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**WHAT'S IN A WORD: INTERDEPENDENCE, COLLABORATION, AND
PUBLIC MANAGEMENT LITERATURE**

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ABSTRACT

This research performs a systematic literature review on the use of interdependence in the public management literature. First, of all the article provides a brief overview on the theoretical roots of the concept based on the tenets of Resource Dependence Theory. Then, based on the review of the more than 200 papers included in the final review, we organize our findings in a set of categories describing the how public management scholars have, so far, understood and used the concept. In light of these preliminary findings, the authors suggest potential future directions for research.

INTRODUCTION

Collaboration, in any of its expressions, is becoming the quintessence of service delivery and policy making (Alter and Hage, 1993; Huxham, 2000). Characterized long ago as a society of networks (Castells, 2000; Raab and Kenis, 2009), modern social, economic and political contexts around the world are better understood when considering the multilayer linkages among decision-makers, stakeholders, and the multiplicity of actors involved in the attainment of policy goals. Scholarly attention to collaborative governance in any of its expression is for sure not new. For the last decades public management scholars have contribute to enhance our knowledge of the collaborative spectrum (i.e. public-public; public-nonprofit; public-private; public-private-nonprofit; partnerships, networks, joined-up government, etc.) both by providing empirical illustrations and by theorizing on the phenomena.

In this vein, inter-agency collaboration through networks or similar arrangements is commonplace in many policy areas (Vigoda, 2002; Hudson, Hardy, Henwood and Wistow, 1999; Agranoff and McGuire 2003). Governments for-profit and/or non-for-profit organizations

engage in public-private partnerships for the provision of infrastructures, welfare services or urban regeneration programs amongst others (Osborne, S.,P., 2000). Last but not least, co-production and co-creation initiatives are channeling citizenship and public agencies collaboration in public services' design and implementation (Voorberg, Bekkers and Tummers, forthcoming). In this scenario public value is not achieved by single actors in isolation but results from the combined interactions of those who have the capacity to decide, those who possess the necessary resources and those who bear an interest in a particular issue.

Underpinning this statement is the idea of interdependence. As a multifaceted construct interdependence expresses primarily the interconnectedness among actors, resources and/or tasks (Blau, 1964; Pfeffer and Salancik, 1978). At the same time, interdependence reflects the networked nature of our world (Castells, 2000). Interdependence is also an enabler for the enactment of certain institutional arrangements in the public sphere (Rethemeyer and Hatmaker, 2008). Finally, and perhaps most importantly, interdependence appears as both a cause and a consequence of collaboration and co-ordination among agencies and organizations (Hillman, Whitters and Collins, 2009)

Our scholarly community has transposed, extend, and developed a concept drawn from classical organizational design and organizational studies' contributions. On the one hand, the literature on organizational design pervasively uses it, mostly referring to task interdependence (Mintzberg, 1973; Thompson, 1967) as a determinant of organizational structure. On the other hand, interdependence lies at the core of Resource Dependence Theory (Pfeffer and Salancik, 1978; Hillman et al. 2009) whose tenets explain why organizations interact with their environments to reduce uncertainty and to control the resources they need to succeed.

To date, the literature on public management appears fragmented. On the one hand, most of the times the concept definition is contingent to the study's setting and, to the best of our knowledge, a nuanced and collectively agreed-on understanding of the construct is missing. On the other hand, although interdependence is commonly mentioned in our field, its empirical assessment and operationalization is tackled from different theoretical backgrounds and encompasses multiple explanations.

In light of all this, the paper executes a systematic literature review on the use of the word/concept interdependence in the public management literature. In order to do so, our analysis of the previous literature, following recent similar contributions in our field (Isset, LeRoux, Mergel, Mischen, and Rethemeyer 2011; Turrini, Cristofoli, Frosini and Nasi , 2010; Provan, Fish and Sydow,, 2007), is organized as follows. First of all we provide a brief conceptual section where interdependence is explored as construct to disentangle its theoretical tenets. We follow with a methods section in which we describe our strategy to review the literature. The third section provides an overview of our preliminary findings which derived from the analysis of more than 200 papers that refer to interdependence.. published in the top peer-reviewed journals in the public management field for the last decades Finally, we discuss the findings and propose a series of future developments in light of them.

INTERDEPENDENCE: POWER, INTER-ORGANIZATIONALS RELATIONS AND MORE.

Why a literature review on interdependence in collaborative public management? The need for this research arose a few months ago when working in a paper on goal-directed networks.

Although it was not our main goal, at some stage we faced the need to include, to theorize and, if

possible, to operationalize interdependence as a construct in our research. As easier as it may apparently appear, after a few fruitless attempts we realized that this was to be a difficult task. While the concept is extensively used by our scholarly community, we found no exact definition to build on and no clear operationalization suiting our purposes. Thus, we decided to start from the beginning and try to understand both the concept and its use considering its theoretical sources making it the case for a systematic review of the published work revolving around the concept of interdependence. What follows is a brief historical overview that, based on seminal pieces on dependence, power and resource dependence theory and inter-organizational relations, helps explain the theoretical roots of this concept.

