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ARTICLE

Readdressing The Redundancy Effect: A Cognitive Strategy For E-learning Design

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ABSTRACT

This study challenges understandings on the ‘redundancy effect’ of cognitive load theory and visual/verbal classifications of dual-coding theory. Current understandings assert that a multimedia mix of narration and text displayed during e-learning leads to cognitive overload, thus, impeding learning [1,2]. Previous research suggests that for optimal learning to occur, the most effective multimedia mix for e-learning presentation is the use of graphics and narration [3-6].

The current study was undertaken with 90 undergraduate students at a British University. Participants were allocated to one of three groups. Each group used a different multimedia mix of a music e-learning program. Participants received learning material electronically, which involved either a mix of narration and text, graphics and text, or graphics and narration. Learning was measured by differences in music knowledge scores obtained before and after receiving the learning material. Results indicate that the combination of text and narration is most effective for learning, compared to combinations of graphics and text and graphics and narration. These findings challenge the currently accepted stance on the redundancy effect in e-learning design.

1. Introduction

Contemporary educational technologies make use of a range of multimedia elements including text, graphics, video and sound to present pedagogic information. However, these elements are often applied in an ad-hoc manner without considering which mix of elements will best communicate educational concepts to students. For example, e-learning platforms may use a mix of narration and text on screen or just narration without a clear rationale for using multiple or a single presentation mode. Alternatively, an emphasis may be given to inclusivity in terms of learning styles, such that the more styles that are addressed the better, without consideration of what is optimal. For instance, on some virtual learning platforms subtitles have become a standard feature that learners have to switch off rather than on. As such, while technology has made it easier and cheaper to use multiple presentation modes, educational designers and learners are not generally informed about the benefits and drawbacks

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of choosing a particular presentation mode.

Studies in e-learning and psychology have produced mixed and contradictory results about the effectiveness of using different modes to present learning content. Some research has supported cognitive load theory, which suggests that conveying excessive information can impede learning because of the limited capacity of working memory \[1-9\]. The outcome of cognitive load has been coined the redundancy effect, whereby learning is detrimentally affected by the overloading of either the visual or verbal processing channels of memory. Other research, in contrast, has suggested that learning is more effective when multiple channels are used \[10,11\].

Our research attempts to clarify and explain the inconsistencies in the literature around the use of multiple presentation modes (e.g., text, graphics, narration) in e-learning. In what follows, we show that the inconsistencies in past research may at be attributed to differences in how text is treated, as either a verbal rather than visual presentation mode. Moreover, text is a natural form of communication that is directly encodable and the visual-verbal categorization may not therefore be representative of how text is processed. We argue that text paces narrated information, and therefore, enhances learning rather than competes for limited working memory resources. It may be that there is no redundancy effect when text is involved, as will be shown by our empirical results. Our findings support and help explain the work conducted by Truman & Truman \[10\] and Toh et al \[11\], who found that e-learning interfaces that present information via text and narration simultaneously significantly increase students’ ability to recall pedagogic concepts.

In what follows, we investigate the effectiveness of three separate presentation modes on learning and information recall: ‘text-only’, ‘text-narration’ and ‘pictorial-narration’. The e-learning program MOLE (Music Oriented Learning Environment) is used as a test platform for the study. We control the effect of several variables that can interfere with the relationship between presentation modes and learning including music theory and music instrument training.

2. Background Motivation

2.1 Human Memory and Dual Coding Theory

Research about the effectiveness of media used in learning contexts is based on assumptions about the operation of human memory. There are four well-established memory processes: control, encoding, storage and retrieval. Furthermore, the modal model of memory proposed by Atkinson & Shiffrin \[12\] identified three sub-stores of memory: sensory memory, short-term memory and long-term memory. Information perceived via sensory memory can be transferred to short term memory via attentional processes, while information in short-term memory can be transferred to long-term memory through two primary conditions: rehearsal of material/information in short-term memory, and in-depth information processing \[13,14\]. Unlike the infinite capacity of long-term memory, short-term memory is limited in the information it can hold \[14\].

In addition, the model of working memory proposed by Baddeley \[15\] purports that auditory and visual processing channels are independent, allowing both visual and verbal representations of information to be held in memory. Two slave sub-systems are encompassed within working memory: the articulatory loop and the visuo-spatial sketchpad. The articulatory loop is responsible for processing and storing verbal information, whereas the visuo-spatial sketchpad is responsible for processing and storing visual information. The ‘central executive’ component of working memory co-ordinates these sub-systems and allows referential connections to be formed between visual and verbal information.

The notion of working memory relates to Paivio & Csapo’s ‘dual-coding theory’ \[16\]. This theory asserts that simultaneous multi-channel processing of linguistic information is possible whilst providing a symbolic function to non-verbal objects. This is facilitated by two cognitive representation units; imagens and logogens \[17,18\]. Imagens are concerned with processing pictorial information, whilst ‘logogens’ are responsible for processing verbal information. Educational technologies that utilise dual-modality are effective for enhancing the recall of pedagogic information as they target both the visual and verbal processing channels. This allows the brain to search along two ‘paths’ during recall, allowing maximization of an individual’s response time \[19,20\]. When translated into the context of learning, offering learning materials through the two paths of visual and verbal processing should lead to more effective learning because information recall is enhanced.

2.2 Cognitive Load Theory: Redundancy and Modality Modes

While dual coding theory suggests that using both visual and verbal presentation of learning material enhances learning, other theories of memory imply that memory processes can be overloaded, leading to reduced learning capacity. More specifically, cognitive load theory asserts that as short term memory is limited in capacity, the use of repetitive or redundant features of learning material will overload the cognitive resources of learners, i.e. the visual
or verbal processing channel identified in the dual-coding theory, culminating in a redundancy effect \cite{7,3,9}. More specifically, visual pictures and verbal narration presented simultaneously with redundant on-screen text increase cognitive load and can impede learning due to the competition of resources in working memory\cite{21,24}.

In order to avoid the redundancy effect, Clark and Mayer\cite{23} suggest that learning is most effective when pedagogic concepts are presented via visual graphics and verbal narration as opposed to a combination of graphics, narration and onscreen text\cite{3}. Clark and Mayer’s reasoning is that when graphics and words are both presented together in visual manner, the visual-processing channel becomes overused. Numerous studies corroborate this finding \cite{22,25}. In these studies, however, text is considered to be visual information processed through visual memory channels as imagens rather than logogens. Rather, as verbal information, text can be processed by logogens via a verbal-processing channel, alleviating the cognitive overload on the visual-processing channel. It is also important to note that much of the empirical research validating the redundancy principle has been based on the learning of scientific concepts and technical material\cite{26,27,24}.

### 2.3 E-learning Design and the Redundancy Effect

Studies within the area of e-learning design have applied dual-coding theory to the use of pictures and narration in learning situations owing to the distinction between visual and verbal entities\cite{4,5,6,21}. Some studies have found that a mix of pictorial and narration information is more effective for information recall\cite{22,23,3,4,5}, whilst other studies have found that a mix of text and narration is more effective\cite{28,29,10,11}. For example, Toh et al\cite{11} investigated the redundancy effect in multimedia learning via two instructional modes: redundant mode and modality mode. In ‘redundant mode’, static pictures and audio narration were presented with synchronised redundant on-screen text (verbal overload). In ‘modality mode’, only static pictures and audio were presented (no overload). Findings revealed that learners exposed to the redundancy mode achieved significantly higher comprehension scores than learners exposed to the modality mode. These findings suggest that the redundancy effect does not impede learning; rather, the use of all of pictures, audio narration, and on-screen text reduced the cognitive load, and thereby enhanced learning.

### 2.4 Challenging Visual-verbal Classifications

Research about the redundancy effect in learning assumes that text and narration are both verbal logogens. Specifically, the simultaneous reading of text whilst listening to narration are referred to as ‘verbal entities’\cite{13,30,16,18}. In contrast, graphical images relate to visual memory stores and processes. Many scholars have adopted the classifications or ‘visual’ and ‘verbal’ as literal categories in the design of e-learning. However, in the present study it is argued that the classification of text as a verbal entity and images as a visual entity is a false dichotomy. Rather, like images, the representation of text is visual, as it has a visual structure.

Furthermore, some scholars have assumed that simultaneously presenting text visually and orally can cause interference between reading and listening to the text because the speed of reading is usually faster than that of listening\cite{31,32}. However, we argue here that concurrent reading and narrated text focuses the learner’s attention on pacing through the information as opposed to skim reading and thus imparts a deeper level of learning. This view is supported by Badii & Truman\cite{29} and Truman & Truman\cite{10}, who report that processing of visual and auditory text do not interfere with each other, they are both naturally and directly encodable as forms of communication, and reinforce rather than impede on learning.

### 3. Methodology

The purpose of this research is to investigate the redundancy effect in e-learning. In particular, this study will focus upon the effectiveness of three presentation modes on pedagogic information recall: narration and text (referred to as the ‘redundancy’ mode), graphics and narration (referred to as the modality mode, i.e. visual vs verbal) and graphics and text (referred to as the mixed visual mode).

#### 3.1 Hypotheses

The following hypothesis was explored:

H1) The redundancy mode will be associated with greater information recall compared to the modality and mixed modes.

#### 3.2 Participants and Experimental Procedure

In order to test our hypothesis, an adapted version of MOLE (Music Oriented Learning Environment) was used. This software was adapted from the version used in previous studies by Badii & Truman\cite{29} and Truman & Truman\cite{10} to consist of three short interactive lessons relating to music theory fundamentals. MOLE was originally designed in accordance with the Associated Board of the Royal School of Music theory guides. The MOLE software was adapted into three different prototypes to present multimedia information in accordance with the
conditions under investigation. The prototypes used are described in Table 1.

Table 1. Experimental conditions

<table>
<thead>
<tr>
<th>Experimental Condition</th>
<th>MOLE Prototype Display</th>
</tr>
</thead>
<tbody>
<tr>
<td>Redundancy mode</td>
<td>Audio narration and on screen text</td>
</tr>
<tr>
<td>Modality mode</td>
<td>Static graphics and audio narration</td>
</tr>
<tr>
<td>Mixed mode</td>
<td>Static graphics and on screen text</td>
</tr>
</tbody>
</table>

Ninety undergraduate students at a British University (n=90) participated in the study. All participants were randomly selected and equally assigned to one of the conditions shown in Table 1. Participation took place in a computer lab which accommodated 15 participants at a time. All participants were provided with a computer running the MOLE software and a set of headphones. Learning was captured by participants’ scores on a pre-test and a post-test, administered prior to and following their session with MOLE. This was followed uniformly across all conditions.

3.3 Data Collection Protocols

In order to evaluate the actual learning imparted by the MOLE software, participants completed a paper based pre-test prior to their learning session and post-test immediately after their learning session. The pre-test also allowed for the assessment of prior knowledge of musical concepts. Participants were allocated five minutes to complete the pre-test and fifteen minutes to interact with the MOLE software. Upon completing the learning session with MOLE, participants were then given five minutes to complete the post-test. The post-test included questions from the pre-test arranged in a random order. The pre-test and post-test scores were then compared across all three conditions to ascertain the mode associated with the highest recall scores. The total participation time was twenty-five minutes.

3.4 Ethical Considerations

Participation in this study was voluntary and anonymous. Participants were assured that they could withdraw their participation at any time.

4. Results

The responses of participants for each of the 11 questions of the pre-test and the post-test were averaged, such that pre-test and post-test scores generated mean. These scores are presented in Table 2, across each of the modes separately.

Table 2. Means and standard deviations of pre-test and post-test across mode type

<table>
<thead>
<tr>
<th>Experimental Condition</th>
<th>N</th>
<th>Pre-test Score M (SD)</th>
<th>Post-Test Score M (SD)</th>
<th>Difference between pre-test and post-test scores</th>
</tr>
</thead>
<tbody>
<tr>
<td>Redundancy Mode (Narration and text)</td>
<td>30</td>
<td>4.13 (3.32)</td>
<td>9.53 (1.54)</td>
<td>5.40</td>
</tr>
<tr>
<td>Modality Mode (Static graphics and narration)</td>
<td>30</td>
<td>2.90 (3.13)</td>
<td>6.13 (2.62)</td>
<td>3.23</td>
</tr>
<tr>
<td>Mixed Mode (Static graphics and text)</td>
<td>30</td>
<td>1.93 (2.46)</td>
<td>4.70 (2.62)</td>
<td>2.77</td>
</tr>
</tbody>
</table>

As can be seen in Table 2, participants in the redundancy mode attained higher scores in the pre-test and post-test than those in modality and mixed modes. Those in the mixed mode (i.e. text and static graphics) attained the lowest scores on the pre-test and post-test out of all three conditions. The reason behind the different pre-test scores across the three conditions can be explained by individual variables in particular music training, as discussed later in detail.

A 2 (time: pre-test vs post-test) X 3 (mode type: redundancy vs modality vs mixed) repeated measures ANOVA was conducted to establish the association between test performance and interaction with the learning software. Significant main effects were observed in that participants performed significantly better in the post-test compared to the pre-test, F (1, 87) = 211.75, p = .000. This indicates that learning was imparted during the e-learning session across all modes using different combinations of text, graphics and narration.

In addition, a significant interaction effect was observed between mode type and learning performance, F (2, 87) = 9.65, p = .000. Specifically, participants who received the redundancy mode performed significantly better in the post-test, compared to participants who received the modality mode (p = .001), and participants who received the mixed mode (p = .000). The participants in the redundancy condition improved their performance on average by 5.40 points against 3.23 points in the modality condition and 2.77 points in the mixed mode condition. This indicated that the redundancy mode was the most effective multimedia mix for imparting learning.

5. Additional Analyses

Additional analyses were computed to examine the role of demographic variables, such as music training, on performance across the pre-test and post-test. A 2 (time: pre-test vs post-test) X 3 (mode type: redundancy vs modality...
Instrument training performed significantly better in the pre-test ($M = 4.82, SD = 3.07$) and post-test ($M = 7.80, SD = 2.80$), compared to individuals with no music theory training (pre-test: $M = 1.55, SD = 2.23$, post-test: $M = 5.95, SD = 3.08$), $F(1, 83) = 7.60$, $p = .007$, $\eta^2 = .12$.

Similarly, a 2 (time: pre-test vs post-test) X 3 (mode type: redundancy vs modality vs mixed) X 2 (music theory training: yes vs no) repeated measures ANOVA was conducted. A significant interaction effect between time and type: redundancy vs modality vs mixed) X 2 (music theory training: yes vs no) revealed a significant interaction effect between time and music instrument training, irrespective of the mode type they had received. Specifically, individuals with music instrument training performed significantly better in the pre-test ($M = 5.06, SD = 3.05$) and post-test ($M = 8.28, SD = 2.35$), compared to individuals with no music instrument training (pre-test: $M = 1.84, SD = 2.48$, post-test: $M = 5.96, SD = 3.12$), $F(1, 84) = 7.60$, $p = .007$, $\eta^2 = .08$. No significant differences were identified with regard to gender.

