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Cooperation in the Latin American behavioral sciences: Motivation, evaluation and difficulties

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ABSTRACT

This study investigated the motivation for establishing partnerships, how these partnerships are evaluated, and the difficulties encountered in the partnerships among Latin-American researchers in behavioral sciences. A hundred Latin-American researchers who had published scientific work indexed in *Psycinfo* in which another author from the continent participated. The participants answered a questionnaire on the above-mentioned topics. The results indicated that the main reasons for establishing partnerships with other Latin-Americans were to seek broader and more significant results and increased productivity or the visibility and recognition of production. As regards the evaluation of the results of the partnership, most participants indicated that the partnership has resulted in an increase in publications and publications of higher scientific level and greater visibility. Several difficulties were recognized, which in general, were access and communication in order to maintain the partnership. The main difficulties in conducting research were related to the final writing of the paper, as an article, chapter or other, as well as data collection. In terms of work infrastructure, the main barriers were financial constraints and lack of time to devote to the partnership. It can be concluded that the main reasons to cooperate are qualitative and quantitative advances, and that the difficulties in the partnerships are secondary.

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Cooperación en las ciencias del comportamiento latinoamericanas: Motivación, evaluación y dificultades

Palabras clave:
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RESUMEN

Este estudio investigó la motivación para el establecimiento de asociaciones para cooperación, cómo se evalúan estas asociaciones y las dificultades encontradas entre los investigadores latinoamericanos en ciencias de la conducta. Participaron un centenar de investigadores latinoamericanos que habían publicado trabajos científicos indexados en Psycinfo con otro autor del continente. Los participantes respondieron a un cuestionario sobre los temas antes mencionados. Los resultados indicaron que las principales razones para el establecimiento de asociaciones para cooperar con otros latinoamericanos fueron: buscar resultados más amplios y significativos y aumento de la productividad o de la visibilidad y el reconocimiento de la producción. En cuanto a la evaluación de los resultados de la asociación, la mayoría indicó que la asociación se ha traducido en aumento de las publicaciones, en publicaciones de mayor nivel científico y en una mayor visibilidad. Se reconocieron varias dificultades. En general, las principales dificultades fueron el acceso y la comunicación para mantener la asociación. Las principales dificultades para llevar a cabo la investigación se relacionan con la redacción final del documento, como un artículo, capítulo u otro, y la recopilación de datos. En cuanto a la infraestructura de trabajo, las principales barreras fueron las limitaciones financieras y la falta de tiempo para dedicar a la asociación. Se puede concluir que las principales razones para cooperar son los avances cualitativos y cuantitativos, y que las dificultades en las asociaciones son secundarias.

International cooperation in all areas of science has increased over the years (Gama & Velho, 2005; Kliegl & Bates, 2011; Leydesdorff & Wagner, 2009; Wagner, 2006). The data available for Latin America also point to the growth of international cooperation in various fields of science (Fernández, Gómez, & Sebastián, 1998; Fernández, Frank, & Pittaluga, 2005; Paz López & María Taborga, 2013; Russell & Ainsworth, 2013; Russell, Ainsworth, Del Río, Narváez-Berthelemot, & Cortés, 2007; Vanz, 2009) including by social networks (Pinto, Efrain-García, Rodríguez Barquín, & Moreira González, 2007). The growth of international cooperation also affects psychology, as found in a study of the production which occurred resulting from cooperation in the 1975–2007 period, in 12 of the leading journals of Psychology (García-Pereira & Quevedo-Blasco, 2015; Kliegl & Bates, 2011; Quevedo-Blasco & López-López, 2011). However, scientific cooperation seems to be less significant when it comes to Ibero or Latin American production in Psychology (García-Martínez, Guerrero-Bote, Hassan-Montero, & Moya-Anegón, 2009; García-Martínez, Guerrero-Bote, & Moya-Anegón, 2012). López-López et al. (2010) found low levels of cooperation in the Ibero American Psychology, pointing to the difficulty of establishing and maintaining networks of national and international cooperation. López, Silva, García-Cepero, Bustamante, and López (2011) also observed lack of cooperation in Latin American Psychology, based on journal articles in Latin America included in the Redalyc system between 2005 and 2007, suggesting that research communities in Latin America have yet to be articulated concerning research and publications, highlighting the need to strengthen cooperation networks. These findings provide the basis of what can be the first attempts in our community to consolidate an academic community, which we believe could be decisive in the scientific and technological development of our region.

