that parenting has been the most rewarding and humbling experience of his life. His thirty-eight-year marriage has been an enriching experience and seems to provide a secure base for Rob's sense of being deeply rooted in life.

Rob's belief system includes the inner voice as "a deeper level of my own being." The experience of inner voice was a significant part of Rob's life as he finished his doctorate in divinity and became involved in work characterized as nonviolent, selfless action. He recounted an experience which happened when he was thirty-three.

It operated once, that I can remember, in the civil rights movement, when I was in Mississippi in 1961, and I was part of a visitation to Jackson, where the Freedom Riders were. There were a group of 40 or 50 of us in this room in a black college, and they were asking for people to volunteer to go with seven or eight into the airport restaurant, which meant we'd be arrested and go to jail.

They needed a white Protestant *minister*, and they asked two or three times. They were about ready to leave, and the Rabbi who was heading up the delegation said, "Well, we haven't got a white Protestant minister yet," and then I heard this voice say, "Well you've got one now," and that was me. I was so surprised that it was me, that I had said that. It came from some very deep place in me. I was hearing it and saying it at the same time. . . .

I wasn't uncomfortable about it. That's what I wanted to do, that's what I believed in, and that's what in my deepest self I wanted to do. I was never dissatisfied or upset or distressed by what I had said, but it surprised me.

Rob feels that there is a spiritual dimension, which he defines as "the I being part of a larger process," operating with his inner voice experiences. He sees the inner voice experience as closely related to intuition, but he made the distinction that his inner voice experiences were consistently a part of the spiritual dimension of being. There is an element of volition in Rob's inner voice experiences. He finds prayer and meditation helpful in contacting the inner voice when he chooses to do so intentionally, Rob also has inner voice experiences without deliberately seeking them, but intention is an important aspect of his relationship with the inner voice.

*toward
and
beyond
a
higher
self*

INTERPRETATIVE SUMMARY OF FINDINGS

The major interests reported by these subjects were, for example, astrology, parapsychology, and meditation. Participation in such interests suggests the possibility of a certain psychological openness on the part of the subjects. Also, twenty-one subjects (70%) of a sample of thirty reported practicing some form of meditation. Twenty-three subjects (76%) have been involved in some form of psychotherapy. These facts suggest a group of subjects who combine both psychological and spiritual interests.

The subjects showed a wide range of occupations, including both professional and blue collar work; annual incomes ranged from \$10,000 to above \$60,000. Twenty-eight of thirty (93%) had a college education, or a higher degree. These are subjects

who value education and can support themselves in a variety of occupations. Their age is also notable, ranging from 28 to 68, with the majority reporting that their inner voice experiences occurred between ages 35 and 45. On this basis, inner voice experiences may be age-specific. Midlife has been noted as a significant time for individuation (Jung, 1965, p. 196), and Heinze (1982, pp. 30-31) found that shamans reported first occurrences of inner voice experiences, predominantly either after puberty or at midlife.

All of the individuals in the third category of inner voice experiences as channels toward a higher self practiced some form of meditation on a regular basis, and expressed a deep sense of spiritual connection through these inner voice experiences. The sense of certainty expressed by these individuals was very similar to the certainty Arberman (1963-70) reports in mystics experiencing inner voices. It is possible that this last category of subjects attained a certain level of mystical experience which is in part auditory and which leads to positive selfless action, as described above in Rob's case.

*three
reactions
to
spiritual
awakening*

Assagioli (1986, p. 25) outlines three reactions to spiritual awakening which parallel the three categories of inner voice experiences emerging from this study. Assagioli speaks in terms of energies and levels of organization with regard to peak experiences. According to Assagioli, superconscious energies work with the individual according to the levels at which he/she can receive and integrate these energies. He observes that one possible outcome of a peak experience is that it fails to bring about a higher level of organization. Such experiences are often painful, and the individual may not recognize their transpersonal origin.

The positive outcome of such an experience is that the individual can be directed to the next steps necessary for fuller integration. Such an outcome of a peak experience, in Assagioli's schema, parallels this study's category of inner voice experiences as fragmented parts of the self. For instance, Eric has not yet recognized the transpersonal origin of his inner voice experiences, but they have continually led him to piece together various fragments of himself. He is searching for a career that will reflect his talents as well as support his family. He is no longer content to simply do a job, but through his inner voice experiences has formed a commitment to find work that reflects him.

The second outcome to peak experiences according to Assagioli, is less intense and involves a temporary neutralization of personality patterns. What remains is very important: "an ideal

model and a sense of direction which one can use to complete the transformation through his own purposeful methods" (1986, p. 25). This sense of direction is precisely what emerged with individuals in my second category of inner voice experiences, which essentially created a dialogue furthering the growth and development of the individual. For instance, Ruby's inner voice experiences guided her in the direction of changing her career to painting. This change, she reports, *has* been very fulfilling for her, and she continues to change and grow in a positive direction.

A third possible outcome of a peak experience, according to Assagioli, is a higher integration of personality. The individual's life is permanently transformed as a result of the experience. This type of integration is rare and can be compared to the third category of inner voice experiences. Individuals in this category are integrated and open to the higher self through inner voice experiences; they experience a permanent shift in their lives. In this study, this permanent shift in personality also was associated with selfless service-work without monetary or obvious ego gratification.

These findings suggest an ongoing interior education with the inner voice as the teacher. Alschuler (1987) proposes an inner curriculum based on a study of religious figures who had inner voice experiences. The experiences reported by subjects in the third category, where channels opened toward and beyond a higher self, showed some similarity with this inner curriculum.

*an
"inner
curriculum"*

First, according to Alschuler, contact with the inner voice brings into question the individual's prior beliefs about reality. Then, the individual goes through a process of intensive instruction, which may involve periods of isolation. The last stage of the curriculum is union, characterized by a fuller identification with the other world, a *tour* of heaven and hell, and a spiritual marriage with the inner teacher. Those individuals who have experienced this level of inner education go on missions of unification in the exterior world. Their knowledge of the "other side" is so clear that they want to make this side more like the other *side*. Although none of the subjects in this study reported this level of experience, the subjects in the third and most integrated category of inner voice experiences were consistently involved in missions of selfless service. Sometimes selfless service preceded, but it was always intensified after inner voice experiences. These subjects were in touch with an experience that transcended their individuality.

These findings suggest that psychotherapists might do well to consider a wide range of possibilities when a client reports

a
foundation
for
further
investigation

hearing an inner voice. The possibilities could include such diverse processes as a fragmented voice, psychotic or integrated dissociation, extrasensory perception experience, intuitive experience, "vocation," or a spiritual awakening. The three categories emerging from this study may provide a beginning and much needed cartography for inner voice experiences. They may also serve as a foundation for further investigation into a little understood, but widely reported experience.

Finally, this study may help dispel the common stereotype of the inner voice as the prerogative of saints and psychotics, and thereby encourage research into its liberating effect on our human capacities.

REFERENCES

- ALSCHULIR, A. (1987). The world of inner voice. Unpublished data.
- ARBMAN, E. (1963-1970). *Ecstasy or religious trance*. Vols. 1-3. Stockholm: Scandinavian University Books.
- ASSAGIOLI, R. (1986). Self-realization and psychological disturbances. *Revision*. 8(2), 21-31.
- ASSAGIOLI, R. (1965). *Psychosynthesis*. Esalen, CA: Esalen Books.
- ASSAGIOLI, R. (1973). *The act of will*. Esalen, CA: Esalen Books.
- BUGENTAL, J.F.T. (1966). *Psychological interviewing* (rev. ed.). Los Angeles: Author.
- CHATTERJEE, M. (1984). *Gandhi's religious thought*. Notre Dame, IN: Notre Dame University Press.
- DE VAS, G. (1975). *Socialization for achievement*. Berkeley, CA: University of California Press.
- GROF, S. (1985). *Beyond the brain; Birth, death, and transcendence in psychotherapy*. Albany, NY: SUNY Press.
- HEERY, M. (Speaker). (1988). *The meaning of inner voice experiences* [Cassette]. Berkeley, CA: Conference Recording Service.
- HEINZE, R.I. (1982). Shamans or mediums, toward a definition of different states of consciousness. *Phoenix Journal of Transpersonal Anthropology*, 6(1-2), 25-44.
- HEINZE, R.I. (1985). Consciousness and self-deception: The art of undeceiving. *Saybrook Review*. 5(2), 11-27.
- JASPERS, K. (1964). *General psychopathology*. Chicago: University of Chicago Press.
- JUNG, C.G. (1919). *Memories, dreams, reflections* (R. & C. Winston, Trans.), New York: Vintage Books.
- O'BRIEN, M.J. (1967). *The Socratic paradox and the Greek mind*. Chapel Hill, NC: University of North Carolina.
- RAPHAEL-STAUDEL, (Ed.) (1977), *Consciousness and creativity*. Berkeley, CA: Pantheon Proteus.
- VAN DUSEN, W. (1981). *The presence of other worlds*. New York: The Swedenborg Foundation.

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IRRATIONAL BELIEFS AND UNCONDITIONAL SELF-ACCEPTANCE. II. EXPERIMENTAL EVIDENCE FOR A CAUSAL LINK BETWEEN TWO KEY FEATURES OF REBT

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ABSTRACT: In a test of two key features of REBT, causal relationships between irrational beliefs and unconditional self-acceptance were experimentally investigated in a sample of 106 non-clinical participants using a priming technique. Priming participants with statements of irrational belief resulted in a decrease in unconditional self-acceptance whereas priming participants with statements of rational belief resulted in an increase in unconditional self-acceptance. In contrast, priming participants with statements about unconditional self-acceptance did not result in an increase in rational thinking and priming participants with statements about conditional self-acceptance did not result in an increase in irrational thinking. The present study is the first to provide evidence of a causal link between rational/irrational thinking and unconditional/conditional self-acceptance. The findings have important implications for the core hypothesis of REBT and underscore the advantages of experimental over correlational studies in theory-testing.

KEY WORDS: priming; irrational beliefs; REBT; self-acceptance; self-esteem.

INTRODUCTION

According to REBT, irrational beliefs are illogical, rigid and inconsistent with reality whereas rational beliefs are logical, flexible and consistent with reality. As a result of holding irrational beliefs, people acquire unhealthy emotions, dysfunctional behaviors and psychological disturbance. Through disputation of their irrational

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beliefs, people can develop more rational and realistic ways of thinking that will produce greater acceptance of the self and others. In REBT, self-acceptance means accepting oneself unconditionally regardless of whether one behaves competently or correctly and whether others are likely to express approval or respect (for reviews, see Dryden & Neenan, 2004; Ellis, 1994).

A great deal of research has been carried out on irrational beliefs, but very little work has been done on unconditional self-acceptance, even though unconditional self-acceptance has long been a key feature of REBT. One reason for this state of affairs may be the lack of a reliable and valid measure of unconditional self-acceptance. Recently, however, Chamberlain and Haaga (2001a) devised a measure consisting of 20 statements reflecting the various philosophical and practical aspects of unconditional self-acceptance distilled from the REBT literature. Chamberlain and Haaga (2001a, b) found that this measure of unconditional self-acceptance was positively associated with life satisfaction and happiness, and negatively associated with anxiety, depression and depression-proneness. Unfortunately, their measure of unconditional self-acceptance was also found to be correlated with self-esteem. To overcome this problem, they partialled out self-esteem from the other correlations. When this was done, the correlations with anxiety and depression-proneness remained significant, but the correlations with depression and life satisfaction/happiness became non-significant.

Armed with this newly-available measure of unconditional self-acceptance, Davies (2006) investigated its relationship with irrational beliefs and found a highly significant negative correlation even after self-esteem had been partialled out. Thus, irrational thinking was associated with conditional self-acceptance, whereas rational thinking was associated with unconditional self-acceptance. This provided the first empirical evidence of a link between two key aspects of REBT. However, the findings were only correlational and therefore it could not be concluded that rational/irrational thinking is a *cause* of unconditional/conditional self-acceptance. Indeed, it could well be that the reverse causal direction is the case—accepting oneself unconditionally/conditionally leads to more rational/irrational beliefs. To investigate the causal relations between these constructs would require the use of true experimental designs.

In the present study, causal links between the two key features of REBT were experimentally investigated using a *priming* technique.

Although priming is commonly used in social cognition to examine the effects of presenting different types of information on ostensibly unrelated subsequent judgments or behavior (for a review, see Higgins, 1996), it is not typically used in REBT. The usual technique of manipulating beliefs in REBT is to instruct participants to assume or hold a particular belief while imagining a problem scenario and then to measure the variables of interest. For example, while imagining having a serious disagreement with one's partner, participants might be instructed to hold the belief "It may be inconvenient disagreeing with my partner but it is not awful" and then relationship satisfaction is measured (taken from Cramer, 2005). Although this may be a useful technique in therapy, the problem with this technique from an experimental point of view is demand characteristics (Orne, 1962). Being instructed to assume or hold a belief may constitute a powerful demand cue such that, when it comes time to take the measure of interest, participants will guess the purpose of the experiment and simply respond in such a way as to please the experimenter and/or confirm the experimenter's hypothesis rather than respond as they naturally would. In the example above, having been asked to hold the belief "It may be inconvenient disagreeing with my partner but it is not awful" and then responding to a relationship satisfaction measure, participants may correctly guess that the experimenter wants them to respond more positively than they otherwise would (or, in the Cramer example, as they previously did on a pre-test). With the priming technique, there is no ostensible relationship between the priming manipulation and the measurement of the dependent variable, and therefore demand cues are minimised.

To test the idea that irrational/rational beliefs cause conditional/unconditional self-acceptance, some participants were primed with irrational beliefs and others were primed with rational beliefs. Unconditional self-acceptance was measured before and after the priming manipulation. It was therefore hypothesized that priming irrational beliefs would lead to a significant decrease in unconditional self-acceptance, whereas priming rational beliefs would lead to a significant increase. To test the reverse causal link, some participants were primed with unconditional self-acceptance statements and others were primed with conditional self-acceptance. Irrational beliefs were measured before and after the priming manipulation. It was therefore hypothesized that priming unconditional self-acceptance would lead to a significant decrease in irrational beliefs, whereas

priming conditional self-acceptance would lead to a significant increase.

Self-esteem was included as a control measure. It was not expected that priming rational/irrational beliefs would affect self-esteem but it was expected that priming conditional/unconditional self-acceptance would affect self-esteem given the close relationship between these measures (Chamberlain & Haaga, 2001a, b). Thus, priming conditional self-acceptance should lead to lower self-esteem whereas priming unconditional self-acceptance should lead to higher self-esteem.

METHOD

Participants

Undergraduate students aged 18–43 ($M = 22.86$) completed a number of questionnaires for course credits in mass-testing sessions. Four months later they returned for testing in small groups. Complete data were obtained for 82 women and 24 men.

Measures

The measure of irrational beliefs was the Irrational Beliefs Scale (IBS; Malouff & Schutte, 1986), a questionnaire consisting of 20 statements representing the 10 irrational beliefs described by Ellis and Harper (1961) to which participants respond on a scale from 1 (“strongly disagree”) to 5 (“strongly agree”). Malouff and Schutte report a test–retest reliability of 0.89 and a Cronbach alpha of 0.80. From this questionnaire, a set of 20 *irrational beliefs* was prepared. A set of 20 *rational beliefs* was prepared by reversing the meaning of the items. For example, scale item 5 “Some of my ways of acting are so ingrained that I could never change them” was re-worded as “Some of my ways of acting are ingrained but I can still change them.”

Unconditional self-acceptance was measured with the USAQ (Chamberlain & Haaga, 2001a), a questionnaire consisting of 20 statements to which participants respond on a scale from 1 (“almost always untrue”) to 7 (“almost always true”). In this questionnaire, nine items are worded such that higher scores represent greater unconditional self-acceptance (e.g., “I avoid comparing myself to

others to decide if I am a worthwhile person”), while 11 items are reverse-scored such that higher scores represent greater conditional self-acceptance (e.g., “I set goals for myself that I hope will prove my worth”). Chamberlain and Haaga report a Cronbach alpha of 0.72 which is an acceptable level of internal consistency. From this questionnaire, a set of 20 *unconditional self-acceptance* statements was prepared using the nine normally-scored items plus re-wording of the 11 reverse-scored items. A set of 20 *conditional self-acceptance* statements was prepared using the 11 reverse-scored items plus re-wording of the nine normally-scored items.

Self-esteem was measured with the Rosenberg Self-Esteem scale (RSE; Rosenberg, 1965), a questionnaire consisting of 10 statements to which participants respond on a scale from 1 (“strongly agree”) to 4 (“strongly disagree”). To avoid confusion in the interpretation of results, items were scored so that high scores represented high self-esteem. The Rosenberg scale is the most widely-used measure of self-esteem and has been found to have high reliability and internal consistency. For example, Fleming and Courtney (1984) report a Cronbach alpha of 0.88.

Procedure

In initial mass-testing sessions, participants completed a number of questionnaires including the Unconditional Self-Acceptance Questionnaire (USAQ), the Irrational Beliefs Scale (IBS) and the Rosenberg Self-Esteem scale (RSE). Approximately 4 months later, participants returned for a second testing session when they were randomly assigned either to one of three rationality-priming conditions or to one of three self-acceptance priming conditions. (The relatively long delay between the initial pre-testing and the experimental session was caused by administrative and organizational constraints outside the control of the experimenter.)

In the *irrational-priming* condition, participants were presented with a list of 10 irrational beliefs. In the *rational-priming* condition, participants were presented with a list of 10 rational beliefs. In a *neutral-priming* (control) condition, participants were presented with a randomly-mixed list of five irrational and five rational beliefs. In the *unconditional-priming* condition, participants were presented with a list of 10 unconditional self-acceptance statements. In the *conditional-priming* condition, participants were presented with a list

of 10 conditional self-acceptance statements. In a *neutral-priming* (control) condition, participants were presented with a randomly-mixed list of five unconditional and five conditional self-acceptance statements.

Participants were asked to study the statements for 2 minutes. In order to justify the task and to concentrate participants' attention on the statements, the experimenter told them that they would be asked questions about the statements later on as part of a memory test. This memory test also served as a check on the equivalence of the priming tasks across conditions. After 2 minutes, the list of statements was removed and participants in the irrational/rational/neutral priming conditions were given the USAQ and RSE questionnaires to fill in, whereas those in the conditional/unconditional/neutral priming conditions were given the IBS and RSE questionnaires. The participants were then presented with 20 statements, 10 of which had been previously presented in the priming phase and 10 of the same type which had not been previously presented. They were required to tick the 10 statements they had been shown previously. After completion of the testing, participants were thoroughly debriefed.

RESULTS

The recognition-memory scores are shown in Table 1. There were no significant differences between the irrational/rational/neutral priming conditions nor between the unconditional/conditional/neutral self-acceptance priming conditions, $F_s < 1$. This suggests that the statements were equally memorable across conditions and therefore that the priming effects were equivalent across conditions.

Priming of Irrational/Rational beliefs

Scores on the USAQ and RSE were analysed using a 3 (Irrational, Rational, Neutral priming) \times 2 (Pretest/Posttest measurement) ANOVA. Table 2 shows summary statistics for Unconditional Self-Acceptance and Self-Esteem scores as a function of Priming and Pretest/Posttest conditions.

