**Pictorial Databases for the Assessment of Affective Flexibility: A Systematic Review**

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The present paper attempted to analyze the existing task-based measures of affective flexibility and to provide a strong database for further development and validation of culturally relevant task-based measures of affective flexibility. The Articles in which affective tasks were developed are included in this review. Only those articles which had been transcribed in English and published in peer-reviewed journals from the year 1995-to 2021, with a sample of youth (15-35 years) were included. Key terms were effective flexibility, emotional flexibility, assessment of affective flexibility, and measures of affective flexibility. A systematic search of multiple computerized databases including Science Direct, Pub Med, Google scholar, and Psyc INFO was accomplished to find out the relevant articles. Both keyword search and citation search was performed for the current review. A total of 116 relevant articles were initially evaluated, 101 of them were excluded due to not meeting the inclusion criteria, and finally, 15 articles were retained. Analysis revealed that utilization, psychometric properties, and measurement accuracy were higher for several databases. Most of the studies have used standardized picture databases as stimulus material using a switching paradigm predominately. Correlation and t-tests were predominately performed for statistical analyses of the data. Strengths, limitations, and implications of the databases for affective flexibility had also been discussed.

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1. **Introduction**

Researchers have been adopting various methods to investigate affective flexibility in laboratory (such as through task-based measures) or in everyday settings (e.g. using self-report measures). These affective flexibility measures may range from video clips, sounds, words, static pictures to simple paper or pencil measures. Whereas, finding an applicable visual database relevant to a specific research question is an even bigger task to handle (Dan-Glauser & Scherer, 2011; Sharma & Bhushan, 2019). As for selecting a relevant database for a specific task, a researcher usually selects one of the two different options: either to generate a culturally relevant database for one's study (a tedious task in itself) or to use any viable database made available by the previous studies. No matter what procedure does one adopts, the collected database has to go through the test of several considerations before being initiated into research for possibly generating the most appropriate, suitable, and reliable findings (Dan-Glauser & Scherer, 2011). The current review is an effort at providing detailed information to researchers about the existing pictorial databases/ measure of affective flexibility.

Affective flexibility (AF) is the flexible involvement and/or non-involvement in emotionally significant sets of events or information (Kraft, Rademacher, Eckart, & Fiebach, 2020). It is the internal state of individual that what and how one thinks and feels regarding
different and competing emotionally charged environmental stimuli. AF is more closely related to cognitive flexibility, (Zhu & Bonanno, 2017) and for a couple of decades, it has been explored through instructed shifts of emotionally charged materials and/or tasks, using experimental paradigms (Genet & Siemer, 2011; Kraft et al., 2020).

When the researchers intend to study affect within a context (i.e. cognitive, behavioral or social context), one of the most important prerequisites for them is the selection of suitable and appropriate stimuli for the induction of a specific affective reaction or emotional state, this stimulus set is called “emotionally charged material” (Gerrards-Hesse, Spies, & Hesse, 1994; Horvat, 2017). Such materials are available in different modalities such as auditory, visual and lexical and have been commonly used to elicit emotion related concepts in behavioral and neuro-physiological studies regarding both clinical and non-clinical populations (Marchewka & Nowicka, 2007; Tang & Posner, 2009).

Despite the availability of multiple modalities for research on affect, the current review presents an assessment only of the pictorial databases based on either dimensional or discrete categories. These databases are selected for review because of their vast utility, easy administration and allocation to participants, and capacity to be edited and recorded (Schaaff & Schultz, 2009). In pictorial databases, complex and meaningful images and/or faces are presented (Lang, Bradley, & Cuthbert, 1997). Moreover, evidences also suggest that even several sets of pictorial databases or parts of different sets can also be used simultaneously to handle specific research questions and design in a single research (Balsamo, Carlucci, Padulo, Perfetti, & Fairfield, 2020).

Emotions have long been discussed in terms of discrete/ categorical and dimensional theories. If emotions are conceptualized in discrete states, they can be explained as diverse sets of physiological, experiential and behavioral factors and can ascribe some specific labels for emotional feelings (such as sadness, happiness, surprise, anger etc.). Whereas, the dimensional viewpoints state that emotional conditions are structured by multiple factors such as approach–avoidance, arousal and/or valance and should be explained in terms of a biphasic manner (Feldman Barrett & Russell, 1998; Watson, Wiese, Vaidya, & Tellegen, 1999).

