



## Research Articles

# Solidarity Economy and Family Dynamics of Recyclable Pickers: A View From the Science, Technology and Society Field

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## Abstract

As researches in the social psychology of work field indicate, workers are exposed to the subjective influences of their work environment, with the possibility of interinstitutional and systemic influences due to intersubjectivity. Economic-solidarity enterprises, having an organization and nature different from the capitalist companies and being considered as Social Technologies, from the perspective of the Science, Technology and Society research field, contribute to these influences, which include techniques, methods and products. As the family is one of the main belonging institutions to the persons, this study aimed to investigate the influences of economic-solidarity work relationships on the family dynamics of these cooperatives workers. The research field was the Cooperativa de Trabalho dos Catadores de Materiais Recicláveis de São Carlos [São Carlos Work Cooperative of Waste Pickers], São Paulo, Brazil, and the method used was thematic oral history. Fieldwork was carried out using participant observation techniques and semi-structured interviews with waste pickers and family members, which were transcribed for content analysis and transcribed for feedback to the research participants and validation of the information. Three main characteristics were observed permeating the interviews: that the economic-solidarity principles, even if not theoretically understood, when experienced in the work space, are potential to change people's behavior; that the organization of cooperative work positively influenced family dynamics; and that the cooperative organization was considered as a possibility for the economic inclusion of socially excluded people. The most prominent influences of economic-solidarity work relationships on family dynamics were the increased tolerance and cooperation in carrying out daily tasks and responsibilities.

*Keywords:* solidarity economy, family dynamics, science, technology and society, recyclable waste picker

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This article was developed through the dialogue between the research field science, technology and society (STS) and the social psychology of work, in order to understand some issues that involve the solidarity economy (SE) and the subjective and intersubjective productions related to the relations of work commitments in enterprises based on SE principles. It started with a reflection about four main postulations:

1. As work influences the identity constitution of people, the economic-solidarity organization of work must reflect differently on the identity of workers in enterprises with these principles, as they are contrary to hegemonic capitalist principles (Veronese & Esteves, 2009);
2. The influences received by workers in the labor associations in which they participate, are disseminated throughout the social fabric, and the perspective of systemic change can be attributed to SE (Singer, 2002a);
3. Since the family is the first institution with which the person has contact (Vasques-Menezes et al., 2006), it would also be the first institution to receive influences from the context of labor relations;
4. Because the economic-solidarity enterprises (ESE) are considered as social technologies (ST; Dal Ri, 2007), which can be developed through socio-technical adjustments (STA; Gutierrez & Zanin, 2013), it is important to understand its structure and internal relations to ascertain its potentialities to influence the identities of its workers.

The family dynamics of people inserted in an ESE were defined as the object of research, reflecting on how the ESE influence these dynamics. Accepting that the economic-solidarity principles are contrary to the capitalists, the hypothesis was outlined that the insertion of the worker in an ESE has a different and positive influence on the subjects' personal life and on their family dynamics, in which changes can be promoted after the subject to bring influences from external institutions to the family environment.

Having as a research field the *Cooperativa de Trabalho dos Catadores de Materiais Recicláveis de São Carlos* (Coopervida) [São Carlos Work Cooperative of Waste Pickers], considered an ESE, the general objective of this work, which resulted from a master's dissertation (Secco, 2014), was to investigate the influences of economic-solidarity work relationships on the family dynamics of waste pickers.

After a brief contextualization about the relationships between the SE, the STS field and the ESE of recyclable waste pickers, some considerations will be presented about the impacts of work organization on the subjectivity of the worker and, consequently, on his family dynamics. Then, the method, the results and the final considerations with the synthesis of the main results will be presented.

## SE in Brazil, Recyclable Waste Pickers and the STS Field

The emergence of SE is often associated with the rampant context of technological advancement that has resulted in periods of high unemployment, a situation that has gone through several years and that has led people to organize themselves in an attempt to maintain their jobs. In this sense, SE becomes an alternative to workers who started to organize themselves based on new principles, constituting work relationships different from those experienced until then (Singer, 2002a). Among its principles are cooperation, autonomy, democratic management (Laville & Gaiger, 2009), the defense of collective or associated property, individual freedom, equal distribution of income and solidarity (Gaiger, 2004).

SE has spread across the world in several similar contexts. In Brazil, it appeared during the economic crisis that occurred in the 1980s and which persisted through the 1990s, when several companies went bankrupt, consequently leading to the loss of many jobs. It developed as a way of combating the consequences of the crisis situation, allowing workers to organize, with the support of several institutions (catholic church,

universities, unions, among others), in cooperatives based on its principles, in an attempt to recover bankrupt companies (Singer, 2002a).

In a period prior to this context, around the 1950s, the emergence in Brazil of the recyclable waste pickers activity (Silva, 2006) is noted in a scenario also of unemployment, poverty and social exclusion resulting from the model of economic expansion occurred at the time. Waste pickers started to be instigated to organize themselves in ESE, and this organization still occurs today in an articulated way and represented by the *Movimento Nacional dos Catadores de Materiais Recicláveis* [National Movement of Waste Pickers].

Researchers in the STS field, considering the relationship between social values and scientific and technological production, ponder that this should be controlled by the population, as well as that attention to these scientific principles can contribute to research related to SE. This, because currently ESE are increasingly associated with ST, which are potential to combat inequality scenarios and promote social inclusion being accessible to the most diverse populations (Singer, 2002a). There is still the perspective that the ESE themselves are ST (Dal Ri, 2007) and, thus, the organization of the ESE and the work in the SE are extremely important to ensure their accessibility and suitability to the populations and their needs.

Singer (2002b) highlights the need for ESE workers to know the principles of SE and the technologies involved in carrying out work in the cooperative, citing training activities as important in this process. The change in the way of organizing work and the mode of production, from the capitalist to the solidary characteristics, requires a process of constant education of its actors as it involves the need to transform culturally rooted habits.

In the context of the municipality of São Carlos, located in the interior of the state of São Paulo, Brazil, there are several legal provisions aimed at structuring actions in SE of solid waste with inclusion of waste pickers (São Carlos City Hall [SCCH], 2008a, 2008b, 2008c, 2010, 2012a, 2012b, 2016). Even so, ESE and individuals working in this field constant clashes with the government in the municipality to ensure the maintenance of its activities. Although municipal policies aimed at ES encompass activities related to solid waste, important for the maintenance of Coopervida, the main municipal actions related to the Cooperative started from the theme of waste solid and other environmental issues, highlighting the existence of fragmented and disjointed actions among the sectors related to the activities of the Cooperative. Focusing on guidelines of the National Solid Waste Policy (Law 12.305 of 2 August, 2010), during the research period the SCCH had not yet prepared its Municipal Solid Waste Management Plan (MSWMP), making it unclear which actions on the theme comprised its objectives. This Plan was only published in its Official Gazette in 2020 (Law 19.926 of 17 November, 2020), finally establishing the objectives, instruments and guidelines for integrated waste management in the municipality (SCCH, 2020).

