

Pretest of images associated with the expertise dimension

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In this paper, we present norms concerning the perceived association that two sets of stimuli (photos of people and photos of objects) establish with the concept of expertise. Participants were presented with a set of words associated with the expertise dimension and subsequently asked to judge each stimulus on how much it related with the learned (expertise) dimension on a 7-point scale (1 – Not at all related; 7 – Very related). The interpretation of means' confidence intervals allowed us to distinguish between images highly related with the expertise dimension and images highly unrelated with this dimension. Summarized results are presented and photos made available to support future research requiring stimuli associated with the expertise dimension.

Key words: Expertise, People, Objects, Norms.

Introduction

Human beings are particularly good at perceiving someone's level of expertise and, more importantly, basing their decisions on such perception. We start by presenting the relevance of the expertise dimension on the persuasion literature, its persuasive mechanisms, the methods by which it has been and can be manipulated in a persuasive communication, and the relevance of the validation of images associated with this dimension. With this work, we aim at offering the scientific community material to support research that needs to manipulate the level of perceived expertise. We test images from two categories (people and objects) for further use in different contexts and experimental settings. We thus aim at presenting norms for a set of contemporary images of people and objects regarding their perceived level of association with the expertise dimension.

Expertise and persuasion

The manipulation and activation of the expertise dimension may be relevant to areas of research such as impression formation and perceived power, among others. However, the field that has most studied this feature is communication, and especially persuasive communication.

Research on persuasion has revealed several processes through which attitudes form and change, and a substantial amount of work aims at identifying the factors that determine how people process persuasive messages (Clark, 2014). Source expertise is one of such factors and has been one of the most widely studied factors in persuasion. This line of research has predominantly

The images pretested in this work are available in the archive of the psychology lab of ISPA – Instituto Universitário. E-mail: labpsicologia@ispa.pt

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shown that people are more persuaded by experts than by non-experts (e.g., Chaiken & Maheswaran, 1994; Heesacker, Petty, & Cacioppo, 1983; Hovland & Weiss, 1951; Petty, Cacioppo, & Goldman, 1981). In fact, from a set of persuasive sources found in the literature, expertise seems to be the one that tends to have the greatest effect on persuasive communication, with the greatest average of the explained variance being due to the expertise manipulation (Wilson & Sherrell, 1993).

The mechanism through which this influence is exerted seems to be held at people's belief that "experts' statements are valid". People tend to act as they "endorse" the association of expertise with credibility (e.g., Gotlieb & Sarel, 1991; Hovland & Weiss, 1951; Maddux & Rogers, 1980; McGinnies & Ward, 1980). This association may then guide judgments whenever information regarding a source's expertise is present, offering a heuristic route that supports those judgments.

Because expertise provides a direct link to attitude change (e.g., Chaiken, 1987; Eagly & Chaiken, 1993; Petty & Cacioppo, 1981, 1986), when individuals have low motivation and low resources to process the content of the persuasive message, the manipulation of this feature informs about its persuasive processing. However, this as other variables of the persuasive context may also influence other persuasion routes, depending on the motivation and capacity to process a persuasive message. Specifically, persuasive cues like expertise can also: (a) bias thoughts related with a persuasive message (e.g., Chaiken & Maheswaran, 1994); (b) influence the degree of confidence people hold in their thoughts (e.g., Tormala, Briñol, & Petty, 2006); (c) determine the extent to which people scrutinize (e.g., Debono & Harnish, 1988; Heesacker, Petty, & Cacioppo, 1983; Tobin & Raymundo, 2009) and pay attention to persuasive appeals (Debono & Harnish, 1988; Heesacker et al., 1983; Moore, Hausknecht, & Thamodaran, 1986; Tobin & Raymundo, 2009).

Expertise manipulation

Research on the persuasion field has often relied on providing participants with biographical information about the persuasive source (see Eagly & Chaiken, 1993). As discussed, providing information in form of a short description of source expertise may promote attitude change either directly or indirectly by affecting the interpretation or the evaluation of the message.

However, impressions of a source can be also shaped in more ecological and spontaneous ways, such as through visual cueing. In order to affect ads' perceived credibility, advertisers commonly make use of source expertise through, for example, the use of white lab coats, making one a "doctor" or a "scientist", or tidy black suits, making one a "financial expert".