The basic objective of the current review paper is to systematically discover and synthesize the existing literature on affective flexibility so as to facilitate contemporary researchers to select an appropriate database relevant to particular research question and population. However, in the presence of vast literature on the topic, the current review is selective and confined only to the following research questions. The Research Questions are (1) How do emotion-evocative picture stimuli measure affective flexibility of adults? (2) What should be the most used and appropriate response system (dimensional or discrete) for affective picture stimuli?

The current systematic review follows the PRISMA reporting guidelines by Moher et al. (2015) PRISMA stands for “Preferred Reported Items for Systematic Reviews and Meta-analysis. It is basically a check list and the essential points of a systematic review and meta-analysis are checked against it. It consists on PRISMA Flow Chart/diagram and PRISMA Protocols/checklist. Flow chart/diagram is used for describing the screening process of materials for any systematic review (see figure 1) and explains the transparency of selection process by making all the steps obvious. Whereas PRISMA checklist helps authors to keep on track and improve the reporting of a systematic review or meta-analysis. The PRISMA 2020 statement has replaced the 2009 statement and includes new reporting guidance (Page et al., 2021).

The method section of the current review presents the methodology of the systematic review according to the standardized guidelines such as literature search, study selection, data extraction and synthesis. However, the result section presents the outcomes; which include sample characteristics, stimulus material and theoretical ground of the included studies. Moreover, picture quality and accessibility of the picture data set is also discussed.

3. Method
3.1 Protocol and Registration
For the current systematic review, protocols were not registered
3.2 Search Strategy
In the light of the Preferred Reporting Items for Systematic Review and Meta-Analysis (PRISMA) guidelines by Moher et al. (2015), a search of multiple computerized data bases including PubMed, PsycINFO, Science Direct and Google scholar was performed between July to September 2021 to identify the relevant articles. Both key word search and citation search were performed for the current review. Key terms were affective flexibility, emotional flexibility, assessment of affective flexibility and measures of affective flexibility. Resulting studies were screened out and only peer reviewed articles, published from 1995 to 2021 were included in the current review. After that we again scrutinized the studies on the basis of inclusion criteria.

3.3 Study Selection
Followed by the PRISMA guidelines, studies were se selected by both of the researchers independently. First of all relevant searches were conducted to identify background literature on the topic, search terms and inclusion criteria for the researches were also identified at this stage. After fulfilling initial parameters, the literature was searched based on key terms and initially just titles and abstracts were reviewed. Full text articles were obtained for the studies which passed from the initial screening. Finally relevant literature was assessed for its quality, theoretical grounds, implications and findings. At every stage of the study selection, synthesis and inclusion of the study in the current review, the agreement of both of the researchers was obtained. In the final stage all the extracted literature was tried to sum up in a nutshell.

3.4 Inclusion Criteria
Articles which included affective flexibility task development based on pictorial dataset, with a sample of youth (15-35 years), written in English language and published in peer reviewed journals from year 1995-2021 were included in the present review, as mentioned in Table I.

3.5 Selection Process
Both of the authors independently reviewed each article to scrutinize whether it meets the inclusion criteria or not. Parameters for selection of the articles are described in Table I. However, articles were manually selected and none of the automatic device was used for the selection of articles.

3.6 Data Extraction and Synthesis
The following information was sought out from the extracted studies: aim(s) and objectives, design, population, measures included, procedure and findings. Researches based on qualitative research design and non-empirical theoretical work also excluded because they are out of scope from the current review.