6. Discussion

With regard to our hypothesis, the results from our study demonstrate that text and concurrent narration leads to a significantly higher level of learning as opposed to graphics-text and graphics-narration modes. This finding opposes views on cognitive load theory, and in particular the ‘redundancy effect’. That is, rather than impede learning, a text-and-narration mix is significantly conducive to learning. There are a number of reasons for this occurrence. Firstly, we argue that concurrently read and narrated text focuses a learner’s attention on pacing through information rather than ‘skim-reading’ and imparting a deeper level of learning. This concept is substantiated by Moore[15], who states that “the pace of narration controls the pace of the material”. In addition, both the written and spoken word are natural forms of communication, and thus, directly encodable.

Whereas current understandings on dual-coding theory suggest that ‘text’ and ‘narration’ are both categorised as ‘verbal entities’[15], we argue that this is a false dichotomy as the representation of text is a visual display in itself. Therefore, the simultaneous presentation of text and narration of identical information within an e-learning system allows for the simultaneous multi-channel processing of linguistic information for the learner. Thus, the material is imparted along two distinct channels in the brain, increasing the learnability of the material. This approach strengthens the associations of the material being learned, and is an effective strategy for e-learning design. Our findings support those reported by Badii and Truman[29] and Truman and Truman[10], who reported that text-and-narration enhance learning performance.

Although all our participants performed better in the post-test compared to the pre-test, our results indicate that previous music theory and instrument training led to better task performance irrespective of the mode through which the material was delivered. As a result, the results indicated that the same mix of learning modes, the redundancy mode, is the most effective one for both novice and expert learners. Sweller[34] argues that information processing is likely to differ markedly between novice and expert learners because expert learners may be more readily able to process material because of its availability in long-term memory. However, our results suggest that there is no difference regarding the effectiveness of learning modes between students who have different knowledge levels. Learning modes do not need to be adjusted for novice and expert learners where information recall is concerned.

However, further research is needed to investigate how the mix of learning materials interacts with different knowledge domains and learning types, i.e. recall vs understanding. As argued by Sweller[35] instructional design should be adapted to the knowledge domain because the domain interacts with the capacity and duration of working memory. Earlier research on cognitive load theory has focused on examining learning in the domain of scientific and technical knowledge[1][2][3]. For example, Craig and his colleagues studied learning related to the process of lightning formation as a weather condition[1]. In contrast to the earlier studies pertaining to the learning of scientific concepts, our study concerned another domain of learning, theory of music. Our results are aligned with the findings of other studies that have also investigated learning in the area of music (i.e. Truman & Truman[10] Badii & Truman[29]).

More research is needed to categorise the different knowledge domains and to examine the significance of the domain in explaining the effectiveness of learning materials. Past research has shown that individual qualities influence learning. For example, it has been argued that perception defined as the type of information students like to receive is the most important dimension of learning styles[36]. Sensitive students prefer data and are methodological in their approach, while intuitive students prefer principles and theories (ibid.). Perception and other individual qualities may be linked to the effectiveness of learning modes.

The results of our research have practical implications. As discussed above, the notion of learning styles has been
criticized in the past because teaching in class rooms has not been adapted to match the diversity of learning styles displayed by learners. Based on our research, e-learning material can be easily adapted to deliver knowledge content through the different modes of narration, text, and graphics. The overall results suggest that the use of text and narration together does not impede on learning, debunking the redundancy effect, and is rather the most effective for learning.

7. Conclusion

The impact of this research is that the use of text and narration simultaneously is an effective strategy for e-learning. This challenges the widely accepted cognitive load theory, in that the representation of text is visual, and uses a visual rather than verbal information processing channel. Perhaps for this reason, the use of text and narration simultaneously does not impede on learning, and is actually conducive to learning due to the use of two rather than one learning mode. The use of text and narration together is also more effective than mixes of graphics-text and graphics-narration, perhaps due to the greater ease of encoding communication forms (i.e. text and narration). Instead, the cognitive load appears to occur where graphics are concerned. Future research may include delineating the impact of the use of graphics in learning, in combinations with other forms, as well as investigating information pacing in concurrent text and narration. This study has also raised implications for the current classifications of visual and verbal entities of dual coding theory.

References


ARTICLE

The Analysis of Effects of Semantic Comprehension upon the Anxiety Indices in People with Autism Spectrum Disorder

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ABSTRACT

Hypersensitivity to stimuli is one of main way of anxiety symptoms in people with Autism Spectrum Disorders (ASD) owing, within other factors, to deficit cognitive attribution performed on stimulating input. This research studies precisely the possible existence of relationships between the comprehensive elements of the information input and the anxiety increase in people with ASD. A total of 30 students with ASD have participated in the study, aged between 6 and 14 age years, divided into two groups, an experimental group (EG) consisting of 20 students and a control group (CG) formed by 10 other students. Study aims are to study the relationships between perception and information understanding, as well the consequent anxiety reactions in people with ASD and, finally, analyze the improvement of these data from application of a naturalistic systemic program. Results found along 3 successive measures along 12 months, performed throughout correlation analysis, ANOVA W test of 1-factor comparative measures and post-hoc analysis to age variable, allows to conclude the students who belong to EG significantly improved in aspects related to conceptual coding and in self-management of their own learning, and accordingly, they reduce anxiety level with regarding to their CG peers.

1. Introduction

Anxiety is considered as a very common symptom in children with Autism Spectrum Disorder (ASD). The description about the seeming of the anxiety processes, at present, are very varied and recurrent.

Hodgson, Freeston, Honey & Rodgers[12] show that intolerance to uncertainty and exhibition to unexpected stimuli can be one of most important causes of anxious processes for these people. However, this reaction to presence of the stimuli is due to cognitive interpretation these people make about this situations, as well as their anticipation levels. Cai, Richdale, Disanayake & Ujiarevic[5] also analyze this issue, and find related scores between emotional regulation, intolerance to uncertainty and the anxiety symptoms levels increase, concluding all key variables studied are associated among themselves in analysis of the anxiety decisive factors and depression in people with ASD.

Indeed, intolerance to uncertainty is indicated as a major element or indicator of the diagnostic process of anxiety disorders in children with ASD, which implies the trend to react negatively to unforeseen or uncertain events,
forming a transdiagnostic construct associated with a variety of anxiety disorders, including generalized anxiety disorder, social anxiety, panic and sensitivity to anxiety in general [13,27,30]. This aspect is being investigated by Neil, Olson & Pellicano [25], who report this construct is highly relevant to sensory sensitivities and anxiety in children with autism.

In this sense, Joyce, Honey, Leekam, Barret & Rodgers [14] and also Rodgers, Glod, Connolly & McConachie [29] precisely relate the anxious foci with the restricted and repetitive behaviors that constitute a specific diagnostic dimension [1], and find significant relationships between the anxiety increase and intolerance to uncertainty, caused, largely, through behavior inflexibility, concluding with a high correlation between both variables.

For this reason, the factor related to conceptual understanding of stimuli scopes an aspect of essential importance. Indeed, as they claim Black et al. [3], people with ASD, in general, have certain specific characteristics of hypersensitivity to stimuli, which is largely related to presence of anxiety factors. Hence, this stimulating hypersensitivity can cause people with ASD to perform a wrong cognitive centering process, which deform the meaning and understanding of main stimulus and, consequently, the anxiety is greatly increased, due lack of cognitively attributed comprehension.

Rodas, Eisenhower & Blacher [28] confirm, in effect, that risk of comorbidity to anxiety problems in people with ASD are due to association between semantic and pragmatic language and the externalization behavior itself. Therefore, pragmatic language was inversely related to anxiety levels and concurrent externalization behaviors. Indeed, deficits in pragmatic language are a common feature in people with this diagnosis type, which affects to reception, coding and the information recovery throughout its interaction with context, which creates difficulties for analyze the big number of ensue stimuli, especially, when they get more complex, producing, consequently, a considerable increase in anxiety in peoples with ASD.

Vella, Ring, Aitken, Watson, Presland & Clare [32] checked the participants with ASD were slower, more concrete and less flexible than their normal typical pairs in tasks of decision making. These tendencies to information processing, derived from deficits found in cognitive tasks of coding and interpretation of information, can contribute to difficulties in understanding some contexts, especially when these are less familiar, more complex and, specially, when it happens unexpectedly, which it’s ease a considerable increase of anxiety levels.

Although there’s little research on functional evaluation for anxiety treatment, Moskowitz et al. [24] assess the teaching strategies based on multiple methods to analyze the anxiety degrees in children with ASD, as well as application of adjusted treatments to improve levels of anxiety and their associated behaviors, through a multicomponent intervention process of individualized strategies to support the positive behavior of traditional cognitive behavior therapies [7].

Also, improvement through natural treatments, that facilitate self-training and self-information, about contexts about information necessary for stimuli understanding can support reduction of anxiety levels in people with ASD. For which, we’ve to look for those methodologies that facilitate intervention focused in natural environment with the aim of facilitating information cognitive self-management. In this sense, Corbet, Blain, Ioannou & Balser [9] propose an intervention “mediated” through their peers based on use of theater in order to analyze the impact this intervention has on reducing anxiety levels and stress of people with ASD.

However, any intervention model must be supported on basis of systemic interaction in two ways: 1) the mutual impact of all basic psychological processes involved over the information processing shape, and 2) the interaction of all context elements related on growth of anxiety levels, hence intervention must focus on own environment conducive to understanding of events, personal autonomy and construction through naturalistic environment. According to these principles, integrated systemic programs based on natural context are adjusted, both these that relate the perceptive-cognitive areas and those with intervention context itself, characterized by interactivity of all the participants, namely, teachers, families, health services and peers, applied in a natural environment noted as Pivotal Response Treatment (PRT), it shapes a naturalistic developmental behavior intervention [23].

PRT program is based, above all, in specific interests of children themselves and their previous potential, in order to improve the development of communication, language, play and social relations, through a naturalistic learning-teaching, focused on the different perceptive-cognitive areas and family affection, with participation of all factors of natural change, through education, training and empowerment [16,18,19].

2. Research Aims

This study aims to analyze the effectiveness of perceptual-cognitive on conceptual understanding and its relationship with anxiety levels in people with ASD, based on following main hypothesis: perception and stimuli understanding are directly related to anxiety degrees in people
with ASD.

Within this general aim, research presents following specific aims:

1. Analyze the relationship levels between perception and stimuli understanding in relation with anxiety levels increase of people with ASD.

2. Study interactive effects between integrated perceptual-cognitive hypothesis, conceptual coding and its consequences in anxiety levels in this people.

3. Perform a naturalistic systemic program to improve attention-perception and contextual comprehension rates, in order reduce anxiety levels in people with ASD.

4. Observe the differences of the effects on experimental group regarding to control group.

5. Analyze possible differences in relation to participants age interval.

3. Method

3.1 Design

Study design is an experimental investigation of two groups, an experimental group (EG) to which an integrated cognitive-perceptual-cognitive program and a control group (CG) was applied standard development. Evaluation was carried out during 12 months along 3 successive measures.

3.2 Participants

A total of 30 students with ASD, of age ranges between 6 and 14 years, distributed in both groups, have participated in this study. For the EG 20 students have been selected, of which, 7 students are between 6-8 years old, 6 between 9-11 years old and 7 between 12 and 14 years old; in the GC another 10 students have participated, of which 4 have between 6-8 years, 3 between 7-9 years and 3 between 12-14 years.

3.3 Variables

Analysis has been configured based on following variables:

1. “Group”: EG and CG.

2. “Age”: age ranges.

3. “Sensory”: cognitive-perceptual integration (3 measures).


5. “Anxiety”: anxiety level (3 measures).

3.4 Data Analysis

Correlation analysis between variables under the hypothesis of related interactions between stimuli understanding on context and anxiety reactions, through the Pearson correlation.

ANOVA test of a 1-factor repeated measures was carried out, “factor 1” being the arithmetic mean (μ) of data found in "sensory", "semantic" and “anxiety” variables to measure possible causal interaction between the "sensory", "semantic" and "anxiety" variables (“factor 1”) in relation to "group" variable.

Finally, interaction analysis of “factor 1” in relation to "age" variable is found through the post-hoc test.

3.5 Instruments

Instruments used have been following: 1) reading analysis of a curricular text adapted to different competencies of students, 2) participant observation of natural and simulated situations, and 3) three scales of evaluation measures, make ad hoc, according to standardized criterion indices for "sensory" variable: 1) attention, and 2) perception; "semantic" variable: 1) semantic integration, and 2) categorial integration; and “anxiety” variable: 1) generalized anguish, and 2) fear reaction, indicated in tables 1 (”sensory”), 2 (”semantic”) and 3 (“anxiety”).

Table 1. Standardized criteria for "sensory" variable: cognitive-perceptual integration.

<table>
<thead>
<tr>
<th>Attention</th>
<th>Criteria</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Very dispersed attention towards stimuli.</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>Temporary attention is focused, with external help.</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Attention is made, but it’s induced.</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>Intrinsic attention is often developed.</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>No disorder.</td>
<td>0</td>
<td></td>
</tr>
</tbody>
</table>

Table 2. Standard criteria for variable "semantic": conceptual coding

<table>
<thead>
<tr>
<th>Semantic integration</th>
<th>Criteria</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Concepts are not integrated.</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>Very limited concepts are integrated, with help.</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Various concepts are integrated, with help.</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>Integrations of several concepts are frequently carried out.</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>New concepts are integrated with the information.</td>
<td>0</td>
<td></td>
</tr>
</tbody>
</table>
3.6 Procedure

Standard scores formed throughout average found in each dimension (0: no disorder-4: severe deficit), assessed by Association's social education, psychology and psychiatry team. In the other centers, assessment has been completed by the educational centers professionals.

3.7 Program

Applied cognitive-perceptive integration program aims to set an integrated continuity of all lived situations, in order to generate the higher functionality and meaningfulness of learning, starting from the previously conceptual semantic units, through systematic and continuous evaluation of exchange of data in all intervention contexts.

Program consists of the following structure [26]:

3.7.1 Previous Analysis of the Initiated Behaviors: "Initiation”:

(1) Situation analysis that give to increase in anxiety, through the Agenda.
(2) Situational analysis of context.
(3) Delimitation of the main elements.

3.7.2 The Situational Aspects’ Reconstruction:

(1) Situation Reproduction.
(2) Reconstruction with help of situation.
(3) Summary of reconstruction implemented.

3.7.3 Experiential Methodological Process Based in the Self-management with Help:

(1) Personal self-construction of the previous reproduced situation.
(2) Analysis of self-constructed situation.
(3) Experience of the personal reconstruction.

3.7.4 Analysis and Synthesis of Situation and its Reconstruction (Self-management):

(1) Analysis of self-constructed situation.
(2) Understanding of self-constructed situation.
(3) Synthesis of stimulus learned.

3.7.5 Exchange of Learned Roles:

(1) Learning by observation.
(2) Exchange of roles in learning process carried out.
(3) Personal assessment of role exchange.

3.7.6 Establishment of Empathy’ Situations in the Reconstructed Experiences:

(1) Analysis of reconstructed situation.
(2) Meanings’ attribution to reconstructed situation.
(3) Cognitive attribution.
(4) Emotional attribution.
(5) Personal assessment of situation.