As a consequence, difficulties were observed in the dialogue between the Cooperative and the public authorities, as well as several trials of a split in this relationship, which the approval of MSWMP tends to soften, as it provides in its Article 7 programs and actions to promote the inclusion of waste pickers in the waste stream (SCCH, 2020).

Coopervida persisted with the execution of its work, in the last decade, with the support of several institutions, such as universities and associations, surrounded by several contradictions (Secco, 2014; Secco-Oliveira, 2018; Secco-Oliveira, Machado, & Zanin, 2015, 2017; Secco-Oliveira, Santos, Teixeira, & Zanin, 2018).

According to [Secco-Oliveira \(2018\)](#), although there are converging considerations on the origin of the solidarity economy, besides several studies on the premises of its development in the Brazilian context, the conception of what it really is, is still in dispute, demonstrating its procedural and the contextual importance for the evaluation of its theoretical implications.

In Brazil, at the Federal level, institutionally there were setbacks, impacting the financing and development of the ESE, although there were numerous popular mobilizations in its defense. In 2003, under the presidency of Luiz Inácio Lula da Silva, the National Secretariat for Solidarity Economy (NSSE) had been instituted. With the political changes that occurred after the change of government and its political tendencies, this secretariat has increasingly lost its status. During the government of Michel Temer, it became Undersecretary of Solidarity Economy of the Ministry of Labor, Employment and Social Security, through [Decree nº 8.894, of November 3, 2016](#). Currently, during the government of Jair Messias Bolsonaro, it was downgraded by [Decree nº 9.674, of January 2, 2019](#), becoming the Department of Solidarity Economy, linked to the Ministry of Citizenship and then, by [Decree nº 10.357, of May 20, 2020](#), the attributions referring to solidarity economy passed for the Urban Productive Inclusion Department, and there is no longer a specific sector for it.

In São Carlos, both the government structure related to the solidarity economy and some tensions persist. The performance of the Community Solid Waste Forum of São Carlos/SP, created in 2016, assisting this dialogue, stands out. It is composed of representatives from various public and private institutions, in addition to civil society, who have historically supported Coopervida in different settings. The organization of this Forum allowed these actors to articulate themselves to enhance their actions. With the approval of the MSWMP, an important step taken with the contribution of the Forum, the importance of continuing its activities is reaffirmed for the Plan to be effectively executed.

## Work, Subjectivity and Family Dynamics

From the perspective of work, some researches, which dealt with subjectivity in SE, addressed the premise that as work is a central influence in people's lives and, consequently, in the constitution of their identity, the solidary organization of work should reflect differently in the identity of ESE workers ([Esteves, 2010](#); [Nicolletti, 2011](#); [Onuma, 2011](#); [Veronese & Esteves, 2009](#); [Veronese & Guareschi, 2005](#)). They agree to affirm that even in the face of some contradictions involving the organization and development of the ESE and the engagement of workers, these influences occur to a greater or lesser extent, since their principles diverge from the capitalists, corroborating the prospect of a possible systemic change pointed out by [Singer \(2002a\)](#).

This perspective predominates among several theorists ([Arruda, 2000](#); [Santana Júnior, 2007](#); [Singer, 2002b](#); [Tauile, 2002](#)), based on the criticism of the cultural problems of capitalist principles. Resulting in the fragmentation of the personal, social and political environment and in the breaking of social ties by prioritizing immediacy to the construction of long plans, they favor the development and intensification of individualism ([Sennett, 2006](#)).

Also analyzing the work, [Vasques-Menezes et al. \(2006\)](#) highlight that the work organization and other institutions external to the family, exert influences on its dynamics, because when one of its members has its identity influenced by its social contacts, when it returns to the family it influences the others. Thus, economic development can interfere both in issues of economic and family autonomy and it is understood that it is not

possible to comprehend the family and its changes if we do not consider social changes, which can affect economic, scientific, technological and relational areas.

As the family is a system “inserted in” and “related to” other systems, the family group can be presented with several configurations, such as: “family of origin, extended family, nuclear family, substitute family, single-parent family, among others” (Araújo, 2007, p. 35, authors translation).

Although these configurations are variable, economic stability, outlined as a basis for autonomy, is an aspect that permeates family desires in today's society (Fernandes, 1994). This model is more related to the middle classes, but it is offered to other classes as the ideal of economic growth (Negreiros & Féres-Carneiro, 2004).

On the other hand, it is observed that the functioning of families of popular classes, differs in relation to the aspect of labor insertion, what occurs according to their survival needs. This perspective coexists with a new concept of family, in which the functions of its members once seen as immutable, are subject to change. In other words, the varied non-traditional family configurations enable different roles organizations, such as the man being the housekeeper, the woman being the Family leader, and the couples not having children (Negreiros & Féres-Carneiro, 2004).

Referring to each family's peculiar way of relating and functioning, Agostinho and Sanchez (2002) define family dynamics as “[...] a set of exchanges of influences between their members” (p. 33). Through it, the way the family members' roles are organized, their motives and hierarchy and how the person will be constituted as a subject (Araújo, 2007, authors translation).

Even if occurs this possibility of occupying non-traditional roles in the family dynamics, Salvagnim and Canabarro (2015), in a study carried out in the Brazilian context, highlight that women still receive a greater work overload related to family dynamics, which reflects in their professional life, especially for those in a leadership position, showing that gender issues are relevant when it comes to investigations on the work-family relationship.

In this sense, Perry-Jenkins and Gerstel (2020) highlight that gender conditions are more addressed in literatures that relate work and family, but that other issues such as race, ethnicity and social class have not yet been adequately considered, leaving many gaps about differences in consequences of the work-family relationship in different contexts and conditions of existence.

Theoretical reviews address how certain work experiences impact on family life, such as, for example, Pellegrini et al. (2018), who studied the family impacts of bullying in the workplace, or Perry-Jenkins and Gerstel (2020), addressing racial discrimination in the workplace.

The first authors enhanced how much the family's support or not, as well as the person's openness or not, reflects on how the subject will overcome the difficulties triggered by these experiences, which also impact on the economic, libidinal, status, and in the marital relationship as distance and hostility, resulting in changes in family dynamics. The authors of the second study pointed out that, as racial discrimination has been a growing topic in labor studies, some results have indicated that workers who suffer from racism in the workplace have worse moods in the family context, also resulting in problematic behavior by children.

An important information presented by [Perry-Jenkins and Gerstel \(2020\)](#) is that little research investigates the children's perspective on the work of parents, which makes it difficult to understand how this relationship implies in the actual family dynamics.