The use interdependence as a theoretical construct can be tracked down in the management and organization's literature back already to the second half on the twentieth century. In 1962 Emerson's contribution on the conceptualization of power, pointed out to the existence of patterns of mutual dependence (i.e. interdependence) among individuals (or organizations) as a core element to understand any relationship. Moreover, Emerson (1962) proposes that the patterns of interdependence are the defining element of power in a relationship as *"power resides implicitly in the other's dependence [on oneself] ...the power of A over B is directly proportional to B's dependence on A"*. Building on this contribution, central to Homans's (1950, 1974) and Blau's (1964) Social Exchange Theory is the vision of social and human interaction based on the reciprocal exchange of rewards both tangible and intangible. Blau's (1964) contribution was extended to go beyond the relationship conceived as dyads to incorporate a broader perspective that considers that exchanges and rewards are determined in a network of relationships (Bienenstock, and Bonacich, 1992, 1997; Cook, 1977, 1982; Cook & Whitmeyer, 1992)

Thompson's (1967) book "Organizations in Action" also represents a milestone in the literature on power and resource dependencies. Thompson (1967) characterizes and defines three different types of interdependence depending on the intensity of the interactions and the behaviors needed to deliver a certain task. When there is pooled interdependence progress is independent among different units (i.e. progress of A does not affect, neither positively nor negatively, the progress of B) and the need for co-ordination is minimal. In a situation of sequential interdependence progress is achieved in a sequential order (i.e. B requires A to finish to progress) and, therefore, a certain degree of co-ordinative effort is needed. Finally, if reciprocal interdependence exists different units need to work simultaneously to execute a task making it much more complex and requiring the greatest degree of co-ordination.

These studies on power and dependencies were the basis upon which years later Benson (1975) offered an explanation on why organizations establish linkages to other organizations (IOR). In his classical piece, Benson (1975) offers a definition of inter-organizational networks as a political economy. In his view organizations create, maintain and develop patterns of communication and exchange by means of which they acquire and offer scarce resources in a network of power relations. Thus, Benson (1975) provides an explanation on why inter-organizational relations exist based on a utilitarian view of inter-organizational interaction.

Pfeffer and Salancik's (1978) classical piece "The External Control of Organizations: A resource dependence perspective" builds on the aforementioned contributions to focus on the organization's interdependence to other organizations on their environment. Resource Dependence Theory (RDT) has been applied to a wide array of inter-corporate devices such as International Joint Ventures (IJV), strategic alliances, board inter-locks and networks among others (Gulati and Sytch, 2007; Rethemeyer and Hatmaker, 2008; Hillman, Withers, and Collin,

2009). In essence RDT revolves around two core ideas. While organizations, characterized as opens systems have at their disposal and possess a set of valuable resources (both tangible and intangible), at the same time, to achieve their aims, they need resources or capabilities that are possessed by other organizations. This imbalance creates uncertainty and organizations will try to cope with it by controlling, accessing or acquiring the required resources (Ulrich and Barney, 1984). Thus, how organizations manage their environments will enhance, hamper or constraint their capacity to perform as they are they will be more or less equipped to fulfill their organizational goals.

In light of Resource Dependence Theory, cooperative strategies are better understood, since when resources or competences are not available to organizations the likelihood of establishing ties with other organizations increases (Malatesta, and Smith, 2014). It is important to notice that organizational environments are dynamic since organizations manage their network of interdependences in a recurrent iteration of interactions that creates new patterns of dependencies. Each new scenario, in turn, affects both inter and intra-organizational power (Hillman, Whitters and Collins 2009).

To sum up, after more than three decades since Pfeffer and Salacnik (1978) published “The External Control or the organizations: A Resource Dependence Perspective” the theory has been extensively applied not only to studying mergers and acquisitions (M&A), strategic alliances and other inter-organizations relations (Hillman, Whitters and Collins, 2009) but also to researching the fields of health, care and public policy (Wry et al. 2013, Davis and Cobb, 2010). In a way, “RDT has acquired the status of a powerful general metaphor” (Casciaro and Piskorski, 2005: 167). In the introduction of the second edition of Pfeffer and Salacnik’s book, Pfeffer argues that, in fact, as the metaphor is so widely accepted and successful, researchers have not extend and

provide sufficient empirical work based on the tenets of Resource Dependence Theory (Pfeffer and Salacnik, 2003). In other words, the metaphor status, also acknowledged by Hillman et al. (2009) and Wry et al. (2013), should not detract the importance of a RDT perspective to provide novel and interesting insights in situations in which organizations are to manage complex environments. In this regard, for instance, Casciaro and Piskorski (2005) encourage researchers to acknowledge the importance of the conceptual separation of the constituent constructs of the notion of interdependence, that is, power imbalance and mutual dependence. In the same vein, Malatesta and Smith, 2014, encourage researchers in the public management literature to build on Resource Dependence Theory.