It is of common sense, and acknowledged, that a way used to judge a source's expertise is through his or her appearance (e.g., Aronson, 2004; Boucher, 2011; Brownlow, 1992; Nguyen & Masthoff, 2007). Although perceived expertise is of particular interest in experimental contexts, researchers have long manipulated this peripheral cue by simply selecting pictures in how prototypical they appear in regard to the expertise dimension. Manipulation of source clothing (e.g., semi-formal clothing vs. mechanic uniforms; Boucher, 2011), use of doctors as expert sources (Nguyen & Masthoff, 2007), or manipulating the presence of medical equipment in these images (Jiwa, Millet, Meng, & Hewitt, 2012), constitute examples of such operationalization.

However, methods through which expertise is visually manipulated scarce necessary validation. Consequently, with this work, we aim at providing the scientific community material to support research that needs to manipulate the level of perceived expertise.

Objective

Our objective with the present work is to provide material facilitating the research on this field, by analyzing the perceived association of (1) potential source images and (2) familiar objects with

the expertise dimension. We expect to show that objects are also associated with the expertise dimension, supporting studies that do not want to use either images of people, nor words, or short descriptions. As shown by Jiwa et al. (2012), objects such as medical instruments exert a positive influence on the depicted person's perceived trustworthiness, which relates with the expertise dimension (Pornpitakpan, 2004). Here, we aim at showing that such expert-related objects are also associated with the expertise dimension when presented by themselves. One of the main advantages associated with the use of objects as experimental stimuli is the fact that these have ecological validity (Bradley & Lang, 1999) whose processing of semantic meaning appears to be fast (Carr, McCauley, Sperber, & Parmalee, 1982).

We aim at finding a subset of images with good inter-subject agreement, which can be used in future experiments.

Method

Sample

Seventy three Portuguese undergraduate Psychology students (57 females), with ages between 17 and 42 years-old ($M=20.04$; $SD=3.50$), participated in this laboratory study.

Material

Images of people and objects were selected from online image banks (e.g., *Google images*), having as criteria: (1) the presence of only one object/person for image; (2) the objects are represented in a white background; and (3) images have no copyright and are open access.

After selected, the images were digitally edited and standardized regarding their dimension, resolution and color scale. Specifically, resulting images are in grayscale, with a resolution of 800x800 pixels.

Resulting stimuli consisted on a total of 80 images subdivided in two categories: 40 images of objects and 40 images of people. These images were selected from a larger set, being pre-categorized by 10 judges as belonging to an Expert and Non-Expert categories. The judged images that gathered stronger consensus regarding their classification were selected for the final sample, resulting in 20 images for each of the 4 categories (Expert/Non-Expert objects, and Expert/Non-Expert people).

In order to study the association with expertise, we used a set of 12 words representing this dimension. These words were selected from a larger set by 10 judges who evaluated them as those best representing the expertise dimension. The words selected were: Specialized; Knowledgeable; Intelligent; Qualified; Educated; Expert; Erudite; Competent; Skilled; Technical; Professional; and Proficient¹.

Measure and procedure

This study was conducted in a laboratory context using the E-prime software (Schneider, Eschman, & Zuccolotto, 2002) v.2.0 for the presentation of the stimuli and data collection.

¹ Original words, as presented in Portuguese: *Especializado, Conhecedor, Inteligente, Qualificado, Instruído, Perito, Erudito, Competente, Hável, Técnico, Profissional* and *Proficiente*.

Participants were invited to participate in a study about “Evaluation of Images” with a mean duration of 10 minutes. Participants provided informed consent, and anonymity and confidentiality of data were assured.

Participants’ first task consisted on learning the expertise dimension. To this end, participants were told they would be presented with a set of words with the objective of learning the construct they represent. Instructions requested particular attention to these words and indicated that after their presentation, the next task would consist on indicating for different images how these related with the learned construct. Participants were instructed to press the Space tab and move on to the subsequent task once they felt they had completely learned/comprehended the construct. In the image evaluation task, participants evaluated a set of images according to the previously learned construct, on a 7-point scale ranging from 1 (Not at all related) to 7 (Very related).

In the image evaluation task, all images were randomly and individually presented on the screen, along with the set of expert-related words on the superior section of the screen and the 7-point scale on the lower section of the screen (see Figure 1). With this procedure, we aimed that each image was evaluated for the expertise dimension without necessarily being evaluated for the concept of expertise. This way, ratings based on a general and standardized expertise dimension were obtained.