For Unconditional Self-Acceptance scores, there was a significant interaction of Priming and Pretest/Posttest conditions, $F(2,50) = 6.89$, $p < .002$. As can be seen from Figure 1, unconditional self-acceptance increased significantly as a result of priming Rational beliefs,

Table 1

Number of Statements Correctly Recognised

	<i>Priming condition</i>			<i>Priming condition</i>		
	<i>Irrational</i>	<i>Rational</i>	<i>Neutral</i>	<i>Conditional</i>	<i>Unconditional</i>	<i>Neutral</i>
<i>Mean</i>	7.84	7.58	7.50	7.42	7.76	7.64
<i>SD</i>	1.25	1.27	1.32	1.40	1.29	1.17
<i>N</i>	18	19	16	19	17	17

Table 2

Summary Statistics for Unconditional Self-Acceptance and Self-Esteem Scores as a Function of Priming and Pretest/Posttest Conditions

<i>Priming condition</i>		<i>Unconditional self-acceptance</i>		<i>Self-esteem</i>	
		<i>Pretest</i>	<i>Posttest</i>	<i>Pretest</i>	<i>Posttest</i>
Neutral	<i>Mean</i>	87.56	86.75	30.88	31.94
	<i>SD</i>	11.72	13.49	5.20	4.92
	<i>N</i>	16	16	16	16
Rational	<i>Mean</i>	85.95	92.63	31.21	32.74
	<i>SD</i>	9.80	12.87	4.16	5.16
	<i>N</i>	19	19	19	19
Irrational	<i>Mean</i>	85.56	77.50	32.17	32.00
	<i>SD</i>	11.74	11.00	4.02	5.55
	<i>N</i>	18	18	18	18

$t(18) = 2.38, p < .05$ (a medium effect; $d = 0.55$), decreased significantly as a result of priming Irrational beliefs, $t(17) = 3.44, p < .01$ (a large effect; $d = 0.81$), and stayed the same in the neutral-priming condition, $t < 1$.

For Self-Esteem scores, there were no significant effects, $F_s < 1$.

Further analysis was carried out on the USAQ scores. Previous research (Davies, 2006) had shown that the items of the USAQ did not load on a single factor but rather on two factors, self-esteem and self-acceptance. Therefore, two scores were calculated from the USAQ

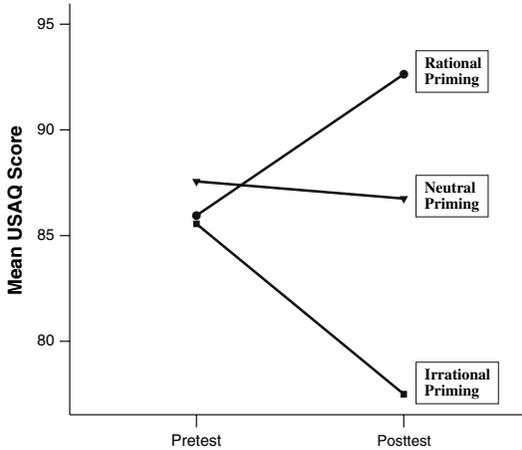


Figure 1. Self-acceptance as a function of priming irrational/rational beliefs.

items based on their loadings on these factors, Factor 1 representing self-esteem and Factor 2 representing self-acceptance. Analysis of variance showed a highly significant interaction of Irrational/Rational priming and Pretest/Posttest for Factor 2 (self-acceptance), $F(2,50) = 10.92, p < .001$, but no significant interaction for Factor 1 (self-esteem), $F < 1$. As can be seen from Figure 2, Factor 2 scores increased significantly as a result of priming Rational beliefs, $t(18) = 3.36, p < .005$, decreased significantly as a result of priming Irrational beliefs, $t(17) = 3.40, p < .005$, and stayed the same in the neutral-priming condition, $t < 1$.

Priming of Unconditional/Conditional Self-Acceptance

Scores on the IBS and RSE were analysed using a 3 (Unconditional, Conditional, Neutral Priming) \times 2 (Pretest/Posttest measurement) ANOVA. Table 3 shows summary statistics for the Irrational Beliefs and Self-Esteem measures as a function of Priming and Pretest/Posttest conditions.

For Irrational-Beliefs scores, there was no significant interaction of Priming and Pretest/Posttest conditions, $F < 1$. However, for Self-Esteem scores, there was a significant interaction of Priming and Pretest/Posttest conditions, $F(2,50) = 3.42, p < .05$. As can be seen from Figure 3, self-esteem increased as a result of priming unconditional self-acceptance, $t(16) = 2.36, p < .05$, decreased as a result of

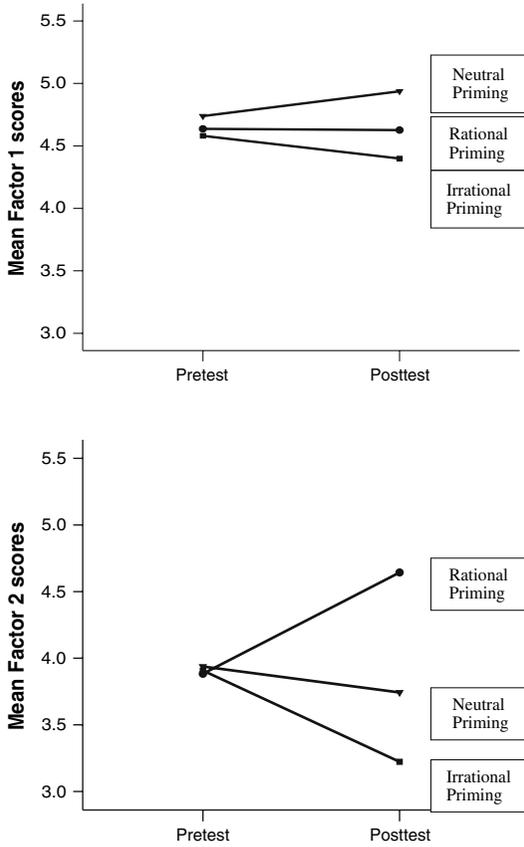


Figure 2. USAQ factor 1 and 2 scores as a function of irrational/rational priming.

priming conditional self-acceptance, $t(18) = 1.82, p < .10$, and stayed the same in the neutral-priming condition, $t < 1$.

DISCUSSION

The findings of the present study show clearly that thinking about rational beliefs increases unconditional self-acceptance whereas thinking about irrational beliefs reduces unconditional self-acceptance. By contrast, thinking about unconditional or conditional self-acceptance does not affect irrational versus rational thinking (although it does influence self-esteem such that unconditional

Table 3

Summary Statistics for Irrational-Beliefs and Self-Esteem Scores as a Function of Priming and Pretest/Posttest Conditions

<i>Priming condition</i>		<i>Irrational beliefs</i>		<i>Self-esteem</i>	
		<i>Pretest</i>	<i>Posttest</i>	<i>Pretest</i>	<i>Posttest</i>
Neutral	<i>Mean</i>	58.65	58.59	31.47	32.35
	<i>SD</i>	10.01	8.13	5.25	5.41
	<i>N</i>	17	17	17	17
Unconditional	<i>Mean</i>	57.88	56.41	31.06	33.88
	<i>SD</i>	8.25	7.02	5.24	4.34
	<i>N</i>	17	17	17	17
Conditional	<i>Mean</i>	59.63	60.63	30.79	28.68
	<i>SD</i>	7.28	7.80	5.19	5.20
	<i>N</i>	19	19	19	19

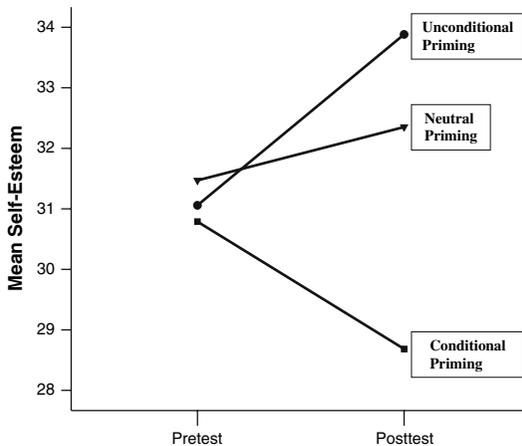


Figure 3. Self-esteem as a function of priming unconditional/conditional self-acceptance.

self-acceptance increases self-esteem whereas conditional self-acceptance reduces self-esteem).

As well as supporting previous findings that irrational beliefs are associated with low unconditional self-acceptance (Davies, 2006), these findings extend this work by showing not simply a correlation

between the two but a causal link. In addition, the present findings establish that the previously-observed correlation was not simply due to content overlap between measures of irrational beliefs and unconditional self-acceptance, otherwise the priming effects of IBS and USA would have been similar when they were clearly not.

These findings are very relevant to the issue of whether the “core” hypothesis of REBT—that irrational beliefs cause psychological dysfunction and disturbance—is testable (e.g., Bond & Dryden, 1996a). Ellis (1958, 1994) proposed that cognitions, emotions and behaviors are not separate psychological entities but that they are intimately related to each other. This is what Bond and Dryden refer to as the “interdependence principle” of REBT. If this principle holds, then causal links between these entities, such as between irrational beliefs and unhealthy emotions, cannot be examined because interdependence logically implies that these entities are not separate and cannot be separated from one another. Thus, the “core” REBT hypothesis cannot be tested. According to Bond and Dryden “If a system is truly interdependent, then each element of that system cannot be isolated and its effects examined, because the effect of each element is contingent upon the other elements of the system; in other words, cognitions, emotions, and behavior cannot legitimately be separated from each other; therefore, if one attempts to measure the effects of cognition on psychological disturbance and health, one is also measuring the effects of emotions and behavior as well.” (p. 31).

Although the present study found evidence that irrational beliefs are a causal agent in self-acceptance, there was no evidence that self-acceptance is a causal agent in irrational thinking. However, there was no check to see whether the experimental priming of self-acceptance actually changed people’s self-acceptance. It is possible that the priming method is particularly suited to changing beliefs rather than to changing stable and central traits such as self-acceptance and this is why no significant effects of self-acceptance on irrational beliefs were found. Unfortunately, the priming method does not easily allow for manipulation checks. In addition, since there is only one recognized measure of unconditional self-acceptance, the findings need to be replicated with different measures and different methods, especially since there are some doubts about the psychometric properties of the USAQ (Davies, 2006).

It may very well be that other areas of Ellis’s REBT model are interdependent or exhibit bi-directional causality. In an important

series of studies, Bond and Dryden (1996b, 1997, 2000) showed, using role-playing/imaginal inductions, that people who hold irrational beliefs endorse more dysfunctional inferences than those holding rational beliefs. However, they did not test whether inference statements may cause beliefs and therefore it remains a possibility (admittedly unlikely) that there is also a reverse causal link, i.e. holding functional versus dysfunctional inferences results in the differential endorsement of rational versus irrational beliefs.

Clearly, the present findings need replicating using other samples, methods and procedures, particularly different manipulations or inductions of irrational/rational thinking, as well as other measures relating to self-acceptance. Given the application in the present study of an experimental technique (priming) new to REBT, it would be of interest to examine the use of priming in other REBT areas to see whether similar effects occur and whether there are qualifications or limitations of the effects observed in the present study.

REFERENCES

- Bond, F. W., & Dryden, W. (1996a). Why two, central REBT hypotheses appear untestable. *Journal of Rational-Emotive and Cognitive-Behavior Therapy, 14*, 29–40.
- Bond, F. W., & Dryden, W. (1996b). Testing an REBT theory: The effects of rational beliefs, irrational beliefs, and their control or certainty contents on the functionality of inferences. II. In a personal context. *International Journal of Psychotherapy, 1*, 55–77.
- Bond, F. W., & Dryden, W. (1997). Testing an REBT theory: The effects of rational beliefs, irrational beliefs, and their control or certainty contents on the functionality of inferences. I. In a social context. *Journal of Rational-Emotive and Cognitive-Behavior Therapy, 15*, 157–188.
- Bond, F. W., & Dryden, W. (2000). How rational beliefs and irrational beliefs affect people's inferences: An experimental investigation. *Behavioral and Cognitive Psychotherapy, 28*, 33–43.
- Chamberlain, J. M., & Haaga, D. A. F. (2001a). Unconditional self-acceptance and psychological health. *Journal of Rational-Emotive and Cognitive-Behavior Therapy, 19*, 163–176.
- Chamberlain, J. M., & Haaga, D. A. F. (2001b). Unconditional self-acceptance and responses to negative feedback. *Journal of Rational-Emotive and Cognitive-Behavior Therapy, 19*, 177–189.
- Cramer, D. (2005). Effect of four aspects of rational statements on expected satisfaction with a close relationship. *British Journal of Guidance and Counselling, 33*, 227–238.

- Davies, M. F. (2006). Irrational beliefs and unconditional self-acceptance. I. Correlational evidence linking two key features of REBT. *Journal of Rational-Emotive and Cognitive-Behavior Therapy*, *24*, 113–124.
- Dryden, W., & Neenan, M. (2004). *The rational emotive behavioral approach to therapeutic change*. London: Sage.
- Ellis, A. (1958). Rational psychotherapy. *Journal of General Psychology*, *59*, 35–49.
- Ellis, A. (1994). *Reason and emotion in psychotherapy: A comprehensive method of treating human disturbances*. New York: Birch Lane Press.
- Ellis, A., & Harper, R. A. (1961). *A guide to rational living*. Englewood Cliffs, NJ: Prentice-Hall.
- Fleming, J. S., & Courtney, B. E. (1984). The dimensionality of self-esteem. II Hierarchical facet model for revised measurement scales. *Journal of Personality and Social Psychology*, *46*, 404–421.
- Higgins, E. T. (1996). Knowledge activation: Accessibility, applicability and salience. In E. T. Higgins & A. W. Kruglanski (Eds.), *Social psychology: Handbook of basic principles* (pp. 133–168). New York: Guilford.
- Malouff, J. M., & Schutte, N. S. (1986). Development and validation of a measure of irrational belief. *Journal of Consulting and Clinical Psychology*, *54*, 860–862.
- Orne, M. T. (1962). On the social psychology of the psychological experiment: With particular reference to demand characteristics and their implications. *American Psychologist*, *17*, 776–783.
- Rosenberg, M. (1965). *Society and the adolescent self-image*. Princeton NJ: Princeton University Press.

Review

The neuronal basis and ontogeny of empathy and mind reading: Review of literature and implications for future research

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Abstract

Social neuro-science has recently started to investigate the neuronal mechanisms underlying our ability to understand the mental and emotional states of others. In this review, imaging research conducted on theory of mind (ToM or mentalizing) and empathy is selectively reviewed. It is proposed that even though these abilities are often used as synonyms in the literature these capacities represent different abilities that rely on different neuronal circuitry. ToM refers to our ability to understand mental states such as intentions, goals and beliefs, and relies on structures of the temporal lobe and the pre-frontal cortex. In contrast, empathy refers to our ability to share the feelings (emotions and sensations) of others and relies on sensorimotor cortices as well as limbic and para-limbic structures. It is further argued that the concept of empathy as used in lay terms refers to a multi-level construct extending from simple forms of emotion contagion to complex forms of cognitive perspective taking. Future research should investigate the relative contribution of empathizing and mentalizing abilities in the understanding of other people's states. Finally, it is suggested that the abilities to understand other people's thoughts and to share their affects display different ontogenetic trajectories reflecting the different developmental paths of their underlying neural structures. In particular, empathy develops much earlier than mentalizing abilities, because the former relies on limbic structures which develop early in ontogeny, whereas the latter rely on lateral temporal lobe and pre-frontal structures which are among the last to fully mature.

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Keywords: Social neuro-science; Theory of mind; Empathy; Pain; mPFC; Insula; ACC; Emotional processing

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1. Introduction

Humans are intensely social creatures and one of the major functions of our brains is to enable us to interact successfully in social groups. One crucial capacity for successful interaction is our ability to understand other

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people and to predict their actions. Social cognitive neuroscience (Adolphs, 1999, 2003; Blakemore et al., 2004; Ochsner and Lieberman, 2001; Frith and Wopert, 2004) has recently started to provide insights into the neural mechanism underlying our capacity to represent others people's intentions and beliefs (referred to as "theory of mind" ToM or "mentalizing"), and the capacity to share the feelings of others (referred to as "empathy"). In everyday language as well as in the literature the terms empathy, perspective taking and ToM are often used as synonyms. Sometimes the term empathy is further differentiated by dividing it into two subcomponents, emotional and cognitive empathy. Indeed, at first glance these concepts are difficult to differentiate because they share similar features. Thus all these concepts refer to our ability to put ourselves in the shoes of another person, be it in their mental or emotional shoes. In the present paper the suggestion is made that the capacities to mentalize and to empathize are distinct and rely on different neuro-cognitive circuits. More specifically, it is argued that the process of mentalizing refers to the attribution of propositional attitudes to another person, that is, the attribution of desires, beliefs and intentions. For reasons of simplicity, the term "propositional attitude" will be sometimes replaced by the term "mental states", although the reader has to keep in mind that mental states could in principal also include feeling and emotional states. In the present paper we use the term "empathizing" to refer to the process which allows us to experience what it feels like for another person to experience a certain emotion or sensation (e.g., qualia). The capacity to understand other people's emotions by sharing their affective states is fundamentally different in nature from the capacity to mentalize. Thus, sharing the grief of a close friend feels fundamentally different than understanding what this person is having as thoughts and intentions, the latter lacking a bodily sensation.

First a short summary of the major findings of imaging studies in three interrelated but separate research streams will be provided: the neural basis of mentalizing, motor action imitation and empathizing. Then future directions for the study of empathizing and mentalizing will be discussed, focusing on how these abilities can be differentiated with regard to their relative contribution to the understanding of other people's mental and emotional states. Finally, possible implications of the outlined neuroscientific evidence for developmental science will be discussed. Specifically, it is suggested that our ability to reflect upon others and our ability to share their feelings should display different ontogenetic trajectories reflecting the differential development of the underlying brain structures.

2. Mind reading

For two decades now, research in developmental psychology, social psychology and cognitive neuro-science

has focused on the human ability to have a "ToM" (Premack and Woodruff, 1978) or to "mentalize" (Baron-Cohen et al., 2000; Frith and Frith, 2003), that is, to make attributions about the propositional attitudes (desires, beliefs, intentions) of others. This ability is absent in monkeys and only exists in a rudimentary form in apes (Povinelli and Bering, 2002). Wimmer and Perner (1983) developed a new paradigm to study the ability to mentalize in children. In this so-called false-belief task a story is told which goes like this: Maxi has some chocolate and puts it into a blue cupboard. Maxi goes out. Now his mother comes in and moves the chocolate to a green cupboard. Maxi comes back to get his chocolate. Where will Maxi look for the chocolate? The answer can be given simply by pointing: Maxi will look in the blue cupboard because this is where he falsely believes the chocolate to be. Control questions checked that the child understood the sequence of events: Where is the chocolate really? Do you remember where Maxi put the chocolate in the beginning? A series of subsequent studies established that children from around age 4 but not before begin to understand this scenario and can verbally explain it when asked. At age 5, over 90%, and at age 6 all children could understand the task (Baron-Cohen et al., 1985; Perner et al., 1987). Other researchers used variants of this task with essentially similar results. Studies were also carried out in other cultures indicating the universality of this clear developmental phenomenon (Avis and Harris, 2005). Note, however, that Clements and Perner (1994, 2001) were able to show that the false-belief scenario with Maxi and the chocolate is already understood by 3-year-old children when the task is transformed into a little play and eye-gaze is measured instead of verbal report.

Research in the domain of psycho-pathology demonstrated that the explicit attribution of mental states such as false beliefs is severely delayed in autism. The lack of a ToM in most autistic children could explain their observed failures in communication and social interaction (Baron-Cohen et al., 1985, 2000; Frith, 2003).

Recent imaging studies on normal healthy adults have focused on the ability to "mentalize" and have used stories, cartoons, picture sequences and animated geometric shapes which differed in the degree to which they represented the intentions, beliefs and desires of others (for a review, see Gallagher and Frith, 2003). Other studies, for example, involved the brain imaging of subjects while they played strategic games (McCabe et al., 2001; Gallagher et al., 2002; Rilling et al., 2004) with another partner or alternatively with a computer outside the scanner room. All these studies have repeatedly given evidence for the involvement of three brain areas: the temporal poles, the posterior superior temporal sulcus (STS) and most consistently an area in the medial pre-frontal lobe (mPFC) which is illustrated in Fig. 1. This area has not only been found to be involved when mentalizing about the thoughts, intentions or beliefs of others but also when people are attending to their own mental states (Mitchell et al., 2005).