Public management scholars have not been immune to these theoretical developments and the idea of interdependence has been widely adopted by our scholarly community. The academic interest has run in parallel to three fundamental developments. First of all, the realization that as societies get complex so do the problems organizations engaged in the provision of public goods are faced with (Rittel and Webber, 1973). In this scenario the creation of public value requires the establishment of mechanisms to manage organizational interdependences not only linking public organizations among them but also requiring the collaborative efforts of private and non-profit organizations. Thus, as a response to the interdependence among organizations interests and goals, collaboration and inter-organizational innovations (Mandel and Steelman, 2003; Vigoda, 2002; Hudson, Hardy, Henwood and Wistow, 1999; Agranoff, and McGuire, 2003) have become common place in the public management environment for the last decades. Secondly, individual organizational goals are no longer achievable in isolation (Agranoff, 2007) and resource dependences lie at the core of collaborative efforts in the public management arena (Lundin, 2007). As Huang and Provan (2007) point out, when it comes to public management,

resources include not only those highly tangible (i.e. funding) but also intangible resources such as reputation or capacity to influence (Alexander, 1996).

The following section is devoted to explain our research strategy in reviewing the literature referring to interdependence and collaboration in public management.

METHODS

Following recent contributions (Isett et al. 2011; Turrini et al. 2009; Provan et al. 2007) our research strategy has two main stages. So far, due to time and resources constraints, we have developed the first stage aimed at identifying how our scholarly community has used the term/construct “interdependence”.

Although our main objective was to identify contributions regarding any instance of collaboration in public sector environments, we chose not to narrow our search by using keywords related only to collaborative endeavors. Two reasons justify this decision. First of all as our aim was to understand how public management scholars have used and adopted the concept, it seemed interesting, at this preliminary stage, to know about the widespread use of the construct as such when it comes to public management. Secondly, we realized that most of the times the word interdependence appears neither in the title of the paper nor as a keyword, and, thus, we were obliged to search and tag the word within the manuscripts’ full text.

As a part of our strategy at this stage we selected an a priori set representative top peer-reviewed journals in public management considering their impact factor and editorial orientation to capture a landscape overview of the published research on interdependence. The selected journals were Journal of Public Administration Research and Theory, Public Management Review, Public Administration Review, Public Administration and International Journal of Public Management.

Using computerized bibliographical databases and our search criteria this strategy lead us to identify 772 papers where the words: interdependence, interdependences or interdependencies appeared. The strategy is summarized in table 1. The papers were introduced in a purposely created database which contains relevant information about the contributions such as authorship information, journal and year of publication and title.

Table 1. Method for the preliminary literature review

SEARCH STRATEGY (1st Stage)

Keywords: Interdependence OR interdependences OR interdependencies

Databases: ISI-Web, JSTOR, EBSCO-Business Premier
Topic/English/article or review

Search criteria Peer-reviewed journals: JPART; PAR; PA; PMR; IJPSM
Text words/English/articles/full text/reviewed journals

Results Total no. of articles retrieved: 772

Two researchers reviewed the retrieved papers and selected them considering the full manuscript content. In order to do so, the researchers read the papers and decide on whether the paper was or not related to any of the expressions of collaborative endeavors including collaborations among public agencies, public organizations and for-profit or/and non for-profit organizations. Thus, papers dealing with intergovernmental relations, networks and policy networks, contractual relationships, partnerships and PPPs among others were included in a secondary database. The database includes information about authorship, journal, methodology used, type of collaboration, and how the concept of interdependence is used and measured if so, for a total of 213 published contributions (table 2). Tables 3 to 5 and figures 1 to 3 provide information on the dataset descriptives.

Table 2. Selected papers vs. total papers per journal.

	JPART	PMR	PAR	IJPSM	PA
TOTAL N.	125	83	305	60	199
Selected N.	39	30	91	22	31
Years	1989-2013	2001-2012	1969-2014	1997-2013	1997-2012

Table 3. Final dataset by methodology.