3.7.7 The Behavior Expression:

(1) Expression of feelings elicited by cognitive-emotional situation.
(2) Analysis of behavioral expression.
(3) Analysis of situation consequences.

3.7.8 Cognitive Decoding of Situation as a Whole:

(1) The stimuli elements analysis.
(2) The context aspects analysis.
(3) The interactions analysis.

3.7.9 Situation Modification, through Creation of Alternative Contexts (Generalization):

(1) Behavior alternatives analysis to anxiety doing situation.
(2) New alternatives implementation.
(3) Understanding of situational concept.
3.7.10 Cognitive Reconstruction Considering the Alternatives (Self-management):

(1) Self-management of the different alternatives.
(2) Self-management of new behavioral reactions.
(3) Analysis of the effects of new reactions.

3.7.11 Learning Assessment:

(1) Self-test of the lessons learned.
(2) Learning Relationships with other previous conducts.
(3) Verification - global evaluation.

3.7.12 Personal Agenda: "end":

(1) Specify the new strategies learned in the Personal Agenda.
(2) Setting new strategies into practice in other natural contexts.
(3) Shape new main learning strategies.

4. Results

Pearson's bivariate correlations analysis shows positive partial relationships between variables of the study: "sensory", "semantic" and "anxiety", which can be observed in Table 4, hence it can be assumed that, in general, changes found in any of variables, may involve changes in the other variables of this study.

Indeed, partial positive correlations are observed: "anxiety1" with "semantic1" ($r = -.46$, sig= .00); "anxiety 2" with "semantic1" ($r = -.48$, sig= .00) and "sensory2" ($r = -.40$, sig= .02); "anxiety3" with "sensory2" ($r = -.50$, "sensory3" ($r = -.50$, sig= .00) and "semantic1" ($r = -.35$, sig= .05), "semantic2" (Pearson= -.50, sig= .00) and "semantic3" $r = -.55$, sig= .00).

Likewise, there are other meaningful relationships: "semantic1" with "sensory1" ($r = .48$, sig= .00) and "sensory2" ($r = .46$, sig= .00); "semantic2" with "sensory1" ($r = .36$, sig= .04), "sensory2" ($r = .58$, sig= .00) and "sensory3" ($r = .65$, sig= .00); "semantic3" with "sensory2" ($r = .52$, sig= .00) and "sensory3" ($r = .75$, sig= .00).

Although correlation analysis aren't cause-effect, it's corroborated that meaningful relationships are produced between variables analyzed, therefore any change in one score can affect the study data set as a whole.

Statistical mean of measured criteria referred for "sensory", "semantic" and "anxiety" variables, whose intersection constitute “factor1” of comparative analysis with the goal to analyze the set of variances and co-variances compared to "group” variable. This comparative analysis has been made-up with the ANOVA W test of Mauchly (see

Table 4. Pearson Correlation (n= 30).

<table>
<thead>
<tr>
<th></th>
<th>Sensory1</th>
<th>Sensory2</th>
<th>Sensory3</th>
<th>Semantic1</th>
<th>Semantic2</th>
<th>Semantic3</th>
<th>Anxiety1</th>
<th>Anxiety2</th>
<th>Anxiety3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sensory1</td>
<td>Pearson Correlation</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Sig. (2-tailed)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sensory2</td>
<td>Pearson Correlation</td>
<td>.62(**)</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Sig. (2-tailed)</td>
<td>.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sensory3</td>
<td>Pearson Correlation</td>
<td>.40(*)</td>
<td>.75(**)</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Sig. (2-tailed)</td>
<td>.02</td>
<td>.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Semantic1</td>
<td>Pearson Correlation</td>
<td>.48(**)</td>
<td>.46(**)</td>
<td>.15</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Sig. (2-tailed)</td>
<td>.00</td>
<td>.00</td>
<td>.42</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Semantic2</td>
<td>Pearson Correlation</td>
<td>.36(*)</td>
<td>.58(**)</td>
<td>.65(**)</td>
<td>.21</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Sig. (2-tailed)</td>
<td>.04</td>
<td>.00</td>
<td>.00</td>
<td>.26</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Semantic3</td>
<td>Pearson Correlation</td>
<td>.11</td>
<td>.52(**)</td>
<td>.75(**)</td>
<td>.04</td>
<td>.64(**)</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Sig. (2-tailed)</td>
<td>.53</td>
<td>.00</td>
<td>.00</td>
<td>.82</td>
<td>.00</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Anxiety1</td>
<td>Pearson Correlation</td>
<td>-.22</td>
<td>-.24</td>
<td>-.10</td>
<td>-.46(*)</td>
<td>-.04</td>
<td>-.05</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Sig. (2-tailed)</td>
<td>.24</td>
<td>.18</td>
<td>.58</td>
<td>.01</td>
<td>.80</td>
<td>.77</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Anxiety2</td>
<td>Pearson Correlation</td>
<td>-.22</td>
<td>-.40(*)</td>
<td>-.27</td>
<td>-.48(**)</td>
<td>-.15</td>
<td>-.11</td>
<td>.64(**)</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Sig. (2-tailed)</td>
<td>.23</td>
<td>.02</td>
<td>.13</td>
<td>.00</td>
<td>.40</td>
<td>.56</td>
<td>.00</td>
<td></td>
</tr>
<tr>
<td>Anxiety3</td>
<td>Pearson Correlation</td>
<td>-.25</td>
<td>-.50(**)</td>
<td>-.50(**)</td>
<td>-.35</td>
<td>-.50(**)</td>
<td>-.55(**)</td>
<td>.67(**)</td>
<td>.59(**)</td>
</tr>
<tr>
<td></td>
<td>Sig. (2-tailed)</td>
<td>.17</td>
<td>.00</td>
<td>.00</td>
<td>.05</td>
<td>.00</td>
<td>.00</td>
<td>.00</td>
<td>.00</td>
</tr>
</tbody>
</table>

Notes:
** Correlation is significant at the 0.01 level (2-tailed).
* Correlation is significant at the 0.05 level (2-tailed).
Table 5).

As observed $W$ statistical analysis rejects sphericity hypothesis $= .01$ (sig $= .00$), which let to reject the Sphericity Assumed, that’s say variances- covariances between study variables aren’t same, hence a univariate approximation is applied: Test of Within- Subjects Effects, which, also para small samples (N= 30) data related to the univariate ANOVA $F$ constitutes an index correction more stable and powerful than multivariate statistics as it corrects multivariate contrasts values inter- subjects (see Table 6).

As can be seen, the meaningful critical level found indicates that there’s a mutual positive influence between both variables: "sensory", "semantic" and "anxiety" ("factor1"), whose most significant data are: Sphericity Assumed: sig $= .00$ and Greenhouse-Geisser: sig $= .00$, that is, there’s an influential interdependence between the study variables.

Comparative analysis of the “factor1” in relation to "group" variable, shows that there’re significant differences in variance- covariance perform by the “factor1” regarding to group type (factor1 * group), whose data are: Sphericity Assumed: sig $= .00$ and Greenhouse-Geisser: sig $= .01$, which let to conclude the program has found important differences between the EG and the GC, with significant improvements being observed upon the 3 successive measures in participants that make up EG, confirming the main hypothesis of this study.

Likewise, Mean Square Intercept is also highly significant, which explains the estimates of percentile of "factor1", formed by the intersection of the three measures

<table>
<thead>
<tr>
<th>Within Subjects Effect</th>
<th>Mauchly’s $W$</th>
<th>Approx. Chi-Square</th>
<th>df</th>
<th>Sig.</th>
<th>Epsilon(a)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Greenhouse-Geisser</td>
<td>Huynh-Feldt</td>
<td>Lower-bound</td>
<td>Greenhouse-Geisser</td>
<td>Huynh-Feldt</td>
</tr>
<tr>
<td>factor1 (sensory, semantic and anxiety variables)</td>
<td>.01</td>
<td>97.20</td>
<td>35</td>
<td>.00</td>
<td>.36</td>
</tr>
</tbody>
</table>

Note:

(a) May be used to adjust the degrees of freedom for the averaged tests of significance. Corrected tests are displayed in the Tests of Within-Subjects Effects table.

(b) Design: Intercept (factor1) + group + age + group * age.

Table 6. Tests of Within-Subjects Effects.

<table>
<thead>
<tr>
<th>Source</th>
<th>Type III Sum of Squares</th>
<th>df</th>
<th>Mean Square</th>
<th>$F$</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>factor1 (sensory, semantic and anxiety variables)</td>
<td>87.22</td>
<td>8</td>
<td>10.90</td>
<td>41.46</td>
<td>.00</td>
</tr>
<tr>
<td>Sphericity Assumed</td>
<td>87.22</td>
<td>2.91</td>
<td>29.97</td>
<td>41.46</td>
<td>.00</td>
</tr>
<tr>
<td>Greenhouse-Geisser</td>
<td>87.22</td>
<td>.04</td>
<td>21.56</td>
<td>41.46</td>
<td>.00</td>
</tr>
<tr>
<td>Huynh-Feldt</td>
<td>87.22</td>
<td>1.00</td>
<td>87.22</td>
<td>41.46</td>
<td>.00</td>
</tr>
<tr>
<td>Lower-bound</td>
<td>12.29</td>
<td>8</td>
<td>1.53</td>
<td>5.84</td>
<td>.00</td>
</tr>
<tr>
<td>Sphericity Assumed</td>
<td>12.29</td>
<td>2.91</td>
<td>4.22</td>
<td>5.84</td>
<td>.00</td>
</tr>
<tr>
<td>Greenhouse-Geisser</td>
<td>12.29</td>
<td>4.04</td>
<td>3.03</td>
<td>5.84</td>
<td>.00</td>
</tr>
<tr>
<td>Huynh-Feldt</td>
<td>12.29</td>
<td>1.00</td>
<td>12.29</td>
<td>5.84</td>
<td>.02</td>
</tr>
<tr>
<td>Lower-bound</td>
<td>21.80</td>
<td>16</td>
<td>1.36</td>
<td>5.18</td>
<td>.00</td>
</tr>
<tr>
<td>Sphericity Assumed</td>
<td>21.80</td>
<td>5.82</td>
<td>3.74</td>
<td>5.18</td>
<td>.00</td>
</tr>
<tr>
<td>Greenhouse-Geisser</td>
<td>21.80</td>
<td>8.08</td>
<td>2.69</td>
<td>5.18</td>
<td>.00</td>
</tr>
<tr>
<td>Huynh-Feldt</td>
<td>21.80</td>
<td>2.00</td>
<td>10.90</td>
<td>5.18</td>
<td>.01</td>
</tr>
<tr>
<td>Lower-bound</td>
<td>8.68</td>
<td>16</td>
<td>.54</td>
<td>2.06</td>
<td>.01</td>
</tr>
<tr>
<td>Sphericity Assumed</td>
<td>8.68</td>
<td>5.82</td>
<td>1.49</td>
<td>2.06</td>
<td>.07</td>
</tr>
<tr>
<td>Greenhouse-Geisser</td>
<td>8.68</td>
<td>8.08</td>
<td>1.07</td>
<td>2.06</td>
<td>.04</td>
</tr>
<tr>
<td>Huynh-Feldt</td>
<td>8.68</td>
<td>2.00</td>
<td>4.34</td>
<td>2.06</td>
<td>.14</td>
</tr>
<tr>
<td>Lower-bound</td>
<td>50.48</td>
<td>19</td>
<td>.26</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Error(factor1)</td>
<td>50.48</td>
<td>69.84</td>
<td>.72</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sphericity Assumed</td>
<td>50.48</td>
<td>97.07</td>
<td>.52</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Greenhouse-Geisser</td>
<td>50.48</td>
<td>24.00</td>
<td>2.10</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
of three variables regarding to "group" type variable (see Table 7).

As it’s observed, data found: $R^2 = 728.98$, $F = 1589.92$, sig=.00 shows that variables values studied are robustly related, which it can be concluded that anxiety variable depends strongly of improvement in "semantic" and "sensory" variables, since the effect of "factor1" is highly explanatory of changes found in relation to "group" variable.

This consideration allows conclude the manifest "anxiety" variable can be related to the meaningful subject-matters of informative stimuli coming from context, since incomprehension produce an intolerant uncertainty in people with ASD, showing an anxious reaction consequent to this situation.

Finally, regarding to variances interaction between variables that make up “factor1” and "age" variable show significant partial differences between participants age ranges (see Table 8).

In this senses, post-hoc statistical test indicates that there’re differences between the 6-8 years’ age range with 9-11 years range (sig=.01) and with 12-14 years’ interval (sig=.00), but there’re no differences between 9-11 years range and interval between 12 and 14 age years (sig=.99).

For graphical observation of this results, graphs corresponding to differences found between both groups can be observed, distributed according to age range (see Graphs 1, 2 and 3).

### Table 7. F Tests of Between-Subjects Effects.

<table>
<thead>
<tr>
<th>Source</th>
<th>Type III Sum of Squares</th>
<th>df</th>
<th>Mean Square</th>
<th>F</th>
<th>Sig.</th>
<th>Partial Eta Squared</th>
<th>Observed Power</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intercept</td>
<td>728.98</td>
<td>1</td>
<td>728.81</td>
<td>1087.81</td>
<td>.00</td>
<td>.97</td>
<td>1.00</td>
</tr>
<tr>
<td>group</td>
<td>2.81</td>
<td>1</td>
<td>2.81</td>
<td>4.20</td>
<td>.05</td>
<td>.13</td>
<td>.50</td>
</tr>
<tr>
<td>Error</td>
<td>11.00</td>
<td>28</td>
<td>.66</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*The mean difference is significant at the .05 level.

### Table 8. Multiple Comparisons.

Tukey HSD

<table>
<thead>
<tr>
<th>(I) age</th>
<th>(J) age</th>
<th>Mean Difference (I-J)</th>
<th>Std. Error</th>
<th>Sig.</th>
<th>95% Confidence Interval</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Lower Bound</td>
<td>Upper Bound</td>
<td>Lower Bound</td>
<td>Upper Bound</td>
<td>Lower Bound</td>
</tr>
<tr>
<td>6-8 years</td>
<td>9-11 years</td>
<td>-.31(*)</td>
<td>.10</td>
<td>.01</td>
<td>-.56</td>
</tr>
<tr>
<td></td>
<td>12-14 years</td>
<td>-.32(*)</td>
<td>.09</td>
<td>.00</td>
<td>-.57</td>
</tr>
<tr>
<td>9-11 years</td>
<td>6-8 years</td>
<td>.31(*)</td>
<td>.10</td>
<td>.01</td>
<td>.05</td>
</tr>
<tr>
<td></td>
<td>12-14 years</td>
<td>-.01</td>
<td>.10</td>
<td>.99</td>
<td>-.27</td>
</tr>
<tr>
<td>12-14 years</td>
<td>6-8 years</td>
<td>.32(*)</td>
<td>.09</td>
<td>.00</td>
<td>.07</td>
</tr>
<tr>
<td></td>
<td>9-11 years</td>
<td>.01</td>
<td>.10</td>
<td>.99</td>
<td>-.24</td>
</tr>
</tbody>
</table>

Note:
5. Discussion

In this study found a significant relationship between the variables that make up stimuli semantic understanding and anxiety levels in people with ASD, which allows conclude that as stimuli understanding and coding becomes more difficult, anxiety increases considerably and, also as it facilitates their understanding and coding, anxiety decreases.

