Visual perception of phrasing in a tai chi routine using different music accompaniments

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Abstract

This study looks into the visual perception of phrasing in a Tai Chi routine as affected by a change in music. The research aimed to investigate whether the quality of phrasing between music and movement is improved with a more congruent accompaniment. Sixty respondents, undergraduate music majors from two universities in Malaysia, were invited to participate in this study. They were asked to evaluate the phrasing between music and movement in videos of the same Tai Chi routine but with two different music accompaniments. It was found that there is a significant difference in the evaluation, and that the video with music composed to provide a better congruence in phrasing received a higher rating.

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1. Introduction

Phrasing is a basic feature of various subjects such as speech, music and dance, and generates expression, structure and direction. In the field of music, phrasing is formed with a combination of motifs, harmony, rhythms and so forth to construct larger units of musical sections and structure. Similarly to music, dance also has much association in terms of phrasing since it involves steps and movements which subsequently construct a particular choreographic structure. Although in a different context, some sports routines are closely related to dance since they involve music and choreography such as acrobatic movements, although artistic aspects are also taken into account.
For dance and sports routines, the visualization or live performance are often realized from the combination of movement and music. Issues of visualization between the role of music and movement have been studied extensively, particularly in the field of film (Lipscomb and Kendall 1994; Lipscomb and Tolchinsky 2005; Marshall and Cohen 1988; Boliver et al. 1994), dance (Fogelsanger and Afanador 2006; Hodgins 1992; Jordan 2011) and instrumentalists (Davidson 1993; Dahl and Friberg 2007, Vines et al. 2011). The ways in which music influences the visual perception of a subject's, or vice-versa, have been identified. Looking into sports routines, this study aimed to investigate whether a better quality of phrasing can be achieved for an intended congruence between music and movement in a Tai Chi routine. This originates from a research to investigate whether congruence between music accompaniment and movement could improve the visual perception of a routine. However, this article only discusses the perception of phrasing amongst the respondents.

1.1. Phrasing in Music and Movement

Research with paired aural and visual conditions using music stimuli that affect the perception and interpretation of the audience continue to gain attention. Despite music per se, phrasing in music relates closely to the body movements of the performers. Analyzing the physical movement of instrumentalists, research found that the movement of an instrumentalist increased together with the ratings for phrasing, dynamics, rubato and overall performances (Juchniewicz, 2008:424). It was also found that without hearing music participants can visually identify phrasing patterns from the physical movement of a performer (Wanderly and Vines 2006:183). Research from Camurri and Moeslund (2010:257) also gathered that intensity increases towards the end of a performer’s phrasing and decreases at the phrase boundary with the introduction of new material. In an experiment analyzing the physical movements of pianists, it was found that the underlying phrasing structures of all pianists were reflected in their motion profiles (MacRitchie et al. 2013). Most of these studies show that the visual aspects of the physical movements of performers reflect musical features to the audience.

As well as instrumentalists, researchers have investigated the parallels between dance and music. Important studies that show audiences’ perception of the correspondence between dance and music include Krumhansl and Schenck (1997) and Mitchel and Gallaher (2001). Hodgins (1992) in his choreomusical analysis also highlights the relationship between choreography and music, categorizing details such as rhythm, dynamics, texture, structure (figures and phrases), as an intrinsic relationship. These studies not only show that an audience can identify congruence between physical movements and music to a certain extent but also emphasize how both subjects are related. The use of music in dance closely resembles that in sports routines, which similarly involve choreography supported by a chosen music. Looking into Tai Chi as the focus of this article, its philosophy and principles can be closely associated to music in many aspects (Loo and Loo 2012, Loo and Loo 2013a, Loo and Loo 2013b). Analysis of the phrasing in sports routines from a musical perspective was investigated (Loo and Loo 2013c), which demonstrated the difference between athletes and musicians in interpreting phrase structures. Although the level of difference was not examined, a comparison in a preliminary study showed that a rhythmic gymnastics routine with a music accompaniment composed from the musician’s perspective was thought by respondents both with a musical background (Loo et al. 2013d) and with a background in dance (Loo and Loo 2014) to show more congruence in the phrasing between music and movements. These researches highlighted that synchronization between music and movements in rhythmic gymnastics can enhance the visual perception of phrasing and other aspects, although more models and different sports routines should also be investigated. For these studies, respondents were only asked to choose which routine provided a better congruence, whereas the current study aimed to identify the level of effectiveness in the music function for the routine.

