

## ALEXITHYMIA: A DEFENSE OF THE ORIGINAL CONCEPTUALIZATION OF THE CONSTRUCT AND A CRITIQUE OF THE ATTENTION-APPRAISAL MODEL

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## Abstract

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**Objective:** Our goal was to compare the original conceptualization of the alexithymia construct with the attention-appraisal model, focusing primarily on the removal of the reduced imaginal activity component, a seminal aspect of the construct in the original model. We also examined associations between alexithymia and emotional distress and emotion regulation, attachment, and trauma, and whether alexithymia is a transdiagnostic risk factor. We discuss differences between the models in the treatment of alexithymia and also differences in measurement.

**Method:** We conducted a narrative review of the scientific literature validating the original model of alexithymia and examined the comparatively few empirical studies evaluating the attention-appraisal model. Articles describing contemporary theoretical ideas about the relationship between imagination and emotion were reviewed, as well as studies exploring associations between alexithymia and imaginal activity.

**Results:** The attention-appraisal model of alexithymia is theoretically derived and examined empirically in studies using correlation/measurement-based methods that employed self-report measures with mostly non-clinical samples and conducted primarily by researchers led by developers of the model. The original model of alexithymia is derived from observations of patients in clinical settings; its validity is supported by findings from hundreds of empirical investigations spanning nearly four decades with nonclinical and a variety of clinical samples using both correlation-based and experimental studies and methods of measurement other than self-report, and by independent teams of researchers. The reduced imaginal activity component of the alexithymia construct is mostly supported by these studies.

**Conclusions:** Because of the dearth of studies with clinical samples, the absence of investigations by independent researchers, and the limited range of methods and measurements to evaluate and assess the model, there is insufficient evidence to warrant removal of the imaginal activity component of the alexithymia construct and for replacing the original conceptualization of the construct with the attention-appraisal model.

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## 1. Introduction

Formulated almost a half century ago, the alexithymia construct is one of the longest enduring and most extensively researched constructs in the field of psychosomatic medicine. Based on a cluster of cognitive and affective characteristics observed initially among patients with so-called 'classic' psychosomatic diseases (Nemiah & Sifneos, 1970; Nemiah et al., 1976), the construct is comprised of four salient components: difficulty identifying subjective emotional feelings and distinguishing between feelings and the bodily sensations of emotional arousal (DIF); difficulty

describing feelings to other people (DDF); constricted imaginal processes, as evidenced by a paucity of fantasies (IMP); and a stimulus-bound, externally orientated cognitive style (EOT) (Nemiah et al., 1976; Taylor et al., 1991, 1997). In the years since it was first described the alexithymia construct has proven to be highly generative, stimulating research across a wide array of areas, including the development of reliable and valid instruments to measure it, expansion into the fields of personality and health psychology, developmental psychopathology (e.g., attachment theory), advances in the theoretical understanding of emotion processing and regulation, and neuroscience research (including

brain imaging and genetic studies).

Yet, despite the long-standing and wide-ranging acceptance of the original conceptualization of the alexithymia construct, and a large accumulation of findings from numerous measurement-based and experimental studies that provide considerable empirical support for this conceptualization, a team of clinical/research psychologists in Western Australia (Preece et al., 2017), together with James Gross in the United States (a leading figure in the areas of emotion and emotion regulation) (Preece & Gross, 2023) have, with comparatively little, and a limited range of empirical evidence, recently proposed revising the construct by removing the IMP component and replacing the widely accepted conceptualization of alexithymia with an *attention-appraisal model* comprised of DIF, DDF, and EOT. This is a sequential model in which EOT is assumed to correspond to impairment at the attention stage of emotion valuation in Gross's (2015a) extended process model of emotion regulation; DIF and DDF are assumed to correspond to impairments at the appraisal stage (Preece et al., 2017).

Our goal in this article is to critically appraise and compare the attention-appraisal model with the longstanding conceptualization of the alexithymia construct, which we hereafter refer to as the *original model* (it is sometimes also referred to as an *affect deficit* model [Sifneos, 1994, 1996]). We begin with a brief outline of the background and formulation of the two models, outlining some of their similarities but also important differences between them. We also review some of the various instruments that have been developed to assess alexithymia based on the original conceptualization of the construct, and briefly describe the Perth Alexithymia Questionnaire (Preece et al., 2018a), which was constructed to measure the attention-appraisal model. In the following section of the article, we review some contemporary theoretical ideas about the relationship between emotion and imagination that we consider helpful for updating the conceptualization and providing fuller understanding of the IMP component of the alexithymia construct. We also review a wide range of studies that have explored the empirical associations between alexithymia and imaginal activity. In later sections we discuss associations between alexithymia and emotional distress and emotion regulation, the influence of attachment experiences and trauma, and the extent to which alexithymia should be considered a transdiagnostic risk factor for psychopathology. In the final section of the article, we compare the two models of the alexithymia construct in terms of their application to the treatment of patients with high levels of alexithymia. In most of our previous publications on alexithymia, we adopted the distinction that Sifneos (1975) and Nemiah et al. (1976) made between *emotions* (the neurophysiological and motor-expressive component of affects) and *feelings* (the subjective, cognitive-experiential component), and used *affect* as an umbrella term (e.g., Taylor et al., 2016).<sup>1</sup> In this article, we use the terms *affect* and *emotion* interchangeably as this makes it easier to discuss our ideas concerning the attention-appraisal model of alexithymia and the extended process model of emotion regulation.

## 2. The original model of alexithymia

The historical background and formulation of the alexithymia construct have been reviewed many times in psychiatry, psychology, psychosomatic medicine, and more recently the emotion processing literature (e.g., Lesser, 1981; Luminet et al., 2013; Luminet et al., 2018; Sifneos, 1996; Taylor, 1994; Taylor et al., 1997). Our goal is to revisit this literature in a way that emphasizes and highlights how the original conceptualization of the construct was derived entirely from clinical observations, without any preconceived underlying theoretical framework, a view that has not been previously or fully articulated. We think this point is particularly important as it highlights the overarching and fundamental difference between the original model and the attention-appraisal model; whereas the former is a clinically derived construct that has subsequently garnered considerable empirical support from a wide and methodologically diverse body of research, the latter is a narrow derivative of a broader preexisting model of emotion regulation (Gross, 2015a), and has comparatively little empirical foundation.

Nemiah and Sifneos (1970; Nemiah et al., 1976; Sifneos, 1973) were prompted to conduct clinical investigations of groups of "psychosomatic" patients by some preliminary psychological observations that Sifneos had made in the late 1960s on randomly selected outpatients who suffered from 'classic' psychosomatic diseases (e.g., ulcerative colitis, duodenal ulcer, neurodermatitis). Sifneos (1967) reported that many of these patients had a very limited vocabulary for describing emotional feelings, a tendency to use action rather than thought to deal with conflicting situations, poor interpersonal relationships, and a tendency to evoke feelings of dullness and boredom during clinical interviews. Nemiah and Sifneos (1970) were inspired also by the observations of Marty and de M'Uzan (2010), who gave the name *pensée opératoire* to the mundane, unimaginative, tied to reality, utilitarian kind of thinking they observed among patients with various somatic illnesses. Nemiah and Sifneos were aware of some earlier observations reported by Ruesch (1948, 1957), who described unimaginativeness and limited verbal and other symbolic expressions of emotions among patients suffering from posttraumatic syndromes or "psychosomatic" diseases; but they did not mention Horney's (1952) description of a paucity of inner experience that she observed in certain psychiatric patients receiving psychotherapy, nor Kelman's (1952) description of patients with an externally orientated style of thinking and externalized mode of living, which anticipated Marty and de M'Uzan's (2010) descriptions of *pensée opératoire* and *vie opératoire* in some somatically ill patients.

Sifneos (1977) indicated that he chose the "pseudo-Greek" word *alexithymia* "to describe certain clinical observations that were made over very many years" (pp. 368-369). Despite the literal translation of the word as "no words for feelings," however, Sifneos (1967) reported that the patients he observed commonly mentioned anxiety or depression, and some talked about feeling nervous, agitated, restless, irritable, tense, or bored; but when questioned, the patients had difficulty elaborating on these subjective negative emotional experiences. Sifneos (1973) did not consider alexithymic characteristics specific to patients with 'classic' psychosomatic diseases; he thought that similar characteristics were probably also present among patients with substance use disorders or with certain personality disorders. Around that time, Krystal

<sup>1</sup> A similar distinction is made by some neuroscientists including Damasio (2003) who states that "emotions play out in the theater of the body. Feelings play out in the theater of the mind" (p. 28).

(1968; Krystal & Raskin, 1970) observed similar characteristics among patients with drug dependence and patients with severe posttraumatic states. Bruch (1973) reported that patients with anorexia nervosa are often bewildered by their emotions and have difficulty describing subjective feelings. And Nemiah (1984) later proposed an association between panic disorder and alexithymia.

Thus, although the original model of the alexithymia constructs with four salient components is based primarily on the clinical observations of Nemiah and Sifneos (1970) and Nemiah et al. (1976), this conceptualization of alexithymia is supported by characteristics that have been reported over the years by other experienced clinicians and clinician scientists. Several of the patients observed by Nemiah et al. (1976) and Sifneos et al. (1977) had a diminished capacity to recall dreams, a tendency to social conformity, or a tendency to assume rigid postures, but these features were not always present, and therefore did not form part of the definition of the construct. Preece and Gross (2023) somewhat misrepresent the history and formulation of the construct when they refer to the original model with four core facets as a “psychoanalytic conceptualization of alexithymia” (p. 1). As we noted earlier, the formulation is based entirely on repeated clinical observations and without theoretical underpinnings. We acknowledge that Taylor and Bagby (2013a) referred to alexithymia as a psychoanalytic construct; but their article aimed to demonstrate to psychoanalysts how a psychological construct derived from clinical observations had moved beyond the field of psychosomatics into the broader field of emotion research and how its validity, etiology, and association with other clinically important constructs had been evaluated using empirical research methods. Furthermore, as Taylor et al. (2016) later noted, “In contrast to how most personality traits are conceptualized, Nemiah et al. (1976) did not postulate a latent variable (*viz.*, alexithymia) that causes and exists apart from the clinically observable features; rather, they formulated what is essentially a mereological construct with the various components assumed to interact with and reinforce one another” (p. 1009).<sup>2</sup> During the middle decades of the 20<sup>th</sup> century, it was common for academic psychiatrists in Canada and the U.S. to receive psychoanalytic training. Hence, dreams and fantasies reported in psychotherapy were often assumed to express the disguised fulfillment of repressed wishes and impulses. We have come to regard this conceptualization of imagination as too narrow resulting in a limited view and understanding of the IMP component of the alexithymia construct: we discuss this issue in more detail in a later section.

### 3. Measures of alexithymia based on the original conceptualization of the construct

Most measures of alexithymia were designed to assess the construct as defined by the four components that comprise the original model. The measures include the self-report Toronto Alexithymia Scale (TAS; Taylor et al., 1985) and Bermond Vorst Alexithymia Questionnaire (BVAQ; Vorst & Bermond, 2001); the interview-rated Beth Israel Hospital Psychosomatic

Questionnaire (BIQ; Sifneos, 1973) and its modified 12-item version (M-BIQ; Taylor et al., 1997); the Toronto Structured Interview for Alexithymia (TSIA; Bagby et al., 2006); the criteria for alexithymia on the interview-rated Diagnostic Criteria for Psychosomatic Research (DCPR; Fava et al., 1995, 2017); a recently developed Japanese structured interview version of the M-BIQ (Komaki et al., 2024); and the performance-based Rorschach Alexithymia Scale (RAS; Porcelli & Mihura, 2010).<sup>3</sup> An Observer Alexithymia Scale (OAS; Haviland et al., 2000) was developed using findings from an earlier study in which 13 professional judges described and rated the characteristics of alexithymic individuals with the 100-item California Q-set (Haviland & Reise, 1996) as well as a pool of newly written items.

Because of some shortcomings identified with the TAS, with the reduced daydreaming factor scale in particular, this 26-item self-report scale was revised in the early 1990s to form the 20-item Toronto Alexithymia Scale (TAS-20; Bagby et al., 1994a; Bagby et al., 1994b). The revision process included writing a larger pool of items to assess the constricted imaginal processes facet of the alexithymia construct; however, as reported by the developers of the TAS-20, all of the items assessing imaginal activity were eliminated because of low corrected item-total scale score correlations and/or high correlations with a measure of social desirability (Bagby et al., 1994a; Taylor et al., 1997). The 20-item version represents an empirically-based modification of the TAS and is comprised of three replicable factors—DIF, DDF, and EOT. Although many researchers compute DIF, DDF, and EOT scores (see, for example, experimental studies reviewed by Luminet et al. [2021]), Bagby et al. (2020) emphasize that these factor scales were *not* developed to be used as subscales. Bifactor analytic studies of the TAS-20 support the use of a total score and question the utility of using factor scale scores (e.g., Carnovale et al., 2021). The absence of TAS-20 items assessing a paucity of fantasies did not change Bagby and colleagues' view that constricted imaginal activity is an essential component of the construct. Indeed, they included an IMP subscale in the TSIA (Bagby et al., 2006), items from which load on its own unique (and replicable) factor, which suggests that imaginal activity is more readily and easily assessed with methods other than self-report. Notwithstanding, several studies have found that the EOT factor scale on the TAS-20 correlates negatively with measures of fantasy activity, and strongly and negatively with the openness to experience (O) domain in the well-known five-factor model (FFM) of personality (e.g., Bagby et al., 2020; Grynberg et al., 2010; Henry et al., 2006; Taylor & Bagby, 2013b), suggesting that this factor indirectly, or by proxy, partly assess the broader IMP facet of the construct. According to McCrae and Costa (1985), individuals high on O are curious about both inner and outer worlds, and open to new ideas and experiences; O thus captures the influence of the innate affect of *interest* within the structure and organization of the personality. Other studies have found that the EOT items sometimes load on two separate factors—pragmatic thinking (PT) and low importance of emotions (IE) (Gignac et al., 2007; Müller et al., 2003)—which is consistent with the items having been written to assess *pensée opératoire*

<sup>2</sup> Mereology refers to the study of the relationships of parts to a whole as well as the relations between the parts within the whole (Stanford Encyclopedia of Philosophy, 2003) (Footnote 4 in Taylor et al., 2016).