<table>
<thead>
<tr>
<th>Criteria</th>
<th>Included Articles</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type of articles</td>
<td>Peer-reviewed papers only</td>
</tr>
<tr>
<td>Date published</td>
<td>Between 1995 and 2021</td>
</tr>
<tr>
<td>Assessment Procedure</td>
<td>task development of Affective Flexibility</td>
</tr>
<tr>
<td>Participants’ age</td>
<td>18-35 years</td>
</tr>
<tr>
<td>Language</td>
<td>English</td>
</tr>
<tr>
<td>Study type</td>
<td>Empirical and Quantitative</td>
</tr>
<tr>
<td>Stimulus material</td>
<td>Databases which used only static pictures as their stimulus material were included in the review</td>
</tr>
<tr>
<td>Important parameters</td>
<td>Focused on the assessment procedures and current databases of affective flexibility</td>
</tr>
</tbody>
</table>

4. Results
4.1 Study Characteristics
After the rigorous procedure mentioned in the method section and summarized in Figure 1, total 15 studies were selected for the current review. The major characteristics of the studies included in the current review are summarized in Table II. Most of the studies included in the review were performed in the current decade. All the included studies had developed the
picture database for the assessment of affective flexibility. Rating of the picture databases by the included studies was done through Self-Assessment Manikins (SAM). Only 3 of the included studies used paper and pencil version of SAM rating, while all the other studies used computer-based SAM ratings of the picture.

4.2 Sample Characteristics
As summarized in Table II, Studies in the current review included participants from the late adolescents and early adulthood group because of the exclusion of studies from the review where participants belonged to below or above that specific age. In all studies, student population is used because of suitability of the sample and easy accessibility for the task performance. Moreover, student population can be motivated to produce genuine responses through giving course credit and such type of other rewards. Total number of participants reported in all of the fifteen studies mentioned in Table 2, is N=4225. As for as the study wise minimum and maximum sample size is concerned, Dan-Glauser and Scherer (2011) generated The Geneva affective picture database (GAPED) with minimum sample size n=60, whereas (Weierich, Kleshchova, Rieder, Reilly, & Vazire, 2019) developed The Complex Affective Scene Set (COMPASS) on n=847 students which is the maximum sample size for a task based study.

4.3 Theoretical Grounds and Response Systems
Szymanska et al. (2015) developed The Besançon Affective Picture Set-Adult (BAPS-Adult) based on attachment theory and adopted both dimensional and discrete approaches to elicit responses from the participants. The reappraisal theory of emotions had provided the basic ground for Dan-Glauser and Scherer (2011) who developed a database named as The Geneva affective picture database (GAPED). On the other hand, Balsamo et al. (2020) provided validation of the existing databases and is independent of any theoretical ground.

As Mauss and Robinson (2009) states that several available evidences supports the notion that emotional flexibility measures reflect dimensional states rather than discrete one. Studies reported in the current review by Goodman, Katz, and Dretsch (2016); Kurdi, Lozano, and Banaji (2017); Marchewka, Żurawski, Jednoróg, and Grabowska (2014); Rahman and Reza (2017) go in line with the above findings and purely based on dimensional rating of emotions. Though Moyal, Henik, and Anholt (2018) provided their database named as Categorized Affective Pictures Database (CAP-D) and attempted to generate categorization of the pictorial data sets developed by Marchewka et al. (2014) and Dan-Glauser and Scherer (2011) named as The Nencki Affective System (NAPS) and (GAPED) respectively, yet original dimensional approach for the rating of these data bases is more suitable and wildly used approach. However, Mikels et al. (2005); Moyal et al. (2018) and Sharma and Bhushan (2019) used discrete categorization of emotions as their response systems. Whereas, Kim et al. (2018) and Weierich et al. (2019) developed Image Stimuli for Emotion Elicitation (ISEE) and The Complex Affective Scene Set (COMPASS) respectively and adopted both dimensional and discrete approaches as their response systems.

4.4 Picture Quality
Several studies have approved the point that the picture quality (such as size, complexity and luminance) has impact on the processing of affective pictorial stimuli (Bradley & Lang, 2007). Keeping this in view, high quality photographs with standard size and luminance were developed by Marchewka et al. (2014) in their data base named as (NAPS) rather than any other database reported in the current review.