Journal	TYPE OF PAPER				
	Qualitative	Quantitative	Normative/Conceptual	Mixed-Methods	Literature Review
JPART	15	14	6	3	1
PMR	17	5	8	0	0
PAR	46	22	16	4	3
IJPSM	15	0	4	1	2
PA	17	2	11	0	1
TOTAL	110	43	45	8	7
TOTAL %	51.64	20.19	21.13	3.76	3.29

Figure. 1 Final data set by methodology

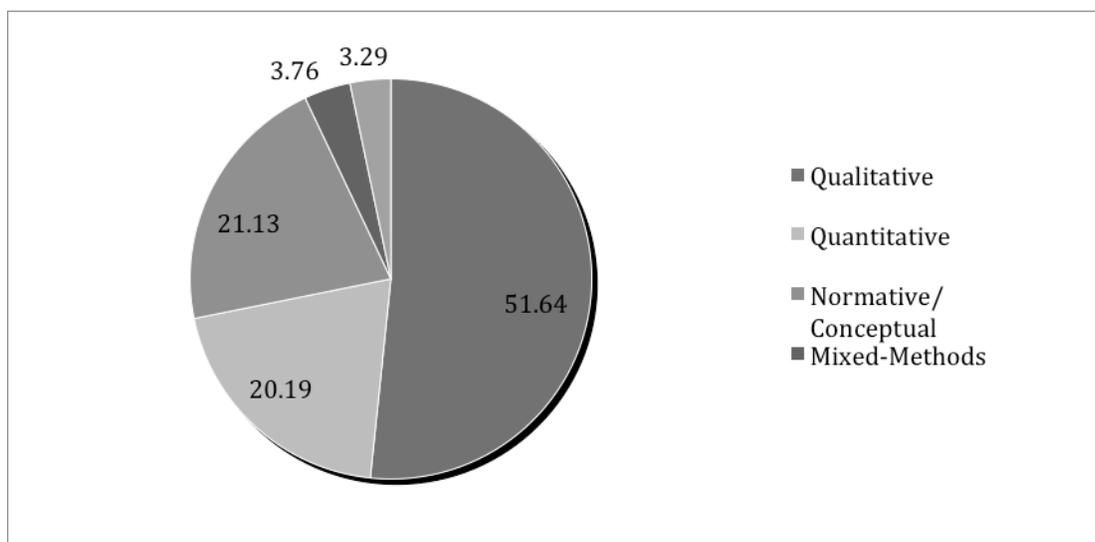


Table 4. Final dataset by collaboration type

Journal	TYPE OF COLLABORATION					
	Collaborative governance	Networks	Partnerships	Contractor	IGR	Others
JPART	4	20	4	3	3	5
PMR	4	13	8	2	1	2
PAR	25	34	8	3	11	10
IJPSM	6	4	5	1	2	4
PA	5	11	7	0	0	8
TOTAL	44	82	32	9	17	29
TOTAL %	20.66	38.50	15.02	4.23	7.98	13.62

Figure 2. Final dataset by collaboration type

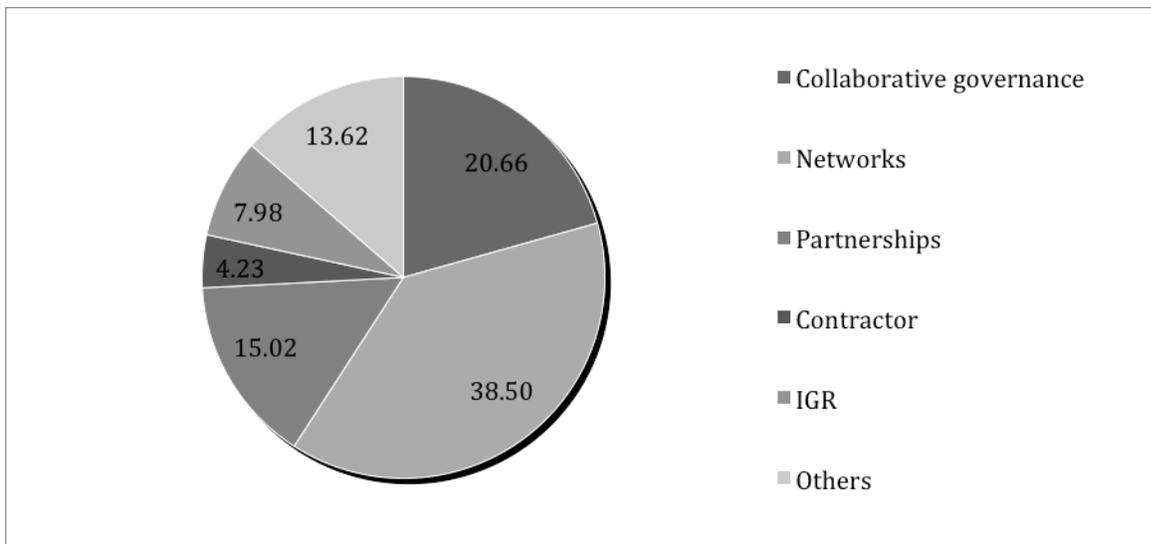
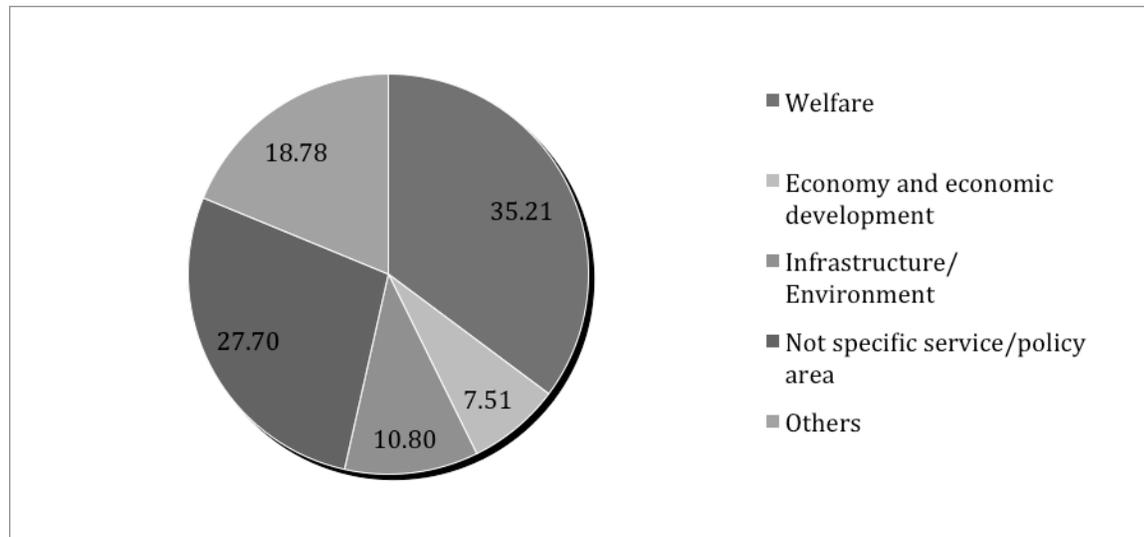


