



Universidad  
Católica  
de Valencia  
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**Facultad de Psicología**

Grado en Psicología

Trabajo de Fin de Grado

**Psychometric Validation of a Scale to  
Evaluate Agency Capability in Adolescents  
of Medellín, Colombia**

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**Valencia, a 24 de mayo de 2019**

## Table of Contents

|   |           |
|---|-----------|
| <b>Agradecimientos.....</b>                                       | <b>4</b>  |
| <b>Abstract.....</b>  | <b>5</b>  |
| <b>Keywords .....</b>   | <b>5</b>  |
| <b>Resumen.....</b>   | <b>6</b>  |
| <b>Palabras Claves .....</b>                                      | <b>6</b>  |
| <b>Introduction.....</b>  | <b>7</b>  |
| <i>Adolescent development</i> .....                               | 8         |
| <i>Capability Approach and Agency</i> .....                       | 10        |
| Agency components .....   | 12        |
| <i>Purpose</i> .....  | 16        |
| <b>Method .....</b>   | <b>16</b> |
| <i>Participants</i> .....   | 16        |
| <i>Instrument and Procedure</i> .....                             | 17        |
| <i>Analysis</i> .....   | 17        |
| <i>Ethics</i> .....   | 18        |
| <b>Results .....</b>  | <b>18</b> |
| <i>Internal consistency and Exploratory Factor Analysis</i> ..... | 18        |
| <i>Confirmatory Factor Analysis</i> .....                         | 20        |
| <i>Validity</i> .....   | 21        |
| <b>Conclusions and Discussion .....</b>                           | <b>22</b> |
| <b>References.....</b>  | <b>25</b> |

### **Agradecimientos**

Quisiera comenzar por agradecer a mis dos tutores, ambos han sido de mucha ayuda. A Ovidio que me ha ayudado a emergerme en el mundo de la investigación desde los primeros semestres de psicología en Colombia y lo continúo haciendo desde la distancia con este trabajo. Y a Carmen que ha sido una gran tutora que me ha enseñado mucho sobre la investigación cualitativa y ha estado apoyándome y dándome animo para cumplir con esto.

Además me gustaría agradecer a el Semillero de Psicología Social y Salud Mental de la Universidad CES, del cual hago parte, pues fue con la ayuda de ellos que se construyo el cuestionario y quienes ayudaron en la aplicación en los colegios de Medellín.

Por último a mi familia, pues gracias a ellos tuve la oportunidad de venir a Valencia y me apoyaron durante todo el proceso. Fueron ellos quienes me daban ánimos cuando me sentía agobiada por estar lejos de casa y todo lo que debía hacer.

**Psychometric Validation of a Scale to Evaluate Agency Capability in Adolescents of  
Medellín, Colombia**

**Abstract**

To understand adolescents, from a positive development perspective, as active participants, who are historically constructed, in interaction with the contexts around them, with the capacity of questioning, choosing, and deciding the ways of positioning themselves in the world in a logic of commitment with others and with themselves, their agency capacity must be examined. Agency comes from Sen's (1985) Capability approach and manifests its self as the attitude that a person has to understand, decide, and choose according to their principles and values. This study's goal is to validate a questionnaire constructed to measure the agency capacity in adolescents of Medellin, Colombia. After a qualitative investigation, it was determined that agency had 18 components to measure. The instrument used had a sociodemographic part and one that measured the variables of interest. In order to do the psychometric validation, first, the questionnaire was applied to 1,422 adolescents Medellin. Then, the sample was divided into two in order to explore its internal consistency and to do exploratory and confirmatory analysis. Results showed adequate internal consistency and goodness of fit and a 3-factor solution model. This study allows to 1) increase the knowledge professionals have about adolescence in Medellin and the capabilities teenagers have; 2) contribute to the theoretical construction of the field of the positive development of adolescents, and 3) have a valid instrument to assess this capacity in adolescents in the city of Medellin.

**Keywords**

Agency, Adolescence, Positive development, Factor analysis, Psychometric validation

### **Resumen**

Para entender a los adolescentes, desde una perspectiva de desarrollo positivo, como participantes activos, históricamente contruidos, que están en interacción con el contexto que los rodea, con la capacidad de cuestionar, elegir y decidir la forma en la que se quieren posicionarse en el mundo en una lógica de compromiso consigo mismos y con otros, debemos estudiar la capacidad de agencia. La capacidad de agencia surge del Enfoque de Capacidades de Sen (1985), esta se manifiesta como la actitud que tienen las personas para comprender, decidir y elegir de acuerdo con sus valores y principios. El propósito de este estudio es validar un cuestionario que fue construido para medir la capacidad de agencia en adolescentes de Medellín, Colombia. Tras una parte cualitativa de a investigación se encontró que la se componía de 18 variables para medir. EL instrumento utilizado tenía una parte sociodemográfica y una que median las variables de interés. Para hacer la validación psicométrica primero el cuestionario fue aplicado a 1.422 adolescentes de la ciudad. Luego, se dividió la muestra en dos para explorar su consistencia interna y hacer el análisis exploratorio y confirmatorio. Los resultados muestran una consistencia interna adecuada, una buena bondad de ajuste y un modelo de tres factores. Lo obtenido en este estudio permitirá: 1) aumentar el conocimiento que tiene los profesionales de Medellín sobre los adolescentes y sus capacidades; 2) contribuir a la construcción del campo teórico del desarrollo positivo; y 3) tener un instrumento valido para evaluar esta capacidad en los adolescentes de la ciudad de Medellín.

### **Palabras Claves**

Agencia, Adolescencia, Desarrollo Positivo, Análisis Factorial, Validación Psicométrica

## Introduction

Studying agency capacity in adolescence is of utter importance since this has been linked to their positive development and wellbeing. Developing it will mean having healthier and happier adolescents that as active participants in society can make a difference in it.