For this reason, it’s necessary to provide specific programs that improve the environmental stimuli understanding, but, due to great stimuli diversity they can happen throughout daily events, the best programming option is promote programs that facilitate contexts understanding from autonomy and self-management in order to improve the interaction of people with ASD with different context, for which, PRT program can be an important reference.

In this sense, these data are corroborated with other research of interest.

Indeed, people with ASD don’t differ from their peers in narrative global aspects, such as length or identification of basic narrative characteristics like as the characters or settings [2,13,31], but they find significant difficulties in integrating elements of history into a coherent whole, partly, due to limited use of complex syntax, that results of temporality lack and information link [6]. Moreover they show a limited use of evaluation processes to bring and give the perspective of events with a wider meaning, and simply describe indices of behavioral emotions, as well as they often make inappropriate comments [8] and, consequently, anxiety associated with narrative formulation probably contributes, in addition, to limitations widely observed with the narrative experienced by individuals with ASD in social settings, being consistent with some previous research [20,22].

For this reason, Lin & Koegel [21] and Koegel [17] include the self-control procedures of children during the whole interactive intervention, since these people require a higher level of staging to advantage overall process of semantic integration, but, undoubtedly, it restricts your ability to narrate in everyday interactions where such extensive support from an interlocutor is unlikely, therefore it’s pivotal to generate programs that increase autonomy of individuals with ASD during the learning process.

In this sense, programs based on naturalistic use methods, such as Pivotal Response Treatment (PRT) can be an important overtake in achievement of semantic comprehension improvement of events and, hence, to diminish anxiety levels associated.

Verschuur, Husbens, Verhoeven & Didden [34] analyze PRT program effectiveness and indicate the data showed significant increases in people with ASD both regarding opportunities created by professionals, as in questions initiated by own children, as well as significant improvements in generalization processes in relation to group situations and collateral changes in children's language, pragmatic and adaptive skills and adaptive behaviors.

Duifhuis, den Boer, Doornbos, Buitelaar, Oosterling & Klip [10] assert the group of children with ASD selected in the experimental condition of PRT program improved their own symptomatology of autism diagnosis, as well as the behavior adaptability and affirm that model can prevent that higher cognitive breach between the autistic development and normotypic development rise.

Bradshaw, Koegel, & Koegel [5] have focused their study on improving expressive communication. Results indicated that verbal communication improved as a consequence of this intervention, with concomitant improvements in areas not worked for all participants, as after the intervention, autism symptoms decreased and their parents reported they were satisfied with program implementation since observed the its child's achievements.

In conclusion, PRT intervention models have demonstrated their effectiveness in improving semantic language in young children with ASD [11,33], which benefits the stimuli understanding, their codification and storage in permanent memory, in order to have needed resources for their recovery and use along the presentation of new stimuli and, consequently, to reduce anxiety levels caused by uncertainty before perceived events.

STUDY LIMITATIONS

This study presents the limitations of research with groups of people with specific educational support needs, which are usually small groups.

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Ourense (Spain), as well as families and those educational centers participated in this study.

References


[16] Koegel, L. K.. Interventions to facilitate communica-


http://dx.doi.org/10.1177/1362361316677957


http://dx.doi.org/10.1007/s10803-018-3637-3


https://link.springer.com/content/pdf/10.1023%2Fa%3A1024446215446.pdf


http://dx.doi.org/10.1007/s10803-017-3070-z


http://dx.doi.org/10.1007/s10803-017-3265-3


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ARTICLE
Exploring the Relation between Karma, Qi, Spirituality, and Subjective Well-Being among People in Taiwan

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ABSTRACT
In addition to recognizing well-being as a multidimensional construct, the potential indicators of well-being also have been recognized as multivariate. Specifically, some recent studies have suggested that various indices of social beliefs, religious attitudes and spiritual practices have been said to be robustly associated with well-being. Therefore, given the overwhelming need for promoting well-being and an increasing recognition of the multivariate indicators of well-being, this research project attempted to evaluate the relation of Qi, karma, transcendental experiences, and spiritual practices with the subjective well-being of people in Taiwan. The relevant data from the national sample of 1,933 participants were subjected to factor analysis to extract relevant factors, which included social and religious attitudes of karma and Qi, spiritual indicators of transcendental experiences and spiritual practices, and positive indicators of subjective well-being. In addition to significant intercorrelations, the hierarchical regression analyses after controlling for demographics suggested that Qi had the highest contribution to subjective well-being, followed by spiritual practices, karma, and transcendental experiences. These results are discussed, their implications are elucidated, and the directions for future research are suggested.

1. Introduction
As the research in well-being has been growing in recent decades, many attempts have been made to define well-being. One such attempt is that well-being is defined as a global assessment of a person’s quality of life according to his own chosen criteria. Other attempts define well-being as a broad ranging quality of life that is affected in a complex way by the person’s physical and psychological state, personal beliefs and social relationships, and the salient features of the environment. Although none of the definitions have fully captured the essence of well-being, most of the researchers now believe that well-being is a multidimensional construct, which may include happiness, satisfaction with life, positive relationships with others, purpose in life, meaningful life, realization of the potential, good life, positive functioning, a state of equilibrium, and flourishing.

Just like that the well-being is a multidimensional construct, the indicators and predictors of well-being also

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have been recognized as multivariate, including sociodemographic characteristics, economic and political aspects, cultural and religious elements, contextual and interpersonal dimensions, intrapersonal and existential aspects, and personality traits. Specifically, some recent studies have suggested that various indices of sociological, religious and spiritual belief systems and practices have been said to be robustly associated with the indicators of well-being.

Therefore, given the widely accepted descriptions of well-being and recognition of the multiple of indicators of well-being, and based on both the strong research evidence for the role of certain indicators in the multi-dimensionality of well-being and lack of it in some other areas, this research project used the large data pool from a national survey in Taiwan to explore the impact of sociological, religious and spiritual indicators on well-being of people in Taiwan.

2. Literature Review

2.1 Positive Psychology and Well-Being

Based on Aristotle’s concept of Eudaimonia and the growing interest in positive psychology in the recent decades, scholars have been rigorously studying well-being [27, 44]. For instance, already in late 1960s, Bradburn [1] had begun his research on psychological well-being in the context of ordinary psychological reactions of people in their daily lives. The major part of Bradburn’s research focused on the distinctive variance of positive and negative affect in influencing psychological well-being. His model specified that people will have higher psychological well-being to the degree to which positive affect predominates over negative affect, and vice versa. Like Bradburn’s argument, Joseph and Wood [25] believed that psychiatry has adopted a restricted view of well-being in describing it as an absence of distress and dysfunction, and therefore, they have also called for psychology professions to adopt positive measures of functioning. Shah and Marks [46] considered well-being to be more than just happiness. For them, well-being means developing as a whole person, being fulfilled, and building a flourishing society.

The evolution of positive psychology further emphasized the role of psychology as not only to study the pathology and weaknesses of people, but also to investigate human strengths, resources, and virtues that people employ in the midst of their daily affairs [35, 42, 45]. Gable and Haidt [14] further explained that positive psychology is the study of the conditions and processes that contribute to the optimal functioning or well-being of people, groups, and institutions. Seligman [44], the undeniable leader of the positive psychology movement, thought that the topic of positive psychology is well-being, that the standard for measuring well-being is flourishing, and that the goal of positive psychology is to increase flourishing. Some scholars described well-being as achieving one’s goals based on the belief that well-being stems from an individuals’ perception of their current situation and their aspirations [11, 12]. Rogers [40] discussed well-being in terms of the good life, because he believed that each individual strives towards becoming a ‘fully functioning person’ by trusting in his/her own organism and being open to experience.

As the interest in positive psychology and well-being has been increasing, many attempts are also being made to define and describe well-being. Shin and Johnson [47] stated that well-being is a global assessment of a person’s quality of life according to his/her own chosen criteria. This statement is reflected in the well-being literature and research [38, 50]. The World Health Organization [50] described quality of life as the people’s perception of their life in the context of their value systems, goals, and expectations. It is a broad concept, being affected in a complex way by an individual’s physical health, psychological state, personal beliefs, social interactions and the features of the environment.

Although none of the definitions or descriptions have fully captured the essence of well-being, most of the researchers now believe that well-being is a multidimensional construct, which may include happiness [36, 3]; satisfaction with life [8, 43]; autonomy, environmental mastery, positive relationships with others, purpose in life, realization of potential, and self-acceptance [41]; good life [40], positive functioning [25], a state of equilibrium [9], and flourishing [44, 46].

Thus, as the literature suggests, researchers for many years have been trying to understand what sort of indicators exactly contribute to well-being, leading to even further confusion whether the multiple well-being models capture the same or distinct indicators of well-being. Consequently, researchers tend to disagree on what constitutes well-being and what specific indicators contribute to well-being, which itself suggests the necessity of accepting well-being as a multidimensional concept that has multiple indicators [17]. Based on the item contents of this national data set in Taiwan [13], well-being for this sample of Taiwanese people can be said to be consisting of inner peace and subjective happiness, positive coping, resiliency and hope, comfort, and satisfying interpersonal relations.

2.2 Religiosity, Spirituality and Well-Being

Just like that the well-being is a multidimensional construct, the indicators and predictors of well-being also
have been recognized as multivariate, including sociodemographic characteristics, economic and political aspects, cultural and religious elements, contextual and interpersonal dimensions, intrapersonal and existential aspects, and personality traits. Recent studies have suggested that various indices of religiosity and spirituality have been said to be robustly associated with well-being. 

For instance, research studies with medical rehabilitation patients suggested that spirituality and religiosity were positively associated with the life satisfaction dimension of subjective well-being. In an adult sample of African Americans, spirituality mediated the relationship between coping style and quality of life. Among working mothers, intrinsic religiosity and spiritual commitment accounted for a significant variance in the positive affect dimension of well-being. Thus, as Idler had said, it could be concluded that the religious, spiritual, and transcendental experiences that are built into the various cycles of life would have a positive effect. The role of transcendental experiences in well-being warrants a special explanation. Yaden, Haidt, Hood, Vago, and Newberg did an integrative and organizational review of the self-transcendent experiences. They defined these experiences as the transient mental states marked by increased feelings of connectedness and elevated levels of mental health. In this view, Yaden et al. say that transcendent experiences do not consist activities or practices that include prayer, meditation, yoga, music, dancing, and many more. Yaden et al. conclude that these transcendent experiences are pure mental states that increase feelings of well-being. Thus, it is worth considering the role of transcendental experiences in the levels of the participants' well-being.

2.3 Karma and Well-Being

Some major religious traditions, and many folk religious traditions and social belief systems, are centered on the principle of karma. Karma literally means both an “act” and also the “result” of one’s action. As a doctrine, karma refers to a cosmic principle by which a person is said to inevitably face the consequences of one’s own good or bad deeds both in the past and current lives. Thus, along the logical lines of cause and effect, the doctrine of karma stresses the individual’s freedom and responsibility for all of one’s actions, resulting in either one’s well-being or misfortunes. Anand thus said that in its fuller sense, karma is an integral doctrine of social and psychological functioning, including a person’s cognition, motivation, action, social relations, and consequences. White, Norenzayan, and Schaller review results also indicated the value of explicit belief in karma for understanding religion, social cognition, and justice.

However, there is not much research conducted that focused on the karmic beliefs. A few studies that have included the antecedents and consequences of karma suggested significant outcomes. In the context of illness and health, for instance, the literature review by Anand indicated that the patients’ belief in karma positively correlated with their recovery and psychological well-being. White, Souza, and Prochownik suggested an evidence for an association between karmic beliefs and prosocial behavior. White, Norenzayan, and Schaller suggested karmic beliefs might predict social judgments.

Therefore, further examination of people’s beliefs about karma is warranted to understand how this particular concept entailing cognition, motivation, and action can affect a wide range of indicators of subjective well-being in the socio-cultural context of Taiwanese people.

2.4 Qi and Well-Being

Qi is generally translated as “vital energy” or “vital life force.” Qi is considered as universal, because it is said to embrace all manifestations of energy, including the material and immaterial aspects. Hence, as a vital life force that is universal, the Chinese medical classics suggest that life itself is a gathering of Qi and that the humans, to being life itself, are born with a certain amount of an essential Qi, whose basic elements include genetic endowment, prenatal nutrition, and environment. Thereafter, in order to sustain life, the humans replenish their Qi through meditation, exercise, food and water, and the air. Even the emotional and belief states are important, as they also can influence health and well-being. Therefore, a healthy and happy life is a dynamic and harmonious integration of all the aspects of Qi. Chinese medical classics also indicate that Qi as a vital force is not only dynamic but it is also in a state of continuous flux from one aspect into another, making the Qi as neither created nor ever destroyed, but only change in its manifestation.

The word “Qigong,” which is a combination of two concepts of “Qi” (vital life force or energy) and “gong” (the exercise of working on the Qi), means cultivating energy. The concept of Qigong is based on the Taoist philosophy, and it has been popularly practiced, particularly in China and the Orient, for increasing life vitality and maintaining health. Believing in the Qi theory and practicing Qigong to optimize the flow of energy or Qi within the body is believed to enhance health and well-being by building immunity, resiliency, and the clarity of thought. Thus, as a means of cultivating energy, Qigong refers
to all sorts of mind and body exercises that integrate breathing techniques, physical postures, mind adjustment, and focused intention into one [30,32], and thus, it can be sub-classified as spiritual, healing, medical, or martial Qi-gong [30].

The review of research articles reported the positive effects of Qigong on various medical conditions [30,32,51] and some of the articles also reported the effectiveness of Qigong on the emotional and psychological well-being [22,24,29,32,51]. The meta-analysis by Wang and colleagues [51] reported that the psychological benefits the participants mostly experienced were decreased symptoms of depression and improved mood. Improvement of overall quality of life was also reported as one of the frequently mentioned benefits of Qigong. The authors concluded that, in addition to doing breathing exercises and practicing visualization, Qigong practice also involves peer learning, social support, and positive expectation. All these practices, support systems, and cognitive processes could have beneficial effects on psychological well-being.

3. Hypotheses

Therefore, as the literature review has indicated and given the widely accepted descriptions of well-being and number of indicators of well-being, and based on both the strong evidence for certain indicators of well-being and the necessity to explore additional relevant indicators in other cultures and contexts, this research project attempted to evaluate the impact of sociological, religious and spiritual attitudes on well-being among people in Taiwan. Specifically, the socio-religious attitudes included Qi and karma, and the spiritual aspect included transcendental experiences and spiritual practices. This study tested the following specific hypotheses:

1. Appropriate items from the Taiwan national data survey that appeared to have measured the study variables were selected and factor analyzed. Given the data pool with multiple items, it was expected that the respective items would significantly load on the intended study variables, creating relevant and valid measures of Qi, Karma, Transcendental Experiences, Spiritual Practices, and Subjective Well-Being.