[Senthanaar et al. \(2020\)](#), in turn, highlight in a study carried out in Ontario, Canada, how much work accidents impact on family dynamics. Agreeing with [Pellegrini et al. \(2018\)](#), the authors show how the situations of support or distance between family and worker vary, and add that when the consequences incur in the disintegration of relationships, a frequently associated factor is the economic one, such as the poverty resulting from the accident at work. They also pointed the insecurity inherent in precarious work positions, highlighting the fragile system of protection for workers and their possibility of dialogue with the competent authorities.

One of the consequences of precarious work associated with the unstable implementation of policies, would be the continuous cycle of illness and unemployment for the injured worker, making it difficult for the other family members to adequately support themselves, who also normally have unsafe working conditions. Thus, the responsibility for recovery lies with the injured worker and his family ([Pellegrini et al., 2018](#)).

In this context of precarious work, [Perry-Jenkins and Gerstel \(2020\)](#) emphasize that precarious work is crucial for understanding their relationship with the family, pointing out that instabilities affect this relationship. In relation to pressure at work, the authors point out that it is closely related to mood and the impact on family relationships and worker well-being. Both high pressure work (due to stress) and low pressure work (due to monotonicity) can negatively impact low income workers, and the support of colleagues can decrease these effects.

Reinforcing the prerogative of the growing need to consider heterogeneous aspects, this encouragement is quite highlighted by the authors for future research, suggesting in analyzes routines “[...] test for signals that race or class may moderate the processes being examined. Otherwise, our research continues to make the lives of many—typically those with less power - invisible” ([Perry-Jenkins & Gerstel, 2020](#), p. 442). This would contribute to the elaboration of public policies adequate to the real social needs, in general and specific situations of minorities.

In the context of working in the solidarity economy, family issues are addressed mainly focused on working on mental health projects. A recurrent work in the literature focused on the relations between the solidarity economy and mental health is that of [Filizola et al. \(2011\)](#). It provides evidence, including on the family perspective on psychiatric reform carried out in the Brazilian context ([Santos et al., 2016](#)).

The authors, in addition to meeting the postulation of [Vasques-Menezes et al. \(2006\)](#) that the family nucleus is the subject's first and most important support network, underscores the family's recognition that the person in psychological distress is a productive being, after participating in economic-solidarity income generation projects. The intensification of worker participation in the social environment was also pointed, with work being an exchange in this environment. In addition, the authors add that:

Although most families belong to less favored economic classes, in addition to financial returns, they recognize the importance of work as a space for creating meanings, exchanges, new relationships and as a relevant factor in maintaining the quality of life of their families. ([Filizola et al., 2011](#), p. 424, authors translation).



In addition, this research by [Filizola et al., 2011](#) also highlighted that the participants' family configuration was not nuclear, accompanying the recognition of new conceptions about family arrangements.

As the family is influenced by several external institutions, it was decided to reflect on the work space, which has the potential to influence the identity of the individual, which in turn, is primarily constituted from family relationships.

## Method

The methodological procedures were aligned with the specific objectives of the work, which were: 1) systematize the work relations observed in the Cooperative; 2) identify the technological and knowledge appropriation aspects existing in the enterprise; and 3) to characterize the changes in the family dynamics of the waste pickers after their insertion in the ESE.

First, a non-systematic bibliographic review was carried out, which allowed us to situate the research problem and the characterization of the field to support the analyzes. A Free and Informed Consent Term was also drawn up, which, together with the research project and the authorization of Coopervida, was submitted to the Ethics Committee on Human Research at the Federal University of São Carlos [Universidade Federal de São Carlos (UFSCar)], located in the municipality of São Carlos, in the interior of the state of São Paulo, Brazil, and its realization was authorized (Certificate of Presentation of Ethical Appreciation 02974512.3.0000.5504. Opinion 162.768). The names of the interviewees were kept confidential.

In order to achieve the first and second specific objectives, fieldwork was carried out based on participant observation ([Queiroz et al., 2007](#)), recorded in a field diary, aiming to know the daily work, the internal and external relations established in the ESE and being able to question the content expressed in the semi-structured interviews, an instrument chosen to know the history of the research participants.

The method used to investigate the influences of economic-solidarity work relationships on the family dynamics of waste pickers inserted in ESE was the thematic oral history, which contributed to the achievement of the third specific objective. While oral history allows us to ascertain social relations based on the life experience and culture of the research participant ([Rigotto, 1998](#)), among its various modalities, the theme stems from “[...] a specific and previously established subject [...] and commits itself to the interviewee's clarification or opinion about a defined event” ([Meihy, 2002](#), p. 145, authors translation).

Ten field visits were made in a period of five months, between August and December 2012, totalizing 20 hours of field work. The observations recorded in the field diary were analyzed to characterize the ESE, based on the following economic-solidarity principles: cooperation and solidarity, individual freedom, income distribution on an equal basis, democratic organization, and self-management.

The number of interviews was defined by the intentional analysis criterion ([Minayo, 2007](#)), considering the link established with the researcher who made the waste pickers comfortable in receiving it. Together, it was defined as inclusion criteria the time of work in the enterprise greater than one year, considering the possibility of the participant having experienced labor relations in the Cooperative, as well as having the possibility to participate in training and education courses offered by the Multidisciplinary and Integrated Center for Studies,

Training and Intervention in Solidarity Economy of UFSCar (Núcleo Multidisciplinar e Integrado de Estudos, Formação e Intervenção em Economia Solidária [NuMI-EcoSol]) and by the Support Department for the Solidarity Economy (SDSE). Cooperative members with less than a year of work were not invited to participate. The interviews took place at the families' homes, at previously scheduled times and days.

The interview script was composed of five blocks, namely (Secco, 2014):

1. Knowing the family group - data for each member of the family group;
2. About Coopervida: before and after - direct questions to the cooperative member;
3. About Coopervida: before and after - questions for the family group;
4. Family relationships and family group health - questions for the family group;
5. Tying the themes - questions for the family group.

Although the Cooperative was composed of around 56 waste pickers and the oldest were from the Administrative Council (formed by three members) and the Fiscal Council (three members plus three alternates), the number of three families, with which it was expected to be involved in around 15 people, it was considered a sufficient sample for a qualitative method that does not intend to quantify, but rather to delve into certain information. It is noteworthy that the reference waste pickers of each family played a recognized role by members of formal and/or informal leaders in their daily work.

## Participants

The research field was Coopervida, located in the city of São Carlos, SP, Brazil. It arose from the unification, in 2010, of three others previously existing waste pickers' cooperatives (Cooletiva, Ecoativa and Coopervida), a result achieved by the partnership between the SCCH's SDSE and UFSCar's NuMI-EcoSol/UFSCar.

