

7.0 DISCUSSION

We intended to develop an instrument to measure music receptivity, field test it and assess its psychometric properties and as a culmination of which, we developed a 20-item questionnaire having four domains (emotional experience, interest, attention, hurdles) and a shorter 12-item version of the same. Even though the five-factor model which we postulated in our conceptual model did not emerge, we suggest that some of the components are not psychometrically integrated, but conceptually integrated, and therefore should be analyzed and separately interpreted. We excluded items 3 and 18 (items assessing hurdles) from the instrument and propose to add them as part of the set of instructions to ensure that confounders do not exist. We expected that lyrical appraisal would come up as a separate domain of music receptivity, indicative of the report of Besson et al. (1998) saying listeners independently process lyrics and tunes. However, lyrical appraisal cannot be viewed as a watertight compartment as it dynamically interacts with emotional experience along with other factors and cumulatively contributes to the music receptivity score. Also looking at the wordings of the items measuring lyrical appraisal, two of the items emphasize, feeling/emotional aspects, e.g., – ‘did not like the lyrics’, ‘lyrics of the music moved me/touched my heart’, and hence the domain of lyrical appraisal got submerged into the emotional experience domain. Lyrical appraisal did not come out as a standalone domain, partly due to the overlap of the two domains. However, we strongly propose that lyrical appraisal must form an independent domain as it is important to measure it separately, especially in clinical settings where music is administered as therapy. The following study supports our contention where it was shown that happy music induced a higher degree of positive valance in ‘without lyrics’ condition contrasted against ‘with lyrics’ condition, and this study also clearly distinguished between experience of music with and without lyrics (Brattico et al., 2011a). Therefore, it reinforces the idea that all the external and internal cues associated with a piece of music are precursors to activation of various mental representations and once they occur, corresponding emotions are experienced.

The two-factor solution was a reduced item version, and it yielded the two most important meta-components of music receptivity, i.e., affect and attention. The affect domain included interest and emotional experience, whereas attention remained as a separate factor. We could also observe discriminant validity between musicians and

non-musicians, where the musicians had significantly higher music receptivity scores compared to non-musicians. The musicians had lower variance in the music receptivity score compared to the non-musicians. As far as the reproducibility of the results or the structure of the construct music receptivity is concerned, we expect it to be reproducible across different setups, as evident through our combined analysis of all the three sample sets yielding a similar factor structure. The well brought out domains are attention, interest, emotional experience, and hurdles, whereas lyrical appraisal merged into the domain of emotional experience. Considering the potential clinical applications of this tool, some of the items have been retained in the tool even though their removal would have given a high factor loading in factor analysis. For example, items 10 and 16 which are quite relevant in traumatic or clinical conditions. The first item of the music receptivity scale appraises the nature and intensity of subjective feelings and emotions evoked in an individual while listening to a given piece of music. This is something similar to the Geneva Emotional Music Scales (GEMS), which has 45 items depicting various emotions that can be induced through music, and it has also been grouped into nine categories of emotion groups (Zentner et al., 2008). The first item of the music receptivity scale has a similar structure, however instead of using GEMS, we used labels of commonly experienced emotions in music listening, and also added a few other components like surrender, seeking mercy, etc. assuming that they would be more culturally relevant in an Indian context. The revised version of this scale, Geneva Music-Induced Affect Checklist (GEMIAC), in which extra dimensions were added, had similar disparity. In this tool, intensity and frequency of affective response are presented (Coutinho and Scherer, 2017).

The concept of music receptivity may have far-reaching implications in relation to the various existing theories in music psychology, education, research, and clinical practices. Music receptivity scale may indicate intrinsic and extrinsic motivation. It may also possibly predict musical engagement. To further evaluate the predictive validity of the music receptivity scale, we could possibly study the personality dimensions associated with music receptivity. A study investigating who should study music, found a correlation with musical outcome and Holland's personality concept of vocational personality and environments (Cevik et al., 2013). Another study based on Savanna-IQ interaction hypothesis reported that intelligence is related with preference for instrumental music over vocal music, and also associated with reflective, intense,

and sophisticated types of music, which gives an insight that higher order appraisal requires higher cognitive functions (Račevska and Tadinac, 2019). Some musical abilities appear to be deeply ingrained, perhaps due to evolutionary adaptation. Infants were found to be sensitive towards many features of sound like pitch and timing that are uniformly found in adults with many years of musical exposure, and also across different cultures (Trehub, 2003). These deeper level musical preferences appear to be hard-wired in the human system. In a study, it was shown that music listening triggers dopamine related reward circuits in the brain associated with pleasure and survival instincts. Some areas involved in this process are hippocampus (generates attachment related emotions), limbic, paralimbic nuclei, visual and auditory systems (Koelsch, 2014). Aesthetic aspects of music have been argued to be of some evolutionary value, and also beyond it. Higher music receptivity might give better advantage of sexual selection of mates, which is also supported by the fact that musical appreciation reaches its zenith in youth when courtship is active (Brattico et al., 2011b). Modulation and appraisal of emotions while listening to music and the way different experiences are felt, have been an important focus of many studies. Prior attempts were made to develop scales to measure attitude towards music (Solomon and Edwards, 1971). Also, other similar constructs like Musical Sophistication Index, and Brief Music in Mood Regulation Scale (B-MMR) emphasizes the importance of emotions. Musical Sophistication Index measures musical skills, abilities, and behaviour, such as active engagement, perceptual abilities, musical training, singing abilities, and emotion (Degraeve and Dedonder, 2019). Brief Music in Mood Regulation Scale (B-MMR) attempts to measure seven different music-related mood regulation strategies (Saarikallio, 2008).