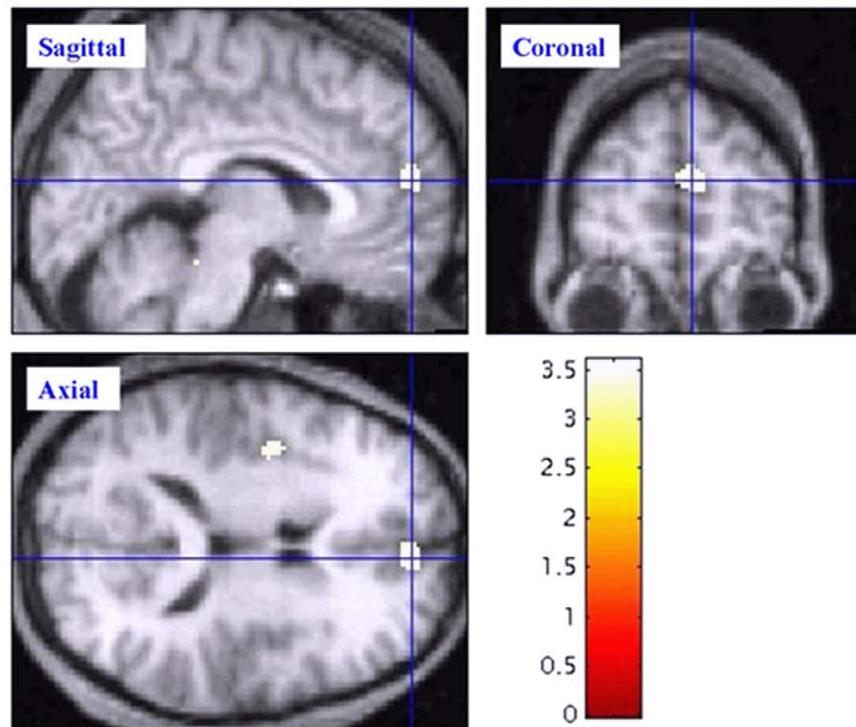


Fig. 1. Region of maximum activity in the region of the medial pre-frontal cortex, the area found to be reliably activated during mentalizing tasks. This activity was elicited when subjects adopted an “intentional stance” while they were playing a computerized version of the children’s game Rock Paper Scissors with either the experimenter or a computer. The figure illustrates activity specific to when subjects believed that they were playing against the experimenter compared to playing against a computer, and thus treated the other as an agent attributing to it beliefs and goals. The actual game sequence was identical in both conditions (adapted from Gallagher and Frith, 2003).

Frith and Frith (2003) suggested that this area may subserve the formation of decoupled representations of beliefs about the world, “decoupled” in the sense that they are decoupled from the actual state of the world and that they may or may not correspond to reality.

A related line of research has focused on the investigation of the neural mechanism underlying our ability to represent others’ goals and intentions by the mere observation of their motor actions. This notion stems from the finding that there are neurons in the pre-motor cortex of the macaque brain that fire both when the monkey performs a hand action itself and when it merely observes another monkey or a human performing the same hand action (Rizzolatti et al., 1996). It has been suggested that these “mirror neurons” represent the neural basis for imitation. Thus, when we imitate someone, we first observe the action and then try to reproduce it. But how do we transform what we see in terms of perceptual input into knowledge of what we need to do in terms of motor commands? The discovery of mirror neurons demonstrated that a translation mechanism is present in the primate brain and automatically elicited when viewing others’ actions. Moreover, Gallese and Goldman (1998) suggested that this mirror system might underlie our ability to understand other people’s intentions by providing us with an automatic simulation of their actions, goals and intentions.

Since the discovery of these “mirror neurons” a similar common coding of the production and perception of motor action has been demonstrated in the human brain using imaging techniques such as PET and fMRI (for a review, see Blakemore and Decety, 2001; Grezes and Decety, 2001). Typically, people were scanned while they saw movies depicting short motor actions. The observed activation was then compared with the activation elicited when the scanned subjects did the same motor action themselves. In line with the observation in monkeys, these studies revealed that the mere observation of another person performing an action recruited partly the same circuitry elicited by the execution of the same action. More specifically, this circuitry involves supplementary motor area (SMA), pre-SMA, pre-motor cortex, the supramarginal gyrus, intraparietal sulcus and the superior parietal lobe (Grezes and Decety, 2001).

3. Empathy

In addition to the ability to understand the mental states (propositional attitudes) of others, humans can also empathize with others, that is, share their feelings and emotions in the absence of any direct emotional stimulation to themselves. Humans can feel empathy for other people in a wide variety of contexts: for basic emotions and sensations such as anger, fear, sadness, joy, pain and lust,

as well as for more complex emotions such as guilt, embarrassment and love. It has been suggested that empathy is the process that prevents us from doing harm to others and motivates altruistic behavior. An absence of empathy is what characterizes psychopaths who hurt others without feeling guilt or remorse (Blair, 2003). Empathy is crucial for the creation of affective bonds between mother and child, and later between partners and larger social groups. These examples exemplify that the lay term “empathy” refers to a complex and multi-level concept incorporating processes of affect sharing, mental state attribution and action control and initiation. As mentioned already in the introduction, we focus here on our capacity to understand emotions of others by sharing their affective states. At this point it is important to stress that although empathizing is defined as “affect sharing” the affective state in self and others is not simply shared but has to be induced in the self by the perception or imagination of an emotional state in another person and, even if it feels similar, is nevertheless distinguishable from the same feeling originated in ourselves.

Neuro-scientific research on empathy has been strongly influenced by action–perception models outlined earlier. Thus, the idea that there are neural mechanisms enabling the sharing of other people’s states has been expanded to include the ability to share their *feelings and sensations* as well (Gallese, 2003; Gallese et al., 2004; Preston and de Waal, 2002). How can we understand what someone else feels when he or she experiences emotions such as sadness or happiness, or bodily sensations such as pain, touch or tickling, in the absence of any emotional or sensory stimulation to our own body? Influenced by perception–action models of motor behavior and imitation, Preston and de Waal (2002) proposed a neuro-scientific model of empathy, suggesting that observation or imagination of another person in a particular emotional state automatically activates a representation of that state in the observer with its associated autonomic and somatic responses. The term “automatic” in this case refers to a process that does not require conscious and effortful processing, but which can nevertheless be inhibited or controlled. Imaging studies in the past two years have started to investigate brain activity associated with different empathic responses in the domains of touch, smell and pain. The results have revealed common neural responses elicited by the observation of pictures showing disgusted faces and smelling disgusting odors oneself (Wicker et al., 2003), likewise by being touched and observing videos of someone else being touched (Keysers et al., 2004). Whereas the former study observed common activation in anterior insula (AI) cortex, a cortex which has been found to be associated with the processing and feeling of disgust, the latter study identified common activation in secondary somato-sensory cortex (SII), a part of the cortex involved in processing and feeling the sensation of touch.

Another study was able to identify shared and unique networks involved in empathy for pain (Singer et al.,

2004a). In this study, couples were recruited allowing the assessment of empathy “in vivo” by bringing both partners into the same scanner environment. Brain activity was then measured in the female partner while painful stimulation was applied either to her own or to her partner’s right hand via electrodes attached to the back of the hand. The male partner was seated next to the MRI scanner and a mirror allowed her to see both, her own and her partner’s, hands lying on a tilted board in front of her. Flashes of different colors on a big screen behind the board pointed either to her hand or that of her partner, indicating which of them would receive the stimulation and whether it would be painful or non-painful.

This procedure enabled the measurement of pain-related brain activation (the so-called “pain matrix”) when pain was applied to the scanned subject or to her partner (empathy for pain). The results suggest that some parts, but not the entire “pain matrix”, were activated when empathizing with the pain of others. Activity in the primary and secondary somato-sensory cortex was only observed when receiving pain. These areas are known to be involved in the processing of the sensory-discriminatory components of our pain experience, that is, they indicate the location of the pain and its objective quality. In contrast, bilateral AI, the rostral anterior cingulate cortex (ACC), brainstem and cerebellum were activated when subjects either received pain or a signal that a loved one experienced pain (see Fig. 2). These areas are involved in the processing of the affective component of pain, that is, how unpleasant the subjectively felt pain is (Craig, 2002; Peyron et al., 2000). Thus, both the experience of pain to oneself and the knowledge that a loved partner is experiencing pain activates the same affective pain circuits. Further analyses also revealed that activity in these

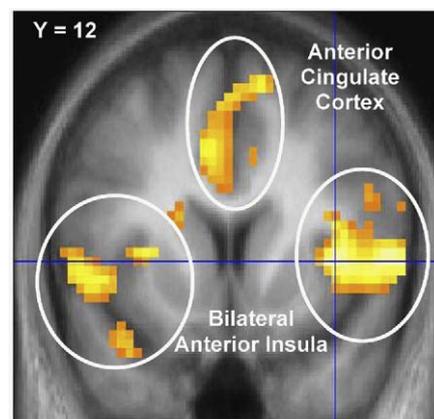


Fig. 2. Shared pain- and empathy-related networks observed when pain was applied to self or partner. The female volunteers activated anterior cingulate cortex (ACC) and bilateral anterior insula—the affective component of their own pain experience—when they observed their loved one receiving painful stimulation to his right hand. The figure illustrates results of a conjunction analysis between the contrasts pain–no pain in the context of self and other at $P < 0.001$ (adapted from Singer et al., 2004b).

empathy-related pain-sensitive areas show individual variation and that these differences covary with interindividual differences in standard empathy questionnaires—the Empathic Concern Scale (IRI) by Davis (1980) and the Balanced Emotional Empathy Scale (BEES) from Mehrabian and Epstein (1972) and Mehrabian (1997). The higher the subjects scored on these questionnaires, the higher was their activation in ACC and AI.

In sum, these findings suggest that we use representations reflecting our own emotional responses to pain to understand how the pain of others feels. Moreover, our ability to empathize may have evolved from a system which represents our own internal feeling states and allows us to predict the affective outcomes of an event for ourselves and for other people. Consistently, activation in these regions has been observed in a wide range of imaging studies associated with emotional awareness of internal bodily states (Critchley et al., 2004), subjective feelings expressed by subjective ratings of trustworthiness in faces (Winston et al., 2002), in response to unfair offers during monetary exchange games (Rilling et al., 2002; Sanfey et al., 2003) or when confronted with the faces of fair players (Singer et al., 2004b). Interestingly, a special cell type, the so-called von Economo cell, has been observed exclusively in these two brain regions and only in humans and our closest relatives the great apes. John Allman has suggested that these large cells may provide a possible neural mechanism for fast social intuitions in uncertain situations of the like of “I feel or don’t feel good about this” (Craig, 2003). In general, these structures have been suggested to subservise a subjective representation of internal bodily and subjective feeling states (Gallese et al., 2004; Craig, 2002, 2003; Critchley et al., 2004; Damasio, 1994).

Results of recent studies on empathy for pain indicate that similar empathic responses can be observed even if the “object” of empathy is unknown or unfamiliar (Jackson et al., 2005; Morrison et al., 2004). The magnitude of this activity, however, is modulated by the affective link to the “object” of empathy (Singer et al., 2006). Thus, activity in ACC and AI has also been observed when subjects watched still pictures depicting body parts involved in possibly painful situations (Jackson et al., 2005) or videos showing a needle piercing in the back of a hand (Morrison et al., 2004). The findings of a new study by Singer et al. (2006) indicate that overall empathy-related activation for unfamiliar persons in pain is lower than when empathizing with a loved one in pain. More importantly, however, this study gives first evidence for the modulation of activity in ACC and AI as a function of whether the subjects liked or disliked the other person in pain.

Finally, a number of studies have investigated the perception and evaluation of facial emotional expressions (for overviews, see also Blair, 2003; Adolphs, 2002; Haxby et al., 2002), mostly by presenting static pictures of faces with different emotional expressions ranging from fear, anger, disgust to happiness and surprise. These studies identified the involvement of a variety of brain regions,

most prominently primary and higher-order visual areas, orbito-frontal cortex, amygdala, insula and basal ganglia. Although relevant, the focus of most of these studies was not on the study of empathy but on the investigation of threat detection, aversive conditioning, subliminal perception, inherent reward values or attentional modulation (for an exception, see Carr et al., 2003; Decety and Chaminade, 2003).

4. Future research perspectives: distinguishing mentalizing and empathizing

Clearly, neuro-scientific research on empathic understanding is in its infancy. In the experiments undertaken so far (Wicker et al., 2003; Keysers et al., 2004; Singer et al., 2004a, 2006; Morrison et al., 2004), subjects were neither required to make any explicit judgment about the feelings of the other person (for an exception see Avenanti et al., 2005, commented on by Singer and Frith, 2005) nor to engage in other-regarding behavior. As pointed out earlier the focus was primarily on our capacity for affect sharing, the capacity to automatically resonate with other people’s feelings even when we are not aware of it. For example, when seeing someone else crying, we automatically start producing tears in our eyes, even in the absence of awareness.

The literature refers to these effects as emotional contagion, the human tendency to automatically mimic and synchronize facial expressions, vocalizations, postures and movements with those of another person (Hatfield et al., 1994). An example for such contagious effects can be observed already in newborns who respond significantly more with crying when hearing another newborn crying than when hearing the sound of white noise, their own cry, the cry of an older baby or a synthetic cry (Martin and Clark, 1987; Simner, 1971; Decety and Jackson, 2004).

However, affect sharing also occurs in the absence of any emotional stimuli to the subject. Even when subjects only see symbols which indicate by their color whether another person is in pain or not, activation in parts of the pain network involved in the processing of our own pain experience is elicited. As with emotional contagion this empathic response is still implicit in the sense that it was elicited without the requirement of any explicit, effortful perspective taking or judgment about the other people’s emotional states.

The capacity for affect sharing—defined in this article as the capacity for empathy—is, however, only one aspect of what is called empathy in our everyday understanding. Thus, the term empathy usually refers to a complex and multi-level construct including simple forms of emotional contagion as well as complex forms of empathic perspective taking associated with other-regarding pro-social behavior (see also Decety and Jackson, 2004; Batson et al., 1997; Eisenberg and Fabes, 1990; Eisenberg, 2000; Preston and de Waal, 2002). Different authors have focused on different aspects of empathy, some focusing

on the automatic component of affect sharing, others on the conscious process of perspective taking allowing the understanding of the others' feelings, and again others on the motivational aspect of empathy underlying the engagement in pro-social other-regarding behavior. Imagine, for example, being confronted with a close and usually quite peaceful friend who is in a stage of extreme rage because he is jealous that his girlfriend showed too much affection towards you during vacations together. Your capacity for affect sharing will help you to experience how it feels to be in rage and this will allow you to make more accurate predictions about possible actions your friend might take. At the same time, however, you will not confuse the rage and jealousy of your friend with your own motivational state. Moreover, you will engage in cognitive perspective taking (e.g., mentalizing) to understand the meaning of the feeling as well as your friend's thoughts and beliefs regarding this specific situation. Further, you will have to regulate and control your own feelings of distress resulting from the threat of the situation and you will probably try to engage in comforting helping behavior to appease the psychological pain of your friend. All these complex processes belong to what we commonly mean when we speak of empathy.

Future research will have to investigate in further detail these different levels of empathic responding and clarify when the abilities of mentalizing (understanding the propositional attitudes of others) and empathizing (sharing the affects of others) play unique and when they play common roles in the understanding of other people's states. An important component of this research will be to identify the neuronal circuitries underlying these different forms of empathic responses.

For purposes of illustration we will focus on the example of empathy research in the domain of pain. A first step for future research would be to compare implicit and explicit forms of empathy. For example, the comparison between brain activities during the mere perception of pain in others and that elicited when subjects are required to make explicit judgments about the unpleasantness or intensity of the painful stimulation as perceived by the other person should elicit different neural activation patterns: implicit forms of empathic responses should be associated with activation of affective representation of the pain network (AI and ACC) alone, whereas the explicit empathy conditions should involve additional activation in STS and mPFC, the areas which have been observed to be involved in cognitive perspective taking.

An interesting additional variation would be to test explicit empathic understanding in two conditions: (a) a condition in which there is congruency between one's own and the other's feeling and (b) a condition in which there is incongruency between one's own and the other's feeling. In the first case, subjects assess the effect of painful stimulation on another person who shares feelings with regard to pain similar to themselves. In the case of incongruency, subjects watch, for example, a masochist getting painful

stimulation, i.e., a person that experiences pain partly as joyful and rewarding instead of solely aversive and unpleasant. In the latter condition, no affect sharing may take place because subjects lack the adequate affect representations. Accordingly, a lack of activation in pain-related networks and enhanced activation of STS and mPFC reflecting cognitive perspective taking should be observed. Finally, processes of inhibition and regulation of empathic responses are assumed to be associated with activity in brain areas known to be relevant for top-down control and emotion regulation, particularly the dorso-lateral aspects of the pre-frontal cortex (Anderson et al., 2004; Miller and Cohen, 2001; Ochsner et al., 2002; Wager et al., 2004).

5. Implications for developmental neuro-sciences

So far, I have summarized evidence for neuronal correlates of mind reading and empathy, two abilities which allow human beings to represent the states of other people whether these are mental or emotional. These abilities enable people to predict others' behavior and, therefore, successfully engage in social interactions. Despite these common features and the difficulty of separating the two abilities in everyday situations, neuro-scientific evidence suggests that these abilities nevertheless can be distinguished and may rely on different neural circuitries. Thus, sharing sensations and emotions with others is associated with activation of circuitries involved in the processing of similar states in ourselves, involving the secondary somato-sensory cortices for touch, insular cortex and ACC for pain and disgust and amygdala for fear. Globally, these regions constitute the "emotional" (Dolan, 2002; Le Doux, 1998) or "social" brain (Adolphs, 1999) and most of these structures are usually referred to as limbic and para-limbic structures. They are crucial for emotional processing and developed early in phylogeny. By contrast, mentalizing abilities have been shown to be associated with activation in pre-frontal and temporal cortices, most importantly the mPFC and posterior STS, structures which belong to the neo-cortex and developed late in phylogeny.

Based on evidence from developmental brain science suggesting different developmental trajectories for different brain regions over the life span (Giedd et al., 1999; Gogtay et al., 2004; Sowell et al., 2003, 2004; Raz et al., 2005) it is suggested that introducing a developmental approach to the neuro-scientific study of mentalizing and empathizing may help to dissociate the two abilities and to generate a better understanding and prediction of the emergence of the proposed different levels of empathic responding. Note that there is a vast amount of existing behavioral data on the development of both empathy and ToM. This literature is summarized elsewhere and is not in the scope of the present article (Baron-Cohen et al., 2000; Mitchell et al., 2005; Decety and Jackson, 2004; Eisenberg and Fabes, 1990; Eisenberg, 2000). The

prediction is made that the ability to understand the mental states of others should evolve later in ontogeny than the ability to share emotions because our ability to share affective states with others relies on phylogenetically old structures which develop early in ontogeny, whereas the capacity to understand mental states (beliefs, thoughts) relies on structures which emerged late in phylogeny and are also among those to mature latest in ontogeny.

Based on modern brain imaging techniques developmental neuro-sciences have indeed begun to give new evidence for nonlinear changes in gray matter (GM) density during childhood and adolescence. GM maturation is reflected in a loss of density over time with a simultaneous increase in synaptic pruning (Giedd et al., 1999; Gogtay et al., 2004; Sowell et al., 2003). Giedd et al. (1999) have shown that brain development between the ages of 4–21 years follows temporally distinct and functionally meaningful maturational trajectories in which higher-order association areas mature only after the lower-order sensorimotor regions have matured. Additionally, it appears that phylogenetically older cortical areas mature earlier than the newer cortical regions. Thus, within the frontal cortex, the primary sensorimotor cortices mature first whereas the pre-frontal cortex matures last; the dorso-lateral pre-frontal cortex (DLPFC) loses GM only at the end of adolescence. The occipital lobes including primary visual cortex and the temporal poles involved in processing smell and taste mature very early, whereas the lateral temporal lobes mature very late. A small region of the posterior part of the superior temporal gyrus matures last; a finding which is interesting with respect to the crucial role of the STS in mentalizing (Apperly et al., 2004). Finally, phylogenetically, some of the oldest cortical regions, among those the limbic and para-limbic structures mentioned earlier, lie on the inferior brain surface in the medial aspects of the temporal lobe and develop earlier than the structures of the neo-cortex.