The research subjects were waste pickers of Coopervida and their families, totaling three Family Groups (FG) interviewed in Portuguese (Brazil): FG1, FG2 and FG3. All parts of the interviews presented in this article have been translated by the authors.

## Analysis of Information and Validation of Results

After the interviews were transcribed and analysis categories were defined using the content analysis technique (Bardin, 1994), they were transcribed, which according to Meihy (1991) values the narrative and its legitimization by the interviewees.

Through exhaustive readings, some excerpts from the interviews of the three families were selected, organized as shown in Table 1, to visualize the meanings of the statements.



**Table 1***Example of Organization and Analysis of Lines and Definition of Categories*

Analysis category	Core of speech	Illustrative lines FG1	Illustrative lines FG2	Illustrative lines FG3
Solidarity economy and cooperativism for the waste picker and the family	Understanding cooperative work	Maria: Now, in addition to this part of you learning a lot, especially the issue of awareness [...] It is a job that I like because of the sense that he has. It is not anywhere that you will be able to work together, equally with people [...]	Miriam: Before I went there, I didn't know anything about solidarity economy. Over the time I spent there, I learned a lot at Coopervida. I had no idea of using a computer. I learned that, Maria taught me, then we, through Coopervida, we took a course, these things. I learned a lot there, in the selective collection [...]	Marta: The university staff went to the Cooperative the other day to teach us [...]
		Maria: Before, we thought we were alone. But now, at the time of difficulty that Coopervida has been going through these past months, we saw that there are many people who care so much about the Cooperative, about our work. It has become a social thing.	Miriam: There in the Cooperative we have the most support from them [NuMI-Ecosol supporters] because they have helped us a lot, to unite the group, they go there to be able to talk to us for everyone understand what solidarity economy is. They say it is the cooperative, that is to strengthen the group, for us to get stronger and help to expand other cooperatives [...]	Marta: The people who help us and the president held a meeting there to talk about it, and it even improved a little [...]

*Note.* These statements are illustrative Only. All statements of waste pickers and their families were considered for analysis.

Based on the triangulation of all the information elaborated, three analysis categories were defined, by which several cores found in the statements previously interpreted were grouped:

- Category 1: The solidarity economy and cooperativism for the waste picker and the family;
- Category 2: Changes in family dynamics after joining the cooperative;
- Category 3: Cooperative as a possibility for economic and social inclusion.

After returning the interviews transcribed to the participants and their agreement on its content, it was considered that the analyzes were validated by the interviewees.

## Results

The results of the fieldwork, related to objectives one and two, will be presented together with the discussions, and after the interviews, considering the analysis and feedback categories, referring to the third specific objective.

### The Research Field: Experiencing the Coopervida

The information contained in this session came from field observations (Secco-Oliveira, 2012). Various records that corroborate the presented can be found in Santiago et al. (2016), Zanin et al. (2018) and Secco-Oliveira et al. (2018).

The experience at Coopervida through participant observation allowed to know the daily life and work relationships, making it possible to observe a high turnover of workers, even though the total number of cooperative members remained practically the same throughout the research period. This aspect influenced the internal communication and interaction patterns and impacted the group's stability.

At the same time that the size of the group was sufficient to guarantee an adequate distribution of the work, the effort committed by each member was relative and varied. Some members felt that they were being harmed by the disinterest of others, a situation that compromised the group unit, which stratified into small groups to carry out the work. This difficulty in identifying in favor of a common objective also limited the participation of cooperative members in collective decisions.

The main motivation was economic, even though in the speech of some cooperative members there appeared economic-solidarity and cooperative principles. However, as the SE was not the general objective of Coopervida, the function of this organization related to its principles had its intensity compromised. So much so that, when the crisis experienced worsened at the end of 2012, more than half of the cooperative members, the majority newcomers, left the organization, remaining around 17 members.

The skills, abilities and limitations of the members were respected, covering age-related conditions, allowing older members to perform activities compatible with their physical and mental conditions, without excessive demands.

The general rules for organizing the routine were reasonably followed. There was also the creation of alternative ways of carrying out the work when some difficulty appeared. However, they were not formally discussed or systematized in any instrument, such as the bylaws, to assist in directing the internal rules.

There was an implicitly vertical constitution of position and status that did not correspond to the economic-solidarity principles and to cooperatives, impairing the performance of the social roles of the members. This conflicting group climate highlighted the differences that exist between the members rather than the motivation for collective goals.

Of the 56 cooperative members at the time, 26 had been in the ESE for less than a year and still did not know what SE and cooperativism was. According to Singer's (2002a) observations about the existence of degrees of self-management, in the Cooperative this was relatively low, with only participative management being verified. Spaces and strategies for sharing information were also insufficient.

Considering that the Cooperative is of an exogenous nature and that many new cooperative members were not previously waste pickers, but unemployed people who were unable to enter other jobs, the identification of these cooperatives with the economic-solidarity labor relations and with the category of work waste picker was made difficult, even by conflicts with the oldest members.

The lack of financial transfers by the municipal government and by truck to transport the selective collection materials, even though provided for in the contract, led to an absolutely low income in December 2012. This caused the newest members' distrust councils members for misunderstanding the situation, which resulted from the lack of knowledge about the organization. The cooperators' disinterest in Coopervida matters was not general, but their appropriation indicated that the sharing process was a limiting factor.

Although the internal communication had restricted characteristics with regard to the dissemination of the principles of SE, the interviews showed the existence of a potential for this, since the participants demonstrated knowledge about the SE and actions aligned with its principles. Another indication of this importance was that among the cooperative members who left the cooperative in times of economic problems, the vast majority were new to the ESE and had participated in few or no educational processes, unaware of the nature and principles of the ESE, which did not allow them to identify or fight for something that ended up transmitting insecurity and strangeness.

### Socioeconomic Characteristics and Composition of Family Groups

The composition of the FGs was quite varied: the FG1 was composed of a couple of civilly married waste pickers; the FG2 for a couple of waste pickers in a stable union plus two children; and FG3 for a waste picker, single mother, plus a daughter, a son and three granddaughters. The participation of family members in the interviews in the case of FG2 and FG3 was not total, as there were children aged three and five, respectively, which made their participation unfeasible, in addition to having a 24-year-old FG3 member who was not willing to participate in the interview. Thus, in [Table 2](#) we find the fictitious names of only the family members who were interviewed

**Table 2**

*Fictitious Names of the Interviewed and Relationship With the Waste Picker*

FG/Waste picker	Family members participating in the interviews
<b>FG1/Maria</b>	Husband (João)
<b>FG2/Miriam</b>	Mate (Pedro) 1 filho (Paulo)
<b>FG3/Marta</b>	1 daughter (Helena) 2 granddaughters (Mariana e Rebeca)

Different family configurations are observed, and only FG2 could be considered nuclear, while FG1 was a childless couple and FG3 was a single mother with the cohabitation of several relatives, corroborating reflections by [Negreiros and Féres-Carneiro \(2004\)](#) and [Filizola et al. \(2011\)](#). As for the research participants, the presence of children and adolescents in the interviews stands out, which differs from most researches, as pointed by [Perry-Jenkins and Gerstel \(2020\)](#), and reinforces the qualifications about the family dynamics of the FGs.