Scientific knowledge about mental health has been constructed from two different approaches: the biomedical model and the behavioral model (Hutsebaut, Feenstra, & Luyten, 2013; Mollejo-Apricio, 2012; Muñoz, Cardona, Jaramillo, & Restrepo, 2018; Secretaria de Educación Pública, 2002). The biomedical model, which has been inherited from the biologist and empiricist tradition of western medicine, conceives sickness as a product of anatomical and physiological factors or external entities that affect the functioning of the organism. On the other hand, the behavioral model understands it as a process; it pays special attention to the study of environmental and behavioral risk factors focusing on the way people act as a factor that determines their state of health or illness.

The studies and results of adolescent mental health have allowed identifying these two perspectives. The biomedical model has allowed doing prevalence, incidences, and causality studies that make it possible to identify the nature, estimate frequencies of disorders, and determine problems associated with mental illness. Alternatively, investigations that stand on the behavioral model that have studied risk factors, apart from associating factors to mental health problems, have characterized adolescents that can become mentally ill. These models have enabled the development of a complementary view that currently allows scientists and professionals to have certain clarities regarding the issue of adolescent mental health (Muñoz et al., 2018).

In this respect, it is possible to determine the prevalence of mental health problems that affect teenagers. According to the World Health Organization [WHO], an estimate of 20% of the population has mental or behavioral problems, depression being the illness that contributes the most to the global burden of morbidity among young people between 15 and 19 years old, around 71,000 adolescents commit suicide annually and 40 times more try to do it.

Also, it has made possible carrying out prognosis about mental diseases that start in adolescence. The American Psychiatric Association estimates that around half of the mental disorders start before age 14 and 75% before the age of 24 (UNICEF, 2011). This situation has been identified by other studies (Mollejo-Apricio, 2012) where 80% of adults with a history of major depression, anxiety disorder or addiction to drugs, presented symptoms of onset before the age of 20.

Epidemiological studies have allowed estimating the prevalence and incidence of different disorders in specific populations and territories. In the city of Medellin, according to the study of mental health in adolescents made by CES University and Medellin's town hall (2009), in respect of the prevalence of depression of every one hundred adolescents, 13.5 meet the criteria for clinical depression. In regards with suicidal ideation and suicide attempt, one in every four adolescents thought about committing suicide in some point, more than 13 out of 100 has made a plan to commit suicide, and 3.5% has attempted it and has required medical attention.

Identifying associations between mental health problems and psychological and environmental conditions to which adolescents are exposed during their development process have helped to establish that some risk factors associated with mental health problems. Some of them are: child abuse, violence in the different areas of socialization, poverty, social exclusion and educational disadvantage, psychiatric disorders, and parents use of psychoactive substances (Alcaldía de Medellín & Universidad CES, 2009; Florenzano, 2013; Londoño et al., 2010).

New studies, such as the studies in neuropsychology, have demonstrated that the adolescent's brain, thanks to puberty, can generate different capabilities like reflectiveness and introspection (Wehmeyer, Shogren, Little, & Lopez, 2017). For example, studies show that the amygdala plays an essential role in the processing and storage of emotional reactions in adolescents' behavior. These studies have allowed giving possible explanations to the tendency adolescents have in assuming risky behavior, and from there formulating hypothesis about the importance that living different experiences makes in development of the adolescents brain, for instance, exposure to violent environments, delinquency, substance use, risky sexual behavior, in the increment of the appearance of mental health problems (Sansone, Farukhi, & Wiederman, 2012; Sawyer et al., 2012; Wehmeyer et al., 2017).

### **Adolescent development**

Adolescence is the period between ages 10 and 19 where a person goes through a series of physical, social, emotional, and psychological changes which makes them sexually mature and helps them develop the abilities that are necessary to become independent adults (Muñoz et al., 2018; Reynolds, 2013; Wehmeyer et al., 2017; World Health Organization [WHO], n.d.).

Late adolescence goes from 14 years of age to 17. At this stage, physical changes are very apparent, growth stops for girls but continues for boys, and sexual maturation is attained

(Aliño Santiago, López Esquirol, & Navarro Fernández, 2006; Sawyer et al., 2012; UNICEF, 2011).

Cognitively late adolescents have better-thinking skills; abstract thinking also appears in this stage; they start to think about the meaning of life. This population starts to worry about the future; they plan, set goals, and assess risk to make choices. Besides, they start to worry about others and start to get involved in social situations (Güemes-Hidalgo, Ceñal González-Fierro, & Hidalgo Vicario, 2017; Sadler, 2017; Sawyer et al., 2012).

Moral development also happens in this stage; there is an increase in moral principles and abstract values. They become less egocentric and start to have a more comprehensive view of society. Also, they start to value moral principles over the law (Damon & Lerner, 2008).

Another significant aspect of this stage is the adolescent's self-concept, whose formation is more intense. They start to play new roles in regards to their appearance, sexuality, values, friendships, ethnicity, and special occupations, this broadens their self-categorizing possibilities (Damon & Lerner, 2008).

Finally, at an emotional and psychosocial level, empathy plays an important role, they become more vulnerable and concerned about others, they experience feelings of love and passion, and more responsible behavior is observed. There is also higher capacity for emotional regulation. Concerning parents and adults, there are fewer conflicts and the ability to see in their parents and take them into account increases (Damon & Lerner, 2008; Sawyer et al., 2012).

There are two theoretical approaches to understanding adolescence: the risk approach and the positive development approach. The risk approach, since 1904 with the contribution of Stanley Hall, understands adolescence as a period of stress and ambivalence; in this model, the adolescent is understood as a passive person who is at risk (Muñoz et al., 2018; Wehmeyer et al., 2017). A more modern approach, the positive development approach, sees adolescence as a stage of opportunities, potentials, productivity, in order to make a change in the world. To study adolescence, this approach focuses on their strengths, assets, and adaptability during development (Gerbino et al., 2018; Muñoz et al., 2018; Sawyer et al., 2012). Adolescents are considered as active participants, who are historically constructed in interaction with the contexts around them, with the capacity of questioning choosing and deciding the ways of positioning themselves in the world in a logic of commitment with others and with themselves (Muñoz et al., 2018). In this article, adolescents are understood as from a positive development perspective as agents, term which is described in the Capability Approach.