In a documentary related to investigation on scientific cooperation between countries in Latin America based on Psycinfo data for the period 2001–2010, Garcia, Acevedo-Triana, and López-López (2014) found low levels of scientific cooperation between Latin American countries in Psychology and related sciences, with a total of 528 publications for the decade. Countries that published more cooperative investigation in the period were Brazil, Mexico, Argentina, Colombia, Chile and Peru. These results are coherent with other researches on cooperation (López-López, de Moya Anegón, Acevedo-Triana, Garcia, & Silva, 2015). The tentative explanation for that revolves around lack of communication between researchers and the standards of competitiveness that hinder cooperation.

The literature on international scientific cooperation generally indicates more advantages than disadvantages in cooperation programs between countries. Furthermore, scientific cooperation is – in local contexts – a main variable for production within research groups (Ramírez, Mihi Ramírez, & Noguera Hidalgo, 2014). Similarly, this literature points more reasons to cooperate internationally than difficulties and problems to overcome in these partnerships. Vanz and Stumpf (2009, 2010) proposed a list of reasons for national or international scientific cooperation based on the systematization of national and international literature on the subject, including – inter alia – the following:

"1. Desire to increase scientific popularity, visibility and personal recognition; 2. Increase in productivity; 3. Rational use of scientific labor, work and time spent on research; 4. Reducing the possibility of error; 5. Obtaining and/or expanding funding, resources, special equipment, materials; 6. Increasing specialization in science; 7. Ability to "attack" the major research problems; 8. Increasing professionalization of science; 9. Desire to increase their experience through the experience of other scientists; 10. Desire to perform multidisciplinary research "(Vanz & Stumpf, 2010, pp. 50–51).

According to Luukkonen, Persson, and Sivertsen (1992), international cooperation is motivated by indirect and direct reasons. The main indirect motivations include strategic motivations directed by governments or agencies of a social, political, economic, military or cultural nature. The direct motivations include: (a) access to knowledge, skills and experts in science and technology; (b) access to unique places and population groups and their data; (c) division of costs and risks; (d) aid in global environmental issues and public health; (e) the establishment of normative standards of science and technology development. In this sense, the conditions in the region of Latin America do not allow to easily overcome these drawbacks, which suggests a distance to generate cooperation processes.

Silva (2007) presents the possibility of achieving common goals in a globalized world as an advantage of international cooperation, opening up opportunities for developing countries. The author suggests that the benefits include sharing costs, access to expertise, technology and facilities, political reinforcement to the project/program and the creation of good relations. As for risks, the author includes loss of freedom of action and the creation of dependency, in addition to increased management complexity, among others.

Wagner (2006) identifies five main reasons why researchers are engaged in international cooperative activities: (a) they can increase their visibility among peers and explore complementary capabilities; (b) they can share the costs of projects that are large in scale or scope; (c) they can access or share expensive physical resources; (d) they can achieve greater leverage to share their data; and (e) they need to exchange ideas in order to encourage greater creativity. Furthermore, Narin, Stevens, and Whitlow (1991) showed that cooperation increases the visibility and the impact of scientific investigation, especially in documents signed by various countries.