<sup>3</sup> The BVAQ includes a fifth factor scale which Vorst and Bermond (2001) labeled emotionalizing (EMO) and defined as “the degree to which someone is emotionally aroused by emotion inducing events” (p. 417).



(some of the EOT items assess inattention to emotions and other items assess a mechanical, unimaginative cognitive style). An informant form of the TAS-20 was developed recently (TAS-20-IF; Bagby et al., 2021). There are currently nearly 35 different validated language/dialect translations of the TAS-20 (see Bagby et al., 2020; Taylor et al., 2003). Preliminary cutoff scores were established for the TAS-20, but these were derived from a very small sample and are no longer recommended (Sekely et al., 2018a). Prevalence rates of alexithymia that are based on the cutoff scores and have been reported for clinical and nonclinical populations are probably over-estimated. Researchers should also be aware that age, gender, and culture may influence the level of alexithymia (Mendia et al., 2024; Ryder et al., 2018).

Factor analysis of the M-BIQ yields two, six-item factors, which are positively correlated and separately assess affect awareness (AA) and operatory thinking (OT) (*pensée opératoire*) (Sekely et al., 2018a). The TSIA is comprised of four, six-item subscales—DIF, DDF, EOT, and IMP; the four-factor structure of this measure was validated in clinical samples for the English and for Dutch and German language translations of the instrument, and in a mixed clinical and nonclinical sample for an Italian translation (Bagby et al., 2006; Caretti et al., 2011; Grabe et al., 2009; Inslegers et al., 2013). Measurement equivalence of the TSIA has been demonstrated across language, gender, and clinical status (Keefer et al., 2015). The four subscales of the TSIA form two higher-order factor scales with DIF and DDF forming an affect awareness factor (AA) and EOT and IMP forming an operatory thinking factor (OT); these higher-order factors are positively correlated. Like the EOT factor scale of the TAS-20, the EOT and IMP subscales of the TSIA have been found to correlate strongly and negatively with the openness to experience domain of the five-factor model of personality ( $r = -.38$ ,  $p < .01$  for EOT;  $r = -.53$ ,  $p < .01$  for IMP) (Rosenberg et al., 2016). And whereas the internal reliability coefficient value for the EOT factor scale of the TAS-20 is of small-to-moderate magnitude in some studies (reflecting its multiple components— i.e., PT and IE), for the EOT subscale of the TSIA the alpha coefficient is typically  $\geq .70$  across studies (Bagby et al., 2006; Caretti et al., 2011; Grabe et al., 2009; Montebanarocci & Surcinelli, 2018), reflecting empirically that this component of the alexithymia construct is theoretically coherent. A short-form, 12-item version (TSIA-SF) was later developed using IRT methods (Sekely et al., 2018b). The short version was designed to provide a total score only and does not contain items for assessing IMP as there was insufficient item representation to capture this difficult-to-assess component fully. Researchers and clinicians who are interested in assessing a patient's imaginative ability should use the 24-item TSIA.

Over several decades of research involving alexithymia, the majority of studies have used the TAS-20 to measure the construct. However, recognizing some limitations with self-report measures of alexithymia, Lane et al. (2020) refer to the TSIA as the “leading measure for objectively demonstrating that alexithymia is present” (p. 3). And after examining the convergence between Dutch translations of different alexithymia measures, Meganck et al. (2011) conclude that “the TSIA and M-BIQ are the best indicators of alexithymia” (p. 237). Nonetheless, the Canadian team of alexithymia researchers has repeatedly indicated that a *multi-measure, multi-method approach* should be used when assessing alexithymia (Bagby et al., 2020; Taylor et al., 1997, 2016; Taylor & Bagby, 1988, 2004).

They recommend that the TAS-20 and other self-report alexithymia scales in particular should be supplemented with interview or performance-based methods. To this list we would also now add the TAS-20-IF. The psychometric properties of most of the measures we have mentioned are reviewed by Sekely et al. (2018a) and Bagby et al. (2020).

#### 4. The attention-appraisal model of alexithymia

In contrast to the clinically derived original model of alexithymia, which is empirically supported by a large and methodologically diverse set of empirical studies, the empirical foundation of the attention-appraisal model is based entirely on findings from factor analytic and correlation-based analyses using self-report measures collected using mostly online, crowdsourcing platforms in community and college student samples (see e.g., Preece et al., 2017). The conceptual background for the model is argued to be derived within the broader theoretical confines of the extended process model of emotion regulation (Gross, 2015a). A single paper published by Preece et al. (2017) seems to have served as the initial empirical foundation of the attention-appraisal model, including most prominently the removal of the IMP component of the construct. This study included administering a battery of self-report psychological measures designed to assess components of the original model along with measures of emotional reactivity and emotion regulation to a community sample. Two subsequent studies by some of the same authors further evaluated the IMP component by including several measures of fantasizing (Preece et al., 2020b; Preece & Gross, 2023); we discuss those two studies in Section 6 of this article and focus here on the initial study.

The measures used in the initial study included the BVAQ, the TAS-20, the Difficulties in Emotion Regulation Scale (DERS; Gratz & Roemer, 2004), and the Perth Emotional Reactivity Scale (PERS; Becerra et al., 2019). The BVAQ and the TAS-20 are the most widely used measures of alexithymia and are based on the original conceptualization of alexithymia, although there is some disagreement about the emotionalizing (EMO) component of the model assessed with the BVAQ. Because of uncertainties about the construct validity of the EMO subscale, Preece et al. (2017) administered the PERS to measure emotional reactivity. The DERS is widely used as a measure of emotion regulation; however, in this study Preece et al. (2017, p. 346) described it as “a self-report measure of emotion regulation *and alexithymia*” (italics added). They regard the Lack of emotional clarity and Lack of emotional awareness subscales of the DERS as corresponding conceptually to the DIF and EOT facets of the alexithymia construct, and therefore combined these two subscales to create an “alexithymia composite score.” Preece et al. (2017) incorrectly refer to the IMP component of the original model of alexithymia and the fantasizing subscale of the BVAQ as “difficulty fantasizing” with the acronym D-FAN; to our knowledge there is no evidence that the constricted imaginal processes component of alexithymia reflects a *difficulty*. Moreover, Vorst and Bermond (2001) define the BVAQ fantasizing subscale as assessing “the degree to which someone is *inclined* to fantasize, imagine, daydream, etc.” (p. 417; italics added). As we have noted elsewhere (Taylor et al., 2023), rather than accepting Nemiah and Sifneos's (1970) description of EOT as an operatory

mode of thinking characterized by “a recounting, often in almost infinite detail, of circumstances and events in [the patients’] environment, including their own actions” (p. 30), Preece et al. (2017) describe EOT as a failure to properly focus attention on emotions and as “difficulties attending to emotions” (Preece & Gross, 2024; p. 2), and misleadingly describe the TAS-20 as a “psychoanalytic measure of alexithymia” (p. 21).

The battery of questionnaires described above was completed using online platforms and collected from 368 (209 females, 159 males) community participants, who were recruited via Qualtrics panels or by advertisements placed on a social media website. The data from these questionnaires were subjected to second-order exploratory (EFA) and confirmatory factor analyses (CFA). The subscales of the BVAQ and TAS-20 were used to assess components of the original model (i.e., DIF, DDF, EOT, and IMP) and EMO. The authors report that the results of the EFA produced a four-factor solution. The first factor was composed of significant loadings (defined as  $\geq .40$ ) on two of the BVAQ subscales (i.e., difficulty identifying and difficulty verbalizing) and the DIF and DDF factor scales of the TAS-20 that are broadly correspondent with these BVAQ subscales. The DERS lack of clarity and awareness subscales also load significantly on this factor. Although the loadings on this factor are highly consistent with the Affect awareness component of the original model of alexithymia (see, for example, the M-BIQ and the TSIA; and also Taylor et al., 1991), Preece and colleagues labeled it ‘Difficulty appraising feelings’; in our view, this label does not reflect the overall thematic content of this factor. Instead, ‘Affect awareness’ would seem to be a more accurate descriptive label given that five of the six significant subscale loadings reflect a lack of awareness of feelings (i.e., identifying feelings, describing feelings, and emotional awareness) and only a single loading reflects difficulty with emotional appraisal (i.e., clarity) (see **table 2** in Preece et al. [2017, p. 349]). Factors 2 and 3 had several significant loadings on PERS subscales, reflecting negative and positive emotional reactivity, respectively. The fourth factor was composed of three subscales with significant loadings—BVAQ analyzing, TAS-20 EOT, and DERS awareness (which cross-loaded on Factor 1), with two other subscales approaching significance—BVAQ fantasizing and emotionalizing. Preece et al. (2017) labeled this factor ‘Difficulty attending to feelings.’ As with the labeling of Factor 1, we think this label is not descriptive of the pattern of loadings. Instead, the loadings would seem reflective of the Operator thinking (OT) component of the original model. For example, the highest loadings are the BVAQ analyzing (i.e., EOT) and TAS-20 EOT subscales with a near significant loading on the BVAQ fantasizing (or lack thereof) subscale, all of which are part of the OT component (see Taylor et al., 2023). The DERS awareness subscale also loaded significantly on this factor, but it also cross-loaded significantly on Factor 1 (Difficulty appraising feelings) and is therefore not unique to Difficulty attending to feelings.

Given the results of the EFA, and of CFAs in which the BVAQ fantasizing subscale did not load significantly with the latent DIF, DDF, and EOT factors on a higher-order ‘alexithymia’ factor, Preece et al. (2017) concluded that the latent structure of alexithymia appears to be comprised of only three components (DIF, DDF, and EOT), warranting a refinement of the definition of the alexithymia construct that would be consistent with the structure specified by their attention-appraisal model. This proposal was further advanced in the subsequent

two studies that assessed the IMP component with several self-report measures of fantasizing which are described in Section 6 of this paper.

One important difference between the attention-appraisal model and the original model is that the latter model is not sequential; its various components are simply assumed to interact with one another. But as we indicated briefly in the Introduction, Preece et al. (2017) position the attention-appraisal model within Gross’s (2015a) extended process model of emotion regulation, linking it, in particular, to the second-level valuation system that is comprised of a four-stage *situation-attention-appraisal-response* sequence. Preece and colleagues propose a temporal sequence of difficulties in evaluating the emotion evoked by an emotion-inducing situation (the first stage); EOT is conceptualized as difficulty in the second stage when an individual must focus attention on the emotion, and DIF and DDF are conceptualized as difficulties when the individual needs to appraise the emotion to identify what it is and what it means for them (the third stage). The measurement-based modelling used by Preece et al. (2017), which is based on cross-sectional data collected at a single point in time using measures assessing facets of the alexithymia construct proposed to operate at different stages in the sequence, cannot capture the temporal dynamics essential to the attention-appraisal model. Support for the model can only be derived from experimental studies in which these different stages are tested empirically or in clinical or population longitudinal studies that could specifically examine the temporal sequencing of the EOT, DIF and DDF components. Such studies could investigate not only whether difficulty attending to an emotion is followed by difficulties identifying the emotion and understanding what it is signaling to them, but also whether this sequence results in maladaptive responses because of a failure to deploy effective emotion regulating strategies (i.e., stage four in the response sequence). Preece and colleagues have not conducted such studies or even reviewed any empirical work that would support the temporal sequencing aspect of the attention-appraisal model.

## 5. The Perth Alexithymia Questionnaire

Soon after proposing the attention-appraisal model of alexithymia, the same team of psychologists developed the self-report Perth Alexithymia Questionnaire (PAQ; Preece et al., 2018a), which is based on the model and is therefore comprised of items that assess only the three facets of alexithymia conceptualized by that model. Although the authors of the TAS and the TAS-20 wrote items based on their own or earlier reported clinical observations of alexithymic patients, Preece et al. (2018a) seem to have written an initial pool of 66 items, based on the theoretical assumptions of the attention-appraisal model; many of the items appear to have been simply re-writes of items from the TAS-20, BVAQ, or TSIA, recasting them into language to match that of the theory-driven attention-appraisal model. Because in this sequential model EOT is assumed to correspond to the attention stage in emotion valuation, all of the EOT items were designed to assess “people’s tendency to not focus attention on their emotions” (Preece et al., 2018a, p. 35); unlike the TAS-20, BVAQ, and TSIA, none of the items assess operator thinking, which Nemiah et al. (1976) described as an essential component of the alexithymia construct. For the DIF and DDF components (corresponding to the appraisal stage of emotion valuation), items were designed “to assess

people's ability to appraise either *negative* or *positive emotions*." (p. 35); EOT did not include negative and positive valence items as the authors state that "it is not until the appraisal stage of emotion valuation that a valance judgment is made" (p. 35). Other measures of alexithymia include only the assessment of negative emotions, which is consistent with Sifneos's (1967) clinical observations and with his view that "an alexithymic individual is always anhedonic" (Sifneos, 1987, p. 124). And as one of our alexithymic patients described his experience, "Positive emotion [for me] is the absence of negative emotion. As black is equivalent to the absence of color, so joy is the absence of anxiety" (Taylor, 2012, p. 151).

Based on the results of a series of confirmatory factor analyses with a nonclinical sample, 24 items were retained for the PAQ. These items are distributed across five subscales—Negative-DIF and Positive-DIF (which collapse to form a General DIF composite scale); Negative-DDF and Positive-DDF (which collapse to form a General DDF composite scale); and a General-EOT subscale. Coefficient alphas ranged from .89 to .95 across the subscales, composite scales, and total scale.

Support for the five factor structure of the PAQ has been provided by several subsequent studies (e.g., Chan et al., 2023; Fynn et al., 2022; Preece et al., 2020a); but apart from the study with a sample of adults with acquired brain injury (Fynn et al., 2022), there are no reports of factorial validity of the PAQ with other clinical samples. When the TAS-20 was initially developed, its three-factor structure was immediately replicated in both a young adult sample and a psychiatric outpatient sample (Bagby et al., 1994a) and since this initial investigation and confirmation of the TAS-20 factor structure in a clinical sample, there have been numerous studies using other and diagnostically diverse clinical samples in many different countries across the world (see e.g., Schroeders et al., 2022). Similarly, other studies have also used diagnostically diverse patient samples to explore the validity of the TAS-20 by examining its association with external criteria using both self-report and behaviorally-based measures. To date, there have been no such validation studies with the PAQ that employed behavior- or performance-based measures, only other self-report measures. Thus, any reported estimates of discriminant validity are likely to be spuriously elevated due to shared method variance between the criterion and predictor variables.