The monthly income of family groups ranged from R\$1,400.00 to R\$2,400.00 (approximately \$700.00 to \$1,200.00 in table at the time). In the case of FG1 and FG2, in which the husband and the mate were also cooperative members, this variation in income depended on the amount of monthly payment.

Regarding education, FG1 was the only one in which all family members had completed high school. In the other FGs, the pickers had low education and the relatives were either students, because they were children or adolescents, or had stopped their studies with low schooling, coinciding with the precarious living conditions and involved in several general exclusions of the waste pickers in the Brazilian context (Bortoli, 2013; Silva, 2006).

Regarding the length of stay at the cooperative, Marta (FG3) was the only one who had never exercised or was exercising a formal leadership role, with one woman having this function during the research period and the other had previously exercised it. However, in informal terms of daily influence on the organization and motivation to carry out the work, the three waste pickers stood out as leaders in the observations made in the field and in the daily discourse of the waste pickers (Secco-Oliveira, 2012).

It will also be noted in the reports in the interviews, that Marta and her family members (FG3) were the participants who showed less understanding about the solidarity economy, which may be due her less working time in Coopervida, compared to other interviewed, which also resulted in less participation in educational processes and external interaction in public spaces, places widely occupied by the other interviewed waste pickers.

Table 3 shows the relationship between the reference waste picker of the interviewed FGs and the Cooperative:

**Table 3**

*Relationship of the Reference Waste Picker With the Coopervida*

Question	FG1	FG2	FG3
How long have you been at Coopervida?	7 years	4 years	1 year and a half
How did you know Coopervida?	The parents were landfill waste pickers and were among the first Cooperative members	The husband was a waste picker at Ecoativa	A friend worked at Coopervida (the unified Cooperative)
In which cooperative did work before the unification?	Coopervida	Ecoativa	Started in the unified Coopervida
What did she do before work at Coopervida?	Scholar student	Housekeeper; unemployed	Waste picker from another Cooperative

### Results of Interviews, Transcripts, and Transcriptions

Before carrying out the content analysis of the transcribed data, the interviews were transcribed to validate the information with the waste pickers.

In Figure 1, there is an example of FG1 transcription.

**Figure 1**

*Example/Excerpt From Transcription of FG1 Interview*

My name is Maria, I am 25 years old and I am a recyclable waste picker. I work at the Recyclable Waste Pickers' Cooperative of São Carlos, Coopervida. In addition to participating in the cooperative, I also participate in some popular forums organized in the municipality, including the solidarity economy. I am married, but I have no children. I finished high school, and at leisure, I enjoy watching TV.

I am introducing myself like this so that you know who I am, because I am going to tell you a story about how the solidarity economy came into my life, and how it influenced the relations here at home. For that, my husband will help me, starting by introducing himself too.

Hello, my name is João and I'm 27 years old. I'm Maria's husband and also a recyclable waste picker, I work at Coopervida and I participate in the forums - but not as much as she does. I also have completed high school, and at leisure I also enjoy watching TV - especially with her!

Next, the three analysis categories will be discussed with their cores of analysis.

**Category 1: The Solidarity economy and cooperativism for the waste picker and their family** — In this first analysis category, two core meanings of the interviewees' statements were defined:

1- Understanding cooperative work — Mention was made of the possibility of learning in the cooperative work space, related to professional training, which, in turn, referred to the valorization of the worker for the development of the enterprise, according to the waste pickers Maria and Miriam:

[...] in addition to this part of you learning a lot, especially the issue of awareness [...] it is a job that I like because of the sense it has, because it is not anywhere that you will be able to work in jointly, equally [...] (Maria, FG1);

Before I went there, I didn't know anything about solidarity economy. Over the time I spent there, I learned a lot at Coopervida. I had no idea of using a computer. I learned that, Maria taught me, then we, through Coopervida, we took a course, these things. I learned a lot there, in the selective collection [...] (Miriam, FG2).

However, due to the moment experienced, there was a difficulty in including cooperative members in spaces for exchanging knowledge (Secco-Oliveira, 2012). Those built by the interviewed cooperative members came from other times and presented themselves as important for facing the problems then experienced.

They spoke of solidarity, but there is no time for us to participate, there is a lot of service to do (Marta, FG3).

Supporters were mentioned as people who helped the cooperative to develop, improving working conditions and relationships within it. Waste pickers believed that cooperative work was intrinsic to the social field, and that the performance of other actors in the ESE led the members to feel valued, strengthening it.

Before, we thought we were alone. But now, at the time of difficulty that Coopervida has been going through these past months, we saw that there are many people who care so much about the Cooperative, about our work. It has become a social thing (Maria, FG1).

When it comes to technological appropriation and knowledge acquisition processes, the role of University Technological Incubators (UTIs) in the ventures is noteworthy. Due to the history of investments made in higher education, mainly in graduate school, which prioritized the training of researchers to work according to global market needs rather than local ones, UTIs appeared as opposition to this system, approaching the population to build together the necessary knowledge (Singer, 2002a).

Thinking about the potential of SE to contribute to the constitution of a meaning to the person, taking into account the possibility of creating a “new social being”, which arises due to the form of organization of the enterprise and which demands several changes in the behavior of its workers (Veronese & Esteves, 2009), it is important to consider that the way the cooperative organized itself shows that there were several conflicts to be resolved. At this point, the University could contribute with its knowledge, which must be exchanged with this population in search of solving problems and responding to the demands presented (Singer, 2002a).

In addition to this partnership between enterprises and Incubators being highlighted in the literature, it was also emphasized by the waste pickers interviewed, who pointed out the contribution of the supporters, in this case NuMI-EcoSol (University), for the organization of the enterprise, following the example of the waste picker Miriam (FG2):

There in the Cooperative we have the most support from them [NuMI-Ecosol supporters] because they have helped us a lot, to unite the group, they go there to be able to talk to us for everyone understand what solidarity economy is. They say it is the cooperative, that is to strengthen the group, for us to get stronger and help to expand other cooperatives [...]  
We have the solidarity economy [SDSE] that is always supporting us in the cooperative (Miriam, FG2).