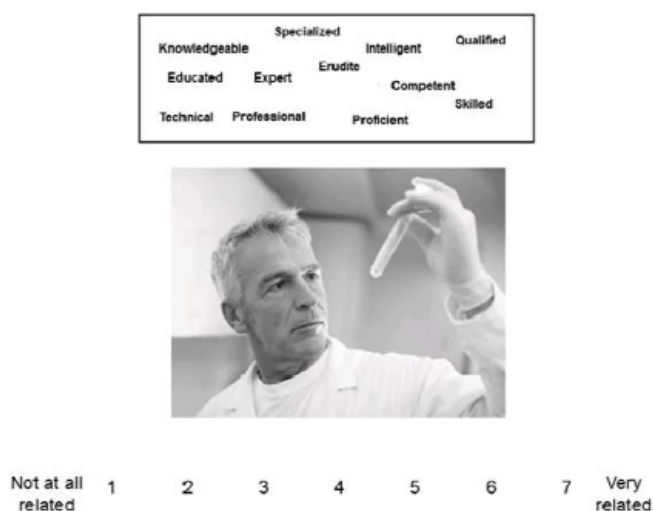


Figure 1. Still frame of the image evaluation task

To provide their answers, participants pressed one of the 7 number keys corresponding to the scale. After finishing, participants were thanked for their participation and properly debriefed.

Results







Obtained results are summarized on Table 1 and Table 2. Data for evaluation means (construct-image association), respective standard-deviations (translating the evaluations consensus), and confidence intervals are presented. The images on Tables 1 and 2 are ascendingly ordered according to the evaluation means.

Through the analysis of the ratings confidence intervals, we were able to categorize the images regarding their association with the Expertise dimension. To this end, images containing the mean point of the scale (4) were classified as neutral (considering as neutral limits $[3.5 \geq 4.5]$). Following this criteria, we identified 11 images of people with low scores on the association with the expertise dimension (from image 1 to 11), 8 images identified as neutral on this dimension (image 12-19), and 21 images identified as high on the association with the expertise dimension (image 20-40; Table 1).

Regarding the images of objects, we identified 26 images of objects with low scores on the association with the expertise dimension (from image 1 to 26), 5 images identified as neutral on this dimension (image 27-31), and 9 images identified as high on the association with the expertise dimension (image 32-40; Table 2)².

Table 1

Means, Standard-deviations, and confidence intervals associated with each image evaluated on the "People" category

Image number	Stimulus	Mean (SD)	95% Confidence interval for means	Expertise association
1		2.438 (1.683)	[2.05; 2.83]	Non-Expert
2		2.452 (1.675)	[2.06; 2.84]	Non-Expert
3		2.493 (1.643)	[2.11; 2.88]	Non-Expert
4		2.712 (1.837)	[2.28; 3.14]	Non-Expert
5		2.808 (1.785)	[2.39; 3.22]	Non-Expert
6		2.877 (1.787)	[2.46; 3.29]	Non-Expert

² Additional analyses of the obtained evaluations showed that images previously classified as belonging to the Expertise category were, indeed, perceived by participants as more related to this dimension compared to the Non-Expert images, for both people category [Expert: $M=5.95$, $SD=.98$; Non-Expert: $M=3.61$, $SD=.99$; $t(72)=18.525$, $p<.001$, $d=2.37$] and objects category [Expert: $M=4.66$, $SD=1.23$; Non-Expert: $M=2.58$, $SD=1.14$; $t(72)=18.402$, $p<.001$, $d=1.75$].













Image number	Stimulus	Mean (SD)	95% Confidence interval for means	Expertise association
7		3.055 (1.817)	[2.63; 3.48]	Non-Expert
8		3.233 (1.867)	[2.80; 3.67]	Non-Expert
9		3.356 (1.896)	[2.91; 3.80]	Non-Expert
10		3.534 (1.908)	[3.09; 3.98]	Non-Expert
11		3.548 (1.826)	[3.12; 3.97]	Non-Expert
12		3.658 (1.887)	[3.22; 4.10]	Non-Expert
13		3.767 (2.045)	[3.29; 4.24]	Non-Expert
14		3.959 (1.918)	[3.51; 4.41]	Non-Expert
15		4.384 (1.838)	[3.95; 4.81]	Neutral
16		4.562 (1.833)	[4.13; 4.99]	Neutral
17		4.603 (1.824)	[4.18; 5.03]	Neutral
18		4.863 (1.946)	[4.41; 5.32]	Neutral