To evaluate the concurrent and discriminant validity of the PAQ, Preece and colleagues (2018a) correlated the questionnaire and its various subscales with the Emotion Regulation Questionnaire (ERQ; Gross & John, 2003) and the Depression Anxiety Stress Scale 21 (DASS-21; Lovibond & Lovibond, 1995), and also conducted an EFA of the subscales of the PAQ and DASS-21. The decision to use measures of emotion regulation and psychological distress for this evaluation contrasts with the traditional approach (Campbell & Fiske, 1959) that was used by Bagby et al. (1994b) to evaluate the validity of the TAS-20; concurrent validity of the TAS-20 total scale and the three factor scales was demonstrated by significant correlations with an independent measure of alexithymia (the observer-rated M-BIQ), and convergent and discriminant validity were demonstrated by a pattern of correlations with measures of personality traits conceptually related (convergent validity) or unrelated (discriminant validity) to the alexithymia construct.

In a recent paper (Zahid et al., 2023), the PAQ showed significant associations with constructs long associated with alexithymia, including psychological

mindfulness, need-for-cognition, and interoceptive awareness. However, in a series of hierarchical regression analyses, the PAQ did not add any meaningful increase in prediction of these constructs relative to the TAS-20. Preece and Gross (2014) misleadingly claim that Zahid et al. (2023) "suggest that their TAS-20 should be the 'measure of choice' for the field due to its formulation of EOT aligning with psychoanalytic theory" (p. 7). In fact, what the Toronto group concluded is that "until future studies with clinical samples using different criterion variables demonstrate incremental validity of the PAQ, the TAS-20 should remain the self-report measure of choice for clinicians and researchers assessing alexithymia, albeit as part of a multi-method approach" (Zahid et al., 2023, p. 1). As mentioned earlier, as was done with the TAS-20, Preece and his colleagues do not supplement their measurement-based studies with experimental studies that use objective measures or criteria to evaluate the convergent validity of the PAQ (see, for example, Lane et al., 1996; Prkachin, 2009; Suslow & Junghanns, 2002).

There are several concerns about the PAQ that have been largely overlooked. In the development of the questionnaire, Preece et al. (2018a) did not include any reverse coded items to control for acquiescent response bias, a style of responding that has been long recognized in psychometric theory (Jackson & Messick, 1958; Messick, 1966) as an important source of systematic error that compromises the measurement validity of self-report instruments (see Danner et al., 2015; Rammstedt et al., 2017). Indeed, almost all measures of personality and psychopathology include reverse-coded items, including the TAS-20 and the BVAQ; for the TSIA, some of the items are written so that the content reflects the relative absence rather than the presence of the characteristic in question, and the scoring for these items is reverse keyed and does not have to be done manually. The developers of the PAQ deliberately chose not to include reverse coded items arguing that they may place a "cognitive burden" on the examinee, decrease internal consistency reliability, and produce a method factor, citing a single study in support of their decision, and ignoring the evidence in support of the standard practice of including reverse coded items (Preece et al., 2018a). Another critical flaw of the PAQ is excessive item content redundancy. This is reflected in the very high levels of coefficient alpha estimates that across most studies exceed .90 and, in many instances, reach .95 or higher. This is routinely reported not only for the full-scale scores but also for the subscales which have fewer items. This, too, seems to have been an intentional decision by the developers of the PAQ, who argue that clinical constructs should have coefficients of .91, citing antiquated texts or secondary sources, and ignore more recent thinking that coefficient alphas that exceed .90 likely reflect item content redundancy and a narrow sampling of the construct (Clark & Watson, 2019; Streiner, 2003). Another related concern is that in factor analytic studies the factor loadings for the PAQ items and scales are too high, exceeding .70 in many cases. This again is simply a result of item content redundancy which artificially and spuriously inflates estimates of goodness-of-fit indices, creating the false impression of measurement-to-construct fidelity (Clark & Watson, 2019; Sellbom & Tellegen, 2019).

Preece et al. (2018a) make clear that "The PAQ is intended for clinicians and researchers who want to work within the framework of the attention-appraisal model" (p. 35), but they fail to mention that like other self-report measures of alexithymia, it should not be considered a



standalone measure of alexithymia but supplemented with other methods for assessing the construct, especially in clinical situations. Several translations of the PAQ have been developed, and a six-item short form (PAQ-S) was recently introduced (Preece et al., 2023b). In our view, before clinicians and researchers consider using the PAQ, they should be aware that the instrument does not assess the alexithymia construct as it was originally conceptualized, and that incremental validity over the TAS-20 and the TSIA has yet to be demonstrated. And whereas Preece et al. (2023b, p. 493) claim that the short form of the PAQ “can be used as a quick, robust measure of overall alexithymia levels,” and “has excellent potential to enhance the viability of alexithymia assessments in time-pressured research and clinical settings” (p. 500), we caution clinicians and researchers against using it as the sole instrument for assessing alexithymia. Discerning readers will justifiably question the validity of findings from clinical assessments or rapidly conducted empirical studies that measure a psychological construct as complex as alexithymia with a brief six-item questionnaire. Like the Canadian team that developed the TAS-20 (Bagby et al., 2020; Taylor et al., 1997, 2016), Lumley (2000; Lumley et al., 2007) indicates that our understanding of alexithymia will not advance well unless self-ratings of the construct are used together with different assessment methods such as performance measures, structured interviews, and informant’s ratings.

## 6. Relationship between the attention-appraisal model and fantasy activity

As noted in Section 4 of this paper, to further investigate whether IMP should be considered a core component of the alexithymia construct, Preece and colleagues (2020b; Preece & Gross, 2023) conducted two factor analytic studies with separate nonclinical samples who completed in an online survey the TAS-20, PAQ, and several different self-report scales assessing different aspects of fantasizing/daydreaming activity. In these studies, none of the scales that assessed fantasizing activity loaded with DIF, DDF, and EOT on an ‘alexithymia’ factor. Preece et al. (2020b) concluded that the results support the view that “difficulties fantasizing might be better conceptualized as a correlate of alexithymia rather than a core component of the construct” (p. 9). They acknowledged, however, that the ‘alexithymia’ factor (representing the attention-appraisal model) was found to be associated with reduced general daydreaming frequency and vividness of daydreams with the sample in the first of these two studies.

Preece and colleagues support their call for a refinement of the definition of alexithymia to include only DIF, DDF, and EOT by citing the absence of IMP items on the TAS-20 and the short form of the TSIA, and a network analysis of TSIA data in which IMP items were connected with EOT items but only weakly connected with the DIF and DDF components of the construct (Watters et al., 2016). However, in their review of other studies exploring alexithymia and imaginal activity, Preece et al. (2020b) overlook studies that have reported significant negative correlations between the EOT factor scale of the TAS-20 and measures of fantasizing. For example, in a sample comprised of community adults and undergraduate students ( $N = 248$ ) with a mean age of 43.5 years ( $SD = 23.11$ , range = 18-88 years), the EOT factor scale of the TAS-20 correlated strongly and negatively with the

fantasy subscale of the Interpersonal Reactivity Index ( $r = -.57$ ) (IRI; Davis, 1983); moreover, a confirmatory factor analysis that tested four different models found the model comprised of DIF, DDF, EOT and Fantasy was the best fit ( $CFI = .852$ ,  $SRMR = .070$ ,  $RMSEA = .059$ ) (Henry et al., 2006). Preece et al. (2020b) and Preece and Gross (2023) also overlook the studies we noted earlier in which the EOT factor scale of the TAS-20 and the EOT and IMP subscales of the TSIA correlated negatively with the openness to experience domain of the FFM. In fact, the TAS-20 total score also correlated negatively with the openness to experience score (Taylor & Bagby, 2013b).

One of the measures used to assess fantasizing in the studies by Preece et al. (2020b) and Preece & Gross (2023) was a 45-item short form of the Imaginal Processes Inventory (IPI). But rather than using the short version (SIPI) developed and validated by Huba et al. (1982), Preece et al. (2020b) developed their own short version by selecting items from the longer IPI to assess different aspects of daydreaming. Consequently, they were not able to examine relations between the TAS-20 and the Positive constructive daydreaming subscale of the SIPI, which has been found to correlate positively with openness to experience (Zhiyan & Singer, 1997).

As acknowledged by the various research groups, all the above studies were conducted with nonclinical samples and relied exclusively on self-report measures. Further studies are needed to replicate the findings in clinical samples with disorders in which high levels of alexithymia are usually found, and use multi-method approaches to measure the various constructs. We also think it problematic to rely solely on measurement-based methodology to advance a new model of alexithymia meant to dislodge the longstanding and broadly supported original model. As Taylor et al. (1997) advocate, measurement-based approaches to construct validation must be supplemented with experimental approaches, which have been done over many years to evaluate the original model of alexithymia.

Over the years, based on our experience treating patients with high levels of alexithymia, we have come to realize that reduced daydreaming or fantasizing is just one manifestation of an impaired imagination. Consequently, in our view the controversy over whether to include constricted imaginal capacities in the definition of the alexithymia construct has been influenced by a narrow conception of imagination (perhaps generated by Sifneos [1973, 1974]), and by an incomplete understanding of the relationship of imagination with emotion, in particular its role in the generation, representation, and regulation of emotion. A somewhat improved understanding of the IMP component of alexithymia is offered by Luminet and Nielson (in press) who indicate that “Poor fantasy life (PF) refers to a lack of daydreaming, imaginal activities, and abstract-symbolic aspects of life” (p. 6), [i.e., characteristics of people low in openness to experience]. In the next section we first review current thinking about the human imagination including its development and its relationship with emotion. We then review a range of studies that have used different methods to investigate relations between alexithymia and imagination.

## 7. Imagination and emotion

The proposal by Preece and colleagues (Preece et al., 2017; Preece & Gross, 2023) that reduced imaginal activity be regarded as a correlate of alexithymia rather

than a salient component of the construct does not consider or even acknowledge the close relationship that exists between emotion and imagination. Human beings know from everyday experience that images and fantasies can elicit emotional responses (e.g., feeling excitement and joy by a fantasy of reuniting with a long-lost friend), and that emotions can evoke images or fantasies (e.g., anxiety triggering a fantasy of being attacked by an intruder in the home). Arcangeli (2017) reminds us that an intimate link between emotion and imagination was emphasized in the mid-1700s by the Scottish philosopher David Hume. In Hume's words (which Arcangeli cites), "it is remarkable, that the imagination and affections have close union together, and that nothing which affects the former, can be entirely indifferent to the latter" (Hume, 1739, II-vi). Yet, throughout most of the last century, philosophers and psychologists did not pursue a formal study of imagination. Emotion and cognition were viewed as separate entities (Izard, 2009), and imagination was considered "a peripheral feature of cognition or a domain for aesthetic research" (Asma, 2022, p. 243). Only a few psychologists (e.g., Singer, 1966) were interested in daydreaming and fantasies, which they thought reflected aspects of inner experience. Over the past several decades, however, ideas about emotion and cognition gradually converged as psychologists became interested in exploring interactions among cognitive and emotional processes and proposed models for the development of emotion schemas or cognitive-affective units (e.g., Bucci, 1997, 2008; Izard, 2009). In addition, brain imaging studies discovered that emotion and cognition continually interact in the brain via intersecting neural networks that link multiple regions of the brain and are often integrated so that they jointly influence thinking and behavior (Pessoa, 2008). Research in the field of emotion regulation also expanded rapidly, especially after Gross (1998) introduced his process model of emotion regulation and later the extended process model (Gross, 2015a).

Following these advances, several philosophers and psychologists have come to realize that imagination needs to be moved from the periphery to the center, and have been writing about imagination and emotion, including the role of imagination in emotion regulation (e.g., Asma, 2022; Cocquyt & Palombo, 2023; Loev et al., 2022; Morton, 2013; Schroeder & Matheson, 2007; Wulf, 2021). In addition, hypotheses about the neurobiology of imagination (see, Agnati et al., 2013) have led to several brain imaging studies; the findings suggest that the neural systems underlying imagination include the default mode network (DMN), with the hippocampus supporting constructive aspects of imagination and the ventromedial prefrontal cortex (vmPFC) having a role in evaluative aspects (viz., appraising the affective significance of an event (Asma, 2022; Beaty et al., 2018; Cocquyt & Palombo, 2023; Comrie et al., 2022). Given that salience network regions (e.g., amygdala, nucleus accumbens, anterior insula, and dorsal anterior cingulate cortex) may sometimes also be involved in emotional imagination, Cocquyt and Palombo (2023) "hope to demonstrate that the infusion of emotion into imagination is not the product of a single brain region or network but, instead, a complex interplay across large swaths of cortical and subcortical tissue" (p. 66). Findings from earlier functional brain imaging studies suggest that alexithymia is associated with dysfunction in some of these regions, including altered crosstalk within the DMN and the salience network (Goerlich & Aleman, 2018). Given the limitations of self-report and behavioral measures of

imagination quality or ability, it has been suggested that neuroscientific methods may prove critical to further understanding of imaginal processes (Li et al., 2022).

Recognizing that imagination involves both affective and representational processes, Asma (2022) conceptualizes imagination as a middle layer of cognition—"the layer between the lower conditioned associational mind and the upper symbolic representational mind" (p. 244); in essence, linking imagination with the subcortical emotion systems described by Panksepp (1998, 2004), who considered these systems the source of human affects. Based on relations between alexithymia and the personality dimensions of neuroticism, extraversion, and openness to experience, and results of studies that explored the affective underpinnings of the dimensions of the five-factor model of personality (Davis & Panksepp, 2011; Davis et al., 2003), Taylor et al. (2018) suggest that alexithymia would likely "be associated negatively with the SEEKING system, negatively with the PLAY system, and positively with the FEAR, ANGER, and SADNESS systems" (p. 341). Moreover, there is evidence that the SEEKING system, is related positively to a trait measure of various aspects of creativity (Reuter et al., 2005). Krystal (1988a) found that alexithymia patients were particularly uncreative; and in an empirical study with university students ( $N = 89$ ), Averill (1999) reported strong negative correlations between the Emotional Creativity Inventory and the TAS-20 total score ( $r = -.34, p < .01$ ) and especially the EOT factor scale score ( $r = -.61, p < .001$ ).