Table 5. Final dataset by policy arena

Journal	TYPE OF POLICY				
	Welfare	Economy and economic development	Infrastructure/ Environment	Not specific service/policy area	Others
JPART	11	4	6	7	11
PMR	13	0	4	11	2
PAR	32	10	7	22	20
IJPSM	9	2	1	7	3
PA	10	0	5	12	4
TOTAL	75	16	23	59	40
TOTAL %	35.21	7.51	10.80	27.70	18.78

Figure 3. Final dataset by policy arena



Finally, as to what refers to the use of the concept, the readers codified initially, first individually and then together, a sample of papers to establish the set of categories in which to classify the papers. These categories helped not only to encompass the papers according on the use of the concept of interdependence but also to develop our findings.

Table 6. Definitive list of categories by use of the concept.

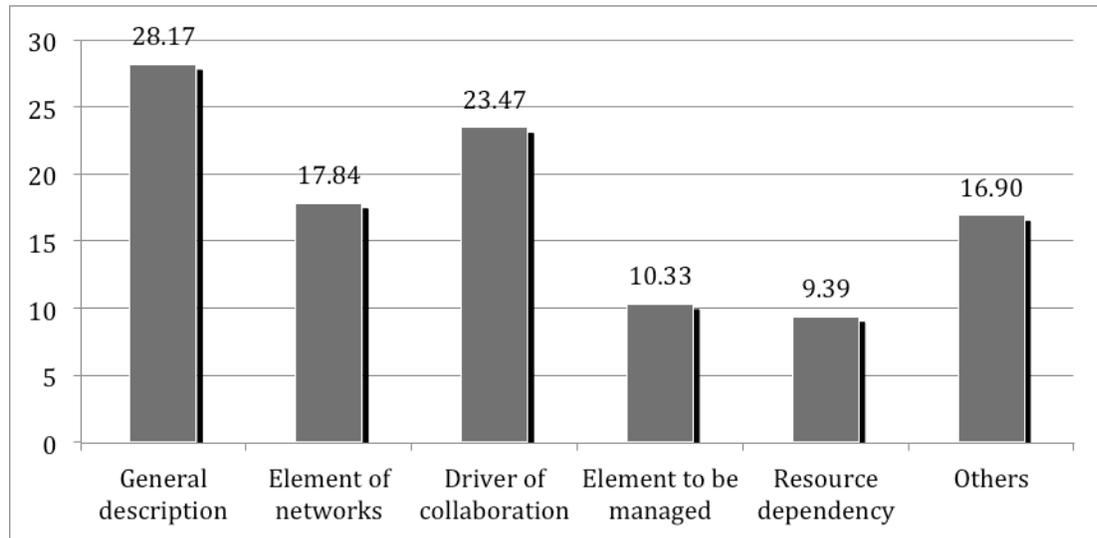
- 1- Interdependence as a description of the environment in which public organizations and the delivery of public goods and services are embedded in.
- 2- Interdependence as a constituent element of networks/ specific definition for network
- 3- Interdependence as a driver for collaborations.
- 4- Interdependence and its managerial implications.
- 5- Interdependence as specific resources dependencies.
- 6- Interdependence

The emergent categories finally selected allowed us to reduce our dataset and to narrow down the research to the more utilized meanings of interdependence when it comes to collaborative efforts in public management. Table 6 and figure 4 provide information on the number of papers per category.