### Capability Approach and Agency

Inside the positive development approaches, one can situate the Capability Approach. This economic and human development framework was originated in the 1980s by Indian economist and philosopher Amartya Sen. This approach “is a broad normative framework for the evaluation of individual wellbeing and social arrangements, the design of policies and proposals about social change in society” (Robeyns, 2005, p. 5). What distinguishes it is the fact that it centers its attention on what people want to do and be according to what they value, and how free they are to achieve it (Alkire, 2002; Restrepo-Ochoa, 2013; Robeyns, 2005; Sen, 1985; Wells, n.d.). In the words of Alkire (2002, p. 20), “Sen's capability approach is a moral framework. It proposes that social arrangements should be primarily evaluated according to the extent of freedom people have to promote or achieve functionings they value.” To do these, Sen defines three essential concepts for his framework of thought: capabilities, functioning, and, agency, which will be discussed more in-depth below.

Sen sees agency as fundamental and irreducible in human beings lives (Crocker, 1992), and defines it as:

“(…)what the person is free to do and achieve in pursuit of whatever goals or values he or she regards as important (...) Agency freedom is freedom to achieve whatever the person, as a responsible agent, decides he or she should achieve” (Sen, 1985, pp. 203–204).

It has also been defined as “the ability that humans have to reflect on what they value, to set goals and to pursue the realization of those goals”(Oosterlaken, 2015, p. 5). Others define it as the liberty a person has to achieve the goals they value (Morela, 2008).

According to Bandura (2006), agency has four main properties: intentionality, forethought, self-reactiveness, and self-reflectiveness. Intentionality is related to the plans and strategies people have to perform an action. Forethought, “involves the temporal extension of agency. Forethought includes more than future-directed plans. People set themselves goals and anticipate likely outcomes of prospective actions to guide and motivate their efforts” (Bandura, 2006, p. 164). Self-reactiveness includes self-regulation and self-directedness, meaning that agents can create a course of action to accomplish their goals and manage the completion of the task. Finally, self-reflectiveness “is the most distinctly human core property of agency” (Bandura, 2006, p. 165), it is the ability that a person has to reflect on one's self, actions, and thoughts.

Most of these definitions have in common that agency brings change (Bivort-Urrutia, 2005; Keleher, 2014; Sen, 2000). For example, in Sen's book *Development as Freedom*, he

writes: "I am using the term 'agent' not in this sense, but in its older-and 'grander'-sense as someone who acts and brings about change." (2000, p. 19) In his investigation, Pluma (2010) discusses how agency can change the process of social exclusion by empowering individuals which "counteracts the power of ethno-family norms and the deficit of the resources of the structure, in such a way that an effective result in terms of inclusion is achieved." (2010, pp. 110–111)

Another critical aspect of agency is that goals set have to be understood from the person's standpoint, it is something subjective since it has to do what is important to the person: "(...)whose achievements can be judged in terms of her own values and objectives, whether or not we assess them in terms of some external criteria as well" (Sen, 2000, p. 19). It is necessary to understand that agency is not only about the action, "it also encompasses the meaning, motivation and purpose which individuals bring to their activity, their sense of agency, or 'the power within'" (Kabeer, 1999, p. 438).

What is more, agency cannot only be considered as a promoter of welfare in the subject since not all agency exercises produce well-being in the agent, but some may also even generate discomfort in the person (Pluma, 2010; Restrepo-Ochoa, 2013; Sen, 2000). About this Sen (1985, p. 187) says the following: "In fact, some types of agency roles, e.g., those related to fulfilling obligations, can quite possibly have a negative impact on the person's well-being."

Having this definitions in mind, an agent can be understood as a person who is a member of a society that is able to establish goals, objectives, and purposes according to what is important to them (what they value), and who acts in a social context in order to bring changes and achieve his/her goals, even if these actions can generate discomfort to themselves (Morela, 2008; Muñoz-Duque, 2018; Pick et al., 2007; Restrepo-Ochoa, 2013; Sen, 2000). However, collectives such as institutions and groups can also exercise agency (Bivort-Urrutia, 2005; Kabeer, 1999). About this topic Bandura (2006) comments that people do not act as individual agents, he argues that a person's functioning is the cause of three factors working together: intrapersonal, behavioral, and environmental determinant. "Social systems are the product of human activity, and social systems, in turn, help to organize, guide, and regulate human affairs." (Bandura, 2006, p. 165)

Subsequently, different studies have found that agency capacity, and consequently its components, to be an import tool in life since it has an intimate relation with well-being (Alkire, 2002; Cheng & Furnham, 2002; Reis, Sheldon, Gable, Roscoe, & Ryan, 2000; Sarkova et al., 2013; Soria, Martínez, Esteve, Gumbau, & Gumbau, 2005; Wehmeyer et al., 2017). For example, the results Van Bavel's (2017) study with teenage sex workers suggests "that

collective agency indeed offers a way to cope with structural constraints and to challenge unequal power relations” (p.84). Another study about self-care agency in adolescents regarding cardiovascular risk factors encountered that those teenagers with a higher rate of self-care agency have a lower amount of cardiovascular disease risk factors (Morales-Aguilar & Flórez-Flórez, 2016).

There have been done very few scales to measure agency, and most of them measure specifically self-care agency. For example the Appraisal of Self-Care Agency Scale (ASAS) has been validated for several countries, such as China (Guo et al., 2017), United States of America (Sousa, Zauszniewski, Zeller, & Neese, 2008), Norway (Lorensen, Holter, Evers, Isenberg, & Van Achterberg, 1993), Brazil (Damásio & Koller, 2013), Colombia (Manrique-Abril, Fernández, & Velandia, 2009), and more. Other scales that also measure self-care agency are: The Exercise of Self-care Agency (ESCA), The Denyes Self-care Agency Instrument (DSCAI), The Perception of Self-care Agency Questionnaire, and The Self-as-Carer Inventory (SCI) (Sousa et al., 2008)

### **Agency components**

After a qualitative portion of the study, 18 components of agency were identified (figure 1).