Also from an evolutionary perspective, Asma (2022) describes imagination as a form of early thinking or embodied cognition (relating to the environment) that is initially preconceptual but then "plays a role in the emergence of conceptual thinking" (p. 247). This view of the biology of imagination overlaps with theories of emotion organization and experience, in particular with Lane and Schwartz's (1987) cognitive-developmental theory in which emotional awareness is considered a type of cognitive processing that undergoes five levels of structural transformation, ranging from preconceptual levels (at which emotions are experienced as bodily sensations only or as both a body sensation and an action tendency) to conceptual levels as emotions are gradually linked with words and experienced psychologically as well as somatically, initially as individual feelings and eventually as an awareness of blends of feelings. Lane and Schwartz's theory has been of considerable value to alexithymia theorists because the different levels of emotional awareness help formulate hypotheses about associations between alexithymia and undifferentiated states of unpleasant emotional arousal that may be experienced as somatic distress or trigger impulsive actions such as bingeing on food or consuming drugs or alcohol with the aim of downregulating the arousal. The dimensional nature of the alexithymia trait, which has been demonstrated by taxometric studies with the TAS-20 and the TSIA (Keefer et al., 2019; Mattila et al., 2010; Parker et al., 2008), maps onto this theoretical model of levels of emotional awareness.

## 8. The development of imagination

Imaginal capacities begin to develop early in life and have an important role in the development of social cognition and emotion regulation in infancy and childhood (Kushnir, 2022). Izard (2009) writes that "during early ontogeny the feeling-thought patterns of unbridled imagination facilitate cognitive and social



development from the first moment that the young child engages in make-believe or pretend play. In these developmental processes and throughout the lifespan, imagination remains part emotion feeling and part cognition” (p. 15). In his article describing an extended process model of emotion regulation, Gross (2015a) acknowledges that “emotion regulation processes change across the life span” (p.18); he refers briefly to the initial reliance of infants on caregivers for emotion regulation, and how growing language abilities offer new possibilities for emotion regulation. However, Gross makes no mention of a role for imagination or fantasy in emotion regulation. In contrast, more than a quarter century ago, Taylor et al. (1997) discussed the emergence of imaginal capacities within the context of early relationships and their role in affect regulation. They provided a detailed account of affect development and the development of affect regulation that is consistent with Piaget’s view “that affect development follows a course that is parallel and complementary to cognitive development” (Taylor et al., 1997, p. 16). Taylor and colleagues (1997) outlined a similar parallel course for the development of imagination, and noted in a later contribution (Taylor et al., 2016) that it is “dependent on the child’s interactions with affectively engaged primary caregivers” and “proceeds from the infant’s formation of images of the mother (which become linked to subsymbolic sensory experiences), to the creation of a transitional object (such as a soft toy or blanket)” that comes to symbolically represent the mother, and then, “to ‘the 5-year-old’s creation of fantasy play that reflects his own subjective world and his understanding of the concepts of mental states and mind (Mayes &Cohen, 1992; p. 41)” (p. 1014). Taylor et al. (2016) emphasize that “fantasies, dreams, play and interests involve affects and serve some of the affect regulatory functions initially provided by the primary caregivers; they play an important role in personality development and in the self-regulation of affects throughout life” (p. 1014).

The role of imagination in emotion regulation, especially the induction of positive affective experiences, is very evident in children’s play. Taylor et al. (1997) report that “Singer (1979) regards play in early childhood as an adaptive resource by which children can organize complex experiences into manageable forms, and thereby avoid extreme negative affects and maximize the occurrence of positive affects of interest and joy” (pp. 22-23). Although the more commonly used measures of alexithymia do not inquire about playfulness, the Observer Alexithymia Scale (OAS; Haviland et al., 2000) includes items that ask if the person being rated has a good sense of humor, tells jokes, is playful, colorful, and interesting or boring. In our own clinical practices, we have observed that patients with high levels of alexithymia are rarely playful and usually have few if any interests that typically generate positive emotions and thereby mitigate the experience of negative emotions (see, for example, case reports in Taylor et al. [1999] and Taylor [2012]).

## 9. Investigations of relations between alexithymia and impaired imaginal activity

Given the close association of emotion and imagination, and the continual interactions between them, we would expect reduced emotional awareness in individuals with high alexithymia to be accompanied by impaired imaginal activity. However, because of

their mutual entanglement, it may not be possible to study emotion and imagination separately. Consider, for example, the Levels of Emotional Awareness Scale (LEAS; Lane et al., 1990), a performance-based test that was developed to assess individual differences in emotional awareness as described in Lane and Schwartz’s (1987) cognitive-developmental model of levels of emotional awareness. Respondents to this test are presented with a description of 20 different imaginary situations and are asked to describe what they would feel in each of those situations, as well as how the other person mentioned in the situation would feel. Although Smith et al., (2019) have demonstrated that multiple processes may contribute, either in isolation or in combination, to low emotional awareness, it seems that the ability to describe how one would feel, and how the other person would feel in these situations, may employ imagination (in at least some of the situations) as it would depend on the respondent’s capacity to simulate their own and other’s mental states.

Some of the empirical studies investigating relations between alexithymia and imaginal activity assess imagery and other studies assess imagination. As Agnati et al. (2013) point out, these are commonly conflated concepts; whereas imagery is the “basic faculty for producing mental images of previously experienced material,” imagination involves “creating new mental images by combining and modifying stored perceptual information in novel ways . . .” (pp. 1-2). Imagery, in their view, “provides the elements necessary for imagination and is arguably present also in other species together with a primitive form of imagination, namely a rudimentary form of prospection, i.e., the faculty of creating a mental picture of a future or anticipated event” (p. 1).<sup>4</sup> In our view, the constricted imaginal processes component of the alexithymia construct relates more to imagination than to the capacity to form images.

### 9.1. Investigations with self-report measures of alexithymia

In building an argument that reduced imaginal capacity is not part of the alexithymia construct, Preece et al. (2017) cite some experimental studies that reported no differences between people with high levels of alexithymia and people with low levels of alexithymia on tasks that assessed imaginal efficiency (e.g., Czernecka & Szymura, 2008) or the vividness of visual imagery (Bausch et al., 2011; Mantani et al., 2005). They fail to mention that in the study by Czernecka and Szymura (2008), participants with high alexithymia scores had a lower level of general creativity and less originality than those with low alexithymia scores. Preece and colleagues also mistakenly assume that high and low alexithymic groups in this study were based on TAS-20 total scale scores, whereas the investigators report that they used the 40-item BVAQ total scores to dichotomise the sample (comprised of 68 recovering alcoholics and 68 non-drinking adults) into alexithymic and non-alexithymic groups. Given that Bermond et al. (2015) describe the 40-item BVAQ total scores as meaningless because the higher order cognitive and affective factors are orthogonal to one another, the findings from the

<sup>4</sup> Asma (2022) similarly regards imagination as “a form of animal prospection – the ability to envision the future – and seems comprised of simulation, prediction, intention, and planning..., but not necessarily high-level representation like concepts” (p. 246).

Czernecka and Szymura (2008) study are somewhat questionable. Preece et al. (2017) also misrepresent the results of the fMRI study by Mantani et al. (2005). Although no differences were found between high and low alexithymic participants in their subjective ratings of some imagery conditions (future happy, past neutral, and future neutral events), Mantani and colleagues report that the mean subjective ratings of the vividness of the imagery were higher in the low alexithymia group than in the high alexithymia group for past happy, past sad, and future sad events. Furthermore, during some of the imagery conditions, relative to the low alexithymia group, the high alexithymia group showed significantly less activation in the posterior cingulate cortex. Preece et al. (2017) reference some other studies that reported a lower imaging capacity or less vivid imagery in high alexithymia subjects when compared with low alexithymia subjects (e.g., Campos et al., 2000; Friedlander et al., 1997). Except for the study that included recovering alcoholic adults and assessed alexithymia with the BVAQ, all of the experimental studies that are mentioned by Preece et al. (2017) were conducted with nonclinical samples (community or college students) and used total scale scores on either the TAS-20 or the 26-item TAS to create high and low alexithymia groups.

## 9.2. Investigations with performance-based measures of alexithymia

In making their argument for a revised conceptualization of the alexithymia construct, Preece and his colleagues (2017, 2019; Preece & Gross, 2023) were either selective in their review of the alexithymia literature or overlooked a series of studies that used performance-based tests and clinical samples, the results of which provide considerable support for an impaired imaginal capacity as a core component of the alexithymia construct. Some of these performance-based instruments such as the Rorschach were previously labelled as “projective tests” and relied heavily on the content of the respondents’ responses to ambiguous stimuli and were criticized for poor reliability and questionable validity (see Lilienfeld et al., 2000); however, more contemporary views conceptualize these tests as performance-based personality measures in that they focus not so much on the content of the percept attached to the ambiguous stimuli but how the respondent formed that percept, which can be scored using standardized scoring guidelines not much different from cognitive tests. This assessment technique is designed to elicit information about the personality *in action* by using incomplete or unstructured tasks to reveal implicit individual motives and abilities, differently from explicit motives derived from self-report scales (Krishnamurthy et al., 2022; Wright et al., 2022). The standardization of administration and especially standardized scoring procedures (both of which bear resemblance to structured clinical interviews—e.g., the Structured Clinical Interview for DSM-5) for the Rorschach test has resulted in excellent reliability across clinical and nonclinical samples, with intraclass correlation coefficients ranging from .82 to .97 (Meyer et al., 2002), and meta-analytic evidence of validity (Mihura et al., 2013). The idea of using a performance-based test to assess alexithymia may stem from Ruesch’s (1957) observation of a paucity of fantasy and imagination among ‘psychosomatic’ patients with characteristics later described as alexithymic; he reported that these patients’ “fantasy elaborations in

such tests as the Rorschach and thematic apperception tests are primitive, unimaginative, and stereotyped” (p. 117).

Early empirical studies that used performance-based tests to investigate and compare verbal behavior and fantasy life in psychosomatic and psychoneurotic patients yielded mixed results (e.g., Vogt et al., 1977; Taylor et al., 1981). However, as Acklin and Alexander (1988, p. 344) point out, these studies used different methods for administering, scoring, and interpreting the Rorschach test, thereby limiting the ability to compare findings across studies. By using the Comprehensive System (Exner, 1974) with medical patients, it was found that a significant decrement in fantasy life together with other Rorschach alexithymia indicators supports the original conceptualization of alexithymia in which an impaired imaginal capacity is a core component of the construct (Acklin & Bernat, 1987; Acklin & Alexander, 1988).

The above-mentioned studies were based on between-group comparisons of Rorschach variables without using external criteria for assessing alexithymia. By using the TAS-20 as an external criterion for alexithymia, a group of patients with inflammatory bowel disease was classified into three groups of alexithymics, non-alexithymics, and indeterminate-alexithymics based on the over time consistency of scoring to the TAS-20 administered twice at a 6-month lag time (Porcelli & Meyer, 2002). Since the Rorschach is a broadband measure of personality assessment, it does not include scores that directly assess the alexithymia construct. Therefore, 27 Rorschach CS variables were grouped into clusters theoretically consistent with the alexithymia construct (fantasy, affect, adaptive resources, cognition, social adaptation, and projection), showing that 24 of the 27 variables significantly differentiated the three alexithymia groups in the expected direction. In particular, two Rorschach CS variables, both characterized by excellent meta-analytic effect size (Mihura et al., 2013), showed high effect size compared to the TAS-20. One was Form% (i.e., the subject’s response is determined merely by the shape of the blot) which was found significantly higher in the alexithymic group compared to the two other groups and showed large association with the TAS-20 score ( $r = .70$ ). Form% evaluates concrete and simplistic thinking, avoidance of complexity and ambivalence, restricted and stereotypical ideation, limited openness to experience, difficulty in adapting to not clearly defined and highly structured situations, and a ‘perceptual tunnel’ interpersonal perspective. It is therefore highly consistent with a thinking style that typifies alexithymia as the “emotional equivalent of blindsight” (Lane et al., 1997). The other Rorschach variable was M or *human movement* (i.e., the subject identifies a human being who is doing something, such as dancing, talking, fighting, etc., because he or she is experiencing some inner feeling according to which the identified object is felt as actually moving, even though the stimulus is static) which was found significantly lower in the alexithymic group compared to the two other groups and showed moderate to large association with the TAS-20 score ( $r = .45$  to  $.48$ ). Meta-analytical evidence has demonstrated that M responses are associated positively with planning, intelligence, imagination, fantasy, empathy, interpersonal skills, and neural mirroring (Mihura et al., 2013). M responses are a product of processing implicit feelings from bodily sensations which the subject is not aware of, a process that is usually referred to as ‘embodied cognition’ (Damasio, 2010). The ability to make and use

symbolic representations of one's own and the other's mental states, which has been found theoretically and empirically to relate to M (Porcelli & Kleiger, 2016), has been referred to as mentalization (Fonagy et al., 2002).

Based on these findings, Porcelli and Mihura (2010) developed the Rorschach Alexithymia Scale (RAS) by using data from a group of 219 patients with medical and psychiatric disorders, reducing the number of Rorschach variables to three, through a series of multiple regressions: low social competence (Coping Deficit Index), social conformity (number of Popular responses), and again Form% that showed the strongest effect size with the TAS-20 ( $r = .72$ ). Although M is not part of the RAS formula because of a statistical computation artifact, patients who gave no or only one M response scored significantly higher to the TAS-20 ( $t = 15.86, p = .003$ ) and to the RAS ( $t = 6.85, p < .001$ ) than those with more than one M response. At a clinical level, therefore, the combination of high Form% and low M strongly suggests the presence of the core components of the alexithymia construct, namely impaired imagination, concrete thinking, poor affective awareness, and difficulty in communicating one's inner feelings to others.

More related to the relationship between alexithymia and impaired imagination are the results of the Rorschach Reality-Fantasy Scale (RFS; Tibon et al., 2005a) assessing the ability to integrate fantasy and reality. Meaning in human experience is generated in the mutual, dialectical, enriching tension between reality and fantasy. An adaptive, healthy, and functional ability to preserve potential space would thus be demonstrated in individuals who manage to separate their own psychic reality from that of other people while adequately maintaining an intermediate area where reality and fantasy are perceived as separate yet interrelated. When reality is used predominantly as a defense against fantasy, the fantasy pole collapses into the reality one. These states represent one possible form of psychopathology that may occur in a collapse of potential space. Another form of collapse is represented in psychosis, in which the reality pole collapses into the fantasy one (Ogden, 1985). Combining several Rorschach CS variables through a stepped procedure, the RFS has a scale score ranging from -5 to +5 indicating the extent to which a subject relies on fantasy with minimum contact with reality (score = -5; example of Rorschach response: *it looks like black coffee that is spreading on the table, I can smell it*) or on reality with minimal if any input from fantasy (score = +5; *it is a bat because of the shape*). In a study with medical patients, the RFS score showed high effect size with the TAS-20 ( $r = .63$ ) and, within the Rorschach test, with Form% ( $r = .70$ ) and M ( $r = .45$ ), explaining 48% of the TAS-20 variance (Tibon et al., 2005b).