According to Wagner and Leydesdorff, (2006), the networks established by international collaboration in science and technology provide opportunities for developing countries to acquire knowledge for local development, but there is little indication of how to manage these networked systems. The potential for misunderstandings and obstacles to organize the networks are significant. For Okubo and Zitt (2004) modern means of communication facilitate scientific exchange, and international programs have provided economic incentives for cooperation. However, collaboration between scientists from different countries is not straightforward. Specific barriers related to language, cultural or geographical distance must be overcome. Vílchez de Salazar and Flores Urbáez (2004) indicate financial factors as obstacles and limitations to international scientific cooperation, as well as physical and technological infrastructure, institutional standards, availability of human resources, little formality of the process of international cooperation in the university, the university administrative bureaucracy and the low culture of innovation and cooperation. Besides advantages and disadvantages, the authors have investigated factors associated with the existence or development of international scientific cooperation or determinant factors of cooperation. In this case, geographical proximity is an important factor, enhanced by the cultural/linguistic proximity or geopolitical proximity (Bassecoulard, Okubo, & Zitt, 2001; Okubo & Zitt, 2004).

These findings suggest difficulty to cooperate. However, these hurdles could be overcome if there is a strengthening of the academic community of the region. In addition, to date these conditions could be a first step in the creation of mechanisms to overcome them. Given the importance of scientific cooperation for the advancement of Psychology and related sciences in Latin America and the indications in the literature of lack of wider cooperation on the continent, this study investigated the motivation to establish partnerships, how these partnerships were evaluated and the difficulties encountered in the same among Latin American researchers in the behavioral sciences.

Method

Participants

The participants were 100 Latin American researchers who had published an article in a journal indexed by Psycinfo in collaboration with another Latin American author(s). Potential participants were identified and located based on information from publications identified in the first stage. The inclusion criteria for participation in the research were: (a) to be linked to a research institution or university based in Latin America; (b) to have published documents in collaboration with Latin American authors of another country in the period between 2001 and 2010.

Data collection procedure

Once identified, potential participants were invited to participate and answer the questionnaire on their research partnerships with other Latin American authors.

Instruments

A questionnaire was developed to be used specifically in this investigation, which aimed to identify the factors that motivated the partnership from a list of possibilities based on the literature on scientific cooperation. Other questions sought to investigate how the participants evaluated the results of the partnership. Finally, we sought to identify the difficulties in establishing and maintaining international partnerships. This question was divided into three sub-items. The first item sought to obtain information on the general difficulties. The second item explored information on difficulties in conducting the investigation itself. Finally, the third item aimed

at obtaining information on difficulties related to research infrastructure.

Data analysis procedure

Data from the questionnaires were tabulated and presented with the help of descriptive statistics. Open questions were analyzed with the use of content analysis.

Results

A scientific partnership with a researcher from another country brings along a number of difficulties and costs that exceed those faced in local or national partnerships, despite the advantages associated thereto. Thus, this investigation undertook to understand the reasons why Latin American researchers sought alliances with researchers from other Latin American countries. This type of information aimed at understanding the factors involved in finding Latin American partners before conducting a specific investigation. However, it was also considered important to understand how a partnership would be evaluated by someone who had participated in the process once established, and after bringing a product (scientific paper or chapter) to fruition. In this sense, the objective was to understand the perception of researchers before and after achieving a scientific partnership with other Latin American researchers. Finally, we sought to understand the difficulties perceived in the course of these partnerships to bring together elements that would allow to reflect on ways to optimize these partnerships, including its limiting factors.

This article presents the results about these three points investigated: (a) the motivating factors to establish scientific partnerships with researchers from other Latin American countries; (b) how researchers evaluate such cooperation or scientific partnership; and (c) the difficulties encountered in this partnership. This article is based on data collected using a questionnaire answered by 100 Latin American researchers working in the field of behavioral sciences and refer to partnerships that generated at least one publication indexed in Psycinfo – a database organized by the American Psychological Association from 2001 to 2010.

Motivation for cooperation

The establishment of partnerships and scientific cooperation is based on different reasons or motivating factors. Based on the literature on scientific cooperation, four different alternatives were presented to participants as motivation to participate in a scientific alliance with other Latin American researcher. Participants could also indicate and specify other factors, if they deemed necessary. The 100 participants could indicate one or more factors to cooperate. Table 1 indicates the motivation factor to establish partnerships.