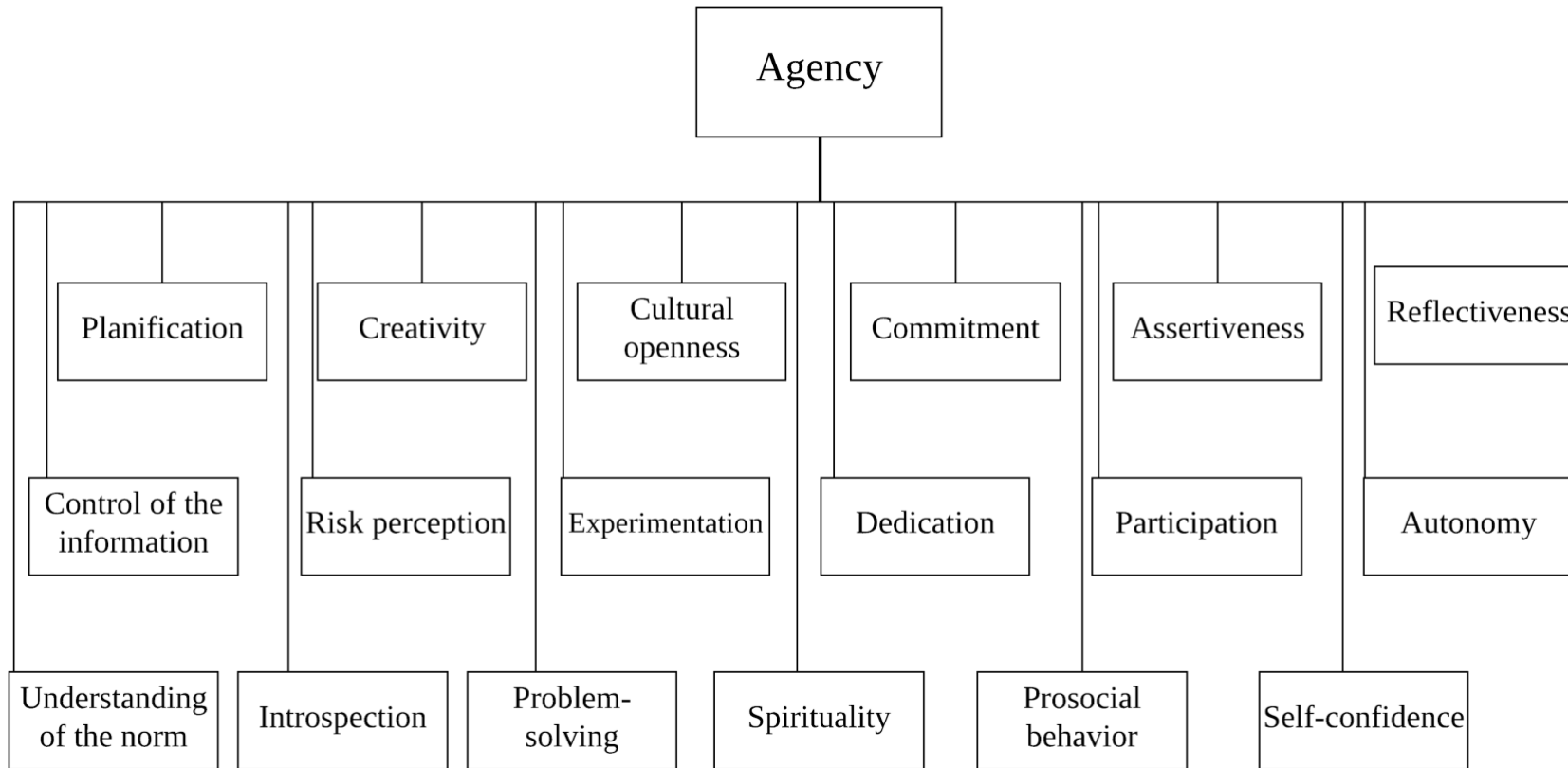


Figure I.

Construction of the agency according to the different components reviewed in the literature: Understanding of the norm, Control of the Information, Planification, Introspection, Risk Perception, Creativity, Problem-solving, Experimentation, Cultural Openness, Spirituality, Dedication, Commitment, Prosocial Behavior, Participation, Assertiveness, Self-confidence, Autonomy, and Reflectiveness.

Adolescents do not only need norms to know what to do, but it is also crucial for them to understand the context, the time, and the reason these norms are given, this is how understanding of the norm is viewed as in this study (Bonell et al., 2016).

The feeling the adolescent has of knowing something and knowing what to do with that knowledge is control of the information, this helps them when socializing, making decisions, and having confidence on them (Ballesteros Guerra & Megías Quirós, 2015; Berríos & Buxarrais, 2005; Krauskopf, 2011).

Planification includes aspects such as articulating a course of action, predicting or anticipating possible outcomes from this, creating and generating alternatives, making decisions and maintaining the attention (Arán Filippetti & Richaud, 2011; Bandura, 2006).

The process in which a person assesses their inner world, reflects on their mental processes, emotions, thoughts, and motivations is introspection (Reynolds, 2013; Zemel, Ronel, & Einat, 2016). Zemel, Ronel, and Einat (2016) found that introspection helped adolescents that previously had delinquent behavior to change their life around and follow positive life habits and adolescents that were at risk to overcome risk factors, to be resilient.

The cognitive and emotional process of assessing a situation to define how dangerous something can be is risk perception (Aven & Renn, 2009; Trumbo et al., 2016; Weber, Blais, & Betz, 2002). Risk perception in adolescence has been linked to the development of the brain where emotional processing and reward-seeking are in all their rage. Having low or inadequate levels of risk perception or associated with adolescents carrying out behavior that can be harmful such as the use of substances, risky sexual behaviors, and wrong use of the internet (Martínez Pastor, García Jiménez, & Sendín Gutiérrez, 2013; Pedrosa, 2009; Sawyer et al., 2012; Trujillo, Santacana, & Gómez, 2007; Wehmeyer et al., 2017). These risk factors have also been associated with high levels of experimentation, which is trying new and varied activities that arouse interest in the person (Sawyer et al., 2012; Wehmeyer et al., 2017).