2. It was expected that there would be significant positive correlations between the indicators of the study variables, suggesting that the magnitude of the variables increases in relation to the other variables. For example, it was expected that the stronger belief in karma would increase the extent of the use of spiritual practices.

3. After controlling for the important demographics in hierarchical multiple regression analysis, it would be expected that the indicators of karma, Qi, transcendental experiences, and spiritual practices would significantly contribute to the subjective well-being of people in Taiwan.

4. Method

4.1 Procedure and Participants

This project used the data from the “2014 Taiwan Social Change Survey, Round 6, Year 5: Religion” [13]. The total sample consisted of 1,933 participants. As indicated in Table 1, there were 986 males and 947 females, with the age ranging from 19 to 94 and with the mean age of 46. A little over half of the participants (n = 1114; 57.6%) were married and had full time jobs (n = 1003; 51.9%). About 939 (48.5%) had completed senior high school and below, 256 (13.3%) had some sort of college degree, and 321 (16.6%) had a bachelor’s degree. About half of the participants (n = 934; 48.3%) believed in some sort of eclectic and folk religions, followed by Taoism (n = 301; 15.6%) and the variations of Buddhism (n = 288; 14.9%). There were 200 (10.3%) participants who did not believe in any religion.

4.2 Data Analysis

This research project used the data from Taiwan national survey, conducted by the Academia Sinica [13]. The relevant data from the total sample of 1,933 valid participants were subjected to factorial analysis to extract the appropriate study measures. The factorial analyses procedure is explained in the Measures section.

Once the relevant factors and sub-factors were extracted and their reliabilities were tested, the subsequent total measures were tabulated by summing the values on their individual items, and they were further subjected to bivariate correlational analysis to study the strength of the relationship between them. Finally, as it was hypothesized, hierarchical multiple regression analysis was conducted to assess the contribution of the important demographics, followed by karma, qi, transcendental experiences, and spiritual practices to the levels of the participants’ well-being.

4.3 Measures

The data set consisted of 1,933 participants who answered the questions on 85 variables. The variables included a large number of demographics, items on social issues, cultural values and perceptions of different cultures, religious and spiritual beliefs, religious attitudes, personal religious behavior and spiritual practices, beliefs in magic and numerology, behaviors and concepts concerning charitable
organizations, daily and family life, experiences from childhood, among others. Since this already available data is raw and demographic in nature, this project chose the appropriate data variables and items that represented the respective study variables of well-being, religious beliefs, and spiritual practices. After selecting the appropriate items on specific variables, factor and reliability coefficient analyses (Hypothesis 1) were conducted on these selected items and variables to create the following valid and reliable constructs.

4.3.1 Karma and Qi

The data set had 18 items that measured the participants’ social and religious attitudes on 4-point Likert scale, assessing the beliefs from 1 (not at all) to 4 (very much). When these items were subjected to principal component analysis, there were six items that had either low loadings or double loadings, which thus were removed from the analysis. The remaining 12 items were subjected to principal component analysis, which resulted in two significant components, explaining 49.67% of the total variance. The first component, based on the item content, was named as “karma” and consisted of six items with the factor loadings ranging from .54 to .87, explained 36.39% of variance, and had a Cronbach’s α of .81. The sample items in this component included, “To meet someone or be with someone is something that has been predestined in the previous life or several lives before,” and “If you do something bad or good, it will affect your destiny later in life.” The second component was named as “Qi” and consisted of six items with the factor loadings ranging from .54 to .87, explained 13.28% of additional variance, and had a Cronbach’s α of .80. The sample items included, “A person’s Qi can be strengthened through cultivation,” and “To be healthy physically and psychologically, we have to strike a balance between yin and yang, as well as maintain an adequate blending of the two.”

4.3.2 Transcendental Experiences

There were six items in the data set that measured the supernatural experiences on a 4-point Likert scale, ranging from 1 (never) to 4 (often). When these six items were subjected to principal component analysis, they loaded on a single component, with the loadings ranging from .59 to .82 and explained 52.04% of the variance. This component was named as “transcendental experiences” with the sample items consisting of, “Heard God’s voice” and “Experienced supernatural healing.” This component had a Cronbach’s α of .81.

4.3.3 Spiritual Practices

The data set had three items that represented some sort of...
belief in spiritual practices, measured on a 4-point Likert scale, ranging from 1 (strongly disagree) to 4 (strongly agree). The principal component analysis suggested a single factor, with the loadings ranging from .71 to .82. This component was named as “spiritual practices,” explained 59.51% of the variance, and had a Cronbach’s α of .67. The sample item in this component included, “It is not necessary to join religious groups for getting closer to Buddha or God. Personal spiritual practices can also make it happen.”

4.3.4 Well-Being

There were six items that assessed the affective states of the participants, measured on a 5-point Likert scale, with the values ranging from 1 (strongly disagree) to 5 (strongly agree). When subjected to principal component analysis, all six items loaded on one component, with the loadings ranging from .64 to .78. Because of the positive affective nature of the items, this component was named as “well-being,” explained 51.92% of the variance, and had a Cronbach’s α of .81. Sample items in this component included, “Feel inner peace and happiness” and “Gain comfort in times of trouble and sorrow.”

4.3.5 Demographics

Demographic questions included the participants’ gender, age, marital status, education level, job status, and religious affiliation.

5. Results

5.1 Factorial Analyses and Reliability Coefficients

To investigate Hypothesis 1 and as indicated in Measures part of the Method section, the relevant data from 1,933 participants were subjected to exploratory factorial analyses to reduce the already available data items to obtain the coherent study measures that capture a linear combinations of raw items in explaining most of the shared variance in that particular construct [34]. With the item loadings set to .50 and above, the analyses resulted in two measures of socio-religious attitudes (karma and Qi), two spirituality-related measures (transcendental experiences and spiritual practices), and one measure of subjective well-being.

The items on the relevant study measures extracted from exploratory factor analyses were then subjected to reliability tests to determine their internal consistency in forming an appropriate scale that measures the underlying intended construct. Based on the review of the psychometrics, Pallant [34] suggested that the reliability coefficient of a scale should be .70 and above. However, Pallant also said that the reliability coefficients might be smaller with fewer items, such as less than 10 items, because the reliability coefficient is an indicator of the mean inter-item correlations and so the values are sensitive to the number of items in the scale. As explained in Measures part of the Method section and as indicated in Table 2, the reliability coefficients for the study scales ranged from .67 to .81. Four measures had .80 and above coefficients and one had a value of .67, very close to the recommended .70 value. Overall, this acceptable range of reliability coefficients indicates that the items appropriately make up the respective scales in assessing the intended construct.

5.2 Intercorrelations

As indicated in Table 2, all the intercorrelations (Hypothesis 2) were significant with the values ranging from .14 to .46, representing small to medium effect sizes (small effect, $r = .10$ to .29; medium effect, $r = .30$ to .49, and the large effect, $r = .50$ to 1.0). Specifically, Qi had the highest positive correlation with Spiritual Practices, $r = .46$, $p<.001$, suggesting that the cultivation of Qi is in some sense a spiritual practice and vice versa. As expected, the socio-religious attitudes of Karma and Qi were significantly correlated, $r = .41$, $p<.001$, suggesting that those who believe that the current behavior and lifestyle would affect the next life tend to see the importance of practice of Qigong and the cultivation of balance between yin and yang. All the major variables were also significantly and positively correlated with subjective well-being, suggesting that the levels of well-being vary simultaneously with the karma and Qi attitudes, spiritual practices, and transcendental experiences.

### Table 2. Reliability Coefficients, Means, Standard Deviations, and Intercorrelations

<table>
<thead>
<tr>
<th>Variables</th>
<th>$\alpha$</th>
<th>$M$ (SD)</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Karma</td>
<td>.81</td>
<td>16.15 (4.13)</td>
<td>.41”</td>
<td>.14”</td>
<td>.25”</td>
<td>.32”</td>
<td></td>
</tr>
<tr>
<td>2. Qi</td>
<td>.80</td>
<td>11.68 (4.04)</td>
<td></td>
<td>.15”</td>
<td>.46”</td>
<td>.38”</td>
<td></td>
</tr>
<tr>
<td>3. Transcendental Experi-</td>
<td>.81</td>
<td>6.59 (1.85)</td>
<td></td>
<td></td>
<td>.16”</td>
<td>.17”</td>
<td></td>
</tr>
<tr>
<td>4. Spiritual Practices</td>
<td>.67</td>
<td>6.62 (2.53)</td>
<td></td>
<td></td>
<td></td>
<td>.36”</td>
<td></td>
</tr>
<tr>
<td>5. Well-Being</td>
<td>.81</td>
<td>20.57 (5.66)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>N = 1933; $p&lt;.001$.</td>
<td></td>
<td></td>
<td></td>
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</tr>
</tbody>
</table>

Hierarchical multiple regression was used to access (Hypothesis 3) the ability of demographics, karma, Qi, transcendental experiences, and spiritual practices to predict the levels of subjective well-being. The results are...
presented in Table 3. Important demographic variables, including religious affiliation, were controlled for in Step 1 of the hierarchical regression, which were significant, F (9, 1923) = 27.01, p<.001, R²=.08. Except the marital status, all the demographic variables significantly contributed to the well-being, with the religious affiliation having the highest contribution (β = .18, p<.001), followed by education level (β = .14, p<.001).

When the major predictor variables were simultaneously entered in Step 2 of the regression analysis, the overall model was significant, F (7, 1916) = 116.30, p<.001, R²=.29, explaining an additional 21% of the variance in well-being, after controlling for demographic variables. On inspection of the variables’ individual contribution to well-being in Step 2, Qi had the highest contribution (β = .18, p<.001), followed by spiritual practices (β = .14, p<.001), karma (β = .11, p<.001), and transcendental experiences (β = .08, p<.001).

Table 3. Results of Regression Analyses on Well-Being

<table>
<thead>
<tr>
<th>Steps and Variables</th>
<th>F</th>
<th>R²</th>
<th>β</th>
<th>t</th>
<th>95% Confidence Intervals</th>
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<td>Step 1</td>
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<td>.08</td>
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<tr>
<td>Gender</td>
<td></td>
<td>.09</td>
<td>3.87*</td>
<td>.474 to 1.450</td>
<td></td>
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<tr>
<td>Age</td>
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<td>.07</td>
<td>3.23*</td>
<td>.002 to .009</td>
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<tr>
<td>Marital Status</td>
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<td>.02</td>
<td>.66</td>
<td>-.155 to .077</td>
<td></td>
</tr>
<tr>
<td>Education Level</td>
<td></td>
<td>.14</td>
<td>5.55**</td>
<td>.075 to .157</td>
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<tr>
<td>Occupation</td>
<td></td>
<td>.09</td>
<td>3.90**</td>
<td>-.175 to -.058</td>
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<tr>
<td>Religious Affiliation</td>
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<td>.18</td>
<td>7.96**</td>
<td>.040 to .066</td>
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</tr>
<tr>
<td>Step 2</td>
<td>116.30*</td>
<td>.29</td>
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</tr>
<tr>
<td>Gender</td>
<td></td>
<td>.06</td>
<td>3.11*</td>
<td>.252 to 1.114</td>
<td></td>
</tr>
<tr>
<td>Age</td>
<td></td>
<td>.03</td>
<td>1.68</td>
<td>.000 to .006</td>
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<tr>
<td>Marital Status</td>
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<td>.01</td>
<td>.05</td>
<td>-.105 to .100</td>
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<td>6.16**</td>
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N = 1933; *p<.001; **p<.01.

6. Discussion

This exploratory quantitative research project investigated the relation of karma, Qi, transcendental experiences, and spiritual practices to the subjective well-being of general population in Taiwan over and beyond the selected demographic variables. The significant results are discussed in the following paragraphs.

6.1 Intercorrelations

The bivariate correlational analysis indicated a significant correlation between karma and Qi. As a vital life force, Qi is a manifestation of energy in different forms, both material and immaterial [20,30]. The principle of karma is understood as both a deed and the consequence of such a deed [16]. Thus, the relation between Qi and karma is interpreted as that of the universal manifestations of energies affecting us form specific patterns based on karma from our both past and current lives [16]. Goldman [16] says that on the physical side some people look fairly healthy but experience certain strange illnesses that nobody is able to figure out. On the internal side, some people have lots of recurring conflicts in their lives that just seem to make no sense. Some of these various problems could have been caused by bad karma from the past life. In other words, the bad fruits and negative consequences of karma from the past life are transferred as a source of negative information into the current life’s vital force or energy field, causing both physical problems and internal conflicts. Goldman [16] says that once the residual negative energy information from the past life is cleared, the bad karma-induced health or other problems lessen or disappear. The same could be said of the good karma in the past life, which would have been transferred as a positive energy into the current life, and which can be increased or balanced through the practice of Qigong.

Qi and spiritual practices were significantly correlated. According to the Chinese medical classics, the life itself is a gathering of Qi or vital energy. In order to both gather and sustain this vital energy, people have to replenish it through various practices of Qi [20]. One such known practice is Qigong, which is also sub-classified as a spiritual practice [30]. Hence, it is evident from this research results that Qi and spiritual practices are significantly correlated due to the exercise of Qigong viewed as a spiritual practice in replenishing the vital energy. The content of the scale items also indicate that a person’s Qi can be strengthened through cultivation of Qigong and the personal spiritual practices that focus on Qi also help to replenish the vital energy. In fact, the experts view Qigong through three broad categories. The first is medical Qigong, which is practiced to heal self and others, and from which acupuncture, herbal medicine and massage are originated. The second is martial Qigong, which focuses on physical prowess, and the third is spiritual Qigong, which is practiced to attain enlightenment. The spiritual practice of Qigong uses mantras (sacred chanting), mudras (hand positions), silent sitting meditations, and prayers to pursue
self-awareness, tranquility, and harmony with nature and self, leading to the final enlightenment \[30\].

### 6.2 Regression Analyses

In addition to the significant correlations, the hierarchical regression results also indicated that some of the important demographics and all the independent variables were significant in predicting the participants’ subjective well-being levels. Among the demographics, religious affiliation and education had the highest contribution to well-being, respectively. Studies have indicated that people who have a religious faith or identify as religious tend to report higher levels of both physical and subjective well-being, regardless of any particular religious affiliation or specific religious activities. Overall, the ideological underpinnings of religious beliefs and a greater sense of coherence that flows from such beliefs may result in better psychological well-being \[18\]. Therefore, based on the content analysis of the items that created subjective well-being, it could be said that people who are affiliated to some sort of religion tend to find inner peace and happiness, gain comfort in times of trouble or sorrow, have hope for a better future, and find satisfaction through positive social interactions.