4.5 Accessibility
Data bases of Marchewka et al. (2014) & Kurdi et al. (2017) labeled as (NAPS) and (OASIS) respectively are freely assessable to professionals and students for non-commercial research purposes. Whereas the database presented by Goodman et al. (2016) named as Military affective Picture System (MAPS) is assessable only for the studies on military professionals. Indian and Malaysian data bases by Sharma and Bhushan (2019) and Rahman and Reza (2017) respectively, are also available and can be taken according to cultural relevance.
Figure 1: PRISMA Flow Chart

Identification
Records identified through data bases, n= 116 on the basis of key words

Screening
Records after duplicate removal n =106
n=82 screened out record
Records after filtering non-empirical studies n=4
Neuro-physiological studies n=12
Studies published before 1995 n=7
Self-report measure=1
Articles published in non-English language n=2

Eligibility
Full articles assessed for eligibility n=80
Sample age n=12
Mere cultural adaptation n=41
Clinical population n=4
Thesis n=2
Materials other than picture stimuli n=6
Total excluded articles n=65

Included
n=15 articles were included in final review

Note: Electronic searches identified 116 articles based on keyword search. Articles were screened out on several parameters and only 80 papers were securitized. Full text n=80 articles were obtained and only 15 articles meet the eligibility criteria of the current review.

Table 1: Summary of Main Characteristics of Included Studies Sorted from the latest to Oldest