### 9.3. *The archetypal 9 test*

Several other relevant studies that were conducted with clinical samples administered the Archetypal test with 9 elements (AT9), which is a novel self-administered performance-based test for assessing imaginal capacity. The AT9 was introduced into the field of alexithymia research in the early 1980s by Demers-Desrosiers (1982), who adapted it from G. Durand's (1969) theory of the structure of the imagination. In contrast to self-report methods and imagery tasks for evaluating imaginal functioning, the aim of this test is well hidden from the person being tested. And as explained by

Taylor and Bagby (1988), the AT9 "provides a direct measure of the symbolic function that is allegedly impaired in alexithymic individuals and manifests clinically as a poverty of dreams, fantasies, and other imaginative activities" (p. 359). An impaired symbolic function is evidenced when the patient is unable to create a myth by organizing a dynamic drawing and story using nine symbols that are listed on the test and chosen to elicit anxiety and to suggest tools to resolve it (Demers-Desrosiers, 1982). A disturbed imaginative function loses its symbolizing capacity; therefore, the ability to have the symbols represent and take on meanings is lost. Whereas non-alexithymic individuals usually produce creative drawings and poetic stories, high alexithymia individuals often become anxious and display reticence when presented with the test. Those with the most impaired symbolizing function fail to create a mythical infrastructure and "may resort to naming and numbering the nine symbols in their drawing and simply list the symbols instead of writing a story" (Taylor & Bagby, 1988, p. 359).<sup>5</sup>

In a preliminary study using the ATP (Demers-Desrosiers, 1982), 49 patients with somatic symptoms or disorders (e.g., ulcerative colitis, pain, psoriasis, insomnia, hypertension, angina) were administered the interview-rated BIQ. Thirteen patients were not rated alexithymic on the BIQ and their symbolic function was comparable to a normal population. Twelve of the 17 patients in the subgroup with the highest BIQ scores showed marked impairment of the symbolic function, with absence of a mythical infrastructure, fragmented comic-strip drawings, and totally disconnected stories or only an enumeration of the requested symbols.

Given a potential for bias in the subjective interpretation of the AT9, an objective and quantifiable system for scoring the test was developed and labeled the SAT9, on which higher scores indicate a greater symbolizing capacity (Cohen et al., 1983; Cohen et al., 1985). In a sample comprised of 30 chronic pain patients and 12 patients with functional somatic symptoms, the SAT9 scores correlated significantly with rankings on the subjectively scored AT9 ( $r = .91, p < .001$ ) (Cohen et al., 1983). In another part of this investigation, 18 of the chronic pain patients were assessed for alexithymia with the BIQ; a significant negative correlation was found between BIQ and SAT9 scores ( $r = -.47, p \leq .05$ ) (Demers-Desrosiers et al., 1983). A statistically significant difference in SAT9 scores was also found between those patients who could create a mythical infrastructure and those patients whose drawings and stories were without a mythical infrastructure ( $t = 4.27; df = 28; p < .001$ ). The SAT9 has demonstrated excellent inter-rater reliability in clinical samples (Bourke et al., 1985; Cohen et al., 1985).

Though Demers-Desrosiers and her colleagues (1983) do not consider the AT9 a measure of alexithymia, they conclude that "[it] measures something central to the alexithymia construct" (p. 75), namely the impoverished capacity to fantasize, which they suggest "can be worded as an inability to symbolize or to arrange in a dynamic fashion through one's imaginative capacity symbolic stimuli" (p. 67). Based on a recent study examining relations between the SAT9 and the BVAQ, Langevin et al. (2017) concluded that the results underscore the appropriateness of using the SAT9 as part of a multimethod approach to assessing

<sup>5</sup> A more detailed description of the ATP, including examples of drawings and stories by patients with various levels of alexithymia, can be seen in Demers-Desrosiers (1982), Taylor (1987), and Taylor and Bagby (1988).



alexithymia. The findings from these studies support Ruesch's (1948) observation that for patients without the ability to connect symbols with affects, "symbols have little merit for self-expression, although they can be manipulated in a manner similar to management of gadgets or objects." (p. 139).

## 10. Alexithymia and dreaming

Since fantasizing and dreaming form phases of a common continuous stream of mental activity (Hartmann, 2000; Silberfeld, 1978), another approach to investigating people's imaginal capacity is through dream research. Indeed, empirical investigations of the ability to recall dreams and of the quality of dreams in individuals with high levels of alexithymia have provided further support for reduced imaginal activity as a core component of the alexithymia construct. As with studies using performance-based measures, these investigations were prompted partly by clinical observations that continue to be reported by psychotherapists. For example, several experienced psychotherapists describe patients with alexithymic characteristics who rarely recall dreams (Civitarese, 2013; Krystal, 1979; McDougall, 1982; Ogden, 2003; Taylor, 2012). Krystal (1979) noted that when dreams are recalled, they "are characterised by exceptional simplicity... [and] are usually limited to a few simple sentences" (p. 19). Marty and de M'Uzan (2010) similarly reported that when patients with operational thinking are able to recall dreams, "their accounts also conform to the rules of operational thinking," and that the contents are "always closely connected with an existing reality" (p. 457). Although most recalled dreams of high alexithymia patients merely replay a daytime experience, some dreams contain scenes of violence or other disturbing content, which suggests failure of the dream process to symbolize and contain threatening emotions within the patient's internal world (Levitan, 1989). These observations led Taylor et al. (1997) to suggest that it may be "the quality of the dreams more than the ability to recall them that best characterises alexithymia" (p. 30). However, among the various measures of alexithymia, only the M-BIQ includes items for assessing the quality of dreams and the ability to recall dreams (see Taylor et al., 1997, pp. 272-273).

As noted two decades ago (Taylor & Bagby, 2004), the results of studies investigating dream content and dream recall frequency differ depending on the procedure used for collecting dream reports. For example, Lumley and Bazydlo (2000) conducted a retrospective survey of dreaming among several hundred young adults, as well as a separate 1-week, prospective diary study of 153 young adults who were assessed for dream recall and the content and length of dreams. Across the two studies, the different facets of alexithymia assessed with the TAS-20 correlated with different dream characteristics. The EOT facet was associated with a lower dream recall frequency, shorter dreams, and dreams that were rated as boring and lacking vividness. The DIF and DDF facets were related to low recall of the details of dreams, and with a greater frequency of having disturbing dreams; higher scores on DDF were also associated with dream content rated as bizarre and aggressive.

In a separate prospective study by De Gennaro et al. (2003), female university students were asked to dictate into a tape-recorder dreams they recalled after each morning awakening over a two-week period. The

participants also completed sleep and dream diaries. As hypothesized, participants with higher scores on the TAS-20 recalled significantly fewer dreams than those who scored lower; however, and contrary to the study hypotheses, emotion, vividness, bizarreness, and length of dreams were similar between the two groups.

Although De Gennaro and colleagues (2003) proposed that alexithymia negatively affects only the ability to recall dreams, they acknowledged that the best procedure for maximising the frequency of dream recall is awakening individuals during REM periods of sleep. In a study that used this procedure (Parker et al., 2000), no significant differences were found between a group of high alexithymia students and a group of low alexithymia students in the number, length, and emotional valence of dreams; however, the ratings of fantasy content of the dreams (with consensus agreement by two raters blinded to alexithymia scores) were significantly lower in the high alexithymia group of students.

Despite limitations in each of these studies, including small sample sizes and the use of non-clinical samples of young adults rather than clinical samples with a broader age range, the findings are mostly consistent with psychotherapists' reports that high alexithymia individuals have difficulty recalling dreams and that the content of dreams is either unimaginative or very distressing. Further investigations of alexithymia and dreaming are needed in clinical samples and with multiple methods for assessing alexithymia because there is converging evidence from multiple fields of study that supports a close relation between dreaming and imagination; "indeed, dreaming may turn out to be the purist form of our imagination" (Nir & Tononi, 2010, pp. 12-13).

## 11. Alexithymia and psychological distress

After excluding IMP as a core facet of the alexithymia construct, Preece and colleagues turned their attention to the DIF factor scale of the TAS-20. In two recent second-order factor analytic studies they demonstrated that the TAS-20 DIF factor scale appears to be conflated by psychological distress. The first study (Preece et al., 2020c) involved five separate samples, the DASS-21, and three different self-report measures of alexithymia; two samples completed the BVAQ and the TAS-20; one sample completed only the TAS-20; and two other samples completed the PAQ. The second study used a larger sample that completed the DASS-21, the TAS-20, and the PAQ (Preece et al., 2024). In both studies the three subscales of the DASS-21 loaded on a general emotional distress factor. In the samples that completed the TAS-20, the DDF and EOT factor scales loaded on an alexithymia factor, but the TAS-20 DIF factor scale cross-loaded onto the emotional distress factor. In the samples that completed the PAQ or the BVAQ, all of the subscales of these measures loaded on the general alexithymia factor, and no subscale cross-loaded on the psychological distress factor. Preece et al. (2020c) conclude that "Because the TAS-20 DIF subscale (and by extension its total scale score) appears to be confounded by a distress factor this may limit its utility as a marker of alexithymia" and that "previous studies that have used the TAS-20 DIF subscale might need to be re-visited and potentially re-interpreted pending replication with distress statistically controlled for" (p. 6).

Here again, Preece and colleagues seem to be unaware of, or simply fail to acknowledge the earlier

research that examined the issue of distress and its relation to alexithymia. The argument that the TAS-20 may be more a measure of psychological distress rather than alexithymia is longstanding and has been previously addressed by the developers of the scale. While recognising that several studies have reported positive correlations between the TAS-20 (especially the DIF factor scale) and measures of negative affect, including the neuroticism domain and several of its facet scales on the Revised NEO Personality Inventory (NEO PI-R; Costa & McCrae, 1992) (see Taylor & Bagby, 2013b), Bagby et al. (2020) and Taylor et al. (2016) refer to some studies that found nonsignificant correlations between the TAS-20 (or 26-item TAS) and measures of anxiety and/or depression, and also to other studies that controlled for negative affect and still found statistically significant associations between TAS-20 scores and a number of outcomes. Furthermore, Taylor et al. (2016) acknowledge that “even though TAS-20 scores may be moderately inflated by negative affect and thus lack absolute stability, there is strong evidence of relative stability, which is a true indicator of whether a personality construct is a stable trait and not simply reflective of distress” (p. 1012).<sup>6</sup> Indeed, relative stability of TAS-20 scores has been demonstrated in a number of different clinical populations (de Timary et al., 2008; Grabe et al., 2008; Luminet et al., 2001; Luminet et al., 2007; Porcelli et al., 2003). The developers of the PAQ have not yet reported studies evaluating the relative stability of PAQ scores. Moreover, like almost all of the studies by Preece and colleagues, the two studies examining relations between self-report measures of alexithymia and the DASS-21 were conducted with nonclinical samples (a limitation the researchers acknowledge).

Preece and colleagues (2020c) suggest that the overlap of the TAS-20 DIF factor with the emotional distress factor might be explained by the content of three of the DIF items—Item 3 (“I have physical sensations that even doctors don’t understand”); Item 7 (“I am often puzzled by sensations in my body”); and Item 13 (“I don’t know what’s going on inside me”). In their opinion, the content “is not specific to people’s ability to identify and understand emotions. Rather, these items are about bodily sensations or physical well-being more broadly, and thus may overlap with somatic manifestations of depression and anxiety” (Preece et al., 2020c, p. 6). Preece and his colleagues fail to appreciate that these three items were designed to assess difficulty distinguishing between emotional feelings and the *bodily sensations of emotional arousal*, which is included in the definition of the DIF component of the alexithymia construct, as we noted in the Introduction, and was described by Nemiah et al. (1976) and Sifneos (1994). Luminet and Nielson (in press) similarly point out that DIF “includes difficulty distinguishing one’s feelings from internal bodily sensations and states, known as interoception” (p. 6). In the phase of developing items for the TAS, Items 3, 7, and 13 were written to assess difficulty identifying and appreciating the meaning of bodily sensations (Taylor et al., 1985; Taylor & Bagby, 2021). When the scale was revised to form the TAS-20, these three items were retained because of high loadings on the DIF factor (Bagby et al., 1994a). The PAQ has no items for assessing this aspect of alexithymia

<sup>6</sup> Absolute stability is “the extent to which scores differ or change over time”; relative stability is “the extent to which relative differences among a sample of individuals remains the same over time even in the context of change in illness symptomatology or distress” (Bagby et al., 2020, p. 3).

even though Preece et al. (2018a) link the attention-appraisal model with Lane and Schwartz’s (1987) dimensional model of affect development according to which people functioning at the lowest developmental levels (i.e., high alexithymia) have poorly developed emotion schemas and experience emotions primarily as bodily sensations. A study conducted by Mattila et al. (2008) with a sample of 5129 Finnish adults aged 30 to 97 years found that alexithymia (measured with the TAS-20) was associated with somatization (measured with the 12-item somatization subscale of the SCL-90) “independently of somatic diseases, depression and anxiety, and confounding sociodemographic variables” (p. 716). The strongest association was between the DIF factor of the TAS-20 and somatization.

The question of whether alexithymia is a construct distinct from depression and somatization was examined in earlier studies that used first-order (i.e., item-level) factor analyses. With separate samples of university students and psychiatric outpatients, Parker, et al. (1991) demonstrated that the alexithymia construct (assessed with the 26-item TAS) is separate and distinct from the construct of depression (assessed with the Beck Depression Inventory [BDI]). And in a study with a nonclinical adult sample, Bach et al. (1996) found that the TAS-20 items and the items on a screening list for DSM-III-R somatization disorder loaded on separate factors; the results were replicated and cross-validated in a sample of ‘psychosomatic’ inpatients. Similarly, when Preece et al. (2020c) conducted item-level analyses on their data, “none of the seven TAS-20 DIF items loaded (i.e., loadings  $\geq .40$ ) on the first-order depression, anxiety, or stress factors as the DASS-21 items” (p. 5). Preece and Gross (2023) justify conducting second-order rather than first-order factor analyses because subscale scores (rather than individual item scores) are what are typically used in clinical and research settings.