Image number	Stimulus	Mean (SD)	95% Confidence interval for means	Expertise association
19		4.890 (1.752)	[4.48; 5.30]	Neutral
20		4.986 (1.852)	[4.55; 5.42]	Expert
21		5.301 (1.854)	[4.87; 5.73]	Expert
22		5.425 (1.666)	[5.04; 5.81]	Expert
23		5.671 (1.415)	[5.34; 6.00]	Expert
24		5.685 (1.526)	[5.33; 6.04]	Expert
25		5.781 (1.397)	[5.45; 6.11]	Expert
26		5.795 (1.384)	[5.47; 6.12]	Expert
27		5.822 (1.388)	[5.50; 6.15]	Expert
28		5.877 (1.423)	[5.54; 6.21]	Expert
29		5.945 (1.403)	[5.62; 6.27]	Expert
30		5.959 (1.327)	[5.65; 6.27]	Expert











Image number	Stimulus	Mean (SD)	95% Confidence interval for means	Expertise association
31		5.973 (1.301)	[5.67; 6.28]	Expert
32		6.110 (1.329)	[5.80; 6.42]	Expert
33		6.137 (1.398)	[5.81; 6.46]	Expert
34		6.164 (1.014)	[5.93; 6.40]	Expert
35		6.164 (1.312)	[5.86; 6.47]	Expert
36		6.192 (1.287)	[5.89; 6.49]	Expert
37		6.192 (1.421)	[5.86; 6.52]	Expert
38		6.260 (1.179)	[5.99; 6.54]	Expert
39		6.260 (1.118)	[6.00; 6.52]	Expert
40		6.274 (1.083)	[6.02; 6.53]	Expert

Table 2

Means, Standard-deviations, and confidence intervals associated with each image evaluated on the “Object” category












Image number	Stimulus	Mean (SD)	95% Confidence interval for means	Expertise association
1		1.590 (1.311)	[1.28; 1.89]	Non-Expert
2		1.970 (1.323)	[1.66; 2.28]	Non-Expert
3		2.000 (1.590)	[1.63; 2.37]	Non-Expert
4		2.027 (1.590)	[1.66; 2.40]	Non-Expert
5		2.055 (1.471)	[1.71; 2.40]	Non-Expert
6		2.247 (1.801)	[1.83; 2.67]	Non-Expert
7		2.288 (1.504)	[1.94; 2.64]	Non-Expert
8		2.356 (1.751)	[1.95; 2.76]	Non-Expert
9		2.411 (1.681)	[2.02; 2.80]	Non-Expert
10		2.521 (1.901)	[2.08; 2.96]	Non-Expert
11		2.589 (1.763)	[2.18; 3.00]	Non-Expert


















Image number	Stimulus	Mean (SD)	95% Confidence interval for means	Expertise association
12		2.630 (1.882)	[2.19; 3.07]	Non-Expert
13		2.808 (1.883)	[2.37; 3.25]	Non-Expert
14		2.822 (1.953)	[2.37; 3.28]	Non-Expert
15		2.822 (1.782)	[2.41; 3.24]	Non-Expert
16		2.986 (1.837)	[2.56; 3.41]	Non-Expert
17		3.055 (2.054)	[2.58; 3.53]	Non-Expert
18		3.137 (1.946)	[2.68; 3.59]	Non-Expert
19		3.151 (1.998)	[2.68; 3.62]	Non-Expert
20		3.301 (1.970)	[2.84; 3.76]	Non-Expert
21		3.521 (2.008)	[3.05; 3.99]	Non-Expert
22		3.548 (1.901)	[3.10; 3.99]	Non-Expert
23		3.562 (1.965)	[3.10; 4.02]	Non-Expert

Image number	Stimulus	Mean (SD)	95% Confidence interval for means	Expertise association
24		3.740 (2.273)	[3.21; 4.27]	Non-Expert
25		3.808 (2.106)	[3.32; 4.30]	Non-Expert
26		3.9452 (2.291)	[3.41; 4.48]	Non-Expert
27		4.014 (2.085)	[3.53; 4.50]	Neutral
28		4.260 (2.199)	[3.75; 4.77]	Neutral
29		4.850 (2.012)	[4.38; 5.32]	Neutral
30		4.890 (2.092)	[4.40; 5.38]	Neutral
31		4.904 (2.069)	[4.42; 5.39]	Neutral
32		4.986 (1.926)	[4.54; 5.44]	Expert
33		5.096 (1.945)	[4.64; 5.55]	Expert
34		5.178 (1.981)	[4.72; 5.64]	Expert
35		5.384 (1.761)	[4.97; 5.79]	Expert