<table>
<thead>
<tr>
<th>Author</th>
<th>Aim and objective</th>
<th>Population</th>
<th>Measures</th>
<th>Procedure</th>
<th>Findings</th>
</tr>
</thead>
</table>
| Balsamo et al. (2020) | To validate existing sets of affective stimuli             | N= 199 young adults (166 females) mean age =21.28 years SD = 4.47; range: 19–27 | Self-report Measures: *The Culture Fair Intelligence Test (CFIT)*  
*State Trait Inventory of Cognitive and Somatic Anxiety* (STICSA) for mood  
*The "Trait Depression Inventory" (TDI)*  
*The short "Big Five Questionnaire"*  
Task: Images were selected from IAPS, NAPS and GAPED (180, 180 and 168 respectively) | Participants were divided into three groups and each group performed on the same task on three different sets of affective stimuli named as IAPS, NAPS and GAPED | The study provided validation for the existing databases independent for any discrete or dimensional category. |
<table>
<thead>
<tr>
<th>Author(s)</th>
<th>Year</th>
<th>Aim</th>
<th>Methodology</th>
<th>Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kraft et al. (2020)</td>
<td>To find out flexible shifting on affective material, a new paradigm combining cognitive and affective flexibility was developed</td>
<td>N=100 (ranging from 18–35 years)</td>
<td>- Cognitive flexibility task  - Affective Task  - Neutral task  - Feed-back based flexibility Tasks  - Total 120 pictures of persons, (60 males and 60 females) were used as stimulus set, pictures were drawn from FACES and were used twice resulting in 240 pictures.</td>
<td>Each experimental paradigm and all of the respondents have to go through each situation. All the paradigms were presented in a counterbalanced order. It was concluded that cue dependent flexibility and response time switch costs was associated with one another, on the other hand, feedback-based flexibility was to be less related with other types.</td>
</tr>
<tr>
<td>Sharma and Bhusan (2019)</td>
<td>To develop a culturally relevant stimuli for emotion recognition and affective flexibility</td>
<td>N = 350 undergraduates</td>
<td>140 colored pictures (captured from different angels with the same background) Colored pictures of 6 basic and a neutral emotion were developed. To make the expression heterogeneous but culturally relevant, four expressers (with equal representation of both genders) from the same culture were taken with average age of 25 years.</td>
<td>Due to the inclusion of pictures from multiple angels and maintenance of strict criteria, the current database can be utilized in affect relevant studies, particularly in the Indian cultural context.</td>
</tr>
<tr>
<td>Szymanska et al. (2015)</td>
<td>To create a new set of visual stimuli for attachment related emotions based on attachment theory</td>
<td>N = 315 participants with mean of 20.9 ± 3 years</td>
<td>Total two hundred and seventy six pictures were collected through free online databases, whereas only four of them were taken from IAPS</td>
<td>To cover up the chances of cognitive overload and to make the rating procedure brief, the overall database was equally distributed into three sets with each type of pictures (comfort, neutral, distress and complicity).</td>
</tr>
<tr>
<td>Weierich et al. (2019)</td>
<td>To add on pictures related to visual complexity and to incorporate social content among affect categories, a new dataset is required</td>
<td>N = 847 students mean age 20</td>
<td>Non-copyrighted images on the internet and photographs taken by lab member (images having complex scene with multiple focal points are selected and having single objects are excluded), and total 300 pictures were included in the final set</td>
<td>The Besançon Affective Picture Set-Adult (BAPS-Adult) is a new stimulus set, allowing participants to select from a vast collection of attachment based pictures.</td>
</tr>
<tr>
<td>Kim et al. (2018)</td>
<td>To upgrade previous approaches of stimulus selection and validation and to develop a new systematic picture database</td>
<td>N = 179 with the age range of 18-30, while mean age was 19 years and SD= 1.7 years</td>
<td>10896 images were initially selected through image crawling method</td>
<td>Research participants evaluated the entire pictures with three points 1. Dimensional scale ratings 2. Selecting the categories of emotions and 3. The personal liking and disliking for each presented picture.</td>
</tr>
<tr>
<td>Moyal et al. (2018)</td>
<td>Aimed to generate a pictorial database that categories affective pictures on discrete levels of emotions</td>
<td>N = 15 Psychologists (as experts for pre-test phase) with the mean age of 30 ± 4.35 years N=204</td>
<td>Pretest and Experiment 1a: 1513 pictures were selected from pre-test phase with each group of participants with one week interval. During each session almost 85 pictures were presented in a random order. Sessions were executed in a counterbalanced order.</td>
<td>In Image Stimuli for Emotion Elicitation (ISSE), images were selected using a computing method rather than experimenters to reduce the selection bias. Moreover due to the establishment of retest reliability, images can be used especially in longitudinal studies. The strengths of ISSE were the use of computer based approaches for the selection of pictures and for rating as well. Moreover, retest reliability also provide strong statistical grounds for the database.</td>
</tr>
<tr>
<td>Rahman and Reza (2017)</td>
<td>To develop a new set of affective picture stimulus material with Malaysian population</td>
<td>N=72 adults This research used cross-sectional design, random and purposive sampling technique</td>
<td>Total 186 pictures (83pictures from IAPS 83 pictures selected from internet) Rating of affective image was done through the paper and pencil version of Self-Assessment Manikin based on dominance, valance and arousal</td>
<td>Picture set was presented to each participant in a random order and they have to rate each picture on all the three scales of dominance, valance and arousal. Findings documented that the study provided an additional database among Malaysian population. The results also highlighted that the SAM is capable for rating the affective pictures with Malaysian population.</td>
</tr>
<tr>
<td>Study</td>
<td>Objective</td>
<td>Sample</td>
<td>Methods</td>
<td>Results</td>
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<tr>
<td>Kurdi et al. (2017)</td>
<td>To develop an easily accessible, online data set for affective research with corresponding normative affective rating.</td>
<td>N=822 Based on Circumplex model of emotion</td>
<td>Different online sources were consulted to generate total 900 pictures which were included in this study. Ratings were done on the basis of valance and arousal.</td>
<td>Both of the sets of instructions and rating dimensions were randomly distributed to the participants.</td>
</tr>
<tr>
<td>Goodman et al. (2016)</td>
<td>To fulfill the strong demand of emotional material for military population, a new set of military related images using males and females military and civilian participants was developed</td>
<td>N=201 military and n= 176 civilians, and a separate sample on n= 176 were recruited N= 553</td>
<td>240 pictures reflecting common military related images.</td>
<td>To develop 240 images gender based normative rating was collected from American army officials and civilian population.</td>
</tr>
<tr>
<td>Marchewka et al. (2014)</td>
<td>To generate an affective stimulus set with accurate physical properties of each picture</td>
<td>N=204 Average age of participants was 23.9 ± 3.4 years</td>
<td>The stimulus set contains the pictures taken from coauthors and from newspapers. Initially five thousand pictures were obtained and finally 1356 were selected</td>
<td>The dimensions of approach-avoidance, valance and arousal were used to rate the pictures on a computerized scale. Physical qualities of the pictures were also reported on the basis of entropy, luminance and contrast.</td>
</tr>
<tr>
<td>Malooly, Genet, and Siemer (2013)</td>
<td>To develop a data base which find out individual differences in the successful reappraisal of emotions related to negative pictures and in affective flexibility</td>
<td>N=165 ethnically diverse sample with the age range of 17-25</td>
<td>Baseline mood, fatigue and confusion or anxiety were checked through ratings on 1-5 scales. The Big Five Inventory Emotion-regulation follow-up questions, Affective flexibility Cognitive flexibility</td>
<td>Participants have to categorize affective pictures on the basis of cues. Combination of pictures was changed according to the random sequences. The cognitive task required that the participants have to switch between affective and non-affective models regardless of the initial categorization.</td>
</tr>
<tr>
<td>Dan-Gauser and Scherer (2011)</td>
<td>To develop a new set of emotional database (particularly in negative emotional categories) in the field of affective research</td>
<td>N=60 Average age of participants was 24 years (SD = 5.9)</td>
<td>Negative Emotions: Pictures of spiders, snakes, focusing on Human right violation and animal mistreatment were selected from existing database Neutral images; Buildings and furniture Positive images; Human and animal babies Nature and landscapes Total 6 categories and almost 100 pictures for each category</td>
<td>Pictures were presented in a semi randomized order to each of the 5 groups containing 12 participants. They have to rate each picture for 1 rating scale of valance, 2 for arousal and 2 for acceptance of norms on 0-100 points rating scales.</td>
</tr>
<tr>
<td>Mikels et al. (2005)</td>
<td>To generate categorical and descriptive ratings of the data set developed by International Affective Picture System (IAPS).</td>
<td>Sample for pilot: n=20 (with equal number of female and male participants) mean age=19.55 Study 1: n=60 students average age = 18.7 years with equal proportion of male and female students Study 2: n=60 mean age=18.8</td>
<td>Pictures were selected from IAPS. Total number of pictures showing positive and negative valance was 187 and 203 respectively</td>
<td>First of all pilot study was conducted to determine the overall category of emotions then subsets of images depicting positive and negative valance were selected respectively to generate a valid category label.</td>
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</table>
5. Discussion