In sum, these findings suggest that levels of empathic responding that involve implicit affect sharing and are based on limbic and para-limbic structures as well as on somato-sensory cortices should develop earlier than our ability for cognitive perspective taking because the former rely on structures which develop early in brain development, whereas the latter rely on structures of the neo-cortex which are among the latest to mature, such as the pre-frontal cortex and lateral parts of the temporal cortex. The finding that the DLPFC has not fully matured up to an age of 25 is interesting with respect to its possible role in the modulation and control of affective responses and might suggest that the full capacity for effective and adaptive empathic responding is not developed until late adolescence. It would be interesting to investigate whether the maturation of the DLPFC parallels psychological maturation in the capacity to control and modulate empathic responses necessary to cope with contagious distress or engage in pro-social behavior.

6. Mentalizing and empathizing not only separate but also intertwined

Even though we have argued for separate developmental pathways for empathizing and mentalizing abilities with the latter developing much later than the former, we assume that (a) on both neuronal and psychological grounds the two developmental pathways also interact with each other and (b) both capacities undergo developmental changes throughout childhood and adolescence.

Thus, as discussed earlier, empathy refers to a multifaceted construct ranging from simple forms of emotion contagion to cognitive perspective-taking abilities. Contagious crying seems to be already present in newborns, before infants have developed self-awareness and the distinction between self and others, a capacity which develops only around 18–24 months of age, the period in which children also display the first manifestations of pro-social behavior towards others (Decety and Jackson, 2004). The ability to have empathic responses in the absence of any emotional cue develops probably even later and should parallel the maturation of memory systems and mental imagery. Moreover, explicit forms of empathy should coincide with the emergence of conscious representations of one's own feeling states allowing for statements such as "I feel sad or jealous". The capacity to understand other people's feelings when there is congruency between one's own and another person's feeling states probably develops earlier than the capacity to understand others' feeling in the absence of any representation of this feeling state in oneself. Whereas the former probably relies on a simulation based on one's own representation of a given feeling state in oneself (limbic structures), the latter probably relies purely on mentalizing capacities (pre-frontal and temporal structures). As outlined earlier, mentalizing abilities develop by about age 4 and are probably based on the development of mPFC and temporal structures. Thus, the basic capacity for mentalizing seems to be clearly in place long before the complete maturation of the neuro-circuitry subserving it. This suggests that not only empathizing but also mentalizing abilities may change in nature from early childhood to adolescence. Similar to emotional contagion preceding more complex forms of implicit and explicit empathy, explicit forms of mentalizing abilities are preceded by processes allowing implicit attribution of intentions and other mental states. For example, the ability of an infant to direct its attention/gaze towards the attentional focus of the mother (joint attention) already develops at around the age of 12–18 months or even earlier. Furthermore, explicit forms of mentalizing may differentiate and get more and more complex over the life span. The distinction between first-order (attributing a belief to another person) and second-order beliefs (attributing a belief about another person's belief), the former developing at about age 4, the latter developing later between the ages 6–10, points to a continuous development of mentalizing abilities throughout the life span.

Finally, it is important to stress that this paper has focused only on the first part of the life span and neglected possible implications of adult age changes in neuronal structures for emotional regulation and mind reading. The phase of old and very old age would be of special interest for testing the hypothesis of distinct neuronal networks underlying our abilities for affect sharing and mind reading. Similar to early childhood different brain areas show differential decline in old age [71] suggesting higher vulnerability to structures which develop later and are phylogenetically younger (e.g., PFC). It may therefore be that empathic responses are preserved up to very old age whereas mentalizing abilities show earlier decline. A challenge for future research will be to refine the use of functional imaging techniques in infants (Dehaene-Lambertz et al., 2002) and old age (Jones et al., in press) and to develop “interactive mind” paradigms suitable for infants, children and the aged to enable the assessment of the brain regions underlying our capacities for mind reading and empathizing over the entire life span.

References

- Adolphs, R., 1999. Social cognition and the human brain. *Trends in Cognitive Sciences* 3, 469–479.
- Adolphs, R., 2002. Neural systems for recognizing emotion. *Current Opinion in Neurobiology* 12, 169–177.
- Adolphs, R., 2003. Cognitive neuroscience of human social behaviour. *Nature Reviews Neuroscience* 4, 165–178.
- Anderson, M.C., Ochsner, K.N., Kuhl, B., Cooper, J., Robertson, E., Gabrieli, S.W., Glover, G.H., Gabrieli, J.D., 2004. Neural systems underlying the suppression of unwanted memories. *Science* 303, 232–235.
- Aperly, I.A., Samson, D., Chiavarino, C., Humphreys, G.W., 2004. Frontal and temporo-parietal lobe contributions to theory of mind: neuropsychological evidence from a false-belief task with reduced language and executive demands. *Journal of Cognitive Neuroscience* 16, 1773–1784.
- Avenanti, A., Buetti, D., Galati, G., Aglioti, S.M., 2005. Transcranial magnetic stimulation highlights the sensorimotor side of empathy for pain. *Nature Neuroscience* 8, 955–960.
- Avis, J., Harris, P.L., 2005. Belief-desire reasoning among Baka children—evidence for a universal conception of mind. *Child Development* 62, 460–467.
- Baron-Cohen, S., Leslie, A.M., Frith, U., 1985. Does the autistic child have a “theory of mind”? *Cognition* 21, 37–46.
- Baron-Cohen, S., Tager-Flusberg, H., Cohen, J.D. (Eds.), 2000. *Understanding Other Minds: Perspectives From Developmental Cognitive Neuroscience*, second ed. Oxford University Press, New York.
- Batson, C.D., Sager, K., Garst, E., Kang, M., Rubchinsky, K., Dawson, K., 1997. Is empathy-induced helping due to self-other merging? *Personality and Social Psychology Bulletin* 29, 1190–1201.
- Blair, R.J., 2003. Facial expressions, their communicatory functions and neuro-cognitive substrates. *Philosophical Transactions of the Royal Society of London, Series B: Biological Sciences* 358, 561–572.
- Blakemore, S.J., Decety, J., 2001. From the perception of action to the understanding of intention. *Nature Reviews Neuroscience* 2, 561–567.
- Blakemore, S.J., Winston, J., Frith, U., 2004. Social cognitive neuroscience: where are we heading? *Trends in Cognitive Sciences* 8, 216–222.
- Carr, L., Iacoboni, M., Dubeau, M.C., Mazziotta, J.C., Lenzi, G.L., 2003. Neural mechanisms of empathy in humans: a relay from neural systems for imitation to limbic areas. *Proceedings of the National Academy of Sciences of the United States of America* 100, 5497–5502.
- Clements, W.A., Perner, J., 1994. Implicit understanding of belief. *Cognitive Development* 9, 377–395.
- Clements, W.A., Perner, J., 2001. When actions really do speak louder than words, but only explicitly; young children’s understanding of false belief in action. *British Journal of Developmental Psychology* 19, 413–432.
- Craig, A.D., 2002. How do you feel? Interoception: the sense of the physiological condition of the body. *Nature Reviews Neuroscience* 3, 655–666.
- Craig, A.D., 2003. Interoception: the sense of the physiological condition of the body. *Current Opinion in Neurobiology* 13, 500–505.
- Critchley, H.D., Wiens, S., Rotshtein, P., Ohman, A., Dolan, R.J., 2004. Neural systems supporting interoceptive awareness. *Nature Neuroscience* 4, 189–195.
- Damasio, A.R., 1994. *Descartes’ Error*. Putman, New York.
- Davis, M.A., 1980. A multidimensional approach to individual differences in empathy. *JSAS Catalog of Selective Documents in Psychology* 10, 85.
- Decety, J., Chaminade, T., 2003. Neural correlates of feeling sympathy. *Neuropsychologia* 41, 127–138.
- Decety, J., Jackson, P.L., 2004. The functional architecture of human empathy. *Behavioral and Cognitive Neuroscience Reviews* 3, 71–100.
- Dehaene-Lambertz, G., Dehaene, S., Hertz-Pannier, L., 2002. Functional neuroimaging of speech perception in infants. *Science* 298, 2013–2015.
- Dolan, R.J., 2002. Emotion, cognition, and behavior. *Science* 298, 1191–1194.
- Eisenberg, N., 2000. Emotion, regulation, and moral development. *Annual Review of Psychology* 51, 665–697.
- Eisenberg, N., Fabes, R.A., 1990. Empathy: conceptualization, measurement, and relation to prosocial behavior. *Motivation and Emotion* 14, 131–149.
- Frith, U., 2003. *Autism: Explaining the Enigma*, second ed. Blackwell, Oxford.
- Frith, C., Wopert, D. (Eds.), 2004. *The Neuroscience of Social Interaction: Decoding, Imitating, and Influencing the Actions of Others*. Oxford University Press, New York.
- Frith, U., Frith, C.D., 2003. Development and neurophysiology of mentalizing. *Philosophical Transactions of the Royal Society of London, Series B: Biological Sciences* 358, 459–473.
- Gallagher, H.L., Frith, C.D., 2003. Functional imaging of ‘theory of mind’ 5. *Trends in Cognitive Sciences* 7, 77–83.
- Gallagher, H.L., Jack, A.I., Roepstorff, A., Frith, C.D., 2002. Imaging the intentional stance in a competitive game. *Neuroimage* 16, 814–821.
- Gallese, V., 2003. The manifold nature of interpersonal relations: the quest for a common mechanism. *Philosophical Transactions of the Royal Society of London, Series B: Biological Sciences* 358, 517–528.
- Gallese, V., Goldman, A., 1998. Mirror neurons and the simulation theory of mind-reading. *Trends in Cognitive Sciences* 2, 493–501.
- Gallese, V., Keysers, C., Rizzolatti, G., 2004. A unifying view of the basis of social cognition. *Trends in Cognitive Sciences* 8, 396–403.
- Giedd, J.N., Blumenthal, J., Jeffries, N.O., Castellanos, F.X., Liu, H., Zijdenbos, A., Paus, T., Evans, A.C., Rapoport, J.L., 1999. Brain development during childhood and adolescence: a longitudinal MRI study. *Nature Neuroscience* 2, 861–863.
- Gogtay, N., Giedd, J.N., Lusk, L., Hayashi, K.M., Greenstein, D., Vaituzis, A.C., Nugent III, T.F., Herman, D.H., Clasen, L.S., Toga, A.W., Rapoport, J.L., Thompson, P.M., 2004. Dynamic mapping of human cortical development during childhood through early adulthood. *Proceedings of the National Academy of Sciences of the United States of America* 101, 8174–8179.
- Grezes, J., Decety, J., 2001. Functional anatomy of execution, mental simulation, observation, and verb generation of actions: a meta-analysis. *Human Brain Mapping* 12, 1–19.
- Hatfield, E., Cacioppo, J., Rapson, R., 1994. *Emotional Contagion*. Cambridge University Press, New York.
- Haxby, J.V., Hoffman, E.A., Gobbini, M.I., 2002. Human neural systems for face recognition and social communication. *Biological Psychiatry* 51, 59–67.

- Jackson, P.L., Meltzoff, A.N., Decety, J., 2005. How do we perceive the pain of others. A window into the neural processes involved in empathy. *Neuroimage* 24, 771–779.
- Jones, S., Nyberg, L., Sandblom, J., Stigsdotter Neely, A., Ingvar, M., Petersson, K.-M., Bäckman, L., (in press). Cognitive and neural plasticity in aging: general and task-specific limitations. *Neuroscience and Biobehavioral Reviews*, in press, doi:10.1016/j.neubiorev.2006.06.012.
- Keysers, C., Wicker, B., Gazzola, V., Anton, J.L., Fogassi, L., Gallese, V., 2004. A touching sight: SII/PV activation during the observation and experience of touch 1. *Neuron* 42, 335–346.
- LeDoux, J.E., 1998. *The Emotional Brain*. Weidenfeld & Nicholson, London.
- Martin, G.B., Clark, R.D., 1987. Distress crying in neonates: species and peer specificity. *Developmental Psychology* 18, 3–9.
- McCabe, K., Houser, D., Ryan, L., Smith, V., Trouard, T., 2001. A functional imaging study of cooperation in two-person reciprocal exchange. *Proceedings of the National Academy of Sciences of the United States of America* 98, 11832–11835.
- Mehrabian, A., 1997. Relations among personality scales of aggression, violence, and empathy: validation evidence bearing on the Risk of Eruptive Violence Scale. *Aggressive Behavior* 23, 433–445.
- Mehrabian, A., Epstein, N., 1972. A measure of emotional empathy. *Journal of Personality* 40, 525–543.
- Miller, E.K., Cohen, J.D., 2001. An integrative theory of prefrontal cortex function. *Annual Review of Neuroscience* 24, 167–202.
- Mitchell, J.P., Banaji, M.R., Macrae, C.N., 2005. The link between social cognition and self-referential thought in the medial prefrontal cortex. *Journal of Cognitive Neuroscience* 17, 1306–1315.
- Morrison, I., Lloyd, D., di Pellegrino, G., Roberts, N., 2004. Vicarious responses to pain in anterior cingulate cortex: is empathy a multisensory issue? *Cognitive Affective Behavioural and Neuroscience* 4, 270–278.
- Ochsner, K.N., Lieberman, M.D., 2001. The emergence of social cognitive neuroscience. *American Psychologist*, 717–734.
- Ochsner, K.N., Bunge, S.A., Gross, J.J., Gabrieli, J.D., 2002. Rethinking feelings: an fMRI study of the cognitive regulation of emotion. *Journal of Cognitive Neuroscience* 14, 1215–1229.
- Perner, J.L., Leekam, S.R., Wimmer, H., 1987. 2-year-olds difficulty with false belief—the case for a conceptual deficit. *British Journal of Developmental Psychology* 5, 125–137.
- Peyron, R., Laurent, B., Garcia-Larrea, L., 2000. Functional imaging of brain responses to pain: a review and meta-analysis (2000). *Neurophysiologie Clinique/Clinical Neurophysiology* 30, 263–288.
- Povinelli, D.J., Bering, J.M., 2002. The mentality of apes revisited. *Current Directions in Psychological Science* 11, 115–119.
- Premack, D., Woodruff, G., 1978. Does the chimpanzee have a theory of mind? *Behavioral and Brain Science* 1, 515–526.
- Preston, S.D., de Waal, F.B.M., 2002. Empathy: its ultimate and proximate bases. *Behavioral and Brain Science* 25, 1–72.
- Raz, N., Lindenberger, U., Rodrigue, K.M., Kennedy, K.M., Head, D., Williamson, A., Dahle, C., Gerstorf, D., Acker, J.D., 2005. Regional brain changes in aging healthy adults: general trends, individual differences and modifiers. *Cerebral Cortex* 15, 1676–1689.
- Rilling, J., Gutman, D., Zeh, T., Pagnoni, G., Berns, G., Kilts, C., 2002. A neural basis for social cooperation. *Neuron* 35, 395–405.
- Rilling, J.K., Sanfey, A.G., Aronson, J.A., Nystrom, L.E., Cohen, J.D., 2004. The neural correlates of theory of mind within interpersonal interactions. *Neuroimage* 22, 1694–1703.
- Rizzolatti, G., Fadiga, L., Gallese, V., Fogassi, L., 1996. Premotor cortex and the recognition of motor actions. *Cognitive Brain Research* 3, 131–141.
- Sanfey, A.G., Rilling, J.K., Aronson, J.A., Nystrom, L.E., Cohen, J.D., 2003. The neural basis of economic decision-making in the ultimatum game. *Science* 300, 1755–1758.
- Simner, M.L., 1971. Newborn's response to the cry of another infant. *Developmental Psychology* 5, 136–150.
- Singer, T., Frith, C., 2005. The painful side of empathy. *Nature Neuroscience* 8, 845–846.
- Singer, T., Seymour, B., O'Doherty, J., Kaube, H., Dolan, R.J., Frith, C.D., 2004a. Empathy for pain involves the affective but not sensory components of pain. *Science* 303, 1157–1162.
- Singer, T., Kiebel, S.J., Winston, J.S., Dolan, R.J., Frith, C.D., 2004b. Brain responses to the acquired moral status of faces. *Neuron* 41, 653–662.
- Singer, T., Seymour, B., O'Doherty, J.P., Stephan, K.E., Dolan, R.J., Frith, C.D., 2006. Empathic neural responses are modulated by the perceived fairness of others. *Nature* 439, 466–469.
- Sowell, E.R., Peterson, B.S., Thompson, P.M., Welcome, S.E., Henkenius, A.L., Toga, A.W., 2003. Mapping cortical change across the human life span. *Nature Neuroscience* 6, 309–315.
- Sowell, E.R., Thompson, P.M., Leonard, C.M., Welcome, S.E., Kan, E., Toga, A.W., 2004. Longitudinal mapping of cortical thickness and brain growth in normal children. *Journal of Neuroscience* 24, 8223–8231.
- Wager, T.D., Rilling, J.K., Smith, E.E., Sokolik, A., Casey, K.L., Davidson, R.J., Kosslyn, S.M., Rose, R.M., Cohen, J.D., 2004. Placebo-induced changes in fMRI in the anticipation and experience of pain. *Science* 303, 1162–1167.
- Wicker, B., Keysers, C., Plailly, J., Royet, J.P., Gallese, V., Rizzolatti, G., 2003. Both of us disgusted in my insula: the common neural basis of seeing and feeling disgust. *Neuron* 40, 655–664.
- Wimmer, H., Perner, J., 1983. Beliefs about beliefs: representation and constraining function of wrong beliefs in young children's understanding of deception. *Cognition* 13, 103–128.
- Winston, J.S., Strange, B.A., O'Doherty, J., Dolan, R.J., 2002. Automatic and intentional brain responses during evaluation of trustworthiness of faces. *Nature Neuroscience* 5, 277–283.

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Adolescent personalities and their self-acceptance within complete families, incomplete families and reconstructed families

Abstract:

At the time of this work I had been concentrating on how the family gave shape to adolescent personalities and how adolescents would, as a consequence, accept themselves.

The purpose of this present study is to determine the differences in personality range and levels of self-acceptance among groups of women and men from complete, incomplete and reconstructed families. The study included a group of 314 adolescents, from the administrative region of Łódź. The following test methods were used: the Survey and standardised Inventory of Personality NEO - FFI by P.T. Costa and R. McCrae as adapted by B. Zawadzki, J. Strelau, P. Szczepaniak and M. Śliwińska; and the Scale of Interpersonal Attitude (SUI) as adapted by J. M. Stanik.

As a result of statistical analyses, it turned out that the dimension of personality the Openness to Experience had indeed diversified the examined adolescent groups. Statistically significant differences were also observed at the self-acceptance level between the study groups.

Keywords:

family structure, adolescence, personality, self-acceptance

Streszczenie:

W niniejszej pracy skoncentrowałam się na przedstawieniu roli struktury rodziny w kształtowaniu się osobowości i samooceny adolescentów. Celem prezentowanych badań było określenie różnic w zakresie wymiarów osobowości i poziomu samooceny między grupami kobiet i mężczyzn z rodzin pełnych, monoparentalnych oraz zrekonstruowanych. Badaniami objęto 314 młodych osób z województwa łódzkiego. Zastosowano następujące metody badawcze: ankietę, Inwentarz Osobowości NEO-FFI P.T. Costy and R. McCrae'a w adaptacji B. Zawadzkiego, J. Strelaua, P. Szczepaniaka i M. Śliwińskiej oraz Skalę Ustosunkowań Interpersonalnych (SUI) w adaptacji J. M. Stanika.

W rezultacie przeprowadzonych analiz statystycznych okazało się, że wymiar osobowości różnicujący badane grupy stanowi cecha otwartości na doświadczenie. Istotnie statystycznie różnice zaobserwowano także w zakresie samooceny badanych grup młodzieży.

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Słowa kluczowe:

struktura rodziny, adolescencja, osobowość, akceptacja siebie

Introduction

Psychological literature widely discusses the multilateral influences of family on emotional and social life development as well as on the whole man's personality (Cartwright, 2003; Plopa, 2005; Liberska, 2011; Rostowska, Rostowski, 2011).

Researchers assume that an individual's correct development including the formation of personality, self image, self acceptance and the relation to oneself as well as to other people results from family experience (Reykowski, 1992).