2- Perceptions about the solidarity economy — Waste pickers found it difficult to explain what SE meant, even though they attributed it the sense of promoting unity and solidarity instead of competition and individualism. FG3 was the only FG who indicated that did not know what SE was. However, in the fieldwork carried out, Marta (FG3) often encouraged the group to join together (Secco-Oliveira, 2012). She reported in the interview she did not participate in many courses, however, it is known that she participated, a few months before the interview, in meetings with NuMI-EcoSol supporters about health and SE (Secco-Oliveira, 2012). It is inferred that the she did not associate her practices with SE.

[...] it is another way of being able to generate income for your family. These are jobs that are often overlooked, but that generate income for the family [...] They are means that society finds to enter the labor market. The solidarity economy has this whole social issue as well (Maria, FG1).

Solidarity economy is when you have several enterprises and one tries to help the other. As one enterprise does not usually go over the other, but seeks to help, everyone gains space in the market (Pedro, FG2).

Waste pickers recognized SE elements in the enterprise, even though they did not know how to explain it or associate these elements with its principles. The Marta (FG3) cited examples from everyday life that were not in line with what “the enterprise should be”, situations that would be against economic-solidarity principles. She



even managed to indicate how to correct the “mistakes” that she saw (Secco-Oliveira, 2012). Thus, it was noticed that the SE permeated the relationships in the work environment, even if this did not occur formally.

I think that before [joining the cooperative] we didn't think the same way, because you think about working, earning your own, each in his own square [...] each in his own way. Now, we learned to work together, to see that if we do not work together with each other, with all the members, the work doesn't go out. We are different from the capitalist world [...] (Maria, FG1).

These observations highlight the importance of developing STA (Gutierrez & Zanin, 2013) for the organization of the productive environment, from the logistics of the work flow to the operational part, which refers to the way in which each function is performed. If this organization existed for the fulfillment of work goals, the cooperative members could optimize the working time, having more opportunities to participate in spaces for the exchange of knowledge. The waste picker Maria, even, indicated the need to learn more about SE in order to improve her knowledge and be able to share it.

You know what it is and you cannot transmit, speak. I'm going to study some more so I can say more (Maria, FG1).

Regarding the distribution of income, even though it occurred on an equal basis, it was hampered by losses in one of the ways it was obtained: the transfer of SCCH for the services provided for in the contract. This economic difficulty revealed a fragility of social relations within the enterprise, because due to delays in the withdrawal, several members left the cooperative because they did not understand the situation. The departure of these members further hindered the attainment of income, since the members who remained were not able to collect all the material and trim it, which, in turn, decreased the amount of material sold (Secco-Oliveira, 2012).

In São Carlos, in the past the cooperative was better, but the girls were running after it, going to a meeting, talking in the city hall. And I am still there, firm and strong, I will not abandon the cooperative (Marta, FG3).

Even though Coopervida was created out of discussions between landfill waste pickers, the university and the municipal government, the cooperative's constitution was not at all ex-waste pickers. It consisted of a significant number of people unemployed or who lived in informal working conditions (Secco-Oliveira, 2012). Despite this condition highlighting their social aspect of inclusion, also pointed as important by the interviewees, it hindered the process of identifying these people with work. This made effective self-management impossible, which is only possible if all members are able to manage the ESE.

An issue pointed out by waste pickers was the desire for supporters to consult them before deciding to purchase new products and technologies, to find out if they are suitable for the needs of the cooperative members. This request converges with the STS principles and deserves the attention of researchers (Bazzo et al., 2000). This issue came up when the waste pickers were evaluating the utility of electric carts they received from the municipal government and which were not adequate to the needs of the selective collection carried out, mainly by the city's infrastructure. According to waste pickers, the carts were too big for the characteristics of most public roads (Secco-Oliveira, 2012).

Through contact with supporters and other actors in the SE movement, it is possible, based on the demands, not only to adapt, but also to create procedures that meet the needs of the ESE. For example, helping to establish healthier interpersonal relationships, seeking to organize activities and aiming at a way for the enterprise to stabilize in the best possible way (Zanin et al., 2011). These actions built together with the group refer to the university's social performance and the production ST.

**Category 2: Changes in family dynamics after joining the cooperative** — In relation to this second category of analysis, two cores were defined:

1- The solidarity economy in the family environment — Even with the relativity about the existence of cooperative and solidary behaviors in the daily life of Coopervida, in the interviews this aspect was mentioned as an important part of the organization of the Cooperative's work. The form of cooperative organization was also pointed out as a reason for changes in the behavior of the members relation to their family members. These changes refer to a greater tolerance for differences and the approach of waste pickers to families. They also pointed out that they took many experiences from work home, and that this influenced the organization of family life. The existence of daily cooperation for carrying out domestic activities and respecting the limits of the other was mentioned.

FG1 recognized that after inserting the reference waste picker in an ESE, she changed her behavior, influencing family life. The appearance of more supportive attitudes in daily life by the waste picker and their families was indicated. The FG2 waste picker even indicated that hardly a person who knows this way of relating, does not change afterwards. For this FG, Miriam became closer to the family, more present and communicative. As for FG3, a milestone was that the waste picker stopped drinking, which promoted an improvement in relationships, as she was the leader of the family. Families became more united with these influences, due to behavioral changes that occurred.

It ends up influencing [the work organization], because sometimes she arrives and I realize that she is tired, then I do the job for her. She does the same for me (Pedro, FG2).

It influences in a positive way because you learn a lot, you can bring some experiences, some things into the home. I think that in fact everything we live ends up bringing into the home (Maria, FG1).

She arrives very tired, but when she worked [in another cooperative with other conditions], she arrived very stressed. At Coopervida, she has access to more things, earns more and shares a lot with us. Before, she didn't have that (Mariana, FG3).

So I mean, in general, now things are better (Rebeca, FG3).

Despite the observed influences, only FG1 talked about SE at home. FG2 did not talk about it directly, and FG3 was unable to explain what SE would be.

When she arrives from the fair, from the forum, she says everything [about solidarity economy]! A lot! (João, FG1)

2- Cooperative and solidary relationships in the family environment — When they defined the roles of each person in the house and one of the members could not perform their role due to external commitments, another

member mobilized to cover that job so that no one would be overwhelmed, considering both internal and external work as important. Families have come to respect each other's limitations more.

I think last month I spent the whole month attending events, fairs. So, I didn't stop at home for almost a whole month! Almost every day having a meeting. So, I came home and everything was ready, dinner, everything ready. We share everything (Maria, FG1).

There are conditions of relationship between work and family dynamics different from those, like highlighted by [Salvagnim and Canabarro \(2015\)](#). They pointed out the existence of an overload of work by women, especially leaders, related to family dynamics. It is noteworthy that the authors approached traditional work organizations, not related to SE. This leads us to infer that between different organizational structures, with different hierarchical purposes, different impacts on family dynamics result, including gender characteristics. Another issue refers to the possibility of changing dynamics that previously seemed immutable, such as the traditional female roles of care and male provider, which are related to the job insertion for survival, characteristic of low-income people ([Negreiros & Féres- Carneiro, 2004](#)).