The ability to react in a situation specific affective style and to change the emotional reaction according to the situational demands is called affective flexibility (Beshai, Prentice, & Huang, 2018). The construct of affective flexibility has been studied mostly with experimental paradigms using affective and/or neutral stimulus material (Genet & Siemer, 2011; Kraft et al., 2020; Malooly et al., 2013). Due to the extensive available researches relevant to the research questions of the current review, we discriminately searched for the literature which may be potentially the part of this review. To limit the scope of the review, studies involving children, adolescents, older adults and clinical population were excluded from the current review. Moreover, we focused only on internal emotional states and affect related traits such as neuroticism, emotional expressiveness and extraversion were not included in the review (Bonanno & Burton, 2013; Rusting, 1998). Moreover, only empirical studies were our focus of interest published in a specific time frame from 1995-2021. Finally, we focused only on task-based measures of affective flexibility which developed and used pictorial datasets only.

Lang et al. (1997) are the pioneers to develop and normalized a set of standardized images. In the preceding years their dataset is considered as the hallmark in experimental researches regarding multiple research questions. After their emotional relevant databases many researchers have done tedious work on emotions and emotional relevant databases. By closely examining all the studies in this review, we find that though all measures are tailored for the assessment of the same construct, several studies are difference in their approach, theoretical grounds, response format and implications. The variations of multiple measures of emotion have the following significant reason. First, the concept of emotion is a very vast construct which is difficult to capture with only a single measure. So keeping this in view, in the current review (Balsamo et al., 2020; Dan-Glauser & Scherer, 2011; Kraft et al., 2020; Malooly et al., 2013) paired picture stimuli for affective flexibility with the tasks to measure cognitive functioning, personality measures and other self-report outcome measures. Riegel et al. (2016) provides discrete picture based data on affective material so their database is used in the studies where discrete categorical approach of emotions is to be considered. However, they also compare discrete and dimensional approach on emotional picture sets which provides more accuracy in terms of findings and applications. In short, it can be said if the more the affective flexibility measures are tailored for particular research questions, the more valid and reliable findings they will generate (Riegel et al., 2016).

There are certain self-report measures which assesses the construct of affective flexibility such as self-report by Fu, Chow, Li, and Cong (2018) on affective flexibility is valid in this sense that it is related to currently experienced emotions. Generally speaking, self-report measures are easily administered and comprehensive measures of affective flexibility. But there are certain limitations to administer self-report measures for such type of constructs (such as ignorance of one’s own affective state and inability to explain slight changes in affect due to situational variations and failure to report brief emotional states). Due to these limitations, either task based measures or the combination of both self-report and task based measures are more suitable choices for affective flexibility.