Family experience can either help develop an individual or, in cases of adverse and very strong influences, impede the process of psychical and social development, not letting an individual form desirable human values.

The above-mentioned experience is extremely important because its impact concentrates mostly in the childhood period, when a child's psyche of is the most absorptive, vulnerable, flexible and hardly influenced by the external environment (Dunn, Munn, 1985).

Familiologists point out the importance of the parents' role in family functioning and the children's development. It is because in the initial life period, including the time from infancy to pre-school age, it is the family that plays the main role in the child's personality and self-esteem formation. Its first social contacts are established with the mother, then with the father, brothers and sisters and other housemates (Napura, Schneider, 2010).

Familial influence on the child's development is spontaneous in nature, and is not the effect of any particular educational program. Social stances, determined to a large extent by the socialization process in the first years of life, depend on the family atmosphere in the home, the educational methods applied by the parents, the family structure, and on the social behaviour patterns demonstrated by the parents.

The research done by G. Poraj (1988) shows that parents affect the children's personality and self-acceptance development through applying particular educational methods. Negative influences can be exerted by excessive severity, exaggerated rigorism, and using too much punishment and rules as well as by permissive education, excessive care, and solicitude linked with limited independence.

A number of researchers (Tyszkowa, 2006; Harwas-Napierała, 2006) point out that the relations of a child with adults, mainly concerning their personal qualities, are considered to be one of the most important factors in personal development.

There is also some empirical evidence that there is a close connection between personality and mature parenthood. Mature parenthood can help to reduce the child's self-centeredness, form the child's sense of responsibility and empathy, and trigger its readiness to perform social roles (Rostowska, 2003).

The family structure plays a very important role in personal development. It includes the fact that the child has both biological parents, a stepfather or a stepmother, as well as their age, job and social status. A different educational situation is created in a two-generation family as well as in an extended one. Furthermore, when a child has siblings, their age and number appear to be significant for personality and self-acceptance formation. Different personal qualities and self-acceptance levels will be formed in the eldest, the youngest or the only child, or the only boy among a few sisters or the only girl among a number of brothers (Tenikue, Bertrand, 2010). Knowledge of emotional and social experiences which were provided to a child in its family is often the key to understanding the difficulties the child has in social functioning (Kubik, 1999).

At the early school age and during adolescence a child comes into the secondary developmental context, whose range is much wider than the family environment. In this life period an individual's personal development takes place mainly through influences of non-family environments, such as school, friends and people met in various youth organizations, and later in work (Tyszkowa, 2006).

Our article concentrates on the family role in personality shaping and self-acceptance of adolescents (average age 21). An important argument for doing research in this field is to explore the changes which are currently taking place within the Polish family. They are structural, and functional, in nature and are connected with self-consciousness, thus creating a new kind of educational environment.

Modern families have a diversified structure. Increasingly, incomplete families as well as reconstructed ones are becoming visible in Polish society. Both cases have a tendency to increase, therefore it is so important to study how young people function in incomplete families after a divorce and in reconstructed ones since the psychological knowledge on this subject is still insufficient.

This study adopted the personality concept by R.R. McCrae and O.P. John. The authors singled out five main personality dimensions: Neuroticism, Extraversion, Openness to Experience, Agreeableness and Conscientiousness (John, 1990). These five dimensions were confirmed by numerous sample groups, kinds of data, and for a number of languages (Zimbardo, 2012).

Self-acceptance was determined based on the definition suggested by J. M. Stanik. The author defines it as a rather stable state of personality, resulting from an individual's relatively stable self-estimation, especially when comparing oneself with other people.

High scores obtained on the self-complacency scale for low self-estimation, connect a neurotic, suspicious and hostile personality with a high level of apprehension. On the contrary, low scores point to the lack of these symptoms in the surveyed person's self-description (Stanik, 1998).

It should be emphasized that the level of self-acceptance is connected with how an individual's personality acts, in other words, with its structuralization and organization level. Individuals with stable self-estimation have a better organized personality than individuals with unstable self-estimation. Moreover, worse structuralization results in greater susceptibility of the personality to emotional influences.

Research problems and hypotheses

The purpose of our research was to answer the following questions: Are there any differences in personality qualities between young people from full families, incomplete families and reconstructed ones? Are there any differences in the self-acceptance level between young people from full families, incomplete families and reconstructed ones? Are there any relations and of what kind between young persons' self-acceptance levels and personality qualities from differently structured families?

According to our designated purpose and the above-mentioned questions and based on the content-related literature, a number of research hypotheses have been formulated.

Hypothesis no. 1: There is a difference in personality qualities between groups of women from full families, incomplete families and reconstructed ones.

Hypothesis no. 2: There is a difference in personality qualities between groups of men from full families, incomplete families and reconstructed ones.

Hypothesis no. 3: There is a difference in the self-acceptance level between groups of women from full families, incomplete families and reconstructed ones.

Hypothesis no. 4: There are statistically significant differences in the self-acceptance level between groups of men from families of different structure.

Hypothesis no. 5: There are relations, different as far as strength and direction are concerned, between the self-acceptance level and the examined personality qualities.

Research methods

The following test methods were used to answer our research questions: Survey and Standardised Inventory of Personality NEO - FFI by P.T. Costa and R. McCrae as adapted by B. Zawadzki, J. Strelau, P. Szczepaniak and M. Śliwińska and Interpersonal Relationships Scale (SUI) in J. M. Stanik's adaptation. The survey method allowed us to

gather data on the socio-demographic situation of young persons (age, gender, family structure, domicile, marital status, education). NEO-FFI and SUI are psychometrically acceptable and allow for scientific research (Stanik, 1998; Zawadzki, Strelau, Śliwińska, 1998).

Participants

The study included a group of 600 young persons (average age 21; $\delta=1,181$) from the administrative region of Łódź. The tests were anonymous and done in groups. Participation in the research was voluntary. To create an appropriate sample group, the following exclusion criteria were adopted: young person's attitude toward participation in the survey, demographic structure of the family of origin, and completion of the test sheets².

Taking into account the demographic structure of the family of origin, and according to our designated purposes, the distinguished environments included: the full family, the incomplete family as a result of parental divorce, and the reconstructed family. The above-mentioned familial typology was adopted due to methodological considerations connected with facilitating the conduct of research in this area. The appropriate sample group did not include any persons originating from other family types than the above-mentioned.

Ultimately, the test group comprised 314 people (158 women and 156 men). With respect to the family of origin criterion three comparative groups were identified. Comparative group I was made up of 105 people from incomplete families (53 men and 52 women). Comparative Group II consisted of 104 people from stepfamilies (51 men and 53 women). In contrast, comparative group III comprised 105 people from full families (52 men and 53 women).

The empirical material, collected through surveys, was subject to qualitative analysis. For elaborating the data, the test of independence chi - square (χ^2) was used. A number of statistical analyses were carried out using the computer program IBM SPSS Statistics 20. It turned out that the persons forming the appropriate sample group were characterized by domiciled uniformity (large cities, with a population of more than 100 thousand- $\chi^2=4.166$;df=4;p=.384), marital status (single- $\chi^2=1.322$;df=2;p=.516) and education level (secondary education- $\chi^2=1.031$;df=2;p=.597).

² In order to determine the credibility degree of the received results, we used a rate which consisted of the number of question marks in the Interpersonal Relationships Scale by M. Stanik. It points to a protective and distrustful attitude towards the survey. Considering this fact, we excluded from the examination all those persons who had received high and extremely high scores in this scope (119 people) (Stanik, 1998).

Results

The results presented below were intended to answer the question: Did the surveyed groups of women and men from families of diversified structures differ in their personality qualities? For statistical results the F test and Tukey's multiple comparison test were used.

Since women and men react differently to the same stimuli and behave differently in social situations, is the difference being subject to both genetic factors as well as environmental ones the results for all the women and men in the comparable groups from differently structure families were taken into account (Mandal, 2006).

Variations in the personality dimensions of the tested young women from complete families, incomplete families and reconstructed families.

Bi-factor variation analysis taking gender into consideration pointed to a statistically significant difference between the women from the examined types of families. It concerned the quality of Openness (F=14.487; p=.0005) (Figure 1 and Table 1).

In the Openness dimension, the highest average results (above average) were obtained by women from full families in comparison with those from incomplete families and reconstructed ones. The results appeared statistically significant. A similar degree of Openness also characterized women from incomplete and reconstructed families, who otherwise obtained average results or results below average.

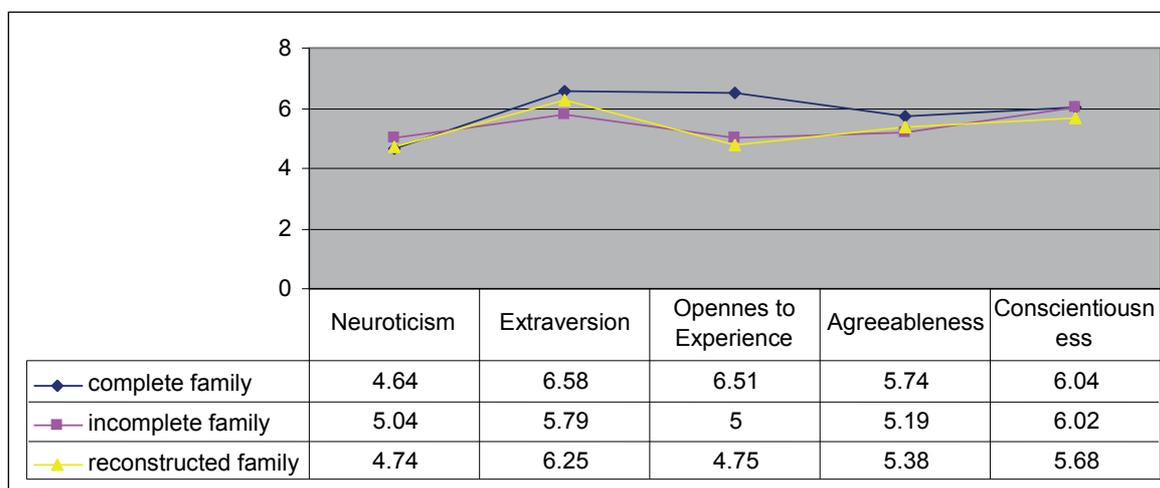


Figure 1. Variations in the personality dimensions of the tested young women from families of diverse structure.

Table 1. The family structure and the dimensions of personality of women in the light of Tukey’s test.

Openness to Experience		
Structure of family:	reconstructed	incomplete
complete	.0005	.0005
incomplete	.768	

In the other personality dimensions surveyed by the NEO-FFI test, namely Neuroticism, Extraversion, Agreeableness and Conscientiousness, there were no statistically significant differences between the surveyed groups of women. The results were on the average level. In this way Hypothesis no. 1 was supported.

Variations in the personality dimensions of the tested young men from complete families, incomplete families and reconstructed families.

Comparative analysis pointed out that the personality dimension significantly different among the men’s groups was Openness (F=23.677; p=.0005) (Figure 2 and Table 2). Survey results for men from differently structured families were similar to those received by the women in this sphere.

In Openness, the highest average results (above average) were obtained by men from full families in comparison with men from either incomplete or reconstructed families, whose results were below average. The results appeared statistically significant. The quality of Openness characterized the men from incomplete families and those from reconstructed ones to a similar degree.

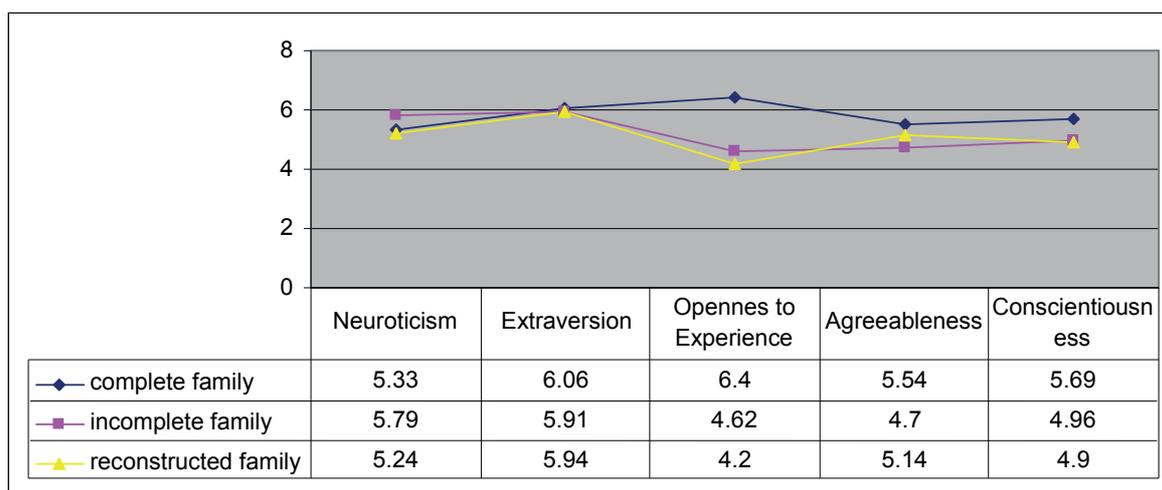


Figure 2. Variations in personalities of the young men from diverse structured families.

Table 2. The family structure and dimensions of the men’s personality in the light of Tukey’s test.

Openness to Experience		
Structure of family:	reconstructed	incomplete
complete	.0005	.0005
incomplete	.423	

In the other personality dimensions surveyed by NEO-FFI, namely Neuroticism, Extraversion, Agreeableness and Conscientiousness, there were no statistically significant differences between the men’s groups. The results were on the average level and in this way they supported Hypothesis no. 2.

Variations in self-acceptance of the young women from diversely structured families

The research results presented below (Figure 3 and Table 3) concerning variations in the self-acceptance for the female groups pointed to a statistically significant difference ($F=32.664$; $p=.0005$).



Figure 3. Variations of the average results as regards self-acceptance in the surveyed female groups.

Table 3. The family structure and the women’s self-acceptance level in the light of Tukey’s test.

Self-acceptance		
Structure of family:	reconstructed	incomplete
complete	.0005	.0005
incomplete	.984	

Considering the women’s self-acceptance from the types of families, it was noticed that women from incomplete families were characterized by the highest average results on the self-acceptance scale, which means that they have a low level of self-esteem in comparison with women from full families.

The group from reconstructed families did not differ significantly as regards average results in self-acceptance from those growing up in incomplete families. The self-esteem level was similar in these two groups.

The optimum level of self-acceptance characterized the group from full families, which differed significantly in this scope from the groups of the women coming from other family types.

Variations in self-acceptance of the young men from diversely structured families.

Considering the influence of the family structure on the self-acceptance level in the tested men groups, a statistically significant difference was noticed ($F=45.723; p=.0005$). The results are presented by Figure 4 and Table 4.

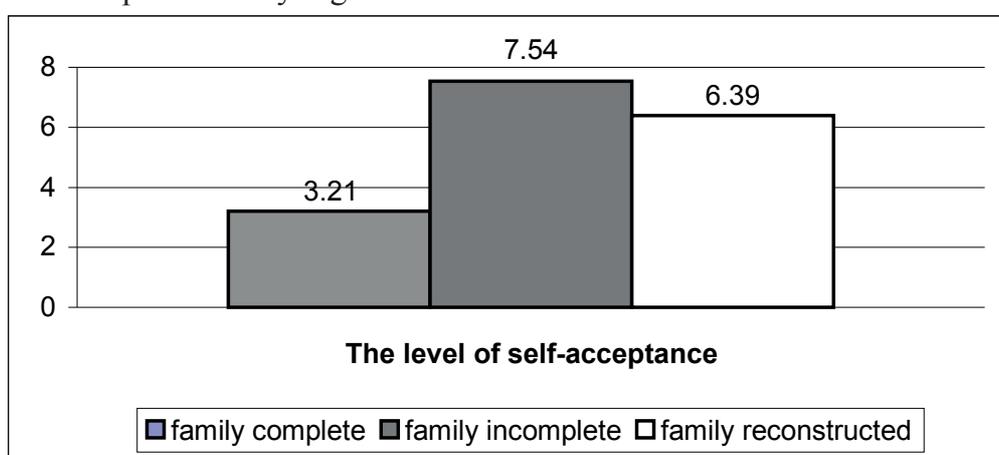


Figure 4. Variations of the average results as regards self-acceptance in the male groups.

Table 4. The family structure and the men’s self-acceptance level in the light of Tukey’s test.

Self-acceptance		
Structure of family:	reconstructed	Incomplete
complete	.044	.0005
incomplete	.0005	

The statistical analysis shows that, as far as self-acceptance is concerned, men from incomplete families received the highest average results in comparison with men from reconstructed families (above average) and from full ones (low results). It means that they are characterized by a low level of self-esteem; they are tense and neurotic. The results appeared statistically significant.

Between the male groups from full families and reconstructed ones there was seen a tendency ($p=.044$) toward showing better socially adapted men from full families. As it appeared, men from full families received the lowest average results on the self-acceptance scale, which means their self-esteem was optimal.

Correlation of self-acceptance with the personality dimensions in the young people from the examined families types.

The next research stage analysed the relations between self-acceptance and the young persons' personality dimensions from differently structured families. In order to do that, we used the r-Pearson correlation coefficient.

Taking into consideration that the correlation coefficients are not additive, we carried out a statistical analysis separately for each compared group.

In the situation when the same two psychological variations correlated with each other in two or/and three types of the surveyed families, the obtained correlation coefficients were compared with respect to their value compatibility.

Analysing the results with respect to correlations between self-acceptance and selected personality dimensions, we used a breakdown of these variations and received the results which are in Table 5.

Table 5. The relation between self-acceptance and some personal qualities of the young people from differently structure families.

Dimensions of personality	Self-acceptation		
	Structure of family		
	Family complete	Family incomplete	Family reconstructed
Neuroticism	.200 p=.041	.575 p=.0005	.339 p=.0005
Extraversion	-	-.255 p=.009	-
Openness to Experience	-	-	-
Agreeableness	-.200 p=.041	-	-
Conscientiousness	-	-	-.225 p=.022

The research results with respect to correlation between self-acceptance and some personal qualities showed that there are relations between the variations and that their strength and directions are different. In this way, Hypothesis five was confirmed.

Considering the relation between self-acceptance and neuroticism, we discovered that it occurs in all the surveyed groups from full families, incomplete families and reconstructed ones (p=.200;p=.575;p=.339). Correlation coefficient values were not significantly different (p=.029).

High levels of apprehension, emotional tension, frequently experienced feelings of hostility and anger, shyness, and minimal ability to cope with stress result in receiving

high scores in the self-acceptance scale, which can be interpreted as pointing to low self-esteem.

There was negative correlation between the extraversion and self-acceptance in the persons from incomplete families. This low level of self-acceptance appears to be related to behaviours aimed at seeking stimulation, willingness to dominate in company, and life activities. The mechanism of compensation might have taken place here. A young man from an incomplete family, having low self-esteem, wants above all to show psychic strength and vigour – and not to be perceived as weak and hesitant.

Agreeableness, or one's attitude about other people, correlated negatively with self-acceptance in persons from full families. It appears that a higher level of self-esteem characterizes persons who are less agreeable, more egocentric, and in relations with others oriented towards competition rather than cooperation. The last relation analysed concerned conscientiousness, which correlated positively with self-acceptance for young persons from reconstructed families. We found that strong-willed, highly motivated and persistent persons are characterized by an optimum level of self-acceptance.

Conclusions

From the dawn of time, humanistic thought has been interested in the family as an institution, its problems having always been the centre of attention of all religious, philosophical, ethical and legal systems, since the family constitutes man's most fundamental reality. Although the family still occupies a high position in the hierarchy of values declared by man, it is affected by a host of undesirable changes and threats, such as: consumptionism, unemployment, poverty, and social pathologies. More and more families are unable to perform all their roles correctly and because of this they cannot provide their children with optimal conditions for development. Phenomena of the kind mentioned concern both full, incomplete, and reconstructed families, which can also be affected by permanent conflicts or commonly existing social diseases such as alcoholism.

Content related literature concerning diversified family structures, shows a wide range of occurring problems. It is emphasized that they affect not only adults but also the younger generation, who are doomed to existence in atypical environments not always satisfying their needs. There is no doubt that any abnormalities in a family influence a young individual's personal development and self-acceptance.