Education levels also showed a significant contribution to well-being. Studies have shown some specific mechanisms linking education and various outcomes \[9\]. Some scholars \[4,5\] referred to these as the absolute, relative, and cumulative mechanisms. The absolute mechanism implies that education has a direct effect on well-being through development of embodied resources and capabilities, elevated reasoning power and analysis, increasing productive capacity and the sense of success. The relative mechanism proposes that the effects of education on well-being depend on an individual’s level of education in relation to others. In other words, if the absolute mechanism has to do with developing resources and capacities, the relative mechanism is relevant for defining social relations and social status. The cumulative mechanism proposes that the effect of education on well-being is conditional on the average level of education of the peers or surrounding groups. In addition to these mechanisms, Desjardins \[5\] proposed the role of agency in explaining the link between education and well-being. Agency is referred to an individual’s capacity to choose and to act. Therefore, it appears that the people who receive education possess the intellectual and psycho-social capabilities, which are important in shaping decisions and behaviors that are associated with the positive outcomes, including well-being.

After controlling for the important demographics in the first step of the regression analysis, all the independent variables were significant in predicting well-being. Qi had the highest contribution to well-being. As the vital life force, Qi is said to be the manifestation of energy in life, both in its material and immaterial forms. As an immaterial form of energy, Qi contributes to the social, internal, and subjective form of well-being. The belief in and the mindset around Qi and its related concepts and practices, such as Qigong, appear to influence physical health and psychological well-being \[10\]. In particular, the research has reported, that the belief in Qi and the practice of Qigong optimize the flow of both physical and mental energy, which in turn, enhance the positivity and well-being through the mechanism of creating positive cognitions, improving the clarity of thought, developing openness to view things in a new way, and generating energy to learn new things and to engage in new behaviors \[32,51\].

For instance, based on the conceptualization of Qi in this study, it could be said that people who embrace the concept of Qi and practice it through Qigong, believe that the cultivation of Qi can cure physical diseases; acquiring strong Qi can ward off all harms, and learning to adequately blend the yin and yang can create a healthy balance between them. In fact, viewing the universe as a big magnetic field and considering an individual in the universe as a small magnetic field summons for a harmonious connection of the individual with the universe. The universe is said to be permeated by the vital life force (Qi) and the individual is expected to gather the Qi that is essential for his or her life from the universal Qi. Such a continuous gathering of vital Qi ultimately leads one to have a better physical and psychological well-being.

Karma also significantly contributed to well-being. The doctrine of karma attributes the quality of a person’s life to that person’s freedom in and responsibility for all the actions \[1\]. In other words, karma is a cause-effect belief by which a person inevitably has to face the consequences of one’s own good or bad deeds, both from the past and current life. Thus, intuitively, people who strongly believe in the doctrine of karma should be more likely to engage in good deeds with an expectation of reaping relevant karmic rewards \[31\], which could be the subjective experience of well-being, as indicated in this research.

Like belief in gods, belief in karma may be a socially-relevant teleological thinking with a tendency to ascribe purpose to life events and natural phenomena \[35\]. Ascribing purpose to life events and natural phenomena, even if they are the results of bad karma, appears to put a positive spin to even the explicit karmic endorsements such as the statements in this study: “to meet someone or be with someone is something that has been predestined in the previous life or several lives before,” or “marrying the wrong person is a debt from a previous life.” That is,

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which flow the aspects of well-being and purpose in life, and thus become an inner source from personal authenticity and wholeness in deriving meaning. Research has indicated that spirituality, as both a belief system and made a significant contribution to well-being. Research in this particular research study.

Spiritual practices and transcendental experiences also made a significant contribution to well-being. Research has indicated that spirituality, as both a belief system and dynamic construct, involves an internal process that seeks personal authenticity and wholeness in deriving meaning and purpose in life, and thus become an inner source from which flow the aspects of well-being. Thus, the participants in this study appeared to have agreed that spiritual growth is a part of self-growth that is both personal and internal to an extent that it is not necessary to join religious groups to become connected with God but rather spiritual practices are sufficient to experience God, get in touch with one’s potential ability and even discover the supernatural power that acts as an inner source of subjective well-being. In other words, spirituality as a belief and dynamic process in seeking personal authenticity and inner potential assists individuals to tap into the sources of inner peace, happiness, comfort, hope, and optimism, which are generally considered as the relevant indicators of subjective well-being.

After controlling for religious affiliation, transcendental experiences were also the source of well-being for the participants in this study. That is, irrespective of religious affiliation, participants’ concrete transcendental experiences described in the forms of being possessed by gods or filled with the spirits, having the visions of gods or sacred deities, hearing god’s voice, and experiencing some sort of supernatural healing, increase the levels of subjective well-being. In other words, people who have transcendental experiences also lead a life of inner peace, happiness, comfort, hope, and optimism, and tend to establish healthy social contacts that lead to relationship satisfaction.

Spilka, Hood, and Gorsuch say that the transcendental experiences may or may not have a religious or holy connotation. But, the transcendental experiences that are perceived as having contact or union with a transcendent or ultimate divine reality are known as mystical experiences, as is the case of the participants in this study. Transcendental experiences in their mystical form have several key characteristics, some of which include: a profound sense of unity; a sense that the experience is noetic; a sense that the experience is holy or spiritual; a sense of ineffability or impossibility of describing the experience in words, and the presence of positive affect. Intuitively, the presence of noetic sense and positive feelings contained in the participants’ transcendental experiences assist them in elevating their well-being.

6.3 Implications and Conclusions

An increasing number of contemporary scholars and professionals in the interdisciplinary area of positive psychology and well-being are moving beyond the restrictive view of well-being as an absence of distress and dysfunction to an elaborate view that adopts multiple measures of positive functioning. In this sense, well-being entails developing as a whole person, making a contribution to the community, and building a flourishing society, which are achieved through investigating and promoting human strengths and virtues and resources that people employ in the midst of their daily chores. In other words, just like the concept of well-being is viewed as a multidimensional construct, so also the indicators and predictors of well-being have also been recognized as multidimensional, including relevant demographic factors, political and economic aspects, cultural and social elements, religious and spiritual dimensions, contextual and interpersonal aspects, and personality traits. Under this premise, this research explored the relation of the socio-religious attitudes of karma and Qi and the spiritual aspects of spiritual practices and transcendental experiences with the subjective experience of well-being.

The significant results from this study validate the general view of positive relation between the social aspects of religious beliefs and the subjective experience of well-being. But, the findings from this study that the rarely investigated socio-religious attitudes of karma and Qi significantly relate to well-being add further evidence to expanding the scope of research investigation beyond the Western-oriented social practices and religious traditions that include non-Western samples. For example, the social and religious belief in the doctrine of karma forms the core value of millions of people in the world, particularly those who are affiliated with some major religious traditions, such as Buddhism and Hinduism, various folk religions, and even with those who do not profess belief any organized religion or atheists. When people endorse that their karmic beliefs strongly influence their past, present, and future lives, the necessity to investigate such a belief in the context of promoting their current healthy functioning and well-being is warranted. Moreover, when karma literally means both an act and the result of one’s action, it seems obvious to help people examine their cognitions, motivations, behaviors and morals, and how all these impact their well-being.

Another socio-religious attitude that is infrequently studied and yet makes a significant contribution to the
overall well-being of people is the concept of Qi and the practice of Qigong. Although Qi is understood from the perspective of Chinese medical classics and thus certain people throughout the world, particularly in the orient, professionalize themselves in this field and practice it for various medical reasons, the results of this study also suggest that Qi can be non-associated with any particular religion or belief system and thus promote it as a useful source of well-being. For example, the concept of Qi indicates that the humans are born with a certain amount of essential positive Qi, which can be increased through the cultivation of the basic elements, such as acceptance of genetic endowment, eating healthy, creating conducive environment, and learning to deal with stress through positive thoughts and behaviors.

Time and again research studies have reported the importance of spirituality and spiritual practices to healthy psychological functioning and subjective well-being. In particular, transcendent and mystical experiences appear to be part of many people’s spiritual lives that create meaning and purpose, and elevate well-being. But, such experiences are neither easily comprehended nor assuredly explained by those who go through them, and they are neither easily accepted nor clearly understood by others. Yet, people go through them more often than people can imagine, and hence, such experiences need to be affirmed and validated, and their impact on overall well-being of people who encounter them has to be recognized.

Finally, on the one hand, this exploratory research study has affirmed the relation of general religiosity and spirituality to well-being, and on the other hand, further validated the necessity of investigating the underexplored indicators of well-being, such as karma, Qi, and transcendental experiences. Yet, this research has its own limitations. First of all, the measures used in this study were derived from the items in relevant categories from a national data pool. Even though the factor analyses indicated reliable scale coefficients, thus suggesting that the measures would have assessed the intended construct, it would be warranted to replicate these results by using the same measures with different populations and thus replicate their reliability. Second, most of the variables fall in the domains of Eastern societies, religious beliefs, and spiritual practices. Thus, although the results are significant due to the control of religious affiliation of the participants, it would be better if these results are replicated with people in the West who endorse different social values and mostly believe in Christianity and its denominations. Third, differences for religious affiliation using the similar measures could be tested in the future studies. This study was not able to test this hypothesis due to the unequal number of participants in various religious groups, particularly a small number of participants in the Catholic and Christian groups. Finally, it should be noted that the analyses in this study were correlational and regression in nature, and therefore, causal mechanisms cannot be established.

As a brief conclusion, it can be said that in spite of its specific limitations, the significant results from this study once again endorse the importance of socio-religious and spiritual indicators of multidimensional well-being, irrespective of religious affiliation and geographical location. In particular, the relation of karma and Qi with well-being needs to be emphasized and further investigated. The results would also help the professionals, particularly in the fields of education, social work, and psychotherapy, in designing suitable courses, workshops, and in implementing appropriate interventions to assist the needy and to promote the overall subjective well-being of people in Taiwan.

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References


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REVIEW
Ways of Representation of Main Suggestive Strategies and Tactics in Law Discourse

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ABSTRACT
This article is devoted to the research of the mechanisms of suggestive influence represented in professional layers – prosecutors and attorneys – speech within the English law discourse on the material of a particular witness examination part of the court procedure. Some basic suggestive strategies and tactics used in this step and brief characteristics of their intentiality and ways of representation are presented. It is stated that suggestion as a means of persuasion and manipulation on a psyche is possible only due to the existence of a certain mechanism which gives a person an opportunity to perceive the suggested influences and reflect them. The authors suppose that the analysis of an effective manipulation of professional opponents – a plaintiff and a defendant (some basic suggestive-psychological algorithms used at the opening statement as well as suggestive strategies, tactics and methods applied) might considerably enhance the perspectives of studying characteristic features of law discourse thus allowing to get closer to the understanding of how a person’s brain works as well as the nature of consciousness and subconsciousness together with the anthropocentric approach aimed at realization of manipulation/suggestion within the situation of an institutional communication.

1. Introduction

A lot of works of Russian and foreign scholars are devoted to the study of the phenomenon of language manipulation and suggestion, among them the classics of Russian neuropsychology V.M. Bekhterev [3], I.P. Pavlov [14], psychologists V.A. Goncharov [7], S.K. Myshlyaev [13], A. M. Svyadosch [16]. Own suggestive systems have been developed by practicing psychotherapists abroad: S. Andreas [1], R. Bendler [4, 5], D. Grinder [5], M. Erickson [6] as well as such linguists as J. Vandries [8], V. von Humboldt [5], L. S. Barhudarov [7], N. Krushevsky [11], V. Wundt [20], R, Rolland [15] etc.

The essence of speech influence in the modern scientific paradigm is reduced to the ability of one person to influence another through the use of a certain set of language means.

In our study we consider the linguistic situation presented in the courtroom, namely the impact of the speech of a lawyer and the prosecutor on members of the jury. The task of both parties in this case is to convince the listeners that they are right by any available linguistic means and to persuade them to make a certain decision (to issue a guilty or acquittal verdict).

The speeches of professional opponents of the judicial discourse can be procedurally divided into the stages of an
introductory statement, the questioning of witnesses and the final word.

One of the most significant and suggestively filled is the stage of interrogation of witnesses. This stage takes place after the introductory word of the parties and can be presented in the form of interrogation of one of the parties of the alleged witness in order to indirectly argue their position – the so-called direct interrogation, or the interrogation of the witness by the party opposing the one called by the witness in order to clarify the evidence and possible discredit arguments – cross-examination.

2. Methodology

The main method is the descriptive method; methods of cognitive science were also used – the method of cognitive analysis, categorization, observation, comparison, generalization, the method of conceptual and taxonomic analysis; interpretation method; functional method; cognitive modeling method; data integration method.

This procedural stage of the court hearing, as well as the stages of the opening or closing words, has a suggestive influence on the jury. However, in this case, the suggestion is implemented indirectly, since the addressee of the questions asked by the prosecutor / lawyer is a witness, and the jury acts as an observer.

As a result, the suggestive strategies and tactics of the stage of interrogation of witnesses can be divided into those used by speakers at the stage of direct interrogation, and, accordingly, those used at the stage of cross-examination.

Of particular interest is the direct interrogation of witnesses in view of the fact that it is the most suggestively filled and contestable.

Modern scientists have studied and described both procedural stages of interrogation of witnesses. Nevertheless, among the identified communicative and language strategies and tactics, we selected those that implement the maximum suggestive impact.

Among the main objectives of cross-examination are the following:
- refutation of the testimony of the interrogated person;
- the establishment before the court of the incompetence of the interrogated person;
- clarification and specification of previously given evidence;
- receiving new information confirming the position of the party.

Based on this, we consider it expedient to consider the implementation of suggestive psychological sequences of influence on the jury by the prosecutor and the lawyer, as well as suggestive strategies and tactics applied at each stage.

3. Results

The main task of both the prosecutor and the lawyer at this stage is to discredit the opponent’s arguments.

To achieve this, the speakers use a number of suggestive strategies, namely, a strategy for obtaining reliable testimony, an optimization strategy, a strategy of inclining to admit / denial of lies, a strategy of persuasion. All of them are realized due to the already formed emotional background in the mind of the jury.

The suggestive strategy of obtaining reliable testimony allows the witness to obtain specific reliable testimony required to argue his own position, and is characterized by the use of the following tactics:

Tactics insisting on remembering. This suggestive tactic is aimed at realizing direct influence and even some indirect pressure on the witness in order to obtain the necessary evidence:

Q: So, I mean, do you think it was that Thursday night you saw the defendant; if you remember?
A: I don’t remember exactly if it was that night, or if it was the next day, or -- it was one of those two.
Q: Either Thursday night or Friday morning, the 4th?
A: Yes [18].

In the presented fragment, the prosecutor needed to insist on the witness’s recollection by the defense of the exact date when he saw the defendant in order to discredit his alibi, claimed by the lawyer.

For this purpose, a number of suggestive and clarifying questions are used aimed at specifying the date. Explanation of the question through introductory constructions (I mean, if you remember), providing a choice of two possible days of the week with an indication of the exact number allows the prosecutor to specify his question as much as possible by means of elements of a scientific functional style.