Table 6. Final dataset by categories

Journal	CATEGORIES					
	General description	To define networks	Driver of collaboration	Element to be managed	Resource dependency	Others
JPART	12	8	8	2	9	4
PMR	12	4	2	3	3	8
PAR	26	13	27	10	4	14
IJPSM	6	4	5	5	1	3
PA	4	9	8	2	3	7
TOTAL	60	38	50	22	20	36
TOTAL %	28.17	17.84	23.47	10.33	9.39	16.90

Figure 4. Final dataset by categories



In a second stage of the research we will perform a new search based on a snowball strategy to identify contributions quoting Pfeffer and Salancik (1978) and other relevant contributions on resource dependence theory and interdependence.

FINDINGS

INTERDEPENDENCE: BUZZ WORD OR SOUND CONSTRUCT?

What follows is the result of our data reduction effort. In an attempt to provide a clear overview on how the literature on public management and collaboration is using interdependence, the section provides a detailed account on each of the preliminary categories in which the papers have been organized. We acknowledge that these broad categories may have some degree of overlapping among them. However, we believe that for the sake of clarity and in order to provide a more fine-grained analysis, it is worth keeping them as initially developed.

Public management in the era of interdependence

Our findings suggest that public management scholars profusely use the word interdependence as a general metaphor to both characterize modern societies and explain how public value is created nowadays. This category accounts for 29% of the reviewed papers. The papers' included in this category point out to the remarkable amount of literature signaling the importance of interdependences nowadays (Castells, 2000; Ball, Krane and Lauth, 1982; Pressman, 1975; Radin, 1977). The reviewed papers argue that, opposite to what happens under traditional modes of representative democracy, boundaries among organizations are becoming less clearly defined as organizations are increasingly more intertwined and interdependent.

This increased interdependence among public, private and civil society actors underlies a trend to what some of the contributions refer to horizontal governance. First of all, governments and public agencies depend on community based to expand and provide services while non-public organizations involved in the provision of services rely on government to get resources and funding. Secondly, as the contributions also report on, specific policy areas such as education, where schools are the vehicles through what a wide array of policies are vehiculated, are becoming increasingly interdependent. Last but not least, the papers included in the category also give account of how collaborative organizational forms are noticeable being adopted and promoted by governments (especially in what to refer to developed countries as for example joined-up initiatives in the UK). Thus, overall, our findings suggest that the literature has acknowledge interdependence (at least what it refers to its existence) under the assumption of a growing need for public and private inter-organizational structures to address the increased complexity of interactions among societal, economical and political actors.

With regard to potential explanations on the abovementioned developments, the reviewed literature coincides to signal that actors can no longer achieve their individual goals in isolation

(Agranoff, 2007) and thus, they exploit their interdependences (which may be fairly noticeable or, on the contrary, not easily visible) as a way to respond to their client demands. As Provan and Sebastian (1998) argue society asks for network-level outcomes when it comes to public services and policies. In this scenario, the production, delivery and implementation but even the design of a given policy becomes a matter of collaborative activity. On the one hand, organizations have interdependent interests as the achievement of their goals depends on other actors. On the other hand, the exploitation of otherwise dispersed knowledge can serve to improve and create new and innovative ways to provide public services and to increase the legitimacy of a given policy or action.

To sum up, our findings suggest that, at least for the contributions that fall mainly in our first category, the literature conveys a message in which interdependence is an inherent characteristic of modern societies as such. The multifaceted and complex problems that are to be solved in this new scenario are better addressed when different and interdependent agents (even across sectors) collaborate to develop and implement public policies and services.

It is noteworthy to notice that, in general, the papers included in this category neither provide any specific account on the nature of the interdependences to be managed or balanced through the collaborative activity nor operationalize interdependence as a variable in the performed analysis whether it is the case.

Networks and interdependence

Our findings show that over 17% of the analyzed papers use the concept of interdependence to specifically define networks. We acknowledge that in what refers to the contextual analysis of the collaborative endeavor, the papers that finally we decided to include in this second category

are just slightly different to some of the contributions that consider interdependence as a characteristic of the environment. However, the decision to develop an exclusive category is based on two main arguments:

- The contributions in this category deal mostly with networks or/and policy networks. In the first category all kinds of collaborations were represented and interdependence was used not to characterize the type of collaboration itself but to characterize the environment that is fostering the inception and development of collaboration in the public sector.

And/or, the contributions in this category cite profusely previous contributions on networks and policy networks.