Our research has shown that the functioning specificity of full families, incomplete families and reconstructed ones strongly determine young persons personalities and their self-acceptance levels.

Comparisons between the groups of women and men from differently structured families pointed to one differentiating personality dimension. It appeared that the women and the men from full families most frequently displayed cognitive curiosity, a tendency toward positive valuations of life experiences. Young people from incomplete and reconstructed families received Openness scores below average, which can point to conventionalism and conservatism demonstrated both in views and behaviour.

Openness characterizing the young people from full families could have resulted from the attitudes presented by the parents, expressing acceptance, respect and the right to gain experience. Being able to act independently and at the same time feeling secure, the young generation could fully concentrate on their cognitive activity development.

Openness is very important for young, contemporary men since the environment where people live is characterized by an unheard of confrontation of cultures, a variety of which can be defined both globally and in micro-sociological terms. It is the consequence of such phenomena as: availability of modern transport, communication, and information transmission as well as social mobility and environmental openness. People meeting each other, almost at every step, reveal their distinctness to each other. In such circumstances, even peaceful co-existence, not to mention agreement or cooperation, is impossible without openness or tolerance toward others.

It should be emphasized that nowadays a preferable personality structure is an “open” one as it is open to innovativeness and a high level of life aspirations. The occurring cultural changes intertwine with social culture differentiation, its mobility, tendency to be open to act according to new social rules, with its emergence of new social groups, institutions, jobs, development, and deepening individual autonomy (Doniec, 2005).

Therefore, people characterized by openness have more opportunities to find their place and succeed in the contemporary world than those people who do not have this quality.

There is no doubt that besides personal qualities, self-awareness and self-acceptance are crucial for social behaviours displayed by an individual.

Self-acceptance is an important element of self-awareness as it enables self-determination as well as enabling individuals to distinguish themselves from the environment. It allows a person to assume a critical attitude towards their abilities as well as towards new requirements set by the environment. It plays an important role not only in getting to know oneself but also in steering one’s behaviour and realizing his/her life plans.

If a person knows what place they occupy in society and what they can achieve, that means that their self-awareness functions correctly and there are no intrapersonal conflicts.

If, on the other hand, there is a big discrepancy between a person's view of their abilities and their real achievements, we speak about a self-awareness disorder. This disorder, according to psychoanalysis, can result from a conflict between aspirations for significance and feelings of low self-esteem.

The results of our research with respect to self-acceptance in young people from differently structured families showed statistically significant differences between women's and men's groups.

Both women and men from full families received scores pointing to a high level of self-esteem. On the other hand, women and men from incomplete and reconstructed families received scores reflecting low levels of self-esteem, which were connected with neurotic and hostile attitudes.

Our results strongly indicate that the family which satisfies the needs of its members and provides them with support and unconditional love, constitutes the optimal educational environment for stimulating one's positive self-image.

Our results can be confirmed by the research results done by H. Szczęsna (2005). The author demonstrated empirically that young people from divorced families were characterized by an average self-acceptance level in comparison with young people from full, well-functioning families, who had a high level of self-acceptance.

Also, J. Conway (1997) in his research, demonstrated empirically that young people from incomplete families were more often characterized by low levels of self-acceptance and self-esteem.

Furthermore, research by K. Pospiszyl showed that the more the father is involved in the educational process and the stronger his emotional bonds with the child are, the higher the child's self-acceptance and self-confidence are in relations with other people (Pospiszyl, 1980).

As a result of our research, a few important observations were made, which are not only consistent with contemporary thought but also bring in some valuable elements modifying the general knowledge on the subject. The research results are significant psychologically because they show that the family structure and parental relationship influence, to a large extent, the personal development and the self-acceptance level of young people.

References:

- Braun-Gałkowska, M. (1990). *Psychologia domowa*. [Psychology domestic]. Olsztyn: Wyd. WD.
- Cartwright, C. (2003). Parent - child relationships in families of remarriage: What hurts? What helps? *Australian Journal of Psychology*, (55), 1-5.
- Conway, J. (1997). *Dorośle dzieci rozwiedzionych rodziców*. [An adult children of divorced parents]. Warszawa: Logos.
- Doniec, R. (2005). Socjalizacja rodzinna w kontekście przemian współczesnej rodziny w Polsce. [Family socialization in the context of the changes in modern family in Poland]. In: H. Cudak, H. Marzec (Eds.). *Współczesna rodzina polska- jej stan i perspektywy*. [Contemporary Polish family-her condition and prospects]. Mysłowice: Górnośląska Wyższa Szkoła Pedagogiczna, 226-245.
- Dunn J. Munn P. (1985). Becoming a Family Member: Family Conflict and the Development of Social Understanding in the Second Year. *Child Development*, (56), 480-492.
- Ganong, L., Coleman, M. (1984). The effects of remarriage on children: review of the empirical literature. *Family Relations*, (33), 18-25.
- Harwas – Napierała, B. (2006). Komunikacja interpersonalna i jej kształtowanie jako istotny wymiar jakości życia rodziny. [Interpersonal communication and its development as an important dimension of quality of life for families]. W: Rostowska T. (red.) *Jakość życia rodzinnego*. [The quality of family life]. Łódź: WSI, 29-42.
- Horney, K. (1980). *Nerwica a rozwój człowieka*. [Neurosis and human development]. Warszawa: PIW.
- John, O. P. (1990). The „Big Five” Factor Taxonomy: Dimensions of Personality in the Natural Language and in Questionnaires. In: L.A. Pervin (Eds.). *Handbook of Personality, Theory and Research*. New York, London: Guilford Press, 66-100.
- Kubik, W. J. (1999). *Jaka jesteście rodziny?* [What are you Family?]. Kraków: WAM.
- Kukołowicz, T., Kulczycka, B. (1988). Spełnianie funkcji przez rodziny niepełne. [The function of the single-parent families]. In T. Kukołowicz (Ed.). *Pomoc rodzinie niepełnej*. [Support single-parent family]. Sandomierz: WS, 13-20.
- Liberska, H. (2011). Development in the family In: H. Liberska (Ed.). *Relations in marriage and family: genesis, quality and development*. Bydgoszcz: Wyd. Wydawnictwo Uniwersytetu Kazimierza Wielkiego, 13-31.

- Maccoby, E. (1980). *Social development. Psychological growth and parent - child relationship*. New York: Harcourt Brace Jovanovich, INC.
- Mandal E. (2006). Osobowość kobiet i mężczyzn: różnice generacyjne i rozwojowe. [The personality of men and women: generational differences and development.] *Psychologia Rozwojowa*. [Developmental Psychology]. (2), 23-34.
- Napora, E., Schneider A.M. (2010). The Influence of Parenting style in Single Mother Families from the South of Poland on an Emotional Functioning of Adolescent Girls and Boys. *Polish Journal of Applied Psychology*, 8: 1.
- Plopa, M. (2005). *Psychologia rodziny. Teoria i badania*. [A psychology of the family. Theory and research]. Elbląg: Wyd. EUHE.
- Poraj, G. (1988). Rodzinne uwarunkowania w nawiązywaniu kontaktów interpersonalnych dzieci jedynych i mających rodzeństwo. [Family determinants of interpersonal networking and having children the only siblings]. In L. Niebrzydowski (Ed.). *Rodzinne uwarunkowania kontaktów interpersonalnych dzieci i młodzieży*. [Family determinants of interpersonal relations of children and young people.] Wrocław: Ossolineum, 65-133.
- Pospiszyl, K. (1980). *Ojciec a rozwój dziecka*. [Father and child development]. Warszawa: Wiedza Powszechna.
- Tyszkowa, M. (2006). Jednostka a rodzina: interakcje, stosunki, rozwój. [Individual and family: interactions, relationships, the development]. In M. Przetacznik – Gierowska, M. Tyszkowa (Eds.). *Psychologia rozwoju człowieka*. [Psychology of human development] T.1. Warszawa: PWN, 124-149.
- Reykowski, J. (1992). Nastawienia egocentryczne a nastawienia prospołeczne. [Self-centered attitude and pro-social attitudes]. In J. Reykowski (Ed.). *Osobowość a społeczne zachowanie się ludzi*. [Personality and social behavior of the people.] Warszawa: KiW, 169-233.
- Rostowska, T., Rostowski, J. (2011). Satisfying psychological needs and quality of life among married and cohabitating couples. In: H. Liberska (Ed.). *Relations in marriage and family: genesis, quality and development*. Bydgoszcz: Wyd. Wydawnictwo Uniwersytetu Kazimierza Wielkiego, 67-98.
- Rostowska T. (2003). Dojrzałość osobowa jako podstawowe uwarunkowanie życia małżeńskiego i rodzinnego. [Personal maturity as a basic prerequisite of life marriage and family]. In I. Janicka, T. Rostowska (red.) *Psychologia w służbie rodziny*. [Family Psychology]. Łódź: WUŁ.

- Stanik, J.M. (1998). *Skala Ustosunkowań Interpersonalnych*. [Interpersonal Relationships Scale]. Kielce: Wyd. Szumacher.
- Szczęśna, H. (2005). Znaczenie ojca dla rozwoju i kształtowania się samoakceptacji młodzieży w świetle badań własnych. [The importance of the father for the development of self-acceptance and the development of youth in the light of their own]. In: H. Cudak, H. Marzec (Eds.). *Współczesna rodzina polska- jej stan i perspektywy*. [Contemporary Polish family-her condition and prospects.] Mysłówice: Górnośląska Wyższa Szkoła Pedagogiczna, 406-418.
- Tenikue, M., Bertrand V. (2010). Birth Order and Schooling: Theory and Evidence from Twelve Sub-Saharan Countries. *Journal of African Economies*, (4), 459-495.
- Winnicott, D.W. (1993). *Dziecko, jego rodzina i świat*. [The child, his family and the world]. Warszawa: Wyd. J. Santorski & Co.
- Zawadzki, B., Strealu, J., Szczepaniak, P., Śliwińska, M. (1998). *Inwentarz Osobowości NEO - FFI P.T. Costy i R.R.McCrae'a*. [Inventory of Personality NEO - FFI P.T. Costy & R.R.McCrae'a]. Warszawa: Wyd. PTP.
- Zimbardo, P.G. (2012). *Psychologia i życie*. [Psychology and life]. Warszawa: PWN.

Differences in Relationship Between Emotional Intelligence and Self-Acceptance as Function of Gender and *Ibasho* (a Person Who Eases the Mind) of Japanese Undergraduates

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Abstract

The present study examined the differences in the relationship between emotional intelligence (EI) and self-acceptance as a function of gender and *ibasho* (*ibasyo*), a Japanese concept of 'home' or 'refuge'. Here, the *ibasho* represents the person who eases one's mind. The participants were 244 Japanese undergraduates who were asked to complete the Japanese version of the Emotional Intelligence Skills and Competence Questionnaire (J-ESCQ; Toyota, Morita, & Takšić, 2007), a question related to *ibasho* (Who is the person that eases the mind) and self-acceptance scales (Itatsu, 1989). Positive correlations between all sub-abilities in EI: (perceiving and understanding emotion (PU), expressing and labeling emotion (EL), managing and regulating emotion (MR), and self-acceptance) were found in females whereas in males, the only positive correlation was found between MR and self-acceptance. For participants who report that 'lover' is a person who eases their mind, PU has a negative correlation with self-acceptance. Both EL and MR have a strong correlation with self-acceptance in all types of groups. These results indicate that the effect of each sub-ability in EI on self-acceptance is determined by gender and the presence of the person who provides a sense of *ibasho* and also suggest that these determinants should be considered to clarify individual differences in adaptation.

Keywords: emotional intelligence, J-ESCQ, *ibasho*, self-acceptance

Emotional intelligence (EI) has been an interesting topic in psychology and a great deal of research has been conducted (Law, Wong, & Song, 2004; Toyota, 2009). In particular, since Goleman (1995) suggested that EI was a strong predictor of performance, a number of research projects have examined the relationship between EI and any kind of performance. Recently, Joseph and Newman (2010) specified a cascading model of the relationship between EI and job performance, in

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which the following sequence is described. Namely, emotion perception casually precedes emotion understanding, which in turn precedes emotion regulation and job performance. This model was confirmed to be valid via meta-analysis of several pieces of research.

According to Salovey and Mayer (1990), EI is "the subset of social intelligence that involves the ability to monitor one's own and others' feelings and emotions, to discriminate among them, and to use this information to guide one's thinking and actions" (p. 189). This definition of EI was followed by many other proposals (e.g. Davies, Stankov, & Robert, 1998; Mayer, Caruso, & Salovey, 1999) which, although not identical, contained only minor differences (Toyota, 2009). The common elements of all of the definitions were as follows: an ability to understand one's own or others' emotion or feeling; the ability to express one's own emotion or feeling, and the ability to regulate or control one's own emotion or feeling (Toyota, 2009). Takšić (1998) followed the definitions of Salovey and Mayer (1990) and developed the Emotional Skills & Competence Questionnaire (ESCQ). The ESCQ thus has three subscales corresponding to the following three sub-abilities: the ability to perceive and understand emotion (PU), the ability to express and label emotion (EL), and the ability to manage and regulate emotion (MR). On the basis of the ESCQ developed by Takšić (1998), Toyota et al. (2007) have developed the Japanese version of ESCQ. The present study used J-ESCQ as the measure for assessing EI.

Although the relationship between EI and job performance as mentioned above has been clarified, the relationship between EI and adaptation has not been examined so much. Especially in Japan, few studies have examined the relation. For example, Toyota et al. (2007) examined the relationship between EI and self-esteem as one of the positive aspects of adaptation. They showed a positive correlation between EI and self-esteem. Toyota (2009), using the scale of loneliness as an index of negative aspect of adaptation, indicated that EI, especially MR, determined the level of loneliness.

Both the positive aspect, e.g. self-esteem, and the negative aspects of adaptation, e.g. loneliness, seem to be determined by self-acceptance. Itatsu (1994) found a close relation between self-acceptance and interpersonal relations. Namely, the participants who accepted their own self had friendly attitudes toward others. As attitude to others is a critical aspect of adaptation, the more a participant accepted their own self, the higher level of adaptation he or she has. Therefore, self-acceptance is worth being examined to clarify the critical aspects of adaptation. As Toyota et al. (2007) showed, there is a positive relation between EI and self-esteem. This relation may be mediated by self-acceptance. Because the participants with higher EI could control their emotion in a situation of strong stress, they could accept their own self. As for the participants with lower EI, they could not control their emotion in such a situation and they often had difficulty in accepting their own self. So the positive relation between EI and self-acceptance could be

predicted. Some recent research (Toyota, 2005; Toyota & Kishida, 2006) found gender differences in interpersonal adaptation. Toyota et al. (2007) also observed gender differences in the correlations between total EI score and neuroticism (-.35 for male and -.17 for female) and between MR score and conscientiousness (.16 for male and .35 for female). Considering these gender differences, the effect size of EI on self-acceptance would depend on gender. The first purpose of the present study is to examine the differences in the effect of EI on self-acceptance between male and female undergraduates.

Previous studies (Epstein & Feist, 1988; Fey, 1957; Phillips, 1951) examined the relation between self-acceptance and other-acceptance (acceptance of others), and showed a close relation between the two types of acceptance. Although no research directly examined the other-acceptance in Japan, Toyota (2009) investigated the effect of *Iiasho* similar to the concept of other-acceptance, on loneliness. According to Toyota (2008), *ibasho* is an idiosyncratic word in the Japanese culture, and is defined as the person who eases your mind (PEM), or the person one feels comfortable with, such as "myself", "mother", "father", "brother", "sister", "friend" and so on. Toyota (2008) showed that participants who selected "myself" as PEM had a higher level of loneliness than those who selected "mother" or "friend". Since the earliest research by Kato (1977), research on PEM stressed the contrast between "myself" and "others". Namely, it is critical whether someone depends on others or not. Recent studies (Okamura & Toyota, 2002; Toyota & Okamura, 2001, 2002) have indicated that the participants who selected "myself" as PEM ("myself" groups) were inferior in two interpersonal emotions (the level of confidence in others and subjective distance between myself and others) than those who selected "mother" or "friend". These studies suggested the importance of PEM for the adaptation and the possibility that PEM had an effect on self-acceptance in Japanese students. The present study compares self-acceptance among PEM groups. Since self-acceptance, as mentioned before, was correlated with other-acceptance (e.g., Epstein & Feist, 1988), it is predicted that participants in "mother", "friend" and "lover" groups would have higher scores of self-acceptance than those in "myself" group. The second purpose of the present study was to examine this prediction.

Toyota (2008) showed that the effects of EI on the level of loneliness were varied among the three groups. Namely, the loneliness in "myself" group was strongly influenced by EI, in contrast to the "mother" or "friend" groups. Toyota (2009) also showed the differences in the effect of sub-abilities (PU, EL, MR) in EI on loneliness across each *ibasho* (PEM) group. Considering these differences among PEM groups, the effect size of EI on self-acceptance would be varied among PEM groups ("myself", "mother", "friend" and "lover"). MR is the most critical for self-acceptance among sub-abilities in EI, because one has to control or regulate some unpleasant, stressful, or sad events that caused the feeling of not-accepting their own self. If so, it is predicted that MR has a significant effect on

self-acceptance in all PEM groups. However, it is also predicted that the effects of EL and PU would depend on type of PEM groups. The third purpose of the present study is to examine these predictions.

Method

Participants

The participants were 244 Japanese undergraduates, 96 of whom were males, 148 were females. The mean age was 18.7 ($SD=0.64$), ranging from 18.0 to 21.8 years old, and belonging to 2 different universities located in Kansai area of Japan.

Instruments

The present study used the following three instruments.

Japanese version of the Emotional Skills and Competence Questionnaire (J-ESCQ) - the original version of this scale was developed by Takšić (1998) using Croatian participants and is based on the framework of the emotional intelligence model (Mayer & Salovey, 1997). The original version includes 45 items divided into three subscales mentioned above (1) PU (e.g., *I notice when somebody feels down.*), (2) EL (e.g., *I am able to express my emotions well.*), and (3) MR (e.g., *I try to keep up a good mood.*). The original version of the ESCQ indicated that the coefficient alphas of the subscales were satisfactory to enable the confirmation of the reliability of the ESCQ (Takšić, 2002). Toyota et al. (2007) developed the J-ESCQ, consisting of 8 items per subscale (24 items). The alphas for the three subscales (PU, EL and MR) were .91, .88, and .65, respectively. The present study used J-ESCQ as a tool for measuring the level of EI. Participants rated each item on a 5-point rating scale (never, seldom, occasionally, usually, and always), indicating how often they feel or think about the statement expressed in each item.

Ibasho Choice Index (ICI) - Ibasho (the person who eases one's mind) of each participant was assessed by the ICI. This index was developed by Toyota and Okamura (2002) and used in previous studies (Toyota, 2008, 2009). ICI includes the question, "*Who is the person that eases your mind?*" and 8 alternatives of choice, namely *myself, mother, father, grandfather or grandmother, brother or sister, friend, lover and others*. Participants were asked to choose one of the 8 alternatives as the answer to the previous question.

Self-Acceptance Scale Short Version (SASSV) - this scale was developed by Itatsu (1989), and then adapted to undergraduates (Itatsu, 1994). This scale consisted of 25 items with a 7-point rating scale, (ranging from 1 = *disagree* to 7 = *agree*), indicating how participants feel or think about the statement expressed in each item (e.g. *I like myself, I am sensitive*). Itatsu (1994) evidenced significant

correlations of self-acceptance with interpersonal attitude (Kato & Takagi, 1980). This correlation was regarded as an indicator of the concurrent validity of the scale.

Procedure

Participants in two different classes completed the previously mentioned scales in the author's classes. Participants were distributed the sheets of paper containing ICI, J-ESCQ and SASSV separately. They were asked to answer each scale following the author's instructions. Two orders of answering the three scales (ICI, J-ESCQ and SASSV; ICI, SASSV and J-ESCQ) were assigned to each of the 2 classes.

Results

Effects of EI on Self-Acceptance in Males and Females

Descriptive data for males and females are shown in Table 1.