Image number	Stimulus	Mean (SD)	95% Confidence interval for means	Expertise association
36		5.493 (2.04)	[5.02; 5.97]	Expert
37		5.521 (1.811)	[5.10; 5.94]	Expert
38		5.658 (1.618)	[5.28; 6.03]	Expert
39		5.877 (1.691)	[5.48; 6.27]	Expert
40		5.877 (1.787)	[5.46; 6.29]	Expert

Discussion

The aim of this work consisted on the presentation of norms for a set of updated pictures for the expertise dimension from two categories (people and objects). With the material here tested, we hope to provide support for research carried out with the use of images that aim to manipulate the expertise dimension, reducing the effort necessary to collect this type of stimuli.

Obtained results suggest a differentiation between images regarding their association with the expertise dimension translated by the means' confidence intervals, for both people and object categories. As proposed, we were able to identify a set of images of objects associated with the expertise dimension, providing support to studies that do not want to use either images of people nor written descriptions in order to cue the expertise dimension.

However, it is important to keep in mind possible existing cultural differences regarding the effects of source expertise. Research has provided evidence for cultural differences for the persuasiveness of this cue, not only between Western and Eastern cultures (Pornpitakpan & Francis, 2001), but also among Western cultures, between European countries (Hornikx & Hoeken, 2007). This way, it is important to test and to adapt these materials to confirm the norms here present among different cultures.

Additionally, when using the material here tested, it should be kept in mind that a source's perceived expertise can also be topic dependent. That is, when presenting information about a topic, a communicator might cue a higher expertise regarding some aspects but a lower expertise on others. That would mean that a doctor might be more persuasive than an athlete when presenting information regarding the benefits of exercise on health, but an athlete might have an advantage

over a doctor when presenting information about fitness programs, as shown by Nguyen and Masthoff (2007). Consequently, the selected images and their respective scores on the association with the expertise dimension, although effective in representing the association with expertise on a general sense, does not take into account these different persuasive contexts, which should be taken into account when using this material in future studies.

We should also point out a possible limitation regarding the measure used to make participants apprehend the expertise dimension. Our purpose was to use a measure that did not directly ask participants to make judgments of “Expert”, “Specialized”, “Knowledgeable”, etc., but judgments based on a general construct of expertise. Aiming to use this same measure for both people and objects in order to have a set of words related with expertise regardless of the stimuli present, there might have been some words that could be more related and applicable to people than objects. Consequently, it is possible that such words could have conceptually distanced themselves from the others. However, we do not believe that such operationalization affected the ratings leading participants to misuse the learned construct, since the results show a clear significant differentiation between images in their associations with the expertise dimension for both people and object categories. The words elected by the judges as best representing the expertise dimension were selected independently of a specific persuasive context. With this, we aimed at using a set of words reflecting the general dimension of expertise. However, words such as “Erudite” or “Educated” might refer to expertise domains in which a formal education can be perceived as necessary. If such was the case, images reflecting expertise domains that do not necessarily require a formal education might have been perceived as less associated with the expertise dimension. Again, this emphasizes the need to take into consideration possible differences between persuasive contexts when using the material here tested.

Overall, we provide here a subset of images with good inter-subject agreement, which can be used in future different contexts and settings, with particular focus on experimental studies aiming to study the direct or indirect effects of expertise-related images.

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Neste trabalho apresentamos normas de associação percebida de dois tipos de estímulos (imagens de pessoas e imagens de objectos) com o constructo de “perícia” (*expertise*). Os participantes foram expostos a um conjunto de palavras associadas com o constructo de perícia e subsequentemente avaliaram cada imagem relativamente ao quanto estas se relacionam com o constructo aprendido numa escala de 7 pontos (1 – Nada relacionada; 7 – Muito relacionada). A interpretação dos intervalos de confiança das médias permitiu distinguir entre imagens altamente relacionadas com o constructo de perícia e imagens não relacionadas com este constructo. Os resultados obtidos são apresentados e discutidos e as imagens testadas são disponibilizadas de forma a apoiar futuros estudos que requeiram estímulos associados ao constructo de perícia.

Palavras-chave: Perícia, Pessoas, Objectos, Normas.

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