Creativity is the ability to create new and original ideas and answers to a situation, which are applicable and useful (Kwiatkowska, Rogoza, & Poole, 2019; Lu, Akinola, & Mason, 2017; Stevenson, Kleibeuker, de Dreu, & Crone, 2014; Zabelina, Friedman, & Andrews-Hanna, 2019).

Problem-solving is a cognitive, emotional, and behavioral process in which a person creates different action plans and decides which one of these options is the best way form of getting from a situation that is not optimal to one that is desired (Cenkseven-Önder & Çolakkadioğlu, 2013; Siu & Shek, 2010).

Cultural openness is being curious, interested, and committed to getting to know the characteristics, both similar and different from one's own, from a group the person does not belong to (Abbott & Cameron, 2014; Wenger, 1999). Having a positive attitude to become acquainted with different cultures has shown to improve tolerance and the adaptation to new places (Graham, 2009; Yakunina, Weigold, Weigold, Hercegovac, & Elsayed, 2012).

Spirituality, not just in the religious sense, has been found to help give positive meaning to situations, facilitating coping with stressful situations (Föller-Mancini, Heusser, & Büssing, 2015; Quiceno & Vinaccia, 2014). It also promotes prosocial behavior, avoiding antisocial behavior, and it helps adolescents give meaning to their life (Cotton, Zebracki, Rosenthal, Tsevat, & Drotar, 2006; Föller-Mancini et al., 2015; Giménez, Valverde, & Torres, 2010; Páramo, 2011; Quiceno & Vinaccia, 2014)).

Being implicated on something significant to one's self and being inspired, feeling enthusiasm, proud, and challenged is dedication (Soria et al., 2005).

Commitment is the fact that once a person makes the choice of embarking in a new task they are able to continue it finishing no matter what sacrifice they might have to make (Agnew, 2014; Luyckx, Goossens, Soenens, & Beyers, 2006; Mestre, Tur, Samper, Náchter, & Cortés, 2007).

Any behaviors that a person willingly does whose objective is the benefit of others is known as prosocial behavior (Caprara et al., 2014; Sánchez-Queija, Oliva, & Parra, 2006). Gerbino et al. (2018) found in two different studies with Italian adolescents that prosocial behavior is a strong predictor for academic achievement in the short and long term, which in turn has been related to wellbeing.

Participation is interacting in a cooperative relationship and becoming involved in something. Different types of participation such as community participation, sport participation, school participation, has been linked to the quality of life (Davis et al., 2013; Levasseur, Richard, Gauvin, & Raymond, 2010), a positive self-concept (Silva Dreyer & Martínez Guzmán, 2007), self-esteem, lower levels of school violence (Ferrer, Muñoz, Ruiz, & Ochoa, 2011), and more.

Assertiveness is being able to expose one's point of view, needs and desires in a way the receptor or receptors understand and without attacking them (Gillham & Reivich, 2004; Inglés, Hidalgo, & Méndez, 2005; Sarkova et al., 2013). Sarkova et al. (2013) found a strong correlation between assertiveness and positive self-esteem, which leads to believe that having this skill leads to greater wellbeing in adolescents.

Self-confidence can be defined as the perception that a person has about their abilities and their capability to face different challenges and achieve goals (Cheng & Furnham, 2002; Luna Bernal & Laca Arocena, 2014; McCullough, Huebner, & Laughlin, 2000; Stankov & Crawford, 1997; Woodman & Hardy, 2003).

Autonomy can be understood as the feeling of acting and deciding according to one's free will by being independent, not feeling coerced to act a certain way, and being able to self-regulate (Kagitcibasi, 2005; Mayordomo, Sales, Satorres, & Meléndez, 2016; Ryan & Deci, 2006; Wehmeyer et al., 2017). Theories such as the Self-Determining Theory, Action-Control Theory, Causal Agency Theory have linked autonomy to agency (Ryan & Deci, 2006; Wehmeyer et al., 2017). For example, Self-Determining Theory presents autonomy as a basic and crucial psychological need, in which the actions that a person takes in order to cover this necessity develop agency (Wehmeyer et al., 2017).

Reflectiveness is that ability the teenager has to think about their own and others' actions, thoughts, and feelings, and understanding where they come from. (Bandura, 2006; Gestsdottir & Lerner, 2008). It is the capacity of having a critical point of view towards ones' self and the world.

## **Purpose**

Knowing the importance that agency has on human development and wellbeing, and the limited amount of scales to measure agency there are, the purpose of this study is to validate a scale to evaluate agency capacity that can be used on adolescents of the city of Medellín. This way, a baseline can be created and later be used to evaluate, create, and improve the quality of the services, programs, and support that the city provides to its young population. Three different reasons can justify this study: 1) having this instrument increase the knowledge professionals have about adolescence in Medellín and the capabilities teenagers have; 2) contribute to the theoretical construction of the field of the positive development of adolescents; and 3) have a valid instrument to assess this capacity in adolescents in the city of Medellín.

## **Method**

### **Participants**

The sample selected was composed of 1,422 adolescents from Medellín, Colombia, ranging from 14 to 17 years old with a mean of 15.5 years and a standard deviation of 1.1 years, 51% were women and 49% men. The sample represents a population of 91,319 adolescent.

This sample was divided into two different samples, one for the exploratory analysis and the other for the confirmatory analysis.

The sample for the exploratory analysis was composed of 710 adolescents with ages ranging from 14 to 17 years old, mean age of 15.5 years, and a standard deviation of 1.0. 48.9% of them were male and 51.1% female. 17.6% of the participants were going through 8<sup>th</sup> grade, 38.5% through 9<sup>th</sup> grade, 32.1% through 10<sup>th</sup> grade, and 11.8% through 11<sup>th</sup> grade. With regards to the socioeconomic stratum of housing, 30.1% of the adolescents lived in the socioeconomic stratum 1, 27% in 2, and 29.9% in 3, these three stratum according to Colombian economic stratification are low economic stratum. 7.9% of the students lived in stratum 4, which would be middle class, and on stratum 5 and 6, 2.3% and 2.8% lived there respectively, which would be high class.