Answers to these questions serve as an immediate form of argumentation for the prosecution. On the one hand, the witness expresses uncertainty on the basis of the use of lexical and syntactic repetitions – the elements of a journalistic style; on the other hand, he unequivocally agrees with the last question which fully argues the arguments presented at the introductory statement stage, i.e. the crime was committed on the fourth day.

A provocation tactic is also widely used, in which the prosecutor / lawyer asks such questions to the witness whose answer is the direct or indirect argumentation of the stated position:

Q: And when you were in Jacksonville last year – do you remember going to Jacksonville to testify?
A: I do.
Q: Do you remember who you testified for, sir?
A: Well, I don’t testify for anybody, sir. I try to give the same testimony no matter who retains me, but it was Mr. Craig Dennis’s firm[19].

The question of whether the witness had given expert testimony earlier, in conjunction with the concretizing question of who was testified against, was contextually aimed at exposing the witness to giving different testimonies.

Another example of the implementation of this tactic may be the emotional pressure on the witness:

Q: It goes without saying, would you agree, that if you were told that your brother was alleged to have raped his daughter, that’s something that would never leave your mind?
A: That’s true. Let me say that I didn’t want to know the detail, and I consciously (because this is a dreadful thing that allegedly happened) didn’t want to know the detail[18].

In the presented example, the lawyer puts emotional pressure on the witness by using emotionally-colored vocabulary (was alleged to have raped) in raising the question with a conditional construction (if you were told), which together forces the witness to talk about a possible situation, the subject of which extremely unpleasant. It is expressed lexico-semantic repetition in the answer (I didn’t want to know the detail).

No less significant is the tactics of posing a direct question in which the speaker deliberately asks a general type of question that requires a yes/no answer in order to get a definite answer:

Q: So you really didn’t see my client before the collision, did you?
A: As I already told you, I was looking straight ahead, and a car was in front of me. The car swerved sharply to the right, and I saw the car to my immediate right start to swerve into my lane.
Q: So that means no, doesn’t it?
A: I suppose so[9].

The use of the alternative question form allows the speaker to get the witness to answer “yes” or “no” which is aimed at arguing the stated position. However, the behavior of the witness is impossible to predict, as a result of which a detailed response may be presented. In this case, the speaker deliberately asks questions about the same content (you really didn’t see ..., did you? / So that means no, doesn’t it?) until he gets the answer in the desired form (I suppose so).

The strategy of inclining to confess/denounce in a lie is one of the most suggestively filled and it implements the maximum impact on the jury. As part of this strategy, the prosecutor/attorney deliberately asks questions that may show the unreliability of the interviewed witness and reveal a lie in his testimony and, as a result, partially or completely discredit the opponent’s position. The tactics used to implement this strategy include the following:

The tactics of checking the information value of the interrogated person. This tactic is aimed at identifying how important the testimony of the alleged witness is. Such questions differ by thematic variability but most often they look like this:

Q: Officer, do you consider yourself as a professional?[18]

There is an identification of the scope of the witness’s activity in order to identify the degree of his knowledge in the issue being studied. Such a question implies the expression of a personal assessment of their activities by a witness as an element of a journalistic functional style and, as a result, has a suggestive influence on the jury.

Q: Your job involves a lot more than just strapping on a badge and a gun and riding around in a police car?[10]

The concretization of the scope of work and official duties determines in more detail the witness’s awareness and also allows to introduce an element of irony by using the appropriate lexical units (just strapping on a badge / riding around in a police car).

This tactic allows us to “weed out” those witnesses who are not related to the case in question or whose social status or education does not allow to provide unambiguously reliable information.

As part of the strategy of exposing a lie, the majority of prosecutors and lawyers use the tactic of reminding the testimony already given which is aimed at direct discrediting of the testimony and, as a result, allows the jury to distrust the side of the witness who stated this:

Q: Doctor, it is very misleading to tell this jury that your legal work is done at four in the morning and on weekends, isn’t it, sir? Isn’t that just a little misleading?[12]

The expression of the personal assessment of the witness’s answer to the previously asked question is implemented in a commentary format with elements of irony: it is very misleading ..., isn’t it, sir?

The lexico-syntactic repetition (Isn’t that ... misleading?) allows the jury to focus on the witness’s desire to confuse or mislead them. This technique allows to create a mistrust of the jury to further testimony of this witness and the side of his stated.

The suggestive strategy of persuasion is implemented after or during the interrogation of the witness by the opponent which allows to express disagreement in the form of a protest. It is either accepted by the judge and obliges the speaker to change the formulation of the question or is rejected. Within this strategy, the most common tactic is to identify and suppress an incorrect question which allows to focus the attention of the judge and jury on the inexpe-
diency or illegality of the question asked:

**Q:** In fact, I think you described him as being very forthright, didn't you?

**A:** Correct.

**Q:** Expressing genuine concern about, you know, what happened to your cousin?

ATTORNEY KRATZ: Objection, Judge, calls for speculation, how genuine it may be [17].

The presented example demonstrates the formulation of a question that causes one of the most common objections—a call to speculation. Within the framework of any court session, speakers should be operated on with facts or reasoned theories of developments. Speculation and reasoning of witnesses should be considered unacceptable. The prosecutor asked the defense witness a question about his knowledge of what had happened to his relative, with whom he had not been in touch for more than six months. Therefore, the lawyer, by interrupting, appealed to the judge with a view to stop possible unconfirmed arguments.

### 4. Conclusion

As we see, the stage of cross-examination of witnesses is very important in the framework of the court session as it allows to present a detailed picture of events stated in the introductory word as well as indirectly affect the jury drawing their attention to the inconsistency of the arguments of the opposite side which affects their direct relationship to the circumstances of the case and judicial speakers.

At this stage, the impact of the suggestion stage aimed at “immersion” of the board members in the situation in question, is strengthened and fixed, and the necessary need for a guilty or acquittal verdict is being prepared and created based on a changing attitude to the position of one party or the other.

Thus, the study of suggestive influence in judicial discourse seems to be a very promising direction of modern linguistic research within the framework of which the mechanisms and ways of realizing the potential of professional speech can be identified and specified.

### References


ARTICLE

Work-family Interface and Job Performance: Job Satisfaction as Mediator

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ABSTRACT

The objective of the study was to examine the relationships between work-family interface, job satisfaction and job performance in an Argentinian workers sample. A cross-sectional empirical study, based on explicative-associative strategy was designed. An availability sample of 383 workers (195 male) from different kinds of organizations was conformed. Based on past evidence, it was hypothesized the mediator role of job satisfaction. Structural equation analysis showed that the indirect effects of work-family interface dimensions (conflict and enrichment) on job performance through job satisfaction were statically significant, which indicated partial mediation. All variables explained 72% of job performance variance. The study provides new evidence regarding the interrelations between job-family articulation and individual job performance, illuminating the crucial role played by satisfaction. Empirical findings and practical implications of the study are discussed.

1. Introduction

Job performance (JP) is one of the constructs that has received most of the attention of the organizational behavior scholars. Possibly, its popularity is because competitiveness and productivity of the organizations are intimately linked to the individual performance of its members [1]. In this sense, experts [2] note that an effective management of performance benefits both employees and organizations. For employees, it results in positive self-esteem, sense of achievement and self-efficiency. For organizations, it involved a workforce more motivated and committed to the mission. In short, job performance is a key to ensure the effectiveness and success of an organization. Thence the permanent interest of researchers and professionals to unravel the factors and mechanisms through which it is possible to influence the performance of their employees.

Regarding conceptualization of the construct, even though the pioneering contributions of Murphy [3] in relation to the accuracy of the scope of the term are recognized, currently, there is a renovated interest in establishing the nature of the concept and differentiate it from other similar constructs, such as productivity and efficiency [1]. In relation to the nature of the performance, the current tendency conceives it as a multidimensional construct, and it is defined as “those behaviors which are relevant for organizational goals and are under the indi-

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have been identified [1, 2, 4], the performance is related to the behaviors task-oriented (and to the ones which exceed the demands of the role, or behaviors extra-role); while productivity and efficiency are considered to be consequences of those behaviors.

In the background of JP, there are many variables related to the work environment, such as organizational support, reward system and justice perceptions, and dispositional variables (for example: motivation, emotional intelligence, self-efficiency, achievement necessity, etc.) have been identified [5]. However, besides these traditional variables, the tendency in force [7] consists in analyzing the predictive potential of other factors, as well as the mediator or moderator mechanisms, which may have influence on the individual performance.

1.1 Job-family Articulation and Job Performance

Facing the increasing number of single-parent families and couples in which both members work outside their home, the analysis of the job-family interface has become a subject of central interest in modern societies. The analysis of literature shows that the negative and positive perspective of the job-family articulation has had an independent development. However, reality indicates that individuals experience both phenomena at the same time; that is why it is convenient to explore both phenomena simultaneously [9].

The negative perspective of the job-family articulation [9] refers to the conflict among roles in which the demands generated in a domain are incompatible with the ones of the other domain. Therefore, complying with the demands of one of them makes it difficult the completion in the other. Following with this definition, the job-family conflict may be delimited according to the orientation in which it is generated. That is to say, if it starts in the family and goes towards job (family-work conflict, FWC) or if it goes from job towards the family (work-family conflict, WFC).

The results concerning the impact of the WFC on general job performance have not been conclusive. In that regard, evidence [10] shows that the correlation tends to be small, specifying that when the FWC correlates significantly and negatively with job performance, the WFC does not present significant associations. In the same way, recent studies [11] show that friends support softens the negative effects of the FWC on the performance, and that co-workers support debilitates the correlation between the WFC and job performance.

Regarding the dimensions of job performance, it has been informed [10] that the WFC has a higher influence on the behaviors of organizational citizenship than on the general job performance. In this way, the employees who experience some kind of conflict may execute the habitual tasks in the same way, but they may opt to reduce the discretionary behaviors in benefit of the organization. Concurrently, it has been noted [13] that the WFC negatively predicts both the performance in the context and in the task, as long as the FWC is also negatively correlated to the last one.

Regarding the positive perspective of the articulation, named as job-family enrichment (WFE) [14] means that combining the job and family roles produces positive effects, which radiate to every domain of life. In this sense, resources gained at work contribute to improve the quality of family life. The same happens the other way around: resources gained in the family improve job performance. Greenhaus and Powell [14] defined resources as assets that may be available when it is necessary to solve a problem (skills, physical and psychological abilities, social capital).

In relation to its consequences, it has been noted [15, 16, 17] that the WFE predicts a higher level of satisfaction, lower resignation intentions and a higher organizational commitment. However, evidence shows that its impact on the performance is not direct but mediated by other factors [18]. Among these, job satisfaction stands out as a possible mediator capable of explaining the influence of the WFE on organizationally valuable results.

1.2 The Mediator Role of Job Satisfaction

Since its emergence in the academic world, job satisfaction has been the object of diverse conceptualizations. These include from its consideration as a positive feeling, to its definition in terms of favorability (or unfavorability) with which employees evaluate their job [20]. During the last years, the alternative of conceiving it as a group of affective and cognitive response to the working situation, with important implications in the behavior of employees and in the organizational results, has gained strength [21]. In this sense, the satisfied employees tend to experience more happiness and well-being; while organizations may be rewarded by an increase in productivity, higher commitment and lower resignation intentions by its members [20, 21].

Some evidence shows that satisfaction is significantly related to the articulation between job and family. In this respect, it has been found that, while the WFC predicts satisfaction negatively, the WFE is related to a positive attitude towards job [8, 16, 20, 22]. In accordance with such empirical evidence, the conceptual framework provided by the broaden-and-build model of emotions [23] allows to understand the possible mediator role of satisfac-
tion. According to this theoretical perspective, positive emotional states increase the psychological resources and amplify the possibilities of attention, cognition and action, being it an ascending spiral of positive emotionality. International literature \cite{20,21} agrees on emphasizing that satisfaction is intrinsically associated with a pleasant emotional state and, as such, with a positive motivational factor with a significant effect on the behavior. Therefore, while the satisfaction resulting from the perceptions of the WFC may influence positively on the performance, dissatisfaction associated with the WFC may be detrimental for it.

The present study is oriented to covering an empirical gap, examining the interrelationships between the job-family articulation, job satisfaction and job performance. In this sense, based on the background described, it was hypothesized an explanatory model of job performance in which the job-family articulation, in its positive and negative dimensions, take the role of independent roles while job satisfaction performs the role of mediating variable.

2. Method

2.1 Design

The present research belongs to an empirical, quantitative and cross-sectional study with an associative-explanatory strategy \cite{24}, since its purpose was to explore the functional relationship existing among variables.

2.2 Participants

Following the recommendations of Lloret-Segura, Ferreres, Hernández and Tomás \cite{25} of counting on at least 200 cases in order to guarantee the verification of the conjectures of the structural equations analysis, the empirical verification was conducted through a convenience sampling (non-probability) of 383 workers. This sample was formed of 195 men and 188 women, all of them workers in the city of Rosario and area of influence in diverse activity trades, such as commerce, service, industry, health and education. The highest percentage of participants was between 21-30 years old (37.9%) and 31-40 years old (28.7%). Lower age percentages were between 18-20 years old (13.6%), and between 41 y 50 years old (11.7%); while the age range of the older than 50 years old (8.1%) was the least represented.

2.3 Instruments

2.3.1 Personal variables

Each employee was asked to provide information regarding his/her gender, age and sector of the company.

2.3.2 Job satisfaction

The Generic Job Satisfaction Scale developed by Mac Donald and Mac Intyre \cite{26}, adapted by Salessi and Omar \cite{27}, was used. The instrument formed of 7 items (for example: “I can make use of all my abilities and skills in my job”), provides a global estimation of the degree of job satisfaction. Each indicator is evaluated according to a Likert scale with 5 options of answers (1 = “totally disagree”; 5 = “totally agree”). The higher the score is, the higher job satisfaction is.

2.3.3 Job performance

The Argentine validation \cite{28} of the Individual Job Performance Scale of Koopmans et al. was used \cite{4}. The instrument is formed of 13 items distributed as follows: task performance (for example: “I performed challenging tasks at work when I had the opportunity to do so”), contextual performance (for example: “I actively participated in meetings at work”) and counterproductive work behaviors (for example: “I complained about unimportant matters at work”); just as the global JP. Each indicator is valued on a Likert scale of 5 points (going from 1 = “never” to 5 = “always”), where the higher the score is, the higher the JP is.

2.3.4 Job-family articulation

This was explored by means of the Argentine adaptation \cite{22} of the Survey Work-Home Interaction (SWING) \cite{29}, formed of eight items with Likert format of 5 points (going from 1= “never” to 5= “always”). This scale explores the work-family enrichment through four items (for example: “I am more self-confident at work because my life at home is well-organized”), and the work-family conflict through four items (for example: “It is difficult for me to concentrate at work because I am worried about household issues”).

2.4 Ethical Considerations

The participation in this research project was voluntary and all the participants signed an informed consent protocol. Anonymity and confidentiality of the information provided were guaranteed. Throughout the entire process, all ethical precautions related to research with human beings established by the American Psychology Association and the recommendations of CONICET (National Scientific and Technical Research Council) for research in the social and human sciences were taken into consideration.