A multiple regression analysis was performed to determine the effects of EI on self-acceptance in male and female participants, respectively. Table 2 shows the result in males indicating that only MR has a significant effect on self-acceptance and explains 15% of self-acceptance variance. Whereas for females PU, EL and MR have significant effects on self-acceptance, and these three sub-abilities in EI explains 35% of self-acceptance variance.

Table 1. *Descriptive Data for Males and Females on Measures of Self-acceptance of EI*

			Male	Female
Independent Variable	Self-Acceptance	<i>M</i>	81.26	80.73
		<i>SD</i>	8.46	8.88
	PU	<i>M</i>	25.34	25.89
		<i>SD</i>	5.22	4.62
	EL	<i>M</i>	26.02	25.19
		<i>SD</i>	4.94	5.60
	MR	<i>M</i>	28.12	28.07
		<i>SD</i>	4.70	4.03

Note. PU – Perceiving and Understanding Emotion;
 EL – Expressing and Labeling Emotion;
 MR – Managing and Regulating Emotion

Table 2. *Multiple Regression Analysis on Self-Acceptance by EI sub-scales (PU, EL, and MR) as a Function of Gender*

Independent Variable	Self-Acceptance			
	Male		Female	
	<i>r</i>	β	<i>r</i>	β
PU	.10		.13	-.23**
EL	.25		.41	.29***
MR	.39	.39**	.53	.49***
	R ²	.15		.35
	F	17.22***		25.76***

Note. PU – Perceiving and Understanding Emotion; EL – Expressing and Labeling Emotion; MR – Managing and Regulating Emotion.

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

The Relationship between PEM, EI and Self-Acceptance

As Toyota (2008, 2009) indicated, the participants' choices of each of 8 alternatives in ICI were counted. Table 3 indicates the number of each choice. As participants frequently chose "myself", "mother", "friend" and "lover" options, the following analyses were conducted to these four groups. Table 4 shows the means and standard deviations for J-ESCQ (PU, EL and MR) and self-acceptance scores for each group. 2 (Gender; male and female) X 4 (PEM; "myself", "mother", "friend" and "lover") analyses of variances were conducted for each index (PU, EL, MR and self-acceptance). For all of the three sub-abilities in EI (PU, EL and MR), the main effect of gender, that of PEM and the interaction of gender and PEM were not significant. However, only for self-acceptance, the main effect of PEM was significant ($F(3, 200)=3.95, p < .01$). Multiple comparisons using Scheffe's method were performed to this main effect, indicating that the self-acceptance score in "mother" group was higher than those in "myself" and "lover" groups ($p < .05$). But, the difference in this score between the latter two groups was not significant and the differences in the score between "friend" group and the other three groups were not significant.

Table 3. *The Number of Choice for Each Alternatives to Ibasho Question ("Who is the Person that Eases your Mind?")*

	Myself	Mother	Father	Grand-father or -mother	Brother or sister	Friend	Lover	Others	Total
Male	28	10	4	1	6	20	23	4	96
%	29.17	10.42	4.17	1.04	6.25	20.83	23.96	4.17	100
Female	25	61	6	1	14	26	15	0	148
%	16.89	41.22	4.05	0.68	9.46	17.57	10.14	0.00	100
Total	53	71	10	2	20	46	38	4	244
%	21.72	29.10	4.10	0.82	8.20	18.85	15.57	1.64	100

Table 4. Mean Scores and their SDs of Self-Acceptance and EI as a Function of Group

		Type of Group								
		Myself		Mother		Friend		Lover		
		Male N=28	Female N=25	Male N=10	Female N=61	Male N=20	Female N=26	Male N=23	Female N=15	
Self-Acceptance	M	79.00	79.04	84.30	83.30	84.15	80.46	79.96	76.20	
	SD	8.66	7.83	10.02	7.59	7.92	8.93	7.65	11.73	
PU	M	24.75	25.32	24.60	25.44	25.60	26.62	26.91	26.73	
	SD	6.20	3.84	6.60	3.83	4.76	6.33	4.55	5.91	
EI	EL	M	24.89	25.52	24.20	25.34	26.05	25.46	28.13	23.67
		SD	5.52	6.09	6.99	5.40	4.63	5.65	3.99	6.07
MR	M	26.18	27.48	29.70	28.34	28.55	28.85	29.30	26.67	
	SD	4.32	4.46	5.06	3.60	5.08	4.34	5.16	3.46	
Total	M	75.54	78.44	79.10	78.95	80.25	80.69	84.48	76.60	
	SD	13.65	11.99	13.31	10.35	10.43	15.03	8.97	12.74	

Note. PU – Perceiving and Understanding Emotion; EL – Expressing and Labeling Emotion; MR – Managing and Regulating Emotion.

The Relationship between EI and Self-Acceptance as a Function of PEM Group

Table 5 shows the correlations between each subscale of EI and self-acceptance in each group. Although .21 for female in "lover" group is a little low, the other correlations between MR and self-acceptance are high (range from .32 to .70). EI also has strong correlations with self-acceptance, except for males in "mother" group. For the correlation between PU and self-acceptance, the clear differences among PEM groups were observed. Namely, positive correlations were observed in "myself" and "friend" groups, but negative correlation was found in "lover" group.

Table 5. Correlations EI (PU, EL and MR) in Each PEM Group

		Type of Group							
		Myself		Mother		Friend		Lover	
		Male N=28	Female N=25	Male N=10	Female N=61	Male N=20	Female N=26	Male N=23	Female N=15
EI	PU	.35	.24	-.19	.18	.29	.62*	-.36	-.21
	EL	.28	.34	-.17	.43*	.31	.59*	.50*	.44
	MR	.32	.68*	.46	.42*	.36	.70*	.45*	.21
	Total	.38	.50*	-.01	.45*	.46	.68*	.45*	.27

Note. PU – Perceiving and Understanding Emotion; EL – Expressing and Labeling Emotion; MR – Managing and Regulating Emotion.

*p<.05.

Discussion

The first purpose of the present study was to examine gender differences in the effect of EI on self-acceptance. For males, only MR predicted the level of self-acceptance, whereas for females, all of the three sub-abilities (PU, EL and MR) predicted it. As previous studies (Toyota, 2005; Toyota et al., 2007; Toyota & Kishida, 2006) showed the gender differences in interpersonal adaptation, the present study also indicated the gender difference in the effect of EI on self-acceptance. As Toyota et al. (2007) suggested, further research in interpersonal adaptation should take gender into consideration.

The second purpose of the present study was to examine the differences of self-acceptance among PEM groups. As predicted, participants in "mother" and "friend" groups had higher scores of self-acceptance than those in "myself" group. However, the score in "lover" group was as low as in "myself" group. It is inconsistent with the prediction. Previous studies (Kato, 1977; Toyota, Oga, & Okamura, 2007; Toyota & Okamura, 2001, 2002) stressed the contrast between "myself" and "others". But "others" includes many types of groups, such as "mother", "friend", "lover" and so on. Although Toyota (2009) showed the difference in the effect of EI on loneliness between "mother" and "friend" groups, the present study found the difference between "lover" and the other two groups ("mother" and "friend"). Since lover may be the most intimate and ego-involved person during later adolescence (Toyota & Kishida, 2006), it is reasonable to detect the difference between "lover" and the others.

The third purpose of the present study was to compare the effect of sub-abilities of EI on self-acceptance among PEM groups. Consistent with the prediction, MR have strong effects on self-acceptance in all of PEM groups. Toyota (2009) showed the importance of MR on loneliness, and indicated that the ability to regulate or control emotion about some events had a function to restrain the level of loneliness. Also, Toyota, Morita & Takšić (2007) showed the positive relations between MR and self-esteem. Considering these studies, the present result indicates the possibility that efficacy of regulating or controlling emotion leads to improvement of self-acceptance. Namely, the participants with higher MR have a higher level of self-esteem, which in turn may lead to a higher level of self-acceptance. Not only MR but also EL has significant effects on self-acceptance in all of PEM groups. This result is consistent with Toyota (2009) showing the effects of EL on loneliness and self-esteem, and suggests that the ability to express and label emotions has also an important function to improve the level of self-acceptance. As expression of emotion leads to a reduction of loneliness (Toyota, 2009) improvement of self-acceptance may be partially caused by the reduction of loneliness.

Interestingly, the effect of PU on self-acceptance varies with PEM groups. Namely, the strong relations between PU and self-acceptance were observed in

"myself" and "friend" groups. However, a weak or negative correlation was found in "mother" and "lover" groups. Especially for "lover" group, PU has a negative effect on self-acceptance. Although the participants in "lover" group depend on others as those in "mother" and "friend" groups, there may be differences in the level or degree of dependence. Comparing with the level of dependence to which participants in "mother" or "friend" groups depend on the "mother" or a particular "friend", each participant in "lover" group may depend on a particular "lover" more deeply. So, perceiving and understanding emotion of a particular "lover" often elicits a negative emotion, which leads to a decline of self-acceptance.

The present study leads to the suggestion that it is critical to enhance the level of MR and EL for improving self-acceptance. A precise educational system should be provided to enhance the level of MR and EL. Toyota and Shimazu (2006) showed the positive relationships between the perceived experiences of contingency and MR ($r=.34$), or EL ($r=.24$), and indicated that the perceived experiences of contingency enhanced the level of MR and EL, which in turn led to the improvement of self-acceptance. According to Toyota (2009), contingent experience is one of the most successful predictors. Considering Toyota and Shimazu (2006), to enhance the level of MR and EL we should provide the opportunity to feel the contingency in the activity to the participants in educational program. During the program, participants should express their own emotion to others and control their own emotion to communicate with others. These activities related to EL and MR would facilitate their own self-acceptance. Considering the gender difference found in the present study, in further investigation it is necessary to establish a flexible utilization of such an educational program depending on the individual differences.

Finally, the present study used self-acceptance as an index of adaptation. Toyota (2008, 2009) used loneliness as an index of the negative aspect of adaptation. Toyota (2009) also used self-esteem as an index of the positive aspect of adaptation. The present study used the self-acceptance as the core index related to both type of aspects, negative and positive aspects of adaptation. In further research a new index of adaptation should be considered.

References

- Davies, M., Stankov, L., & Roberts, R.D. (1998). Emotional intelligence: In search of an elusive construct. *Journal of Personality and Social Psychology*, 75, 989-1015.
- Epstein, S., & Feist, G.J. (1988). Relation between self- and other- acceptance and its moderation by identification. *Journal of Personality and Social Psychology*, 54, 309-315.
- Fey, W. (1957). Correlations of certain subjective attitudes toward self and other. *Journal of Clinical Psychology*, 13, 44-49.

- Goleman, D. (1995). *Emotional intelligence*. New York: Bantam Books.
- Itatsu, H. (1989). Jiko zyuyosei syakudo tansyuku ban (SASSV) no sakusei no kokoromi [Development of self-acceptance scale shorten version (SASSV)]. *Ouyo shinrigaku kenkyu [Japanese Journal of Applied Psychology]*, 14, 59-65.
- Itatsu, H. (1994). Jikozyuyosei to taijinkankei tono kakawari ni tsuite [Basic research on the relation between self-acceptance and interpersonal attitude]. *Kyoiku Shinrigaku kenkyu [Japanese Journal of Educational Psychology]*, 42, 86-91.
- Joseph, D.L., & Newman, D.A. (2010). Emotional intelligence: An integrative meta-analysis and cascading model. *Journal of Applied Psychology*, 95, 54-78.
- Kato, T. (1977). Seinenki ni okeru jiko no dokuritsusei to izonsei [Structure of self-concept in adolescence]. *Shinrigaku morogurafu [Japanese Psychological Monographs]*, No. 14. The Japanese Psychological Association.
- Kato, T., & Takagi, H. (1980). Seinenki ni okeru dokuritsuishiki no hattasu to jiko gainen. [Development of awareness of independence and self-concept in adolescence.] *Kyoiku shinrigaku kenkyu [Japanese Journal of Educational Psychology]*, 28, 334-340.
- Law, K.S., Wong, C.S., & Song, L.J. (2004). The construct and criterion validity of emotional intelligence and its potential utility for management studies. *Journal of Applied Psychology*, 89, 483-496.
- Mayer, J.D., Caruso, D.R., & Salovey, P. (1999). Emotional intelligence meets traditional standards for intelligence. *Intelligence*, 27, 267-298.
- Mayer, J.D., & Salovey, P. (1997). What is emotional intelligence? In P. Salovey & D. Sluyter (Eds.), *Emotional development and emotional intelligence: Educational implications*. (pp. 3-34). New York: Basic Book.
- Okamura, T., & Toyota, H. (2002, May). *Daigakusei ni okeru ibasyo no kojinsa no kento (II)* [An examination of individual difference of "Ibashi" in undergraduates (II)]. Poster presented at the 13th annual meeting of Japan Society of Developmental Psychology, Saitama, Japan.
- Phillips, E.L. (1951). Attitudes toward self and other: A brief questionnaire report. *Journal of Consulting Psychology*, 55, 79-81.
- Salovey, P., & Mayer, J.D. (1990). Emotional intelligence. *Imagination, Cognition and Personality*, 9, 185-211.
- Takšić, V. (1998). *Validacija konstrukta emocionalne inteligencije [Validation of the Emotional Intelligence Construct]*. (Unpublished doctoral dissertation). University of Zagreb, Faculty of Philosophy, Zagreb.
- Takšić, V. (2002, October). *The importance of emotional intelligence (competence) in positive psychology*. Paper presented at the First International Positive Psychology Summit, Washington, DC.
- Toyota, H. (2005). Daigakusei ni okeru iseikankei sukuru [Hererosocial skills in undergraduates]. *Nara kyōiku jissen sogo senta kiyo [Bulletin of Center for Educational Research and Development, Nara University of Education]*, 14, 5-10.

- Toyota, H. (2008). Interpersonal communication, emotional intelligence, locus of control and loneliness in Japanese undergraduates. In J. Van Rij-Heyligers (Ed.), *Intercultural communications across university settings - myths and realities. Refereed proceedings of the 6th Communication skills in University education conference* (pp. 42-54). New Zealand: Pearson Education.
- Toyota, H. (2009). The person who eases your mind "Ibasyo" and emotional intelligence in interpersonal adaptation. *Horizons of Psychology*, 18, 3, 23-34.
- Toyota, H., & Kishida, M. (2006). Kyouikuyou kan-i ren-ai syakudo no kaihatsu [Development of shorten version of love emotion scale for education]. *Nara kyouiku jissen sogo senta kyo [Bulletin of Center for Educational Research and Development, Nara University of Education]*, 15, 1-5.
- Toyota, H., Morita, T., & Takšić, V. (2007). Development of a Japanese version of the emotional skills and competence questionnaire. *Perceptual and Motor Skills*, 105, 469-476.
- Toyota, H., Oga, K., & Okamura, T. (2007). Ibasyo to zyoudou chinou ga kodokukan ni ataeru eikyō [Effects of Ibasyo "the person who eases your mind" and emotional intelligence on loneliness]. *Nara kyouiku daigaku kyou [Bulletin of Nara University of Education]*, 56, 41-45.
- Toyota, H., & Okamura, T. (2001). Daigakusei ni okeru Ibasyo ["Ibasyo" in undergraduates]. *Nara kyouiku daigaku kyouiku kennkyusyo kyo [Bulletin of Institute for Educational Research of Nara University of Education]*, 37, 37-42.
- Toyota, H., & Okamura, T. (2002, May). *Daigakusei no Ibasyo ni okeru kojinsa no kentou (1)* [An examination of individual difference of Ibasyo in undergraduates (1)]. Poster presented at the 13th annual meeting of Japan Society of Developmental Psychology, Saitama, Japan.
- Toyota, H., & Shimazu, M. (2006). Syukanteki zuihankeiken to zyoudouchinou ga kanzyo ni oyobosu kouka [The influences of perceived experiences of contingency and emotional intelligence on emotion]. *Nara kyouiku daigaku kyo [Bulletin of Nara University of Education]*, 55, 27-34.

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UNCONDITIONAL SELF-ACCEPTANCE AND MENTAL HEALTH IN EGO-PROVOKING EXPERIMENTAL CONTEXT

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Abstract

Although it is one of the central concepts of Rational Emotive Behavioral Therapy (REBT), unconditional self-acceptance has not been sufficiently empirically examined, especially not experimentally. Therefore, the aim of this study was to examine the effects of unconditional self-acceptance on mental health indicators in an ego-provoking experimental situation. For a sample of 182 students, we simulated the situation of public speaking. After the simulation, participants were given previously prepared and randomly assigned positive, neutral and negative feedback. We used the Unconditional Self-Acceptance Questionnaire (USAQ: Chamberlain & Haaga, 2001), Serbian Inventory of Affect based on PANAS-X (SIAB-PANAS: Novović & Mihić, 2008), Anxiety subscale (DASS-42: Lovibond & Lovibond, 1995), State Depression Scale (SD: Novović, Biro & Nedimović, 2009) and Situational Attributional Style constructed for the purpose of this study (according to Peterson & Seligman, 1984). Data were collected during the winter semester 2013/2014 at the University of Novi Sad. In the case of anxiety and depression as outcome variables (posttest measures), the analysis of covariance revealed a significant three-way interaction between the level of unconditional self-acceptance, the type of feedback and the satisfaction with feedback. On the other hand, the same predictors did not influence the measures of positive and negative affect. Various expectations from the feedback, as well as the feedback, provoke a certain self-assessment. Different pattern of effects in case of different outcome variables is in accordance with REBT theory.

Key words: unconditional self-acceptance, feedback, anxiety, depression

In the focus of this study is the evaluative component of the *Self*, which is, almost always, associated with psychological problems - an excessively low or high evaluation of some aspects of the self is associated with different psychological disturbances (Chamberlain & Haaga, 2001; David & Szentagotai, 2008). The most investigated construct is self-esteem which represents general subjective, positive or negative, evaluation of the self (Sedikides & Gregg, 2003). Self-esteem correlates with positive mental health indicators, psychological well-being and happiness (Diener & Diener, 1995; DeNeve & Cooper, 1998). Individuals with high self-esteem have lower levels of emotional distress (Sedikides, Rudich, Gregg, Kumashiro, & Rusbult, 2004) and they are more likely to use adaptive stress coping strategies (Greenberg et al., 1992). On the other hand, people with low self-esteem have higher levels of psychological distress, depression and anxiety (Bernet, Ingram, & Johnson, 1993; Tennen & Affleck, 1993). Bearing in mind previous results, self-esteem could be seen as a “social vaccine” for preventing different personal problems in connection with social functioning. Many western countries implemented systematic programs for boosting self-esteem in education, health and business sectors (Baumeister, Campbell, Krueger, & Vohs, 2003). However, there is little evidence for the efficacy of these programs (Baumeister et al., 2003). Also, there are several problems with current operationalization of self-esteem. Some studies suggest that self-esteem can't be reduced to high vs. low dichotomy (Sava, Maricutoiu, Rusu, Macinga, & Virga, 2011), and it is not an unidimensional construct (Kernis, 2005).

Rational Emotive Behavior Therapy (REBT) argues that self-evaluation of personality (positive or negative) and a general assessment of one's worth or value based on achieved performance, is irrational and leads to psychological problems. Most of the psychological disturbances associated with an excessive focus on self-esteem are mild, such as sensitivity to criticism, aggression, maladaptive perfectionism, etc. (as cited in Chamberlain & Haaga, 2001), but there are those that are severely pathological (e.g. bipolar disorder) (O'Brien, Bartoletti, & Leitzel, 2006). Therefore, the concept of self-esteem is detrimental to mental health, according to REBT. As a “healthier” substitute for self-esteem, REBT offers the concept of unconditional self-acceptance (Szentagotai & David, 2013). Unconditional self-acceptance is defined as fully and unconditionally accepting yourself, regardless of whether you behave correctly, intelligently or competently, and regardless of whether people respect, accept or love you (Ellis, 1977). REBT sees unconditional self-acceptance as a continuum or as an intellectual and emotional habit which is expressed to a greater or lesser extent in different individuals. People with high unconditional self-acceptance are more resistant in ego-provoking situations such as failure or rejection (Chamberlain & Haaga, 2001; Davies, 2006, 2007, 2008; Macinnes, 2006; Popov & Popov, 2011).