- Rhodes' (2000) characterization of networks: "theses networks are characterized by interdependence between organizations... there are continuous interactions between network members caused by the need to exchange resources and negotiate shared purposes" (61)
- O'Toole's (1997:45) definition of networks as structures of interdependences.
- Isett and Provan 2005; Koppenjan and Klijn 2004. Networks are defined as a group of goal-oriented interdependent but autonomous actors that joint efforts to produce a collective output which no single actor can produce on its own.
- Kickert, Klijn and Koppenjan (1997) definition of governance networks as the strategic response of rational, self-interested policy actors to the need for the exchange of material

and immaterial resources within a public sector fragmented by New Public Management-inspired reforms.

Our findings suggest, at least for the papers we include in this category, that the literature is using interdependence as defining element of the network concept, which in our interpretation is intertwined with the findings we report referring to category 1. With regard to the nature or underlying rationale for the existence of these interdependence, the contributions refer to resources interdependences (both for tangible and intangible resources) and/or interdependences among interests in a particular area of public policy. Thus, the papers acknowledge increasing interactions in the public domain among multiple centers of independent yet interdependent power. However, interestingly enough, again the majority of the contributions neither assesses specifically interdependence within the network nor operationalizes it or characterize it.

Let's collaborate: interdependence as a driver of collaboration

The third set of papers we classified included these contributions (27%) referring to interdependence as driver or pre-requisite of the collaborative endeavor. In general, the contributions do not provide specific definition of the term as they use interdependence to, again, describe the situation or scenario leading to collaboration. Thus, interdependence serve to explain why collaboration emerge (i.e. because the organizations that are to collaborate are interdependent to some extent or are embedded in a network/environment of interdependences (Thomson and Perry, 2006) but there is no hint about the specific nature of the interdependence (i.e. resources, goals, competencies, etc.) and/or the consequences to bear in mind considering the nature of these interdependences.

In this category some authors refer to the concept of mutuality (Powell, 1990) which characterizes situations in which mutual beneficial interdependences exist based on shared interest for the achievement of a goal that goes beyond any independent individual objective. Intriguingly, some authors point out that it may exist a path-dependent process in which participants in a collaborative endeavor in a public sector environment will come to self-perceive as interdependent, thus creating a sense of shared-fate that foster new collaborative interactions. Moreover, Larson et al. (2002) find that when people goals see their goals as interdependent collaborative activities tend to be more successful and they are more sustainable over time.

Resources and interdependence

The fourth of our categories included those papers in which the authors refer unequivocally to the existence of specific resources dependencies among actors participating in collaborations. This category accounts for less than 10% of the analyzed contributions. The authors profusely quote Pfeffer and Salancik's (1978) "The External Control of Organizations" though most of the times the referred resources dependences are exclusively financial. Building on the tenets of resource dependence theory and social exchange theory (Blau, 1964) cooperation is seen as straight consequence of resource interdependence. In other words, as the organizations involved in the creation of public goods does not possess or control the resources (financial, staff, information, legal authority, etc.) they need to achieve their goals, they are highly incentivized to establish and maintain collaboration ties (O'Toole and Montjoy 1984; O'Toole, 2003; Krueger and McGuire, 2005).

Some authors point out that the amount of actually exchanged resources and the degree of interdependence among actors may affect the benefit achieved through collaboration (Aldrich

1976; Hanf and Scharpf 1978; Aldrich and Whetten 1981; Van de Ven and Ferry 1980) as Aiken and Hage (1968) pose, as the number of shared resources increases, decision making processes become more constrained. However, the reviewed papers also support the opposite view arguing that the more resources exchanged (i.e. the more interdependences) the more degree of commitment to cooperate.

Interestingly enough, resource dependences are reported as an inherent part of new government-vendor relationships (i.e. contracting regimes, Smith and Lipsky (1993:43) in which resource dependencies between public agencies, nonprofits and private actors involved in the provision of welfare and other human services are mutual and depth. In truth, the papers specifically report on the resource interdependences that exist between funders (i.e. public agencies which provide financial resources) and social service providers, though this is characterized as an asymmetric relationship. Organizations tend to exchange resources in a diversified net of interactions to reach both the tacit and material resources. This strategy allows them to better provide enhanced products and services.

The contributions also pose that the type of resources being exchanged (i.e. tangible vs. intangible resources) and the degree to what a given resource is widely dispersed among partners in collaborations, influence how centralized or de-centralized the collaboration will be thus having implications on how collaborations are actually managed and governed.

Interdependence and its managerial implications

Our findings suggest that literature (a 10% of the analyzed papers) has also build on the idea of interdependence as a contingency to be managed within collaborations. As Kettl (1996:9) argues “interdependencies have changed radically the jobs of public administrations, who must now

know not only to manage the functions of their own agencies but also build critical linkages with others". In fact, interdependence is considered here, aligned to Ansell and Gash (2008), a meta-contingency affecting the collaboration's outcomes.