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2.5 Strategy of Analysis

The matrix of data was examined in order to detect missing values, outliers as well as parametric assumptions. The suitability of the data for factor analysis was tested with the Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy and Bartlett’s test of sphericity. The factors were extracted by means of Unweighted Least Squares analyses based on the polychoric correlation matrix and with help of the scree plot. Descriptive indexes (mean and standard deviation) and distribution measures (skewness, kurtosis and the Kolmogorov-Smirnov test) of the variables of the study were used to assess normality of the data. Following, the joint probability distribution of the variables was analyzed through the calculation of the coefficient of multivariate standardized kurtosis and a confirmatory factor analysis (CFA) was conducted in order to determine the adjustment of the measurement model used. Reliability was examined from Cronbach’s alpha coefficient and the index of composite reliability (CR). The convergent validity was determined by means of the average variance extracted (AVE). Discriminant validity was analyzed based on the square root of the AVE. The presence of potential biases due to the common method was evaluated from Harman’s single factor test.

The empirical verification was made from its modeling with structural equations. In this case, it was chosen to generate composite scores of the latent variables, bearing in mind the large quantity of observable variables and measurement error that they entail. This procedure was conducted through the imputation of the factor weight corresponding to each indicator creating a weighted average. In the structure model, the WFE and the WFC functioned as independent variables. In order to perform estimations, the maximum likelihood method was used with the robust corrections of Satorra-Bentler (S-B), recommended when data comes from Likert scales. The goodness of fit was analyzed from the follows indexes: (a) the ratio among the corrected chi-square and the degrees of freedom (S-B \( \chi^2 \)/df); (b) the goodness of fit index (GFI); (c) the comparative fit index (CFI) and; (d) the root mean square error of approximation (RMSEA). Additionally, the expected cross-validation index (ECVI) and the consistent Akaike information criterion (CAIC) were analyzed. As a complement, an analysis with bootstrapping was conducted in order to determine the statistical significance of the total, direct and indirect effects. With that purpose, 5,000 samples from the data set were randomly selected and the confidence intervals were estimated on 95%. The analyses were conducted with SPSS (version 23) and EQS (version 6.1) software.

3. Results

3.1 Preliminary analysis

Preliminary exploration, on 383 documents containing data, showed that there are not missing values. However, three univariate extreme observations were found once that the results of each variable transformed into standardized scores. In all the cases, data was found to be more than 3.5 DE above or below the mean of each variable. In addition, six cases that may be cataloged as multivariate outliers from the moment in which the values of the D\(^2\) index had a lower significance than the stipulated one (p< .001) were identified. Only two of those cases fulfilled the conditions of being both univariate and multivariate outliers. It was decided to eliminate six observations. So, 376 cases were considered valid to continue with the subsequent analysis.

Data was considered suitable for factor analysis since Bartlett’s test of sphericity was significant (\( \chi^2= 2305, 46; p<.000 \)) and KMO test showed a value of .82. Unweighted Least Squares analysis suggested four factors with eigenvalues greater than 1. Scree plot also indicated a similar solution (Figure 1).

In Table 1, descriptive statistics and the measures of statistical dispersion are presented. The totality of the items presented appropriate skewness and kurtosis values. However, the distribution of the latent variables corresponding to WFC and WFE did not correctly adjust to the univariate normal distribution. Nevertheless, the specific literature has indicated that the analysis of the data resulting from instruments valued with Likert scales (polytomous categorical variables) usually results in non-normality results. For that reason, it was decided not to replace the parametric tests with its non-parametric alternatives. For its part, the coefficient of multivariate

![Scree Plot](https://example.com/scree_plot.png)
standardized kurtosis was 42.30, being that much higher than the stipulated limit (-3; 3) to assume multi-normality \[30\]. Based on that result, it was decided to use robust estimators for the calculation of parameters, both in the measurement model and in the structural model.

**Table 1.** Descriptive indexes and K-S test for the variables under study (n = 376)

<table>
<thead>
<tr>
<th>VARIABLES</th>
<th>X</th>
<th>SD</th>
<th>Z</th>
<th>K-S</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Job Satisfaction</td>
<td>3.84</td>
<td>0.68</td>
<td>1.35</td>
<td>0.05</td>
<td></td>
</tr>
<tr>
<td>Job Performance</td>
<td>3.39</td>
<td>0.48</td>
<td>1.12</td>
<td>0.16</td>
<td></td>
</tr>
<tr>
<td>Work-Family Enrichment</td>
<td>3.62</td>
<td>0.82</td>
<td>1.62</td>
<td>0.01</td>
<td></td>
</tr>
<tr>
<td>Work-Family Conflict</td>
<td>2.33</td>
<td>0.62</td>
<td>1.53</td>
<td>0.01</td>
<td></td>
</tr>
</tbody>
</table>

**Source:** own authorship.

The measurement model, formed by four correlated variables (WFE, WFC, JS and JP), their respective indicators, and the corresponding measurement errors did not achieve a satisfactory adjustment (S-Bχ^2/df = 2.20, GFI = .85, CFI = .82, RMSEA = .07 [IC = .06; .07]). The elimination of six indicators (items 2 and 4 corresponding to JS; item 2 corresponding to WFE; item 3 corresponding to WFC; and items 9 and 12 corresponding to JP) that were not significantly linked with the corresponding variable allowed a more adequate adjustment to the empirical data (S-Bχ^2/df = 2.05, GFI = .92, CFI = .93, RMSEA = .05 [IC = .04; .06]). Table 2 presents the results derived from the reliability and validity tests of the measurement model. In all cases, Cronbach’s alpha and composite reliability exceeded the minimum of .70, the A VE index for each construct was higher than .50, and its square root was higher than the correlation between that construct and all others \[31\]. For its part, Harman’s single-factor test indicated that the data was not biased, since the variance explained by a single factor (17.75%) was well below the suggested limit of 50%

**Table 2.** Covariances, α index, CR index, AVE and square root of AVE corresponding to scales.

<table>
<thead>
<tr>
<th>VARIABLES</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>α</th>
<th>CR</th>
<th>AVE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Job Performance</td>
<td>(0.75)</td>
<td>.85</td>
<td>.93</td>
<td>.57</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Job Satisfaction</td>
<td>(.71)</td>
<td>.83</td>
<td>.86</td>
<td>.51</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>W-F Conflict</td>
<td>-.08</td>
<td>-.05</td>
<td>(0.72)</td>
<td>.73</td>
<td>.76</td>
<td>.52</td>
<td></td>
</tr>
<tr>
<td>W-F Enrichment</td>
<td>.13</td>
<td>.11</td>
<td>.19</td>
<td>(0.74)</td>
<td>.78</td>
<td>.78</td>
<td>.55</td>
</tr>
</tbody>
</table>

**Note:** The square root of the AVE is reported on the diagonal; bold = p < .01; italics = p < .05. (Source: own authorship).

**Source:** own authorship.

**3.2 Empirical Verification**

Modeling with structural equations allowed the indexes of adjustment of the structure model set out, as well as the magnitude and direction of the regression coefficients among the stipulated relationships to be known. Those indexes showed that the posed model was correctly adjusted to the empirical data (S-Bχ^2/df = 4.75; GFI = .93; CFI = .92; RMSEA = .04; ECVI = 2.05; CAIC = 57.82). Regarding regression coefficients, the WFE positively influenced job satisfaction (β = .61, p<.000), whereas the WFC do negatively (β= -.16, p<.000). In turn, the WFE linked to JP in a positive way (β = .35, p<.000), while the WFC was negatively linked (β = -.34, p<.000). For its part, JS positively linked to the dependent variable (β = .36, p<.000). So, the mediation mechanism could be verified.

Bootstrapping analysis allowed determining the statistical significance of the effects among the variables. Firstly, indirect effects of the dimensions of job-family articulation on JP through JS were statistically significant. Secondly, a reduction of the magnitude of the absolute value (total effects) in the presence of JS (direct effects) could be observed. However, the fact that the direct effects on JP continued being significant showed a type of partial mediation (Table 3).

**Table 3.** Standardized coefficients and confidence intervals corresponding to the indirect and direct effects of the W-F Conflict and Enrichment on the Job Performance (JP).

<table>
<thead>
<tr>
<th>VARIABLES</th>
<th>Total Effects</th>
<th>Direct Effects</th>
<th>Indirect Effects</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>β</td>
<td>95% CI</td>
<td>β</td>
</tr>
<tr>
<td>WFE =&gt; JP</td>
<td>.56</td>
<td>0.49; 0.62</td>
<td>.35</td>
</tr>
<tr>
<td>WFC =&gt; JP</td>
<td>-.39</td>
<td>-0.46; -0.32</td>
<td>-.34</td>
</tr>
</tbody>
</table>

**Note:** bold = p < 0.001 (Source: own authorship).

Figure 2 summarizes the standardized regression coefficients and the proportions of the explained variance (R^2). In this case, the verified model explains almost 71% of the job performance variance.

**Figure 2.** Standardized coefficients and explained variance proportions corresponding to the partial mediation model (Source: own authorship).

**Note:** dashed lines = residual direct effects; continuous lines = direct effects

**4. Discussion**

The present work intended to explore if job satisfaction
functions as mediator among the positive dimensions (enrichment) and negative dimensions (conflict) of the job-family articulation and job performance. The empirical verification conducted showed that, together, the job-family articulation and satisfaction explain 71% of the variability of individual job performance.

According to the findings obtained, while the WFC negatively affects job performance, the perceptions of WFE have a positive influence on it. Such results coincide with the conclusions reached by other specialists in the subject [10; 12; 13], who have noted that conflict erodes the performance causing unjustified absences, tardiness, lower attention levels and concentration on the task and, even, counterproductive job behaviors which put the organization at risk. In addition to that, specific literature [8] notes that the WFC contributes to increase psychological tension and burnout, affecting not only employee’s development in his/her functions but his/her level of well-being and occupational health. In contrast, the perceptions of balance and enrichment among the job and family domain influence favorably the performance thanks to its shock-absorbing effect on fatigue and work-related stress.

At the same time, differential correlation with job satisfaction has been found in this work. It shows an adverse impact by the JBC and a positive influence by the WFE. These findings are according to the evidence [8, 15, 16, 17, 20, 22], indicating that, while conflict is harmful for task commitment and pleasure, the perception of enrichment promotes positive feelings towards job and organization.

In agreement with studies that enlighten the ways through which the job-family articulation acts on performance [18, 19], the results obtained show that satisfaction acts as an underlying mechanism to the relationship among the variables being analyzed, partially explaining the effects of WFC and WFE on workers’ performance. In this sense, as indicated by the broaden-and-build model of emotions [23], positive emotional states associated with both WFE and satisfaction, would increase psychological resources and amplify attention, cognition and ability to act, translating into an ascending spiral that would positively affect job performance. On the contrary, negative emotions caused by WFC together with a low level of job satisfaction would limit psychological resources, ultimately diminishing the quality of the worker’s performance.

4.1 Practical Implications, Strengths and Limitations

The results of the study conducted entail certain practical implications for organizations. Firstly, understanding how the ways of job-family articulation are linked to JP may become an advantage for human resource managers when designing business policies “friendly” for the family. In this sense, some authors [38] have suggested that some designs of tasks which include a certain degree of autonomy in decision-making, as well as opportunities of training and skills development, may be used in order to raise the level of WFE among employees. In turn, this kind of strategies may have a substantial impact on the dimensions of the JP, such as: (a) facilitate the achievement of duty and tasks specific to job description (task performance); (b) encourage behaviors directed to keep the psychological and interpersonal environment in which the technical nucleus is unfolded (performance in context).

Likewise, the possibilities of balancing the demands of both domains, results in work environments promoting greater satisfaction. Having satisfied employees favors performance at work and the achievement of organizational goals. Thus, the organization would be rewarded with higher quality performances; while employees would experience higher levels of well-being and occupational health [38].

In the third instance, the decrease in WFC levels could result in lower rates of tardiness and unjustified absences [39]; at the same time that counterproductive work behaviors could be reduced in the face of perceptions of inequity [40]. As regards the benefits of workers, psychological tensions could be lessened [41], inhibit emotional fatigue [42] and thus dampen the possibilities of developing work-related stress or burnout syndrome [43].

Like all empirical work, the present implies strengths and weaknesses. Among its limitations, we must emphasize, firstly, the cross-sectional design used, which limits any inference of causality is the strict sense between the variables studied. Therefore, in order to truly establish the causal order of the relationships found in the present work, it would be very valuable if future research use longitudinal designs. Secondly, since the sample selection procedure has not been probabilistic, generalizing the results to the population is inadvisable. However, it should be clarified that, in order to minimize any inconvenience derived from the sampling, it was intended that the sample be of sufficient size to detect significant relationships statistically. Finally, a third limitation of the study could be referred to as the possible contamination of the responses by the effects of social desirability (that is to say, the tendency to show an improved image of oneself). In order to improve this in future studies, some of the many measures of social desirability available in the battery of data collection can be used.

Among the strengths of this research, it is convenient to highlight that it is a genuine contribution to knowledge. Possibly, the greatest contribution that may be attributed
to this study is that it poses a new perspective as an alternative to understand the binomial job-family and job performance; as well as that it demonstrated that, besides being a variable typically of result, satisfaction can also play a fundamental role as a mediating variable.

This study provided preliminary evidence regarding the mechanisms that are activated between the conflict perceptions or balance among the family and working duties, and the performance that people perceive at work. Reality indicates that individuals experience WFC and WFE simultaneously. Therefore, such phenomena must not be studied as watertight compartments. Following the same line, the present research makes a difference with other studies in the area, assuming that the articulation must be understood as the different ways of qualitative manifestation of the WFC and the WFE in people’s lives.

As corollary of the conducted work, future studies may continue broadening the map of performance predictors. Given the nature of the constructs involved, it is possible that the variables such as commitment, confidence and organizational justice emerge as suitable background. Exploration of these alternative ways would be setting the agenda for subsequent researches in the field.

5. Conclusion

The empirical verification conducted provides new evidence regarding the interrelations between job-family articulation, satisfaction and individual job performance. Findings confirm the negative impact of the WFC on the levels of satisfaction and performance; as well as the positive impact of WFE on such variables. In turn, they confirm the partial mediating role that satisfaction plays between both dimensions of the job-family articulation and job performance.

References


https://psycnet.apa.org/record/1990-98304-008


[13] Odle-Dusseau, H. N., Britt, T. W., & Greene-Shorridge, T. M. Organizational work–family resources
DOI: 10.1037/a0026428
DOI: 10.5465/AMR.2006.19379625
DOI: 10.1111/j.2044-8325.2010.02014.x
DOI: 10.5354/0719-0581.2015.37689
DOI: 10.1007/s10869-009-9141-1
DOI: 10.1177/0149206314144429
DOI: 10.1037/a002880
DOI: 10.1037/0003-066X.56.3.218
DOI: 10.6018/analesps.29.3.178511
DOI: 10.6018/analesps.30.3.199361
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Sub-Headings: Font size 16, bold type
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National Library of Singapore

NLB manages the National Library, 26 Public Libraries and the National Archives.

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