Most participants were motivated to participate in international cooperation with other Latin American researchers in order to search for broader or more significant results, followed by the expected increase in productivity or the visibility and recognition of production and the possibility of access to new methods or research resources. The expansion of the possibility of obtaining funding was less indicated as a motivating factor for the partnership. Twenty-two participants indicated other factors beyond those proposed by the research instrument. These factors were grouped into the groups below. Some have referred to a historical factor, which would enable or facilitate such partnerships, referring to the existence of an agreement with Latin American countries (participants 13, 57, 89, 92) or the existence of previous cooperation history (24, 93). The exchange with colleagues in Latin America has also been mentioned, so that these partnerships have been motivated by the possibility of exchanging and rapprochement with Latin American colleagues (27, 31, 34, 56, 82). Another motivation was to develop, integrate or disseminate knowledge about a specific area (7, 33, 97). These partnerships have also been motivated by complementary possibilities, allowing comparative studies between countries (63) and technical complementation or access to participants (59, 94, 100). Cooperation was also motivated by the possibility of training human resources on drugs (86). Finally, cooperation was seen as something worthwhile in itself, creating the possibility of developing studies, simple collaboration or common interest (34, 60, 81) and it is linked to friendship and trust (34, 67).

Table 1 – Motivation to establish partnerships.

Motivation factor	Frequency
Search for broader or more significant results	60
Access to new methods or research resources	32
Increased productivity and visibility and recognition of production	43
Expansion of the possibility of obtaining funding	13
Other (please specify)	22

Note: Frequency by each motivation factor

The three most frequently cited factors indicate that motivation is a scientific breakthrough as the intrinsic results of research in terms of quality, productivity and impact (visibility and recognition) are affected. In short, partnerships were motivated by more specific factors (linked to the achievement of a particular investigation) and broader factors (such as strengthening research fields and Latin American science). The main motivation for establishing partnerships refers to increasing the quality and quantity of scientific investigation.

Evaluation of partnership results

All investigated partnerships resulted in at least one article or chapter published so they can be seen as successful from a scientific production point of view. However, it was investigated how researchers evaluated these partnerships regarding the products obtained. The authors could choose between two alternatives, indicating an increase in the number of publications (quantitative increase) or indicating as a result higher-level scientific publications and greater visibility (qualitative gain). Other responses could be given if the participant did not agree with those answers. The results are shown in Table 2.

As a result of the partnership, most researchers recognized not only an increase in the number of publications, but also a

Table 2 – Evaluation of partnership results.

Factor	Frequency
The partnership resulted in an increase of publications	59
The partnership has resulted in higher-level scientific publications and higher visibility	61
Other (please specify)	20

qualitative gain in terms of generating higher scientific level of publications and higher visibility. Other responses indicated other possible results for these partnerships. Among the 17 participants who specified other results, some indicated as a result of the partnership "a publication" (participants 33, 58, 65, 82, 89, 90). In some cases, participants restated the value of cooperation considered - for example, an excellent academic collaboration (56). Others recognize the results for the researcher, promoting their academic and intellectual growth (77). Sometimes, the result seems to be more limited, as in the case in which the partnership continued only with one of the researchers (doctoral student), albeit duration was short (7).

In other cases, one can see a multiplier effect in the sense that the partnership ended up affecting other researchers and other groups, allowing further scientific development. An example is the case of one of the participants who indicated that, as a result of the partnership, Mexican nurses were creating research centers in graduate courses in the country (13). The results also affected areas and lines of research, as well as encouraged the students involved. One of the participants acknowledged that the partnership favored the consolidation of a research field (8). Another referred to the creation of new lines of research, training students and doctoral training of a student in another country (34) and also the students could have contact with new research approaches (35, 96). Partnerships also contributed to the relationship between groups, strengthening collaboration with a co-author and his working group (15). More broadly, some researchers recognized the opportunity to make Latin American research known internationally as a result of the partnership (27, 41). In short, partnerships were considered positive with more or less far-reaching consequences, ranging from the publication of a paper to the perception of a breakthrough for Latin American science. The evaluation of partnerships, as well as the motivation to cooperate, focused on the scientific results.