We aimed at investigating the effects of the level of unconditional self-acceptance on several mental health variables (positive and negative affect, state anxiety and state depression) in the situation of a realistic stressor in the ego-threat

domain. We used an experimental design which has rarely been used in the field and predicted that participants with lower levels of unconditional self-acceptance, dissatisfied with their feedback, would score higher for ego-disturbance symptoms (anxiety and depression) and negative affect compared to those with higher levels of unconditional self-acceptance. We also assumed that participants with higher levels of unconditional self-acceptance, satisfied with their feedback would score higher on positive affect.

METHOD

Participants

The sample consisted of 188 students (81% females) at the University of Novi Sad. We selected those study groups for which communication and presentation skills are an important part of their future profession. Psychology students were deliberately excluded because they are familiar with these kinds of experiments. After the elimination of multivariate outliers (according to the Mahalanobis distances; Tabachnick & Fidell, 2001) 182 participants remained in the final sample. The mean age of the participants was 20.14 years ($SD = 3.17$).

Instruments and variables

The instruments used are described below.

Serbian Inventory of Affect based on the Positive and Negative Affect Schedule-X (SIAB-PANAS: Novović & Mihić, 2008) is a Serbian translation and adaptation of the Positive and Negative Affect Schedule-X (PANAS-X: Watson & Clark, 1994). A short version of the questionnaire, consisting of 20 items, was used to assess states of positive and negative affect (Positive Affect (PA) pre-test $\alpha = .91$, PA post-test $\alpha = .93$, Negative Affect (NA) pre-test $\alpha = .85$, NA post-test $\alpha = .83$)

Unconditional Self-Acceptance Questionnaire (USAQ: Chamberlain & Haaga, 2001) is a Serbian translation of the original instrument (Chamberlain & Haaga, 2001). USAQ consists of 20 statements with a 7-point Likert scale, that reflect various aspects of USA philosophy, as used in REBT (post-test $\alpha = .70$).

Anxiety Scale from Depression, Anxiety, Stress Scale (DASS-42: Lovibond & Lovibond, 1995) assesses autonomic arousal, skeletal muscle effects, situational anxiety, and subjective experience of anxious affect. The scale contains 14 items with a 4-point Likert-type response format (pre-test $\alpha = .86$, post-test $\alpha = .85$)

A State Depression Scale (SD: Novović, Biro, & Nedimović, 2009) assesses the presence of depressive affect and its cognitive content, as well as other behavioral

and motivational interferences in relation to a *depressive state*. The scale contains 20 items with 5-point Likert scale (pre-test $\alpha = .91$, post-test $\alpha = .91$).

The Situational Attributional Style Questionnaire (SASQ: Popov, 2014) was constructed for the purpose of this study. Beside attributional style, SASQ measures several variables including satisfaction with feedback, which is only relevant to this study. The respondents' task was to indicate to what extent they felt satisfaction with feedback on a 7-point Likert scale.

Data collection procedure

Considering the nature of the study, the experiment had to be blind, i.e. the information about the experiment was kept from the participants until after the experiment. Data were collected at the University of Novi Sad, during the winter semester 2012/2013 in several stages:

1. Students were informed that the University was introducing a new course: *Public speaking skills*. They were invited to voluntarily participate in establishing the criteria for the distribution of students at different levels of the course. Students participated in the study in exchange for course credits. The three-member "jury" was introduced to participants, whose alleged role was to judge participants' public speaking skills.

2. After the sample selection, we conducted the first testing session (pretest phase) in order to measure dependent (depression, anxiety, positive and negative affect) and moderator variables (unconditional self-acceptance, feedback and satisfaction with feedback) and to collect demographic data. These testing sessions, as well as other parts of the experiment, were conducted in groups of 15 participants on average.

3. Further, participants were given a short text about public speaking. Their task was to prepare themselves for an oral presentation in front of other colleagues and the "jury". They had 5 minutes to prepare the presentation.

4. Time allowed for the presentation was 1 minute and participants were interrupted after the time ran out. Participants were informed about limited time for the oral presentation in the previous phase.

5. After the presentations, participants were asked to leave the room for a few minutes until the "jury" created individual feedback information. Instead of that, the "jury" simply placed the feedback information in the envelope with the name and surname of the participants. There were an equal number of positive, negative and neutral feedbacks and they were randomly assigned to participants. Along with the envelopes, participants received a battery of instruments for posttest measuring of dependent variables.

6. At the end, the participants were debriefed and they received oral and written explanation of the whole procedure.

RESULTS

The data were analyzed using the analysis of covariance. The effects of a set of factors (level of unconditional self-acceptance, type of feedback and satisfaction with the feedback) on different dependent variables were tested in separate analyses. Posttest measures of mental health indicators that served as dependent variables were: depression, anxiety, positive and negative affect while pretest measures of the same variables served as covariates. Unconditional self-acceptance scores and satisfaction with feedback were dichotomized by a median split prior to the analysis – scores above the median represented high scores on reported measures while scores below the median were treated as low scores. The used factors were predictive for posttest measures of mental health indicators only for depression and anxiety; positive and negative affect remained unchanged by manipulating feedback. The effects from depression and anxiety ANCOVAs that reached statistical significance are presented in Table 1.

As can be seen in Figure 1, left graph, participants with lower scores on unconditional self-acceptance, who were less satisfied with positive feedback they

Table 1. The effects of unconditional self-acceptance, type of feedback and satisfaction with feedback on depression and anxiety

	Anxiety			Depression	
	<i>F</i>	<i>p</i>		<i>F</i>	<i>p</i>
SA_pre	41.428	.000	SD_pre	304.239	.000
USA×FS×FB	3.270	.041	USA×FS×FB	5.584	.005

Note: USA-unconditional self-acceptance; SA_pre-state anxiety pretest; SD_pre-state depression pretest; FS-feedback satisfaction; FB-feedback

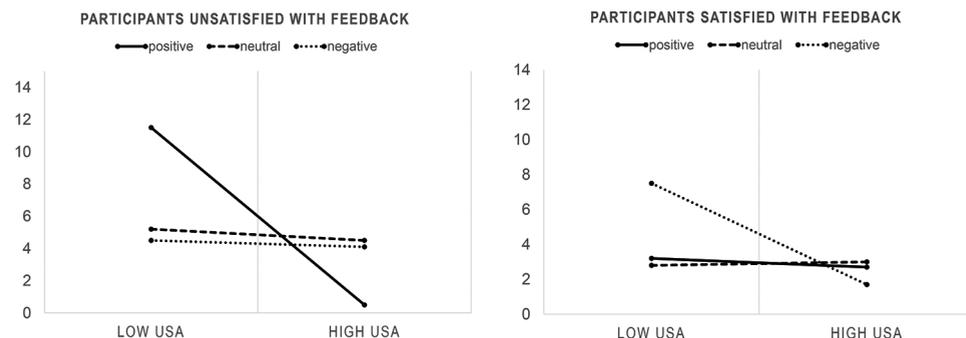


Figure 1. Effects of level of unconditional self-acceptance, type of feedback and satisfaction with feedback on posttest anxiety.

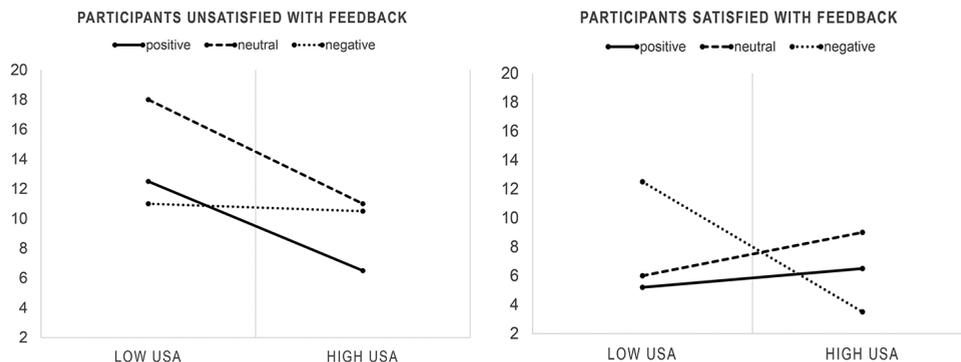


Figure 2. Effects of level of unconditional self-acceptance, type of a feedback and satisfaction with a feedback on posttest depression.

received, were more anxious in comparison with other participants. On the other hand, participants with lower unconditional self-acceptance but more satisfied with the feedback, were more anxious in case of a negative feedback than other participants (Figure 1, right graph).

With regards to depression, participants with lower unconditional self-acceptance dissatisfied with feedback were more depressive in comparison to those with higher unconditional self-acceptance both in case of neutral as well as positive feedback. At the same time, participants with lower unconditional self-acceptance who were satisfied with received feedback were more depressive in response to negative feedback in comparison to participants with higher unconditional self-acceptance.

DISCUSSION

Results presented here support predictions of REBT theory about the protective role of unconditional self-acceptance in depressive and anxious emotional reactions on stressful situations. Stressors were operationalized as feedback on public speaking, but we also examined the role of stressor evaluation – satisfaction with feedback. We hypothesised that unconditional self-acceptance would have different effects on mental health indicators for participants with different satisfaction with feedback, which is exactly what we obtained.

The participants with low unconditional self-acceptance who were not satisfied with feedback were more anxious and more depressive than the participants with higher unconditional self-acceptance, both after positive and neutral feedback. Participants with lower unconditional self-acceptance, but satisfied with negative feed-

back, are more anxious than participants with higher unconditional self-acceptance. On the other hand, participants with lower unconditional self-acceptance who are not satisfied with feedback are the most anxious in case of positive feedback. The lowest score on the depression scale was after negative feedback. It seems like these participants do not accept negative feedback, so it does not influence their depressive symptoms. On the other hand, when someone is satisfied with the feedback, lower unconditional self-acceptance means higher scores on a depression scale. This pattern of results might mean that these participants expected negative feedback and since they are prone to self-deprecation they had a higher score on the depression scale. Similar unconditional self-acceptance moderation of the relationship between type of feedback and satisfaction with it, on the one hand, and mental health variable on the other hand, is obtained in the case of anxiety. The reason could be pessimistic attribution where negative events are interpreted with the internal, stable and pervasive cause (Peterson & Seligman, 1984). However, this is a hypothesis which should be examined.

Overall, these results indicate that personal interpretation of events, more than the events themselves, is more important for quality of emotional response. It is confirmation for one of the fundamental ideas underlying REBT: "*People are not disturbed by things, but by the view they take of them*" (Epictetus as cited in Ellis, 1977) and it is crucial for the therapeutic process.

Although the trend of the results are as expected, the tested predictors did not reach statistical significance in the case of affectivity variables. We assume that this might happen because the emotional response in the present experimental situation is not necessarily dysfunctional. Namely, REBT makes differences between healthy and unhealthy negative emotions which differ qualitatively more than quantitatively (Dryden, 2002). According to REBT, healthy positive and negative emotions should be less influenced by interaction of self-evaluation, feedback and satisfaction with it. It is unclear how much the variance of affect, measured in this study, is saturated with (un)healthy emotional responses because the instrument that we used is not designed to distinguish healthy and unhealthy emotional response. For future research in the context of REBT it would be useful to construct an instrument that would discriminate between healthy (functional) and unhealthy (dysfunctional) emotions.

Although the complex joint effect of the level of unconditional self-acceptance, type of feedback and satisfaction with it on clinically relevant variables presented here cannot be taken as sufficient evidence for therapeutical usefulness of unconditional self-acceptance, it certainly does qualify unconditional self-acceptance for the "race" with other self-evaluative constructs in predicting mental health variables. Therefore, the work on the "psychological reality" of unconditional self-acceptance should be continued in the same direction – investigating the effects of unconditional self-acceptance in other controlled but ecologically valid settings.

REFERENCES

- Baumeister, R. F., Campbell, J. D., Krueger, J. I., & Vohs, K. D. (2003). Does high self-esteem cause better performance, interpersonal success, happiness, or healthier lifestyles? *Psychological Science in the Public Interest*, 4(1), 1–44.
- Bernet, C. Z., Ingram, R. E., & Johnson, B. R. (1993). Self-esteem. In C. Costello (Ed.), *Symptoms of depression* (pp. 141–159). New York: Wiley.
- Chamberlain, J. M., & Haaga, D. A. F. (2001). Unconditional self-acceptance and psychological health. *Journal of Rational-Emotive and Cognitive-Behavior Therapy*, 19, 163–176.
- David, D., & Szentagotai, A. (2008). *The “Self” in REBT: Between self-esteem and unconditional self-acceptance*. Retrieved from http://www.rebt.org/professionals/pdf_files/aei_ac.pdf
- Davies, M. F. (2006). Irrational beliefs and unconditional self-acceptance. I. Correlational evidence linking two key features of REBT. *Journal of Rational-Emotive and Cognitive Behavior Therapy*, 24, 113–124.
- Davies, M. F. (2007). Irrational beliefs and unconditional self-acceptance. II. Experimental evidence for a causal link between two key features of REBT. *Journal of Rational-Emotive & Cognitive-Behavior Therapy*, 26, 89–101.
- Davies, M. F. (2008). Irrational beliefs and unconditional self-acceptance. III. The relative importance of different types of irrational belief. *Journal of Rational-Emotive & Cognitive-Behavior Therapy*, 26, 102–118.
- DeNeve, K. M., & Cooper, H. (1998). The happy personality: A meta-analysis of 137 personality traits and subjective well-being. *Psychological Bulletin*, 124, 197–229.
- Diener, E., & Diener, M. (1995). Cross-cultural correlates of life satisfaction and self-esteem. *Journal of Personality and Social Psychology*, 68, 653–663.
- Dryden, W. (2002). *Fundamentals of Rational Emotive Behaviour Therapy: A training manual*. New York: John Wiley & Sons.
- Ellis, A. (1977). Psychotherapy and the value of human being. In A. Ellis & R. Grieger (Eds.), *Handbook of rational-emotive therapy* (pp. 99–112). New York: Springer.
- Greenberg, J., Solomon, S., Pyszczynski, T., Rosenblatt, A., Burling, J., Lyon, D., ... Pinel, E. (1992). Why do people need self-esteem? Converging evidence that self-esteem serves an anxiety-buffering function. *Journal of Personality and Social Psychology*, 63, 913–922.
- Kernis, M. H. (2005). Measuring self-esteem in context: The importance of stability of self-esteem in psychological functioning. *Journal of Personality*, 73, 1569–1605.
- Lovibond, P. F., & Lovibond, S. H. (1995). The structure of negative emotional states: Comparison of the Depression Anxiety Stress Scales (DASS) with the Beck Depression and Anxiety Inventories. *Behaviour Research and Therapy*, 33, 335–343.
- Macinnes, D. L. (2006). Self-esteem and self-acceptance: An examination into their relationship and their effect on psychological health. *Journal of Psychiatric and Mental Health Nursing*, 13, 483–489.
- Novovic, Z., & Mihic, Lj. (2008). *Serbian Inventory of Affect based on the Positive and Negative Affect Schedule-X*. Unpublished manuscript, University of Novi Sad, Serbia.

- Novović, Z., Biro, M., & Nedimović, T. (2009). Procena stanja depresivnosti [Assessment of depression state]. In M. Biro, S. Smederevac, & Z. Novović (Ed.), *Procena psiholoških i psihopatoloških fenomena* (pp. 19–28). Beograd: Centar za primenjenu psihologiju.
- O'Brien, E. J., Bartoletti, M., & Leitzel, J. D. (2006). Self-esteem, psychopathology, and psychotherapy. In M. Kernis (Ed.), *Self-esteem issues and answers: A sourcebook of current perspectives* (pp. 306–315). New York, NY: Psychology Press.
- Peterson, C., & Seligman, M. E. (1984). Causal explanations as a risk factor for depression: Theory and evidence. *Psychological Review*, *91*, 347–374.
- Popov, S. (2014). *Validation of unconditional self-acceptance construct and its relation to implicit and explicit self-esteem (Unpublished doctoral dissertation)*. University of Novi Sad, Serbia.
- Popov, S., & Popov, B. (2011). *Unconditional self-acceptance as a correlate of adolescent mental health*. Paper presented at the International scientific conference 20th Ramiro and Zoran Bujas' Days. Faculty of Humanities and Social Sciences, University of Zagreb, Croatia.
- Sava, F. A., Maricutoiu, L. P., Rusu, S., Macsinga, I., & Virga, D. (2011). Implicit and explicit self-esteem and irrational beliefs. *Journal of Cognitive Behavioral Psychotherapies*, *11*, 97–111.
- Sedikides, C., & Gregg, A. P. (2003). Portraits of the self. In M. A. Hogg & J. Cooper (Eds.), *Sage handbook of social psychology* (pp. 110–138). London: Sage.
- Sedikides, C., Rudich, E. A., Gregg, A. P., Kumashiro, M., & Rusbult, C. (2004). Are normal narcissists psychologically healthy? Self-esteem matters. *Journal of Personality and Social Psychology*, *87*, 400–416.
- Szentagotai, A., & David, D. (2013). Self-acceptance and happiness. In M. Bernard (Ed.), *The strength of self-acceptance: Theory, practice and research* (pp. 121–139). New York: Springer.
- Tabachnick, B. G., & Fidell, L. S. (2001). *Using multivariate statistics*. Boston: Allyn and Bacon.
- Tennen, H., & Affleck, G. (1993). The puzzles of self-esteem: A clinical perspective. In R. F. Baumeister (Ed.), *Plenum series in social/clinical psychology* (pp. 241–262). New York: Plenum Press.
- Watson, D., & Clark, L. A. (1994). *The PANAS-X: Manual for the positive and negative affect schedule-expanded form*. Unpublished manuscript.

BEZUVJETNO SAMOPRIHVAĆANJE I MENTALNO ZDRAVLJE U
EKSPERIMENTALNOM EGO -PROVOCIRAJUĆEM KONTEKSTU**Sažetak**

Iako je jedan od središnjih koncepata Racionalno Emotivno Bihevioralne Terapije (REBT), koncept bezuvjetnog samoprihvaćanja nije dovoljno empirijski istraživano, naročito ne eksperimentalno. Zato je cilj ovog istraživanja je ispitivanje utjecaja bezuvjetnog samoprihvaćanja na pokazatelje mentalnog zdravlja u eksperimentalnoj ego- provocirajućoj situaciji. Na uzorku od 182 studenta, simulirali smo situaciju javnog nastupa za koji su ispitanici dobili unaprijed pripremljeni, slučajno raspoređeni pozitivni, neutralni i negativni feedback te smo ispitivali efekte interakcije bezuvjetnog samoprihvaćanja, feedbacka i zadovoljstva dobivenim feedbackom na pokazatelje mentalnog zdravlja. Korišteni mjerni instrumenti su: Skala bezuvjetnog samoprihvaćanja (USAQ; Chamberlain & Haaga, 2001), Srpski inventar afekata baziran na PANAS-X (SIAB- PANAS; Novović & Mihić, 2008), Subskala anksioznosti (DASS-42; Lovibond & Lovibond, 1995), Skala stanja depresivnosti (SD; Novović, Biro & Nedimović, 2009) i Skala situacionog atribucijskog stila konstruirana za ovo istraživanje (prema Peterson & Seligman, 1984). Podaci su prikupljeni tijekom zimskog semestra 2013/2014 godine na Sveučilištu u Novom Sadu. Rezultati analize kovarijanse ukazuju na to da razina samoprihvaćanja ima veću ulogu u predikciji anksioznosti i depresivnosti u interakciji sa zadovoljstvom dobivenim feedbackom od same prirode feedbacka. S druge strane, isti prediktori nisu utjecali na mere pozitivnog i negativnog afekta. Različita očekivanja od dobivenog feedbacka, kao i sam feedback, provociraju određenu samoprocjenu, te se različite kombinacije ovih faktora na drugačiji način reflektiraju na pokazatelje mentalnog zdravlja, sukladno sa REBT teorijom.

Glavne riječi: bezuvjetno samoprihvaćanje, feedback, anksioznost, depresivnost

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