Relationships in the homes were horizontal, with all services shared, while respecting the skills and possibilities of each member. All decisions were made in partnership, after discussion to define the best alternatives for everyone. Only the FG3 indicated that the reference waste picker had a greater "power" to deliberate, since in the development of the family, she has already financially supported her children and grandchildren and has, over time, needed to "put order in the house". However, she lacked authoritarian behavior; it was a leadership that encouraged mutual help between family members, as in the cooperative ([Secco-Oliveira, 2012](#)). It was noticed the cooperative organization reflected in family environments.

The economic issue, while influencing family dynamics, stood out a lot in FG3, since when the reference waste picker supported the house, she ended up having more deliberative and organizational power, emphasizing how much this economic aspect reflects in the relationships within the home and in role execution in family dynamics, as pointed out by [Vasques-Menezes et al. \(2006\)](#).

Here inside the house, it is like this: one day I clean the house, the other day it's him. One day at a time. We take turns. We both work on the same service. I know he gets more tired because the job he does is heavier than I do but we both try to divide the job equally [at home]. Then there is time for me to be with the children one day, the next day there is time for him to be with the children (Miriam, FG2).

We balance, because my daughter's work is heavier. There are days when she can't do things, then I do it for her (Marta, FG3)

[...] Yes, the mother helps a lot, and when I can, I do the same (Helena, FG3)

[...] Yes daughter, you help a lot too. We help each other (Marta, FG3).

The cooperative members related this way of family organization to what happened in the cooperative, assuming that not only did they "take" a lot of work into the home, but that family relationships really changed, characterizing themselves as solidary.

I think that everyone who goes through a cooperative leaves with a different thought afterwards, even if they go to a company. Usually, they go and always try to go back to

cooperatives, because they no longer adapt to the way they work in a traditional enterprise (Maria, FG1).

She changed a lot after she started working in a cooperative. She likes to talk more now. How can I say: she talks to us more now. Before, she didn't talk much, now she talks more, she stays more with the family (Pedro, FG2).

Ah grandma, but now that you work at the cooperative, you at least don't drink anymore and things have improved a lot! The mother also stopped this habit (Rebeca, FG3).

In the interviews, other evidence was presented in relation to [Laville and Gaiger's \(2009\)](#) theory that SE is potential to create 'a new social being'. The contact of waste pickers and families with their principles, aroused new attitudes, more solidarity and unity, which influenced the relationship of the FGs.

The FGs, despite having difficulty explaining what SE is, knew and defended it, citing examples of how its principles influenced the day-to-day work and family.

We don't have a leader, because we usually share everything. We end up sharing everything, cooperatively, we end up sharing all tasks, everything. That is why there is no leader at all (Maria, FG1).

[...] We share [the work at home] (João, FG1).

[...]I think a little is due to work. Everyone is in charge, everyone has their opinion, and I think it ends up bringing some of it inside the house (Maria, FG1).

We both always try to sit down and talk, so we can look for the solution, and like, not to do things without having talked to each other (Miriam, FG2).

[...] I think it is a solidarity, that we learned from the solidarity economy, that before she worked with the cooperative she did not know what it was (Pedro, FG2).

I think it is the same in the cooperative. It is as if she [cooperative] was part of the family (Marta, FG3).

Considering family dynamics as an exchange of influences between members, ([Agostinho & Sanchez, 2002](#)) and that it is only understandable if social changes are covered, it appears that in the context studied these social changes related to work extended to the family field. It stands out as transformations after the insertion of the reference waste picker in the cooperative: mention of the improvement in communication at home; division of more appropriate tasks, with emphasis on the influence of cooperativism; positive perceptions by children and adolescents about the participation of the reference waste picker in their daily lives; and expanding the social participation of members and the family group.

**Category 3: Cooperative as a possibility for economic and social inclusion** — This last category was divided into three cores of analysis:

1- Possibility of economic inclusion — FG1, indicated that the cooperative was the first job of the reference waste picker, enabling greater financial stability and security for the family. For FG2, this insertion stabilized the family's income after she entered the previous situation of unemployment, when she was a domestic worker. In FG3, the waste picker previously worked in a cooperative in another municipality, in which they reported that

the work was very bad, from the conditions, until the monthly withdrawal, and that this was “taking the sleep out” of Marta. When the possibility of going to Coopervida arose, she said that work has improved a lot, also enabling family economic stability.

In my opinion, it was good, because it is difficult for you to enter, to find work today. For people who were just starting out, it was much easier to have a job, job security [...] The solidarity economy, it has this whole social issue, because many of the people who work on it, do not have a formal job. The only source of income is his handmade work, or his collection of garbage, of waste. They are means that society finds to enter the labor market (Maria, FG1).

I knew Ecoativa because of my husband, who worked there. Only before that, I worked as a housemaid. I worked for a while and then I left, I was unemployed and I joined Ecoativa [...] It's a cool job. We are helping the environment, cleaning, generating jobs, income for ourselves, waste pickers, and also helping to keep the city clean (Miriam, FG2).

The work in that cooperative [the last job, in another city] was very bad. Withdrawal was low. We didn't have the benefits of the National Social Security Institute. At Coopervida it's different, it's much better [...] (Marta, FG3).

Still on the gender aspect, [Perry-Jenkins and Gerstel \(2020\)](#) pointed out that the increase in women's wages results in a decrease in family life. However, this was not observed in this research. In the cooperative, in addition to providing sufficient income for the reference waste picker, family life has become more harmonious.

For the interviewees, highlighting the speech of Maria, from the FG3, the cooperative exercised what they considered its social function: generating jobs, allowing informal workers and excluded from the labor market, for several reasons (low education, age, ex-convicts) get together and get better living conditions, obtaining an income. This consideration is similar to the findings of [Filizola et al. \(2011\)](#), when they emphasize the social significance that labor insertion has for the subject and for the family.

2- Possibility of social inclusion — This core has as its central focus, the possibility of waste pickers to insert themselves in social spaces, through the Cooperative, with a greater possibility of socialization. This was indicated by the creation of bonds of friendship within the ESE itself, which extended to external spaces. Another form of insertion emphasized by FG2, was the association with the Social Service of Commerce [*Serviço Social do Comércio* (SESC)] of the municipality, mentioned as never imagined by them.

SESC is maintained by businessmen, offering space and services for sports and cultural activities, both for members and for the community in general. Its services aim at social development and well-being, aiming at better living conditions for those involved ([Serviço Social do Comércio, 2021](#)).

I think that even as a way of valuing our work a little more, it is important for us to be able to access these places [like SESC]. It will be cool, especially for the boys [other members]; they like to play football, to have a lot of fun. I think it will be good for them and for those people who think they are nothing in the world. I think it will encourage a lot; they will say “wow we can have good things, it's not just bad things that happen to us” (Maria, FG1).