The second sample was composed of 712 students with the same age range, mean age, and standard deviation. 49% of the sample were male and 51% female. As for the grade, the students were on 17.6% were on 8<sup>th</sup> grade, 41.2% on 9<sup>th</sup> grade, 29.2% on 10<sup>th</sup> grade, and 12.1% on 11<sup>th</sup> grade. Finally, as for the socioeconomic stratum of housing 29.2% lived in stratum 1, 28.5% in stratum 2, 29.2% in stratum 3, 7.3% in stratum 4, 3.2% in stratum 5, and the remaining 2.7% in stratum 6.

### **Instrument and Procedure**

To select the sample, probabilistic sampling was carried out. This was designed according to a stratified by conglomerate into two-stage. The primary information was taken from a questionnaire that was designed with the variables of interest in the qualitative phase and complemented with sociodemographic factors; the instrument was corroborated in appearance and content and piloted to determine and adapt the conditions of its application. Participants were volunteers and completed the necessary informed consent and assent documentation.

### **Analysis**

To select the sample, a probabilistic sampling by conglomerates, stratified, two-stage was carried out. To perform the analysis SPSS 18.0 was used for exploratory factor analysis (EFA), and Amos 18.0 module for the confirmatory factor analysis (CFA). Assumptions were checked to ensure the application of factor analysis, high sample size, multivariate normality, linearity, and the correlation between variables (Comrey, 1973; Tabachnick & Fidell, 1989). To carry out the Exploratory Factor Analysis a Promax rotation was applied because it was considered that there were significant correlations. Likewise, internal consistency of the scale



was checked through Cronbach Alpha; items of homogeneity; KMO index and the Bartlett test of Sphericity (Kaiser, 1974).

After removing the factorial solution proceeded to the completion of confirmatory factor analysis (CFA), accompanied by the goodness of fit indices. Confirmation of the adequacy of the model have been used within the absolute fit indices; the chi-square statistic  $X^2$  (Jöreskog & Sörbom, 1979; Saris & Stronkhorst, 1984); the comparative fit index (CFI) whose value reference is at 90 to consider an acceptable model (Hu & Bentler, 1990), and finally, within parsimony adjustment indices, the error of the root mean square approximation (RMSEA) of the RMSR Similarly, the more smaller its value, the better the fit, the reference value being .05 (Steiger & Lind, 1980).

**Ethics**

This research was approved by the Institutional Ethics Committee of the CES University, and with the endorsement of the Ministry of Education of the City of Medellín, Colombia.

**Results**

**Internal consistency and Exploratory Factor Analysis**

Cronbach's alpha of the Agency Scale proposal was  $\alpha = 0.77$ , and the percentage of total variance explained of 51.13%. Table 1 presents the descriptive analysis, homogeneity items, Cronbach's alpha, kurtosis, skewness, and exploratory factor loadings between items. A sedimentation graph; this graph indicates three or four solutions. Moreover, table 1 depicts all the descriptive analysis of all items.

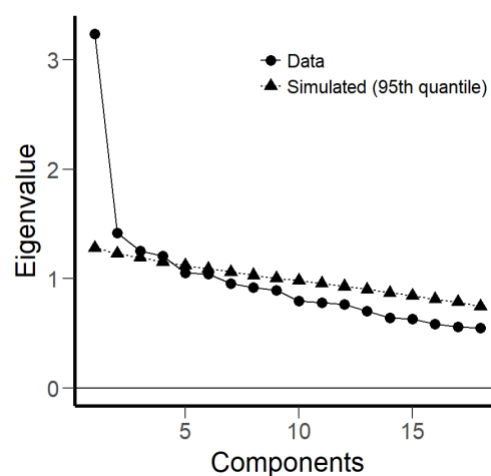


Figure II.

Scree plot representing the eigenvalues and simulation through a Parallel Analysis on polychoric matrix of correlations. It depicts a three-factor solution.

Table 1.

Descriptive analysis for all items: Means, standard deviation, kurtosis, skewness.

|                           | Mean | Standard Deviation | Skewness | Kurtosis |
|---------------------------|------|--------------------|----------|----------|
| Understanding of the norm | 2.71 | .766               | -2.392   | 4.199    |
| Control of information    | 2.69 | .765               | -2.196   | 3.233    |
| Planification             | 2.38 | .981               | -1.043   | -.653    |
| Introspection             | 2.35 | 1.014              | -1.025   | -.662    |
| Risk perception           | 2.28 | 1.059              | -.909    | -.878    |
| Creativity                | 2.41 | .963               | -1.105   | -.528    |
| Problem-solving           | 2.22 | 1.084              | -.802    | -1.060   |
| Experimentation           | 2.74 | .730               | -2.597   | 5.267    |
| Cultural opening          | 2.88 | .534               | -4.339   | 17.794   |
| Spiritual development     | 1.94 | 1.185              | -.372    | -1.554   |
| Dedication                | 2.05 | 1.079              | -.364    | -1.598   |
| Commitment                | 2.00 | 1.124              | -.373    | -1.551   |
| Prosociality              | 1.64 | 1.116              | .208     | -1.519   |
| Participation             | 1.77 | 1.114              | .035     | -1.628   |
| Assertiveness             | 2.39 | 1.026              | -1.212   | -.219    |
| Self-confidence           | 2.24 | 1.048              | -.774    | -1.126   |
| Autonomy                  | 2.02 | 1.078              | -.305    | -1.640   |
| Reflectiveness            | 2.23 | 1.048              | -.724    | -1.210   |

With regards to the validity of Exploratory Factor Analysis (EFA), Bartlett's test of sphericity was  $p < .001$  with a value of chi-square 1340.25 ( $df = 153$ ) and the sample index value of Kaiser-Meyer-Olkin (KMO) was 0.76. The scree-test (Cattel, 1966) recommended a six-factor solution; it is of note that some factors only explain around 5% of the variance. Through the maximum likelihood method, factor loads were extracted. The factor loadings from the exploratory factor solution, according to the maximum likelihood estimation, depicted a three-factor solution, as shown in Table 2.