The possibility of TAS-20 scores being inflated by psychological distress is yet another reason for using a multi-method approach to the assessment of alexithymia. In a recent study with a nonclinical sample, Montebanocci and Surcinelli (2018) found no significant correlations between the TSIA (and all of its subscales) and both the Beck Depression Inventory-II and the State-Trait Anxiety Inventory (STAI). In another study with a nonclinical sample, Rosenberg et al. (2016) found that the TSIA and its subscales did not correlate significantly with the neuroticism domain on the NEO Five Factor Inventory. This study controlled for possible influences of depressive symptoms and trait anxiety by calculating partial correlations with the scores on the BDI-II and on a version of the STAI. Rosenberg et al. (2016) report that “This did not change the results substantially. . .” (p.123).

## 12. Alexithymia and emotion regulation

Preece and Gross’s (2024) description of the original model of alexithymia as a “psychoanalytic conceptualization,” versus the attention-appraisal model as a “cognitive-behavioral conceptualization,” is misleading and reveals their lack of familiarity with an important period in the history of psychosomatic medicine. The introduction of the alexithymia construct in the mid-1970s represented a shift away from the psychoanalytic drive-conflict-defense formulation that underpinned many of the early psychosomatic theories of disease toward a new formulation that linked susceptibility to disease with prolonged states

of emotional arousal due to *deficits in the cognitive processing and regulation of emotions*. Indeed, by the early 1990s, the alexithymia construct was described as “a potential new paradigm for understanding the influence of emotions and personality on physical illness and health” (Taylor et al., 1991, p. 153). Sifneos (1994) wrote that his (and Nemiah’s) earlier observations on medically ill patients indicated “the existence of a deficiency of cognitive processing of emotions” and that “these deficiencies involved a paucity of fantasies, inability to use language to express emotions, and differentiate between emotions and bodily sensations... [and] a tendency to act impulsively” (p. 194). Taylor (1994) further elaborated on the limitations of applying Freud’s model of mental functioning to the “classic” psychosomatic diseases and to certain psychiatric disorders (such as eating disorders, panic disorder, and somatization disorder), and proposed that “the various medical and psychiatric illnesses with which alexithymia has been associated be reconceptualized as *disorders of emotion regulation*” (p. 63). Although Gross (2015a) cites this article when he acknowledges that “People differ in their emotional awareness (Taylor, 1994), and [that] these differences can influence emotion regulation” (p. 14), he does not employ the term alexithymia or credit Taylor with applying the concept of “disorders of emotion regulation” in the clinical arena.<sup>7</sup> Preece and Gross also fail to appreciate that the concepts of emotion regulation and dysregulation could be easily integrated with other changes that were occurring in the field of psychosomatic medicine during the 1980s and 1990s, including the use of general systems theory and cybernetic principles of feedback, self-regulation, and dysregulation to conceptualize the psychobiological mechanisms underlying health and disease (e.g., Engel, 1980; Schwartz, 1989; Taylor, 1987, 1992). The integration of the different concepts led to new directions of research and gradually to the contemporary situation in which “Systems biomedicine, cybernetic feedback models of physiological regulation, and complex risk factor models have widely replaced earlier and much criticized unidirectional ‘one cause-one disease’ concepts of biomedicine from early years of psychosomatic medicine” (Herrmann-Lingen, 2017, p. 966).

Although the original conceptualization of alexithymia was formulated without any preconceived underlying theoretical framework, in an attempt to *explain* the observable features of the construct, Nemiah (1977) placed alexithymia within a theoretical framework that he conceptualized for understanding the cognitive processing of emotions. His conceptualization is not psychoanalytic; instead, it brings together cognitive-behavioral elements. Indeed, there are some similarities between Gross’s (2014, 2015a) theoretical framework and Nemiah’s outline of the internal processes that normally occur in individuals in response to an emotion-provoking situation or stimulus. Nemiah proposed that in addition to there being a perception (i.e. attention) and cognitive appraisal of the elements of the event, the somatic components of affects are aroused and undergo a process of ‘psychic elaboration.’ As summarized by Taylor et al. (2016), “Nemiah (1977) described several elements to the process of psychic elaboration, including a refinement and delineation of the raw emotion into a variety of qualitatively different

nuances that have the potential for conscious experience as *feelings*; a linking of the feelings with words to describe them; the production of images and fantasies expressive of the feelings; and the arousal of a network of memories and associations related to the feelings. It was assumed that an awareness of feelings, together with the thoughts, fantasies, and memories they elicit, facilitates regulation of the emotional arousal induced by the affect-evoking stimuli. Nemiah suggested that alexithymia could occur as a result of a failure in *one or more* of the elements of psychic elaboration, such that the activity of the biologic component of affect would be unregulated by cognitive processes and lead to somatic symptoms or be discharged through actions” (p. 1009). With this conceptualization, Nemiah anticipated the introduction of Lane and Schwartz’s (1987) more detailed and elaborate model for understanding the psychic elaboration of emotions and individual differences in affect awareness, and why certain symptoms may be a result of poorly developed emotion schemas.

It has long been known from both clinical observations and empirical studies that alexithymia is associated with a proneness to experience negative emotions and a limited tendency to experience positive emotions such as joy, happiness, love, and excitement (Taylor et al., 1997; Taylor & Bagby, 2013b). Sifneos (1987) observed a strong association between alexithymia and anhedonia, and Krystal (1988b) reported a blocking of the capacity to experience pleasurable emotions (including playfulness). Krystal (1988b, p. 253) opined that the coexistence of alexithymia and anhedonia suggests a traumatic origin. Preece and Gross (2023) certainly agree that “people high in alexithymia tend to experience more negative emotions and less positive emotions” (p. 5). They attribute these tendencies to alexithymia’s impairing role in emotion regulation and suggest that this impairment may account for the association between alexithymia and a range of emotion-based psychopathologies (Preece et al., 2023a). In a study with a large community sample in the U.S. that completed three different emotion regulation questionnaires, Preece et al. (2023a) found that individuals with high levels of alexithymia, when compared with individuals with average or low levels of alexithymia, reported greater use of maladaptive cognitive and behavioral strategies to regulate emotions (expressive suppression, withdrawal, and ignoring) and lesser use of adaptive emotion regulation strategies (cognitive reappraisal, positive refocusing, putting into perspective, seeking social support).<sup>8</sup> In an earlier study using data collected from the same community sample with the DASS-21 and the Perth Emotion Regulation Competency Inventory (PERCI: a measure of emotion regulation ability developed by Preece et al. [2018b]), Preece et al. (2022) found that the PAQ correlated positively with both the DASS-21 and the PERCI, and the PERCI correlated positively with the DASS-21. However, in the modelling of direct and indirect effects, alexithymia was not directly related to emotional distress symptoms but was indirectly associated via emotion regulation difficulties. The investigators opine that these results support the conceptualization of affective disorders as disorders of emotion regulation.

<sup>8</sup> In this study, alexithymia was measured by a latent factor extracted from a factor analysis of the subscale scores on the PAQ and the TAS-20. Although Preece et al. (2023a) assert that combining the two self-report scales aligns with recommendations to use a multi-measure approach to assessing alexithymia, it is not a *multi-method* approach.

<sup>7</sup> Gross (2014) also references Taylor’s (1994) article in a book chapter and briefly mentions “alexithymia or low levels of emotion awareness” (p. 13).



Preece et al. (2023a) conclude that their results “support the specifications of the *process model of emotion regulation* (Gross, 2015a) and *attention-appraisal model of alexithymia* (Preece et al., 2017), and highlight that at least some of the emotion regulation difficulties associated with alexithymia can be attributed to deficits at the selection phase of emotion regulation” (p. 237, original italics). Yet their results also support the original (affect deficit) model of alexithymia and Taylor’s (1994; Taylor et al., 1997) proposal that the association of alexithymia with several medical and psychiatric disorders involves deficiencies in emotion regulation. Preece et al. (2023a) briefly mention some earlier studies investigating relations between alexithymia and emotion regulation strategies and refer to a review by Luminet and Zamariola (2018) who reported that the findings from most correlational studies “support the view that HA [i.e., individual’s with high alexithymia] report poorer emotion regulation abilities, suggesting that they tend more towards suppression, and less towards reappraisal, in comparison with LA [i.e., low alexithymia individuals]” (p. 59). Laloyaux et al. (2015) found that DDF was the facet of alexithymia that is most related to the use of a suppression strategy to regulate emotions. However, though Gross (2015a) briefly refers to early work on attachment styles in managing anxiety, Preece and colleagues have not yet linked the attention-appraisal model of alexithymia with the role of attachment in affect development and affect regulation.

### 13. Alexithymia and attachment

Although Gross (2015a) acknowledged the initial reliance of infants on caregivers for emotion regulation, as Diaz and Eisenberg (2015) point out, he gave little attention to the impact of different parenting styles, and how the patterns of interaction influence the quality of attachment between children and their caregivers. In contrast, in their outline of affect development almost two decades earlier, Taylor et al. (1997) report that “Research studies on attachment styles in infancy and childhood have confirmed that the sensitivity and responsiveness of the primary caregiver to the child’s emotional states is a major determinant of the way the child learns to regulate distressing affects and to relate to other people” (p. 19). Indeed, it is initially the primary caregiver (usually the mother) who pays attention to and appraises the infant’s emotional states and makes an intervention aimed at alleviating the infant’s distress. Infants and children who experience optimal and consistent responsiveness become securely attached and gradually acquire self-regulatory capacities as well as confidence that they can turn to an attachment figure to help them contain and modulate intense emotional states. Deficient caregiving leads to insecure patterns of attachment—avoidant attachment or anxious attachment—depending on whether the child has consistently experienced maternal insensitivity and rejection, or unpredictability of maternal responsiveness.<sup>9</sup> The patterns of attachment to caregivers are internalized in early childhood and form representational models (“internal working models”) which facilitate the development of self-

regulatory capacities and enable the child to predict behavior and select the strategy that will best preserve a connection with their primary caregivers; these internal working models appear to remain relatively stable from adolescence and onward across adult life (Waters et al., 2000). According to Taylor et al. (1997), “studies of adolescents and adults have found that those with secure attachment styles report low levels of negative affect... Individuals with insecure styles of attachment were found to experience less positive affect than those with secure attachments, and also manifested deficits in the ability to self-regulate anxiety, depression, and other negative affects” (p. 21). It is not surprising, therefore, that some authors give attachment a central role in affect regulation (e.g., Cassidy, 1994; Fonagy et al., 2002; Mikulincer et al., 2003; Schore & Schore, 2008). Diaz and Eisenberg (2015) opine that “attachment history, in addition to parenting, likely provides the foundation for individual differences in multiple phases of Gross’s emotion regulation process” (p. 42).

Perhaps prompted by Diaz and Eisenberg’s (2015) comments, Gross has recently collaborated with some colleagues (Lavi et al., 2019) and given more attention to attachment relationships between children and their parents and especially to the influence of child maltreatment on emotion reactivity and regulation. In a meta-analysis of 58 studies involving children up to age 18, Lavi et al. (2019) found that maltreated children, in comparison with non-maltreated children, experience high levels of negative emotions, low levels of positive emotions, and display emotion dysregulation, including higher levels of aggressive behaviors.

When Taylor et al. (1997; Taylor, 2000) linked the original model of alexithymia with the broader field of emotion theory and research, they adopted the view that emotion regulation is not simply a private ‘homeostatic’ process involving modulatory interactions among the three domains of emotion response systems (the neurophysiological, motor- and behavioral-expressive, and cognitive-experiential domains), but also *interpersonal regulation* provided by an individual’s interactions within attachment relationships and other social relationships (Cassidy, 1994; Dodge & Garber, 1991). Because of their difficulty identifying and describing emotional feelings, alexithymic individuals communicate emotional distress very poorly to other people, and thereby fail to enlist others as sources of aid or comfort (Dunn & Brown, 1991). The deficiency in interpersonal emotion regulation is obviously influenced by insecure attachment styles. McLaughlin et al. (2020) conclude that social support, especially caregiver support during childhood and adolescence, is an important transdiagnostic protective factor against the emergence of psychopathology following stressors.

Over the years, researchers have conducted numerous empirical studies exploring relations between alexithymia and attachment styles; these studies are reviewed by Schimmenti and Caretti (2018). As noted by Taylor et al. (2014), most of the studies used self-report scales to assess attachment styles and the TAS-20 to measure alexithymia. And although most studies were conducted with university student samples, some investigations were conducted with clinical samples including alcoholic inpatients (De Rick & Vanheule, 2006), young men with mood symptoms (Troisi et al., 2001), and female adolescents with borderline personality disorders (Deborde et al., 2012). In all of these studies, alexithymia was associated with insecure attachment styles. We are aware of three studies that used the Adult Attachment Interview (AAI), which addresses an adult person’s reports and memories

<sup>9</sup> A secondary disorganized pattern of attachment is occasionally also present and is thought to result from the activation of competing needs to approach and avoid the caregiver (who is the source of the child’s fear) (Fonagy, 2001).

regarding early attachment experiences with parents. Although the AAI is usually scored categorically, it may also be scored dimensionally with the AAI Q-sort or with State of Mind scales. In a sample of patients with systemic lupus erythematosus, those classified with the AAI as secure had significantly lower TAS-20 total scores and DDF scores than patients classified as insecure or unresolved (Barbasio & Granieri, 2013). And in a study with a sample comprised of patients with spasmodic torticollis and healthy adults, the TAS-20 total score and the EOT factor scale score correlated negatively with the AAI Q-sort dimensional score for secure attachment representations, and positively with the dimensional scores for dismissing and deactivating attachment representations (Scheidt et al., 1999). In a study with a sample of pregnant women, alexithymia negatively predicted coherence of mind, which reflects an individual's overall functioning insofar as it is related to attachment (Taylor et al., 2014).

There is evidence that different stages in Gross's extended process model (and likely also in the sequential attention-appraisal model of alexithymia) may be influenced by personality traits. For example, studies have found that individuals high on neuroticism frequently suppress their emotions and rarely reappraise; individuals high on extraversion commonly reappraise and rarely suppress (Barańczuk, 2019; Hughes et al., 2020). These findings are consistent with evidence from other studies which found that secure attachment styles are related negatively to neuroticism and positively to extraversion (Nofhle & Shaver, 2006). And whereas Preece et al. (2017) consider DIF and DDF the main driving factors in the appraisal stage of their alexithymia model, in a review of several studies, Luminet et al. (2021) report that DDF and EOT were the significant factors associated with cognitive reappraisals.