We always knew the people who worked there at Coopervida, but that way [outside the Cooperative], we never spoke, you know, it was distant. We passed by, didn't greet ir other. And today, we already see different. Like, even [Pedro], there are the boys [others cooperative] since he was not friends before and today, they are friends, they play football together, they play cards, you know, they get together (Miriam, GF2).

They [the supporters] even manage to put us in SESC. It is a concern for others. We work, and take the family. But I still think that we need more meetings for us to do more things (Marta, FG3).

Considering that [Perry-Jenkins and Gerstel \(2020\)](#) highlighted that among low-income workers, in issues of pressure at work, the support of colleagues in the work environment reduces their impact on mood, the development of friendship bonds appears as positive, taking into account that in the cooperative there is respect for the limitations of its members for the allocation of roles and activities and that the issue of stress has not been raised much, except in times of crisis in relations with the municipal government.

3- Best work routines — FG1 indicated that the waste picker's parents were waste pickers at the landfill, highlighting several aspects harmful to health in this environment, such as sharp objects, poisonous animals and contaminated objects. In FG2, the husband of the reference waste picker had previously collected waste at the landfill and reported the same conditions. Both families agreed that in the Cooperative the waste picker is exposed to less risk, besides having more conditions to protect themselves, having infrastructure and individual protection equipment.

It improved everything [with the Cooperative] because when my parents worked at the landfill, it was a lot of dirt. The situation was not quite pleasant. There were several health risks [...] When I joined Coopervida, thank God everything was better. I already had this profile of being cleaner, everything is more separate. So, it was very different (Maria, FG1).

I also got to the landfill, but the last advantages I had there was the possibility of working at the time I wanted, the way I wanted, to collect only materials of better value, and thus generate more income. But, to get these good materials, I had to spend the night and dawn working, otherwise in the morning I would have nothing more. The working conditions weren't good. The bad smell was strong, there were many scorpions, broken glass, needles. At Coopervida we have individual protection equipment to work (Pedro, FG2).

On the other hand, the speech of the FG3 picker indicates that not all cooperatives have the same working conditions, and some may be more precarious than others. This highlights the importance of contracts with municipal governments for payment for services rendered and investment in the cooperative.

[Senthanar et al. \(2020\)](#) stated that the precarious working conditions and the unstable implementation of policies and relationships between workers and managers lead to a cycle of unemployment and illness that negatively impacts family relationships, affecting economic, libido and status issues. It can be inferred that the advance of the structure of Coopervida in relation to other cooperatives, still experiencing conflicts with the municipal government, corroborate that this cycle can be broken in the investment of better working conditions. The interviewees' statements also pointed changes in family dynamics when the reference waste picker started working at Coopervida, having better working conditions in relation to other work places.



## Final Considerations

Three main characteristics permeated the content of the FG interviews: that the economic-solidarity principles, even if not theoretically understood, when experienced in the work space, are potential to change the individual's behavior; that the organization of cooperative work positively influenced family dynamics; and that the cooperative organization was considered as a possibility for the economic inclusion of socially excluded people, which also includes impacts on family dynamics.

The analysis category related to SE and cooperatives for the waste picker and the family allowed us to understand the work relationships observed in the Cooperative. As much as the Cooperative has shown weaknesses in solidarity relations, this was due to conflicts of various kinds, which did not mean that the economic-solidarity principles and cooperative organization were not being developed in the work environment.

The identification of technological aspects and the appropriation of existing knowledge in the enterprise was contemplated in the speeches of the waste pickers, who pointed it as important for the development of the Cooperative. The Coopervida members who had more knowledge did not abandon it because they believed in its potential and social benefits, but those who had not acquired enough, left the enterprise in the first moment of crisis faced.

The category about changes in family dynamics, after joining the cooperative, contributed to the characterization of the changes in the family dynamics of waste pickers after their insertion in the ESE. These changes included improvements in communication, equity in the distribution of housework, and evidence of improvements in stress. Although some results agreed with the notes of the literatures presented on work and family relations, some points diverged in the scope of economic-solidarity work, such as, for example, the non-overload of female labor leaders in relation to domestic work, or the reduction of their family life after its economic development.

The analysis category that approached the Cooperative as a possibility of economic-social inclusion, brought indications about the social function of economic-solidarity work by the inclusion of several economically and socially excluded people. It also highlighted the expansion of ties between workers in the external environment, which seems to be positive for the prevention of stressful situations and negative mood changes, enhancing that the families themselves mentioned some positive points about this.

It was possible to confirm the hypothesis that the SE positively influences the family dynamics of the waste pickers inserted in ESE due to the finding that there was a change in the family organization after the waste picker was inserted in an ESE. These changes being based on the cooperative organization, enabled the development of more tolerant and cooperative behaviors in the family environment and was pointed by the reference waste pickers and by all family members.

Several reflections could be made from that, considering the importance of the appropriation of knowledge by the members and their families, associated with the elaboration of ST through STA and the creation of SE policies to guarantee the stability of the enterprises. It was found that the appropriation of knowledge and technologies went beyond the work environment, having also been incorporated by the families of the waste pickers, illustrating the responsibility of scientific and technological production with its object.

These results brought evidence of how technologies influence the daily lives of families, both considering the ESE as a ST in itself, and taking into account the existence of other technological processes, which even involve the ESE organization itself. This highlighted how science, represented by the knowledge of supporters/university, and the exchange of acquirements with members can lead them to participate in the scientific and technological development that involves the products and methods resulting from these interactions. It was observed the principles of the STS field permeating the scientific and technological production in the field of SE that seeks social gains by the demands of the populations.

The biggest criticisms of the waste pickers in the field work and in the interviews were about the excessive turnover of cooperative members and the economic difficulties arising from relations not effectively established with the municipal government during this research, although some changes of perspective are perceived around the 2020s.

The results obtained are valid for the local context, considering the possibility of changes in the case of replication of the research in other locations and/or moments. However, it serves as a guiding parameter for investigations of a similar nature. It is also noteworthy that the construction of SE and self-management is considered procedural.

As the results of the interviews analyzed from the context found in the field work showed positive evidence about the incorporation of economic and solidary principles by the family, it is indicated that this field of research still has gaps and varied possibilities to be explored. One of them would be to expand the sample to ascertain the perceptions of waste pickers with other roles in the cooperative and their families, and not only those in a leadership position, whether formal or informal. This would also contribute to more comprehensive analyzes of economic, gender, and ethnic-racial aspects. As different results were also found in some literature that investigated hierarchical organization work, this comparison would also enrich the debates on the diversity of potentialities and challenges of various work organizations.

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## Competing Interests

The authors have declared that no competing interests exist.

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