Table 2.

Item loadings in the Exploratory and Confirmatory Factor Analysis

|                           | Factors     |             |             |
|---------------------------|-------------|-------------|-------------|
|                           | 1           | 2           | 3           |
| Control of information    | .312        | <b>.617</b> | .228        |
| Planification             | .325        | .251        | .302        |
| Introspection             | .227        | .216        | <b>.424</b> |
| Risk perception           | .189        | .182        | .285        |
| Creativity                | .320        | .256        | .329        |
| Problem solving           | <b>.442</b> | .165        | .309        |
| Experimentation           | .214        | <b>.385</b> | .336        |
| Cultural openness         | .196        | <b>.527</b> | .328        |
| Spiritual development     | .230        | .150        | .145        |
| Dedication                | <b>.532</b> | .200        | .198        |
| Commitment                | <b>.540</b> | .222        | .188        |
| Prosociality              | .274        | .151        | .228        |
| Participation             | .055        | .159        | .123        |
| Assertiveness             | .176        | .160        | <b>.411</b> |
| Self-confidence           | <b>.452</b> | .125        | .362        |
| Autonomy                  | <b>.394</b> | .177        | <b>.395</b> |
| Reflectiveness            | .298        | .203        | <b>.564</b> |
| Understanding of the norm | .216        | <b>.556</b> | .148        |

### Confirmatory Factor Analysis

An independent sample of 712 students was employed for the confirmatory factor analysis, as previously mentioned. The model presented an optimal fit. The goodness of fit indices global scale was:  $X^2 = 108.97$ ;  $p < .001$  ( $df = 50$ ),  $X^2/df = 2.18$ ; CFI = .93, and RMSEA = .04.

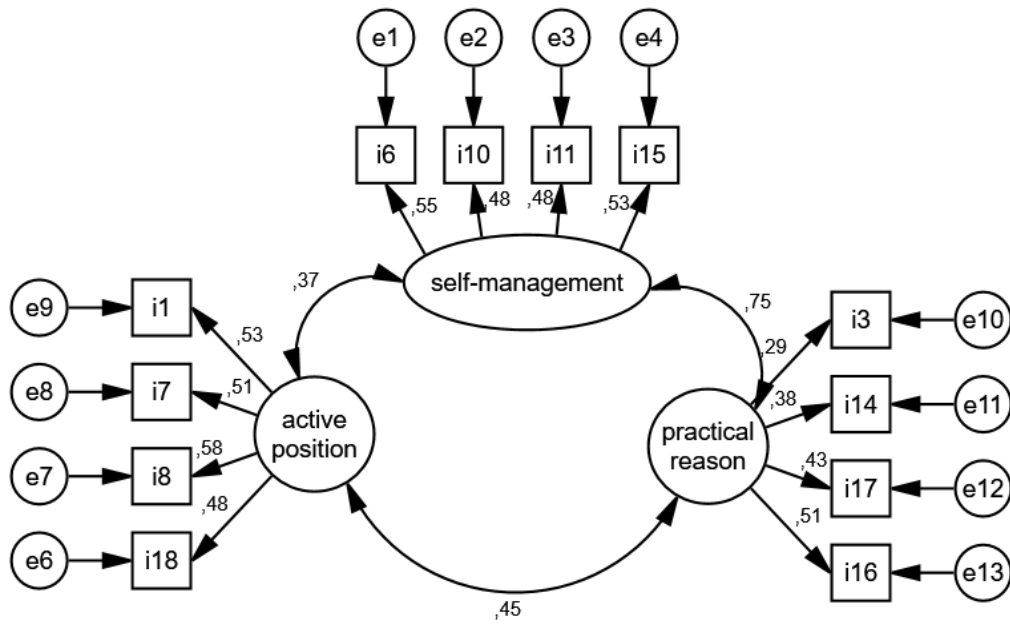


Figure II.  
Factorial solution for the developed scale.

**Validity**

To test the criterion validity of the scale, the Agency Scale proposal was correlated with two items about student's perception in their socialization and student's family satisfaction. The first item was chosen to test convergence and the second one, divergence. This technique was in accordance with the literature.

Table 3.  
Matrix of correlations on the different constructs evaluated on polychoric matrix of correlations.

|                     | self-management | practical reason | active position | Socialization | Family satisfaction |
|---------------------|-----------------|------------------|-----------------|---------------|---------------------|
| self-management     | 1               | .20**            | .35**           | .26**         | .15**               |
| practical reason    |                 | 1                | .18**           | .14**         | .07                 |
| active position     |                 |                  | 1               | .18**         | .02                 |
| Socialization       |                 |                  |                 | 1             | .15**               |
| Family satisfaction |                 |                  |                 |               | 1                   |

Of note, here, one should bear in mind that the proposed agency questionnaire follows a polychorical point scale. In this way, some distortions or bias might occur. For this reason, a bigger sample size was employed (Constant et al., 2018). Assumption of Normality and Continuity also were revisited, even if different authors point out that the violation does not

have statistically significant consequences on the results (Holgado–Tello, Chacón–Moscoso, Barbero–García, & Vila–Abad, 2008). According to Jöreskog (2001), the estimates obtained from variables with asymmetric distribution are not severely altered if the values of the root mean square error (RMSEA) index are kept within the accepted.