Finally, recognizing that anxiety and depression have a *signal function*, Gratz and Tull (2022) argue that "a singular emphasis on the modification or modulation of emotions [decreasing negative emotions and increasing positive emotions] obscures the fact that emotions serve important and necessary functions" (p. 461). In their view, a most clinically useful "conceptualization of emotion regulation would emphasize adaptive responses to emotions that facilitate their functional use as information to guide behavior" (p. 460). Taylor et al. (1997) acknowledged that an individual's willingness to experience emotions and capacity to use them as signals plays an important role in emotion regulation, and therefore included items on the TAS-20 (e.g., EOT item #19, '*I find examination of my feelings useful in solving personal problems*') and the TSIA (e.g., EOT item #23, '*Do you learn much about yourself on the basis of your feelings?*') for assessing this capacity (Bagby et al., 1994a; Bagby et al., 2006). There is evidence that the TAS-20 and its factor scales all correlate negatively with a measure of the affective orientation construct, which is defined as "the degree to which individuals are aware of and use affect cues to guide communication" (Booth-Butterfield & Booth-Butterfield, 1990, p. 451). People who score low on this construct "seem to weigh logic and facts more heavily than affects in guiding their behavior" (Taylor et al., 1997, p. 61).

#### 14. Alexithymia and trauma

Following his observations of alexithymic features in many Holocaust survivors and other posttraumatic states, Krystal (1978, 1988b) proposed that major trauma

during adolescence or adulthood triggers a regression of affect such that the ability to verbalize emotional feelings is impaired and emotions are experienced primarily in the body, often as somatic symptoms. He proposed also that overwhelming traumatic experiences in infancy or early childhood, in particular consistent failure of parents to respond adequately to states of high emotional distress in their child, can result in an arrest in affect development and in developing a capacity to self-regulate emotions. The multiple code theory of emotion processing developed by cognitive scientist Wilma Bucci (1997) can be considered an updated version of Krystal's proposal. According to Bucci, during early normal development emotion schemas develop initially as patterns of sensory, visceral, and kinesthetic sensation and motor activity that are experienced during states of emotional arousal (i.e., subsymbolic processes) that are linked with images, such as the object or person associated with the emotion (i.e. symbolic imagery); verbal symbols (words) are incorporated into the schemas as the child acquires language. The subsymbolic and symbolic components are connected to varying degrees by a 'referential process' such that the meanings represented in the nonverbal modes can be translated into logically organised speech (Taylor et al., 2016). Bucci proposes that if the referential process fails to develop adequately or is disrupted by trauma, the symbolic and subsymbolic components within the emotion schemas become dissociated, thereby affecting the regulation of emotions and the meanings individuals give to their emotions.

Over the years, numerous empirical investigations have supported Krystal's (1988b) clinical observations of associations between alexithymia and various disorders, including substance use and post-traumatic stress disorders. Schimmenti and Caretti (2018) provide a comprehensive review of relations between attachment, trauma, and alexithymia. Since this review was published, two meta-analytic studies have provided further empirical support for Krystal's view that childhood trauma is a risk factor for alexithymia in adult life. Khan and Jaffee (2022) reviewed 88 studies and found that "higher levels of maltreatment in childhood or adolescence were associated with higher levels of alexithymia," (p. 963), which was measured mainly in adulthood with the TAS-20 or the TAS. Although all subtypes of maltreatment were associated with alexithymia, the effect sizes were larger for childhood experiences of emotional abuse ( $r = .21$ ), emotional neglect ( $r = .24$ ) or physical neglect ( $r = .23$ ) than for physical ( $r = .11$ ) or sexual abuse ( $r = .14$ ). A subsequent meta-analytic study by Ditzer et al. (2023) (which included Gross as a co-author) reviewed relevant papers published between 1996 and 2021 and obtained effect size estimates from 99 different samples. Similar to Khan and Jaffee's (2022) findings, child maltreatment was positively related to overall adult alexithymia (measured with the TAS-20 in 97% of the studies, with the BVAQ in 3%). The strongest predictors were emotional abuse ( $r = .18$ ), emotional neglect ( $r = .21$ ), and physical neglect ( $r = .18$ ).

Although the findings from these two meta-analytic reviews cannot be used to make causal inferences, it is noteworthy that like Krystal and other advocates of the original model of alexithymia, Ditzer and her coauthors (2023) conclude that treatment of alexithymia should include interventions that address adverse childhood experiences.

## 15. Is alexithymia a risk factor for psychopathology?

Preece et al. (2023b) recently wrote that “[alexithymia] is widely regarded as an important transdiagnostic risk factor for a range of psychopathologies” (p. 493). We align more with the opinion they expressed in an earlier paper, *viz*, that “available evidence *suggests* that alexithymia *might be* a key transdiagnostic risk factor for a range of emotion-based psychopathologies and poor well-being” (Preece et al., 2020c, p. 2, italics added). One reason for our being less definitive is that the bar is set high for defining a neural or psychological impairment as transdiagnostic (Barch, 2020). Another reason is that most of the studies reporting associations between alexithymia and various forms of psychopathology or different medical illnesses employ self-report measures of alexithymia. We share a concern expressed by Lumley (2000) more than two decades ago that the list of disorders of what self-report alexithymia scales are associated with “seems to be ever expanding, and... includes about every imaginable pathological or undesirable condition” (p. 53). Lumley considered this state of affairs problematic, “for when a measure predicts so many things, it may mean that the construct is, indeed, a very general risk factor, but it could mean that the measure taps a general response disposition or bias” (p. 53).

Although there is no universally accepted definition of a transdiagnostic risk factor, some authors propose that for a process to be considered transdiagnostic there must be evidence that it is not only present across a range of different disorders (and to a higher level when compared to healthy controls), but also that it causally contributes to the development and/or maintenance of these disorders (Cludius et al., 2020; Harvey et al., 2004). Numerous studies have found high levels of alexithymia across a range of different disorders (including substance use disorders, eating disorders, panic disorder, posttraumatic stress disorder, and functional gastrointestinal disorders), compared to lower levels in control groups or community samples, thus meeting the first requirement for defining a transdiagnostic risk factor. However, because most of the studies are cross-sectional and correlational, no causal inferences can be drawn. Despite Taylor et al.’s (1991) emphasis more than three decades ago on the need to conduct prospective, longitudinal studies to determine the direction of causal relationships, there have been very few such studies examining the influence of alexithymia on physical and mental health; consequently, there is currently insufficient evidence to meet the second requirement.

In a review of epidemiological studies published before August 2011, Kojima (2012) found only seven studies that had examined the developmental risks of alexithymia for health problems in nonclinical populations, and 38 studies that had explored the prognostic value of alexithymia among clinical populations (p.1). Three of the nonclinical studies (two of which were based on the same data collected from a large general population) found that baseline alexithymia demonstrated a statistically significant adverse risk for subsequent health problems; three studies found no association, and one study reported that alexithymia had a beneficial effect on health. In the studies with clinical populations, 18 studies reported adverse effects of alexithymia on clinical outcomes, five studies demonstrated beneficial effects, and 15 studies reported no significant associations. Kojima (2012) also identified several limitations with most

studies including in the design, methodology, small sample sizes, or lack of control groups.

An opportunity for shifting from distinct categorical diagnoses toward a transdiagnostic approach that cuts across traditional diagnostic boundaries was provided more than a quarter century ago when Taylor et al. (1997) proposed that it could be both theoretically and clinically useful to conceptualize the disorders with which alexithymia is most strongly associated as disorders of affect (i.e., emotion) regulation, due to deficits in the cognitive processing and regulation of emotions. They cautioned, however, that alexithymia should be thought of as “one of several possible risk factors for a variety of medical and psychiatric disorders” (Taylor et al., 1997, p. 1). Research in different fields over the past two decades has identified several important transdiagnostic factors and mechanisms associated with vulnerability to psychiatric or somatic illnesses across the life span, including childhood trauma, insecure attachment styles, heightened emotional reactivity, and emotion dysregulation (Goodwin & Stein, 2004; Hogg et al., 2023; Lippard & Nemeroff, 2020; Maunder & Hunter, 2008; McLaughlin et al., 2020; Sheppes et al., 2011; Weissman et al., 2019); although these factors are associated with alexithymia, how they interact with each other, and the mediating roles they may have, are not well or fully understood (Dalgleish et al., 2020; Gökdağ et al., 2023). And of course, genetic and biological factors (including accelerated biological aging related to exposure to threatening early-life environments), as well as the regulatory and supportive aspects of social relationships, are among the complex, multiple, and interactive factors involved in health and in the development and/or maintenance of medical and psychiatric illnesses. Based on a review of the literature on alexithymia and physical illness, Porcelli and Taylor (2018) concluded that “The accumulated findings from the empirical investigations indicate that alexithymia may be one of multiple risk factors for physical illness, a modulating factor of severity, a consequence of chronic illness, a cofactor of illness behavior, or a combination of several of these factors” (p. 119).

One type of investigation needed to identify interactions among risk factors is illustrated by a recent longitudinal study that explored the relationship between alexithymia, general psychological distress, and PTSD (at a disorder and symptom level) across a period of 3-4 years (Putica et al., 2024). The investigators analyzed data collected from 1871 members of the Australian Defense Force immediately prior to deployment to the Middle East Area of Operations, directly after deployment, and at 3-4 years post-deployment. General psychological distress (assessed with the Kessler psychological distress scale) was not a moderator of the relationship between alexithymia and PTSD severity at any of the time points; however, psychological distress was found to be a partial mediator of total PTSD severity and hyperarousal symptomatology, and also fully mediated re-experiencing and avoidance symptomatology at all three time points. The results of this study suggest that “alexithymia is a predisposing factor that increases one’s vulnerability to total PTSD severity and to re-experiencing, avoidance, and hyperarousal symptomatology during periods of increased psychological distress, irrespective of temporal proximity to trauma exposure” (Putica et al., 2024, p. 242).

The advocates of the attention-appraisal model appear to believe that the DIF, DDF, and EOT components of the alexithymia construct function as parallel risk factors for psychopathology and should



therefore similarly predict psychopathology symptoms. In a recent non-peered reviewed yet widely distributed paper, Preece and Gross (2024)<sup>10</sup> report two studies in which they compared the correlations between the EOT subscales of the PAQ and the TAS-20 and various scales that separately assess a range of clinical symptoms; they also ran regression analyses to determine which of the two EOT subscales is the stronger predictor. In the first study, utilizing data collected from a community sample in the United States (data which had been used previously in several earlier studies by Preece and colleagues), the PAQ EOT subscale was significantly positively correlated with the depression, anxiety, and stress subscales of the DASS-21, whereas the TAS-20 EOT scale was not significantly correlated with these three subscales. The EOT subscales differed also in the regression models; whereas the PAQ EOT subscale score was a significant unique positive predictor of depression, anxiety, and stress, the TAS-20 EOT score was a significant predictor of stress only, but in the negative direction (i.e. opposite to the investigator's conceptualization of EOT as a risk factor).

Preece and Gross's (2024) second study was with a sample of Australian university students ( $N= 595$ ) of whom 39.2% reported they had been formally diagnosed with a mental disorder in their lifetime. The participants completed the PAQ, TAS-20, DASS-21, and several self-report scales that separately assessed somatic symptoms, alcohol use problems, PTSD symptoms, eating disorder symptoms, dissociation symptoms, and obsessive-compulsive disorder (OCD) symptoms. Both EOT subscales correlated significantly and positively with all symptom categories, except between the TAS-20 EOT subscale and the scales assessing somatic symptoms and alcohol use problems. In the regression models PAQ EOT was a significant unique predictor of all symptom categories; the TAS-20 EOT was a significant unique positive predictor only for depression, anxiety, dissociation, and OCD symptoms.

The assumption that EOT, like DIF and DDF, should predict psychopathology symptoms is influenced by Preece & Gross's (2023) opinion that EOT is exclusively about "difficulty focussing attention on emotions" (p. 4). Yet individuals suffering from anxiety or depressive disorders are typically intensely focused on their negative emotions, rather than inattentive to them. Moreover, Preece and Gross's (2023) view is not consistent with the original conceptualization of the alexithymia construct in which DIF and DDF correspond to impaired affect awareness and EOT is an element of *pensée opératoire* (Nemiah et al., 1976; Taylor et al., 2023). Research studies guided by the original conceptual framework have yielded evidence that EOT is less associated with psychopathology compared with DIF and DDF. For example, in studies that examined associations between alexithymia and negative affects in community and university student samples, the EOT factor scale of the TAS-20 was found to be more weakly associated with proneness to negative affects—*anxiety, depression, and vulnerability to stress (facets of neuroticism)*—than were the DIF and DDF factor scales (Bagby et al., 1994b; Taylor & Bagby, 2013b). Thus, Preece and Gross's (2024) report of weak (or lack of) significant correlations between the TAS-20 EOT subscale score and the depression, anxiety, and stress subscales of the DASS-21 is not surprising given that these subscales measure symptoms like the

traits represented by facets of the neuroticism domain in the five-factor model of personality. For instance, the DASS-21 depression subscale has been found to correlate strongly with the neuroticism subscale of the Big Five Inventory ( $r = .51, p < .001$ ) (Clarke & Kiroopoulos, 2021).

Although high levels of alexithymia are usually found in samples of patients with eating disorders, and also in samples of individuals exhibiting subclinical disordered eating, Morie and Ridout (2018) reported that TAS-20 or TAS-26 scores are typically elevated on the DIF and DDF factor scales but not on the EOT factor scale. The DIF component has the strongest association with substance use (Kun et al., 2023), and, as we mentioned in an earlier section, DIF has a stronger association with somatization than do DDF and EOT (Mattila et al., 2008).