2. Methods

A tai chi routine was chosen and the routine was prepared with two music accompaniments. Two videos were provided for the survey, one with the original music used by the athlete and the other with music composed to be more congruent from a musical perspective, aiming to provide a better visual perception for the routine. Sixty respondents from two universities, undergraduate students who are majoring in music, were invited to participate in this survey. The respondents were presented with the two videos and asked to fill in a questionnaire after each video.
To avoid an irrational primacy effect, thirty respondents first watched the video with the original music followed by the one with new accompaniment and the other thirty respondents did the opposite. The questionnaire used a Likert scale in which the respondents rate the level of visual perception towards the video presented. A paired sample t-test was used to analyse the data for the comparison of both videos. For this study, only the question on phrasing perception will be discussed and reported.

3. Result and Discussion

All respondents (n=60) rated the level of congruence in phrasing between music and movements in two videos of the same routine with different music using a 1-5 Likert scale. Video 1 has the original music used by the athlete while video 2 was edited with a newly-composed accompaniment. The frequency distribution of the ratings for two videos is shown in table 1, where 1 indicates poor and 5 indicates excellent. The result shows that there is a higher rating in video 2, which a total of 45% respondents rated 5 (excellent), while only 18.3% rated video 1 as 5. The difference between the perception of phrasing between the two video was analyzed using paired sample t-test (p <.05).

Table 1. The frequency distribution of the rating in video 1 and 2

<table>
<thead>
<tr>
<th>Ratings</th>
<th>Video 1 (Percentage)</th>
<th>Video 2 (Percentage)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 (poor)</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>2</td>
<td>7 (11.7)</td>
<td>2 (3.3)</td>
</tr>
<tr>
<td>3</td>
<td>16 (26.7)</td>
<td>4 (6.7)</td>
</tr>
<tr>
<td>4</td>
<td>26 (43.3)</td>
<td>27 (45.0)</td>
</tr>
<tr>
<td>5 (Excellent)</td>
<td>11 (18.3)</td>
<td>27 (45.0)</td>
</tr>
<tr>
<td>Total</td>
<td>60 (100.0)</td>
<td>60 (100.0)</td>
</tr>
</tbody>
</table>

Table 2. The difference between phrasing perception towards both videos using paired sample t-test

<table>
<thead>
<tr>
<th>Video</th>
<th>Mean</th>
<th>SD</th>
<th>t</th>
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</thead>
<tbody>
<tr>
<td>Video 1</td>
<td>3.68</td>
<td>0.91</td>
<td>-4.506</td>
<td>.000</td>
</tr>
<tr>
<td>Video 2</td>
<td>4.31</td>
<td>0.74</td>
<td></td>
<td></td>
</tr>
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</table>

Table 2 indicated that the mean score for video 2 (M = 4.31, SD = 0.747) is higher that for video 1 (M = 3.68, SD = 0.911). The analysis shows that there is a significant difference in the perception of phrasing between video 1 and video 2 (t=-4.506, p=.000). Therefore, this study shows that video 2, featuring the new music accompaniment, provides more congruence and better visual perception of phrasing between music and routine.

The higher percentage for video 2 may suggest that the enhancement of congruence between music and movement can improve the visual perception of phrasing in both subjects. The preliminary study of this research, where respondents were asked to answer the questionnaire in a simpler format towards a rhythmic gymnastics routine (by choosing video 1, 2 or ‘the same’ according to the question) also shows a positive answer for the video with new accompaniment (Loo et al. 2013). However, this study presents a more detailed rating for the level of quality in both videos. This research supports other studies which show that a ‘match’ between music and movement could be visually identified even though both subjects are temporally separated (Mitchel and Gallaher...
2001). Research from Krumhansl and Schenck (1997) also states that ‘observers are sensitive to correspondences between music and dance’.

Although experiments show that congruence between music and body movements could change or even enhance the perception of viewers, the physical aspect from the field of dance should also be taken into consideration. In Hodgins’s choreomusical analysis (1992:14), he mentioned that the perception of dancers may be that differences in phrasing as ‘units of musical measurement may seem arbitrary or irrelevant, but to the composer and instrumentalist they are immutable musical standards, age-old and completely intrinsic to the discipline’. As mentioned in Fogelsanger and Afanador’s paper (2006), there is a growing trend in John Cage and Merce Cunningham for music to be used independently and as a sonic background for dance. However, relating to the field of audio-visual as in film music, much scientific research found that music is able to influence the visual perception of a subject (Bolivar et al. 1994, Marshall and Cohen 1998; Lipscomb and Tolchinsky 2005). Therefore, taking into account both the scientific and artistic aspects, there is still much to investigate and analyze in the field of sports routines, as these involve not only physical but also artistic content.

5. Conclusion

This study showed that the visualization of phrasing perception in a sports routine could be enhanced by a more congruent music accompaniment composed from a musical perspective. While the context and principles of phrasing in many fields of expertise have their individual predilection, the visualization from the combination of the audio-visual aspects is important to present the performance of a subject such as dance, instrumental performance, animation, or (the focus in this article), sports routines. However, this research only tested respondents with a musical background and the study should be further investigated using respondents with various backgrounds.

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References