While talking about task based measures of affective flexibility, emotions have been discussed in terms of discrete/ categorical and dimensional theories. The Dimensional viewpoints state that emotional conditions are structured by multiple factors such as approach–avoidance, arousal, dominance and/or valance (Feldman Barrett & Russell, 1998; Watson et al., 1999). On the other hand, theories of discrete emotions explain each emotion in terms of physiological, experiential and behavioral factors. Psychologists have argued that emotional categories such as happiness, disgust and anger and many others emerged from the dimensional elements of emotions along with the cognitive understanding of the self and others (Harmon-Jones, Harmon-Jones, & Summerell, 2017). Emotional dimensions explain...
emotions as a global feature shared by others whereas discrete/ categorical aspects of emotions enables us to understand the varieties of dimensional emotional categories (Lench, Flores, & Bench, 2011; Panksepp, 2004). In the current systematic review, we scrutinized both dimensional as well as discrete viewpoints.

There is a disagreement among the researchers about the ratings of affective flexibility and even on the assessment of those ratings. For example some historical but currently functioning viewpoints report that there is an inverse relationship between negative and positive emotions (Watson et al., 1999). On the other hand, some researchers claim that both of these types of emotions have no relationship with each other (Feldman Barrett & Russell, 1998). While some researcher concluded that the relationship of avoidance and approach is similar to that of the positive and negative emotional states, respectively (Watson et al., 1999). Generally speaking, current review highlighted that the different task based measures of affective flexibility used diverse ratings of emotion according to the design of the study and nature of the research question(s). By reviewing all the fifteen articles, we have concluded that dimensional framework is predominately used approach in most of the studies; the reason might be that it explains affect in more diverse and understandable domains rather than mere categorization of emotional pictures into different labels. Whereas, some other studies mentioned in the current review have combined both of the discrete and dimensional perspectives which are in line with Keltner and Haidt (1999) and Smith and Ellsworth (1985) who stated that dimensional and discrete perspectives can be possibly reconciled to a certain degree and explains that every discrete emotion displays a blend of multiple dimensions. On the other hand, few of them have opted discrete emotional categories as their theoretical background and response format. To sum up, we can claim that affect can be explained in terms of dimensions (valence, approach – avoidance, arousal, dominance and motivational direction) or they may also be described as categories (sadness, happiness, disgust etc). Both of the perspectives are merely theoretical assumptions that may ultimately be inadequate. The most important thing regarding both of the perspectives is that which perspective generates most sound scientific evidence and this will determine the worth of each of the perspective.

6. Conclusion
The review described and explained different existing ways of assessing affective flexibility in an informative and organized manner. We concluded that measures of affective flexibility predominately grouped on dimensional (e.g. arousal and valance etc) approach rather than categorical one (e.g. disgust, anger, sadness, fear etc). Moreover, almost all of the measures of affective flexibility are tailor made according to their research question (s), methodology, and other related factors of affective flexibility (executive functioning, cognitive control and personality factors etc). So there is no hard and fast rule to measure affective flexibility and other related constructs. This means that there is no “thing” that measure affect, rather that affect can be measured by multiple, individually variable processes according to the specific research question(s).

Due to the theoretical nature of the paper, the limitations are only confined to some methodological aspects. We have to exclude some methodologically relevant studies due to not meeting the inclusion criteria such as participants’ age, study design or publication year etc. One of the major criticisms on any systematic review is the publication bias (Torgerson, 2006). Usually the studies with statistically significant results are published and while doing systematic review, such studies with highly significant results are available to be included in the review. Furthermore, some specific key words and/or some comprehensive questions may restrict the scope of any systematic review. Despite this limitation, we specified key words and form some precise questions because both key words and specific research questions are the important features of systematic review (Hannes, Claes, & Group, 2007). Moreover, the current review is limited only to the pictorial data bases of affective flexibility however the subsequent researches can work on auditory, visual or lexical databases. The studies which used children and elderly sample may also be explored in the future.

Disclosure and Conflicts of Interest
None of the authors have received any financial support for the current work. Moreover, there is no conflict of interest that may affect the current review in any way.
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