### **Conclusions and Discussion**

The three factors encountered in the study were named: Self-management, Practical Reasoning, and Active Position. Self-management can be understood as the ability adolescents have of identifying their necessities, prioritizing them, controlling themselves, and making decisions to accomplish their goal (Montero, 1994; Musitu-Ochoa, Herrero-Olaizola, Cantera-Espinosa, & Montenegro-Martínez, 2004; Zych, Beltrán-Catalán, Ortega-Ruiz, & Llorent, 2018). Studies have demonstrated that positive youth development programs are essential to prevent different problems in youths. One of the crucial areas to develop in this approach in order to minimize adverse outcomes in adolescents development is self-management (Shek, Sun, & Merrick, 2012). This factor is composed of the items of problem-solving, dedication, compromise, and self-confidence. Having good problem-solving skills has been related in investigations with adolescents' well-being (Ranjbar, Bayani, & Bayani, 2013; Siu & Shek, 2010). Evidence in support of this position can be found in Cenkseven-Önder, and Çolakkadioğlu (2013) study, who found that between the variables they were measuring the one that predicted the most satisfaction with life and subjective wellbeing was problem-solving. The fact that problem-solving is part of this factor is consistent with what has been said by Little, Snyder, and Wehmeyer (2006) about how fundamental this skill is to be an agent. Also, in order to achieve what one wants, dedication is of utter importance. The definition given above for dedication shows the relation it has with agency and wellbeing, in order for a person to be an agent they must dedicate time and effort to their goals and the pride and effort they put towards something has been linked to wellbeing (Benatuil, 2003; Cadime et al., 2016). Commitment has close connections with positive youth development, therefore with self-management as well. Shek, Sun, and Merrick (2012) describe in their article that different types of commitment are part of successful positive youth development programs. The fact that self-confidence is related to self-management agrees with different literature, especially with studies of emotional intelligence and education (Bisquerra Alzina & Pérez Escoda, 2009; Sánchez Garza & Cabral Parra, 2005). In order to practice self-management skills, an internal locus of control is necessary, which has also been linked to self-confidence. Moreover, it agrees with studies that show that in order for someone to take action having confidence on their skills

to accomplish what they want is an essential factor (Munford & Sanders, 2015; Ortiz García & Olaz Capitán, 2018).

Practical reason is being able to form, deliberate, reflect, and through this decide and justify how to act (Wallace, 2018). This factor is composed of introspection, assertiveness, autonomy, and reflectiveness. Munford and Sanders (2015) made a qualitative study with adolescents and found that an important factor that facilitates carrying out agency actions was accepting responsibility for their actions, making sense of what they were feeling and managing those feelings, all of these is an outcome of introspection. In this same study, they found that developing assertiveness also help them be understood and help them get to where they want to go. The importance of assertiveness in positive development and agency also strengthens the findings of other studies (Gillham & Reivich, 2004; Inglés, Hidalgo, & Méndez, 2005; Sarkova et al., 2013). The findings of assertiveness and agency in this study agree with Abele's et al. (2016), who measure assertiveness as part of agency. Furthermore, the results found also are in concordance with what the Self-Determining Theory says about how autonomy is needed to develop agency (Wehmeyer et al., 2017). The last variable in this factor, Reflectiveness, helps adolescents make sense to the world, helps them understand, being a crucial factor for them in order to manifest their agency capacity (Munford & Sanders, 2015).

Having an active position means getting involved, participating actively, using one's tools to accomplish the goals that were set (González Maura, 2002; Grosser Guillén, 2003). In order to exercise agency, adolescents have to take an active position. They must use their resources in order and not be passive observers waiting to see what might happen (Munford & Sanders, 2015). This will help them achieve the goals that they set themselves according to what they value. The components of this factor are Control of the Information, Experimentation, Cultural Openness, and Understanding of the Norm. The fact that the variable of Control of the Information is part of this factor demonstrates that adolescents need control of the information, they must be informed, understand what is given to them, manage it, and with this use it according to their needs (Ballesteros Guerra & Megías Quirós, 2015; Berríos & Buxarrais, 2005; Krauskopf, 2011; Munford & Sanders, 2015; Tilton-Weaver & Marshall, 2008). Moreover, experimentation is most of the time view as a negative characteristic of adolescents, but the fact that it appears on this factor proves what authors such as Güemes-Hidalgo et al. (2017), Hazen, Schlozman, and Beresin, (2008), and Newcomb (1996) said; after all, it is normal at this stage of life, and it helps them consolidate their identity. The presence of Cultural Openness as a part of the factor also gives more significant support to what was

said in the introduction. As a result of comprehending the norm, adolescents take action in different fields and start to participate. Recognizing adolescents as agents of change, as people that can offer something different to society, and having laws that make sense to them based on their necessities, promotes their active position, and consequently their agency capacity (Bonell et al., 2016; Pérez Expósito, 2014).

In regard to the limitations, the fact that the results were self-reported is one of them since there might be bias and it could be affected by social desirability of the adolescents. Something that would have been desirable would be to apply a different scale that has already been validated to correlate both of them. This was not possible due to the fact that there are no scales validated for these population that measure agency, those that are available, as expressed above, are ones that measure self-care agency. Lastly, another limitation is the fact that the questionnaire follows a polychorical point, a Likert Scale with more anchor points could have given more information. Nevertheless, the necessary analysis was performed in order to check for accuracy.

Differentiating between which variable help measure agency and which do not prove to be a difficult task since they are constructs that have been related in literature and have similar characteristics. For example, some studies can characterize prosocial behavior as a way of practicing agency, but not as a factor of agency, since one can behave prosocially without it being something important to one's values, just do it because it is the right thing to do according to other people (Munford & Sanders, 2015).

In conclusion, the present study, whose purpose was to validate a scale to evaluate agency capacity of Medellin's adolescents, shows that this Agency Scale has good psychometric properties. The exploratory analysis showed that the scale has an acceptable internal consistency, a good adjustment, and the factor loadings depicted a 3-factor solution, all of this was corroborated in the confirmatory analysis. This will allow the instrument to be used both theoretically and practically. It will help obtain more information to contribute to the construction of the field of the positive development of adolescents. Also, having this innovative instrument validated will allow having a better understanding of adolescence in Medellin by exploring an area that has never been explored before. Additionally, with the screening of the population, it will enable experts to do intervention proposals and measure their effectiveness. Finally, as future lines of investigations, it would be interesting and useful to validate the instruments in different countries and languages.

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