In other research, Lumley et al. (2005) found that compared with DIF and DDF, EOT is more strongly negatively associated with the 'Understanding of emotions' and 'Managing emotions' subscales of the performance-based Mayer-Salovey-Caruso Emotional Intelligence Test (MSCEIT; Mayer et al., 2002). The Understanding emotions subscale assesses "the ability to understand emotional information, to understand how emotions combine and progress through relationship transitions, and to appreciate such emotional meanings." The Managing emotions subscale assesses "the ability to be open to feelings, and to modulate them in oneself and others to promote personal understanding and growth" (Mayer et al., 2002, p. 7). Another study assessed individual differences in affective theory of mind with the Reading the Mind in the Eyes Test (RMET; Baron-Cohen & Wheelwright, 2001), which is a performance-based measure of mentalizing skill (theory of mind [TOM]) (Demers & Koven, 2015), although some authors caution that it may measure emotion recognition rather than TOM ability (Oakley et al., 2016; Pisani et al., 2021). The TAS-20 EOT score was a significantly better predictor of performance on the RMET than either the DIF score or the DDF score after controlling for empathy and verbal ability, which by themselves predicted accuracy on the RMET score. In an earlier study examining associations between alexithymia and the ability to detect and rate the intensity of facial expressions of emotion, the EOT factor scale of the TAS-20 was significantly and inversely related to the ability to detect each of six different emotional expressions, whereas DIF and DDF factor scales were not significantly related except for a small negative relation between DDF and the expression of sadness (Prkachin, 2009). The findings from these studies with performance-based measures are clearly consistent with our view that EOT is more complex than simply a lack of attention to emotions.

Another important consideration is evidence that the measurement of alexithymia, particularly EOT, may be influenced by the cultural context (Ryder et al., 2018). For example, Dere et al., (2012) found higher levels of EOT in Chinese-Canadian students than in Euro-Canadian students but no statistically significant group differences were found for DIF and DDF; EOT was predicted by adherence to Euro-American cultural values in both groups.

## 16. Treatment issues

Beyond the conceptual and measurement differences between the original model and the attention-appraisal model of the alexithymia construct,

<sup>10</sup> David Preece also presented the data from these two studies in a keynote lecture at the ARIA workshop in Louvain-la-Neuve, Belgium on May 3, 2024.

there are several similarities but also some important differences in the approach to the treatment of patients who have high levels of alexithymia. As Swiller (1988) reported several decades ago, it is unusual for alexithymic patients to seek treatment of their own volition; they may be persuaded to see a therapist by a spouse or romantic partner who complains of a lack of closeness and paucity of emotional expressiveness in the relationship. Occasionally, these patients are referred by a physician because treatment of somatic or psychological symptoms is not progressing in the way expected.

Both models of alexithymia recommend psychoeducational or cognitive-behavioral strategies to enhance the patient's awareness of emotions and ability to identify and use words to describe feelings, an approach that was first recommended by Krystal (1979) and is described by Ogrodniczuk et al. (2018). A basic assumption is that patients with high levels of alexithymia have either failed to develop adequate mental representations of emotions or the 'referential connections' within and between the elements of emotion schemas have been disrupted by trauma; consequently, symbolic imagery and words are dissociated from the physiological component of emotions (Bucci, 2008) and mentalization and reflective function (the capacity to reflect on one's own thinking and feelings, and those of others) are impaired (Fonagy et al., 2002). By directing patients' attention to the somatic and behavioral expressions of emotion, teaching them to differentiate and label different emotions, and "to recognize their emotions as signals to themselves that are *self-limited in duration and intensity*" (Krystal, 1979, p. 26, original italics), this therapeutic approach aims to integrate the perceptually-bound emotional experience (a world of sensations and actions) with the conceptual affective representational level (a world of feelings and thoughts) so that affects can be used as information for thinking about emotion-evoking situations, and for guiding behavior and communicating aspects of one's inner world (Taylor et al., 1997).

However, as we indicated in a recent article (Taylor et al., 2023), clinicians should be cautious about a treatment approach that focuses primarily on increasing patients' attention to and appraisal of emotions. First, in contrast to Preece et al. (2017), but following Krystal's (1979) advice (reiterated by Ogrodniczuk et al., 2018), we believe that an important task of the therapist is to help the patient develop a capacity to tolerate affects. Krystal and several other psychotherapists (e.g., Aisenstein, 2022; Barth, 1998; McDougall, 1982) have cautioned that the release of emotions can be overwhelming for some patients, and that therapists should not ignore the possibility that keeping emotions out of awareness has an important adaptive function. Indeed, as Sheppes et al. (2011; Sheppes, 2020) demonstrated, when the intensity of negative emotion is high, it is preferable and adaptive for individuals to employ attentional disengagement/distraction rather than reappraisal. This applies especially to patients who have experienced emotional trauma and developed an insecure attachment style. For these patients, the development of a trusting and secure relationship with the therapist is essential, though this may take a long period of time before traumatic emotions can begin to enter the therapeutic space and be gradually identified and discussed.

A second important difference between the two treatment approaches relates to the absence of an IMP component in the attention-appraisal model and the reconceptualization of EOT. If the general goal of

improving emotion regulation is common to the two models, we believe it is insufficient for therapists to focus solely on the difficulties alexithymic patients have attending to and appraising their emotions; additional strategies are needed to help patients link affects with images, to use their imagination, and to develop interests and discover their own creative potential. After all, from a developmental perspective, imagery of the senses is formed before words and continues afterwards (Bucci, 1997). Guided by developmental psychobiology and direct observations of the role of transitional objects and related activities in the development of imagination and creativity, Krystal (1988a) indicated that in working with alexithymic patients, he was concerned with "the patient's ability to hum, to dream, to daydream, to play, and to enjoy humor" (p. 486). Winnicott (1971) stated that "*where playing is not possible then the work done by the therapist is directed towards bringing the patient from a state of not being able to play into a state of being able to play*" (p. 38, original italics). Using Winnicott's idea, Wolff (1977) suggested that "one could define the alexithymic patient as a patient who has lost the ability to play so that it becomes the therapist's task to help him regain his playfulness" (p. 63). Recall that Taylor et al. (2018) suggested that alexithymia would likely be associated negatively with the PLAY system that Panksepp (1998, 2004) considered one of the basic primary-process subcortical emotion systems that are the source of human affects.

Preece and Gross (2024) assert incorrectly that we recommend a "primary focus on daydreaming, fantasy activity, and dream interpretation" (p. 23). In fact, we indicated that "Rather than continually focusing the patient's attention on emotions, the therapist's approach is to comment repeatedly on the patient's communicative style and lack of dream recall" (Taylor et al., 2023, p. 302) (i.e., in addition to strategies to enhance the patient's emotional awareness and capacity for tolerating affects, we address their operative thinking style and impoverished imagination). This is consistent with Ruesch's (1948, 1961) approach; even before the concepts of *pensée opératoire* and alexithymia were introduced, Ruesch (1961) reported that "Development of fantasy in psychosomatic patients is undertaken by training the patient to become aware of his dreams and by promoting daydreams and preparations for future action. Once fantasy develops, it is usually accompanied by disappearance of symptoms" (p. 243).

As we illustrated with a clinical vignette (Taylor et al., 2023), when one of our female alexithymic patients for the first time reported a dream (which she found quite disturbing), the therapist's approach was *not to interpret* the dream; rather, he used the patient's associations to the dream to teach her how her mind was able to create the dream by linking together sparse perceptions from some of her recent daytime experiences. As the patient gradually learned that dreams are like plays, the dialogue in the sessions became more playful, she began to recall more dreams, and only then did the therapist interpret that the dreams referred to the patient's creativity that had previously lain dormant. This was followed by the emergence of interests in the patient that generated positive emotions and remission of her longstanding persistent depressive disorder (Taylor et al., 2023, pp. 302-303). This outcome was consistent with Taylor's (1994) observation that Tomkins (1962) and Izard and Koback's (1991) models of emotion regulation suggest that "the minimization of negative emotions involves *feedback mechanisms* whereby interests and imaginal activity (i.e. aspects of openness to experience) help maintain and enhance positive emotions; these, in turn,

motivate further interests and imaginal activity, which help strengthen emotional bonds with others [that enhance interpersonal emotion regulation” (p. 70).<sup>11</sup>

In another clinical example, Taylor (2012) described the successful treatment of an alexithymic, anhedonic male patient by using Krystal’s (1979) techniques to increase his awareness of, and ability to tolerate, feelings, as well as strategies to increase the patient’s imaginative capacity and to foster interests. When this patient was eventually able to report two dreams, Taylor *did not interpret them* to the patient but privately recognized that they reflected the patient’s positive feelings about the therapy.

Given that alexithymia is a dimensional construct, individuals manifest variation in degrees of impairment. Therefore, as Lane (2020) suggests, treatment should be personalized according to each patient’s level of alexithymia and their specific deficits. Ogrodniczuk et al. (2018) similarly emphasize that “Clinical flexibility is particularly important... because interventions will likely need to be introduced and modulated according to the patient’s emotional tolerance and cognitive abilities. Therapists must be attentive to patient’s defenses as well as deficits, and to any history of childhood trauma. Clinically, our approach is to assess these patients with a clinical interview (which can be scored with the M-BIQ), followed by a battery of tests including the TAS-20, a measure of emotional intelligence, the NEO PI-R, and when possible the TSIA or a performance-based measure. For patients with low levels of alexithymia, targeting their difficulties in identifying and verbalizing feelings is sometimes sufficient. For those patients with higher levels of alexithymia, we recommend the therapeutic strategies we have just described that address all four components that comprise the original model of the alexithymia construct. There is some empirical evidence that interventions that incorporate multicomponent strategies can lower the level of alexithymia and, to a certain extent, reduce somatic and psychological symptoms or favorably affect clinical outcomes, for example, in patients with various psychiatric disorders (Grabe et al., 2008), and patients with symptoms of PTSD and a history of childhood abuse (Zorzella et al., 2020), coronary heart disease (Beresnevaite, 2000), or cancer-related pain (Tulipani et al. 2010). A multicomponent approach can be provided in individual and/or group therapy sessions and may include different techniques aimed at increasing the patient’s awareness of emotion-related bodily sensations (e.g., relaxation training, biofeedback, and hypnosis), art therapy, role playing and nonverbal communication, writing down and sharing fantasies and dreams with other group members, listening to music while in a relaxed state, and keeping dream reports. There is also evidence from a study with a female student sample that TAS-20 scores can be significantly reduced by a hypnotic imagery condition, without targeting a decrease in anxiety or depression (Gay et al., 2008). Olsson (2018) has demonstrated that access to the inner life of alexithymic patients with narcissistic or borderline personalities can be accomplished in psychodynamically-informed psychodrama group therapy.

By ignoring the *pensée opératoire* component of alexithymia, Preece et al. (2017) fail to consider that

<sup>11</sup> Perhaps Gross (2015b) could incorporate this feedback treatment model into the cybernetic/control systems perspective on emotion regulation which he discusses in his reply to the commentaries on his extended process model.

patients with high levels of alexithymia are generally experienced by their therapists as dull, boring, and frustrating (Krystal, 1979; Sifneos et al., 1977; Taylor, 1977, 1984) to the point that they might be unsettling for therapists “whose own self-esteem is closely tied to their ability to communicate with other human beings” (Swiller, 1988, p. 53). A patient’s monotonous communications about external events, and the absence of emotional interactions, may threaten the therapist’s ability to remain empathically attuned to the patient. The emotional response evoked in the therapist by these patients may sometimes represent primitive affects and fantasies that have been split off by the patient and projected into the therapist (Taylor, 1977). In a trial of group psychotherapy for complicated grief, Ogrodniczuk et al. (2005) found that alexithymia (particularly, the DDF and EOT facets) was associated with negative reactions in the therapists, which in turn were associated with a less favorable outcome. The therapists’ negative reactions were influenced by low expression of positive emotions by the patients (Ogrodniczuk et al., 2008). In a recent study with psychiatric outpatients receiving psychotherapy, Porcelli et al. (2024) found that the emotional responses of therapists were associated with the number of human movement responses (M) the patients gave to the performance-based Rorschach test, which was administered prior to the onset of treatment. In particular, the therapists’ reactions to patients who gave fewer M responses to the test were characterized by emotional disengagement and in-session feelings of distraction, emotional withdrawal, annoyance, and boredom.

As we noted earlier, M responses are an indicator of higher-level cognitive functioning and creative thinking, imagination, and empathy for other people. An important component of treatment, therefore, may be to manage the therapist’s negative emotional responses by fostering imagery in the patient and linking imagination with affects. Citing the experimental studies of Holmes et al. (2008), Tatham (2011) notes that “imagery [can have] a more powerful impact on emotion than thoughts and words” (p.1103). And although we usually think of images as visual representations, Tatham reminds us that they are also often in other sensory modalities.

Although the therapeutic strategies we have described have proven useful to clinicians treating high alexithymia patients individually or in groups, evaluation of the extent to which alexithymia can be reduced and thereby improve treatment outcomes for various disorders requires longitudinal studies with large samples and using multiple measures of alexithymia and other variables (Pinna et al., 2020).

## 17. Conclusions

There are clearly important differences between the original conceptualization of the alexithymia construct and the more recently proposed attention-appraisal model. Although the original model was derived from observations of patients in clinical contexts, the validity of this model (with its four salient components) has been subsequently strongly supported by an extensive and very large accumulation of findings from nearly four decades of empirical research with diverse samples and using both measurement-based and experimental methods. In contrast, the attention-appraisal model, which excludes the IMP component and redefines the EOT and to a lesser extent the DIF components, is theoretically derived from Gross’s (2015a) extended process model of emotion regulation and is supported primarily by findings from studies using factor analytic



and other correlational-based methods using self-report measures and community and college student samples. The limitations of this model include the absence of clinical observations and reports of treatment, a dearth of empirical studies with clinical populations, a single instrument to measure the model (the self-report PAQ), and the use of only self-report scales to evaluate relations between alexithymia and imagination, and between the attention appraisal model and other constructs.

The development and validation of instruments that use different methods for assessing alexithymia have created opportunities for multi-method, multi-measure approaches for conducting empirical research and clinical assessments based on the original model. Studies using the various instruments have collectively yielded support for retaining IMP as a component of the construct; and advances in the theoretical understanding of relations between imagination and emotion, as well as some initial neuroscientific studies of imagination, support our view that an impoverished capacity for imagination in high alexithymia individuals involves more than a paucity or absence of fantasy activity and is an important, if not integral part of the alexithymia construct.

We appreciate that models, theories, and constructs in the fields of social, behavioral, and medical sciences progress and evolve, and that the alexithymia construct is no different. There are some interesting aspects of the attention-appraisal model, but we believe that any modifications and alterations to scientific constructs must be based on an accumulation of solid empirical evidence. Such evidence should emerge from independent researchers using diverse methods and/or a complete, careful, and objective review of the existing scientific literature. The accumulated evidence for the attention-appraisal model, in our view, has not reached the necessary threshold such that it replaces the original model.

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