Difficulties and limiting factors

In addition to investigating the motivating factors to establish a scientific alliance and the evaluation of results, we sought to investigate the difficulties encountered in the course of this cooperation. Of the 100 participants, 35 reported that they found no difficulty in the course of the partnership. The difficulties mentioned by the other participants were classified into three groups, as indicated in Tables 3–5.

General difficulties include difficulties in establishing contact or starting a partnership, as well as maintaining it despite the geographical distance and the three classes of possible differences: language, cultural and personal differences. Only the "difficulty of access and communication to maintain the partnership (distance)" stood out in this group (13%). In a way, the difficulties seem to be higher during the partnership than in their establishment or early stage. It can be assumed that only a few participants mentioned differences in language and cultural differences, probably as a result of the fact that most Latin American countries speak the same language, which would be a facilitating factor for cooperation. Similarly, cultural differences probably are not of major importance to be recognized as a difficulty. Likewise, personal or personality differences were rarely mentioned.

Table 3 – General difficulties perceived.

Type of difficulty	Frequency
Contact establishment	5
Language differences	3
Access and communication difficulties to maintain the partnership (distance)	13
Cultural differences	3
Personal differences	4

Table 4 – Difficulties in the conduction of research.

Type of difficulty	Frequency
Theme definition or delimitation of the research object	4
Definition of the methodology	2
Data collection	13
Data analysis and discussion of results	8
Final version of the work (article, chapter or other)	20
Follow-up to the publishing process	9

Table 5 – Difficulties regarding research infrastructure.

Type of difficulty	Frequency
Lack of time to devote to the partnership	23
Lack of human resources (support)	9
Lack of equipment	5
Financial constraints	34

The difficulties seem to grow when it comes to conducting research. As noted previously, the initial phases of research appear to be the stages that generate fewer difficulties - namely the definition of the topic or definition of the research object and the definition of the methodology. It can be assumed that the approach between partners implies some similarity in relation to the research topic and even methodological approaches, which would be an initial condition for the establishment of the partnership. The difficulties increase in the following stages, i.e. data collection, data analysis and discussion of results. However, the greatest difficulty recognized during the investigation concerns the final wording of the work (article, chapter or other). Follow-up to the publishing process also creates difficulties. However, no difficulty was cited by more than 20% of participants.

The difficulties regarding research infrastructure were the most frequently mentioned by the participants. Among the research infrastructure difficulties, those which were most frequently mentioned were financial constraints ($n = 34$) and lack of time to devote to the partnership ($n = 23$). Lack of human resources (support) or the lack of equipment were less frequently mentioned. Thus, infrastructure would be the source of major difficulties.

Difficulties arise at various points of this complex system, due to the distance and difficulty of access and communication, and difficulties with language or culture. Difficulties in conducting research include internal difficulties in the relationship, especially data collection and analysis and final editing and follow-up of the publishing process, which are phases when the relationship has already begun. Infrastructure difficulties, including funding, lack of time, resources and equipment are more associated with the institutions and lack of cooperation policies.

Discussion

Regarding motivation and difficulties associated with international scientific cooperation, the literature has shown more advantages than disadvantages in cooperation programs between countries. Similarly, the literature has pointed out more reasons to cooperate internationally than difficulties and problems in these partnerships.

The reasons for cooperating recognized by participants in this investigation are similar to those related by Vanz and Stumpf (2009, 2010) for scientific collaboration (national or international), such as increasing the visibility, productivity, rationalization of scientific labor, acquisition and/or expansion of funding, resources, special equipment, materials; training of researchers and students; wider dissemination of research; and friendship.