The contributions suggest that managers need to actively manage current and future interdependencies through the creation of common frameworks, the creation of new interdependencies (if necessary) and by building trust. Trust is widely mentioned by the papers that fall in this category as being intertwined with interdependence. As Rhodes (1999) poses regular resource exchanges may be rooted in trust and. At the same time, when interdependences are high, how interdependence is managed breeds trust since opportunistic behavior is prevented as the cost of such a behavior outweighs the potential benefits.

Some of the contributions suggest that repeated interactions are related to the degree of complexity and interdependence of a given task (Thompson, 1967). Actually this creates new linkages of interdependence (i.e. as happens for instance in social care where tasks complexity is high and it is require the participation of diverse specialists), shared values and beliefs. Moreover, as mentioned, if goals are seen as interdependent as time passes the collaboration is to be more successful and sustainable (Larson et al. 2002). Trust, time and interdependence can be, thus, managed to impact positively (or negatively) the collective goals and outcomes.

Specifically some of the papers refer to managerial activities and competences such as networking and boundary spanning skills that become crucial when it comes to manage interdependences. The literature poses that professional or technical knowledge might not be determinant, whereas relational and inter-personal skills are. On top of that, previous inter-

organizational experience, the ability to integrate knowledge from different disciplines and the ability to learn are crucial when managing interdependencies.

Interdependence as a variable: do we measure it?

It is noteworthy to devote, as it was one of our main objectives when we started this research, this final section to report our findings about how interdependence as such is operationalized in the public management literature. As mentioned, not many contributions include interdependence as a variable in the analysis (nor in the qualitative neither in the quantitative pieces) however we have found some instances in which authors have made an effort to do so.

In our sample, interdependence is most of the times operationalized as number and/or important of interactions among organizations or individuals (i.e. dyads). In this case, data collection relies in surveys or interviews where respondents were asked to subjectively report on their interactions (i.e. to whom they interact the most and frequency of the interactions).

In other occasions, authors link interdependence to resources and therefore their measures reflect and measure specific dependencies such as financial or funding dependencies (i.e. state aid funding versus diversity of founding sources) or complementarity of resources (i.e. type of clients brought to the collaboration). Saidel (1991) specifically provide a measure of resource interdependence based on a survey where interdependence was measured by a Likert-type scale (i.e. importance of the resource; availability of alternatives; ability to compel provision of the resource).

DISCUSSION AND CONCLUSION

Our findings show that, as concept, interdependence is profoundly embedded in our scholarly community when it comes to analyze and study a wide array of collaborative endeavors /inter-organizational innovations (Mandel and Keist, 2008).

As we have shown the literature on public management and collaborations is plagued with references to it. However, as our analysis suggest, the concept is mostly used as to characterize the field in which public management is played (Castells, 2001; Aiken and Hage, 1968, Rhodes, 1997). As a substantive assumption the natural consequence of being in an interdependent word is collaboration. However, the other side of the coin is that, at least from the reviewed pieces, beneath the surface, it is difficult to assess the specific context, antecedents and consequences of the existence, creation, exploitation or even elimination of such interdependences. Therefore, it is also difficult to measure it as the concept is elusive and broad. However We believe, in line with Malatesta and Smith, 2014) that we will better understand collaboration, how the patterns of governance and control are established and why some collaborative efforts thrive while others perform poorly by better understanding what are the kinds of interdependencies that are to be managed and how to managed them.

Based on both theoretical and empirical previous literature, the paper contributes to the literature by providing and assessment on the use of a widely use concept and, thus, our systematic literature review helps to disentangle and unravel the meaning of interdependence for our scholarly community. In light of our findings we suggest and encourage researchers to enrich and enhance our knowledge by contributing on:

- Pieces on the specific nature of interdependence (goals, tasks, human resources, competencies, etc.). Despite being an elusive concept, it is necessary devote our efforts to specifically operationalize and measure interdependence.
- Pieces on the spillovers and consequences of interdependence and how this affects the provision of public services and goods.
- Pieces that provide advice to practitioners on how to better manage and lead an interdependent environment.
- Pieces that following recent examples (Malatesta and Smith, 2014) specifically link RDT to public management and collaboratives.

As any research this one has some shortcomings. First of all, as mentioned, due to time constraints we have just partially achieved our objectives and the second stage of our research strategy is to be developed in the near future. The inclusion of the literature specifically mentioning seminal RDT's pieces probably will affect our findings and, hopefully, will help us to improve our contribution. Secondly, we are aware that, as mentioned, some of the categories in which we have organized our findings are, to some extent, not mutually exclusive. Finally, we acknowledge that in reviewing the literature and creating the categories in which we have organized our findings, complete objectivity may not been achieved...

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