Experiencing higher order mind-body experiences such as physiological chills and thrills, feeling moved, and aesthetic awe, is a complex phenomenon (Konečni, 2011). There are many perspectives presented in the scientific literature. In a study, participants listened to their preferred choice of music, and later they were assessed using Tellegen Absorption Scale and Phenomenology of Consciousness Inventory, they showed two types of deep absorptions – zoning-in and tuning-in and showed the interacting role of cognitive and affective systems (Vroegh, 2019). Similarly, the embodied cognition in music was suggested to have two levels, the surface level where bodily movements that gets activated through psychomotor movements, and

the deep level of embodied cognition that integrates other perceptual properties of music, and synergistically pave the path to experience various higher order musical experiences. This feature was hinted as an important factor in distinguishing different levels of musicianship and their brain plasticity (Korsakova-Kreyn, 2018). This intricate phenomenon can be understood using the spreading activation theory. According to this theory, deeper experiences in music listening can be brought about by forming relevant mental representations and suitably activating it at a later time. These mental representations form the musical identity of a person. These mental representations can be formed through active engagement with music and also by mere exposure, perhaps through subliminal pathways as in the case with passive listening. If some of these mental representations are activated through spreading mechanism, then higher order mind-body experiences may be induced. External environmental factors are also very important in the process of initiating suitable mental representations. The spreading activation theory explains many of the complex interrelationships between music listening, experiencing higher order emotions, and social interactions (Schubert et al., 2014).

Studying music receptivity further may help us understand theories related to experience of higher order mind-body phenomena in music psychology. For further ecological validation, we would need to carefully design and control the experimental conditions to have experience of such higher order emotions and then study using this tool. There can be many other confounders, for instance in a study it was shown that felt emotions and perceived emotions may be quite different. Sad music sometimes appears pleasant; owing to that, though sad music was perceived as sad, the actual experience felt by the participants was pleasant, and this strongly emphasizes that the mental representation through which a person feels ultimately is very important (Kawakami et al., 2013). Similar idea is echoed in another article where authors suggest a constructionist perspective of emotion induction through music listening. They argue that music does not essentially induce basic emotions, rather through modulation of core affect (valence and arousal), appropriate mental representations are activated and brings out a spectrum of musical emotions (Cespedes-Guevara and Eerola, 2018). It was also suggested that music listening may bring about mood modulation. Even though these moods may be variable and subjective, they can be linked to a specific emotion, as music listening deliberately aligns feelings to a

particular set of emotions. This implies a cumulative effect leading to experiencing higher order mind-body experiences (Goffin, 2014). Further to support this idea of embodied cognition in music, and to understand experiences like a sense of deep absorption, focus and concentration, action-awareness, distortion of time and intrinsic enjoyment of music, the idea of flow has to be assimilated, and that should be considered both as a trait and a state concept (Chirico et al., 2015).

As future scope, we can also study the relationship between music receptivity and self-esteem. In music education, musical self-concept is an important concept. One's own beliefs about their ability to perform are crucial for music learning and performance. To measure self-concept in music, in a study, three tools were used to measure musical self-efficacy beliefs, which included general musical self-efficacy, musical learning and performance (Ritchie and Williamon, 2007). In another study musical self-concept was measured and it was shown that musical self-concept uniquely correlated with students' views of their musical abilities and ambitions, their inclination towards movement and rhythm, and social dimensions of music (Petersen and Camp, 2016). In a study where effect of music with three different self-esteem values (confident, uplifting, or depressing music) was studied on implicit and explicit self-esteem, it was found that listening to empowering music can help boost self-esteem. It has been postulated that music can act as a powerful means to enhance the self through evoking empathetic feelings, social bonding, and a sense of reward. Further, a two-way interaction of environmental factors and personal factors is necessary to achieve this self enhancement (Elvers, 2016).

Hence it can be seen that the construct music receptivity has wide linkages with many other theories in music and further studies using this tool may yield insightful information in the future.

7.1 Discussion of yoga population study

This study was done on a sample of 72 students who are practitioners of yoga. Among them 60 were used for analysis after removal of missing values. In order establish convergent and divergent validities of the Music Receptivity Scale (MRS), other tools were used to assess interest in music, mind wandering, positive and negative affect, and attention.

Convergent validity is the process by which we can assess if a new tool can show positive correlation with other related tools. Similarly, divergent validity is the process by which we can assess if a new tool can show negative or no correlation with other unrelated tools.

For convergent validity of MRS, we anticipated that MRS affect domain will positively correlate with PANAS positive and Interest in music; and MRS attention domain will positively correlate with attention.

For divergent validity of MRS, we anticipated that MRS attention domain will negatively correlate with mind wandering; and MRS affect domain will negatively correlate with PANAS negative.

However, we did not see any of the expected correlations as expected in this particular sample. Upon careful observation, we could derive two reasons for this unexpected correlation: 1) the mean MRS score in this sample was 46.1, which is a below average MRS scale. Hence, the participants did not show high music receptivity score in the first place, and therefore we could not see the expected correlational trends in this sample. In order to cross examine our reasoning, we separated those participants who score relatively high score in MRS, above 65, and performed the same correlational analysis and we found that the all the expected direction of correlations were observed, however they were statistical non-significant due to a very small sub sample size of 6. Hence, we also did not report it. 2) All the instruments that were used for studying convergent and divergent validities were more of a trait instrument; however the MRS assesses a large part of state construct. Hence, this may also be a possible reason for weak correlations.

We therefore propose that for future such validity studies, we must use participants, who score high in MRS scale.