Among the reasons found, it is possible to recognize direct and indirect motivations, as proposed by Luukkonen et al. (1992). The authors recognize the strategic motivations directed by governments or agencies of the society, of a political, economic, military or cultural nature as the main indirect motivations. In this case, the existence of agreements between countries and training of human resources can be considered as indirect factors. According to the proposed classification, there is a more significant presence of direct motivation, such as: (a) access to knowledge, skills and experts in Science and Technology; (b) access to unique places and population groups and their data; (c) division of costs and risks; (d) aid in global environmental issues and public health; (e) the establishment of normative standards of scientific and technological development.

In general, the advantages recognized by Silva (2007) for international cooperation are present on the data obtained, such as the sharing of costs, access to expertise, technology and facilities, the political reinforcement to the project/program and the creation of good relations. On the other hand, the risks mentioned by the authors such as the loss of freedom of action, creating dependency in addition to the increase in management complexity, were not highlighted.

The results are similar to those indicated by Wagner (2006) in relation to the top five reasons to collaborate internationally: (a) increasing the visibility among peers and exploring complementary capabilities; (b) sharing the costs of major projects; (c) accessing or sharing expensive physical resources; (d) achieving greater leverage to share their data; and (e) exchanging ideas in order to encourage greater creativity. Moreover, Narin et al. (1991) showed that collaboration increases the visibility and the impact of the work. Glänzel and Schubert (2004) also recognize that collaboration can promote research activity, productivity and impact. Therefore, it should be encouraged and supported by scientific research administration and policies.

Besides the advantages, the literature also mentions several difficulties. According to Wagner and Leydesdorff (2006), there is little indication of how to manage such systems in international collaboration networks in science and technology. The potential for misunderstandings and obstacles to coordinate networks is significant. This was not a prominent point, possibly by researchers participating in more restricted networks.

According to Okubo and Zitt (2004), collaboration between scientists from different countries is not straightforward, so that specific barriers related to language, cultural or geographical distance must be overcome. According to the data obtained, Latin America tends to be recognized for its cultural and linguistic proximity, which does not prevent the difficulties caused by geographical distance. The data suggest that physical proximity should be taken into account for the implementation of successful partnerships. Bassecoulard et al. (2001) identify geographical proximity as an important factor associated with the existence or development of international scientific cooperation, enhanced by the cultural/linguistic proximity or geopolitical proximity. The motivation for international collaboration seems to follow historical reasons, linguistic and geographic proximity (Pontecorvo, 2007; Vanz & Stumpf, 2009).

The factors indicated by Vílchez de Salazar and Flores Urbáez (2004) as obstacles and limitations to international scientific cooperation were cited, such as financial factors, physical and technological infrastructure, institutional standards, availability of human resources, little formality of international cooperation in universities and administrative bureaucracy at university-level. There was no emphasis on the low culture of innovation and cooperation. As a specific condition of the Latin American continent, the language and cultural proximity stands out as a positive factor for the development of cooperation; however, there remains the need to overcome geographical distance (Ávila-Toscano, Marenco-Escuderos, & Orozco, 2014; Fernández et al., 2005; Garcia, Acevedo-Triana, & López-López, 2015). Similar studies can be found in other countries (Quayle & Greer, 2014).

The positive evaluation by the participants of these aspects of cooperation suggests that they achieved their goals. In this case, these researchers can be expected to remain motivated to continue these partnerships or to establish new partnerships with other Latin American researchers. This expansion of partnership networks really occurs in most cases investigated, as they are not limited to a single partner, but other scientific partnerships with Latin America have also been reported.

As a conclusion, all partnerships investigated were successful in generating a scientific publication, an article or a chapter. The participants showed different reasons to cooperate and evaluated positively the relationship, in scientific terms. The difficulties mentioned have not prevented a positive outlook of these alliances. In order to overcome difficulties, some actions have been proposed, such as greater

investment on international cooperation. It may be concluded that international scientific cooperation should be fostered among Latin American researches in the behavioral sciences, despite having several difficulties.

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