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Visual landscape preference for farmers in southern Brazil

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Abstract
Landscape preference varies according to the cultural and social experiences of the ind ividual. People preferred landscapes are related to natural environments, with the presence of vegetation and water. Age and gender are variables that can influence landscape preference, especially the feeling of security related to age and aesthetics with gender. This study aimed to analyze the visual preference for the landscape by farmers and to assess whether age and gender are variables related to this preference. Farmers from the Western Region of Santa Catarina, southern Brazil, were interviewed, using semi-structured interviews to collect social and cultural data, and the Q method, through photographs, to identify landscape preferences. Discourses, gradient of landscape preference and influence of age and gender on this preference in the results were identified using multivariate analyzes and statistical tests. Three discourses of landscape preference were identified: natural landscape for appreciation and recreation; rural landscape as familiarity; and cultural landscape. The farmers' preference followed the gradient natural > rural > urban > degraded landscapes. Natural elements with native vegetation and water were preferred in the landscape while environmental degradation, forestry and urban environments without natural green elements were rejected. The lower the age the higher the preference for natural landscapes and the higher the age the higher the preference for urban landscapes. In relation to gender, differences were observed only regarding the landscape with forestry. Consider the perceptions of people in urban and rural landscape management is important for the population to identify with the place they reside. In this perspective, this study demonstrated that farmers do not identify with degraded landscapes and with urban landscapes without the presence of trees.

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INTRODUCTION

The concept of landscape was initially associated only with the physical characteristics of the environment. Later, the human dimension was incorporated and the human interpretation was considered an essential characteristic to define the landscape (MEINING, 2002). Tuan (1979) stated that the landscape has a symbolic significance emerging from people's relationship with the environment. The landscape is also considered what is observed and also what the sight reaches, both within the dimension of perception (SANTOS, 2006). However, the interaction between people and territory is part of the concept of the cultural landscape, representing the community identity in a given time (Plieninger et al., 2006).

Landscape perception is organized and interpreted according to people's social and cultural experiences (FUENTES, 2011). Therefore, an individual's inherent characteristics determine landscape perception and preference, resulting from one's way of being and imaginative capacity, and from educational, cultural emotional, affective and sensitive factors (SCHWARZ et al., 2008). Environmental value orientation is another determinant of the preference for a landscape: individuals with a productivity agricultural value orientation usually prefer extensive agricultural landscapes and are less prone to prefer natural homogeneous landscapes (HOWLEY, 2011).

Different groups of people (local residents, tourists and professionals) differ regarding their landscape preference, reflecting the interests and objectives of each group. The place of residence is an important element influencing preference, as well as the familiarity of the respondents with the environment (HOWLEY, 2011; ISLAS, 2012; SOY-MASSONI et al., 2016; TANG et al., 2014). Familiarity with the landscape plays an important role in its appreciation, being strongly influenced by the experience of places from which people bring their particular memories (FUENTE DE VAL et al., 2004).

Several variables, mainly age and gender (HOWLEY, 2011; MILCU et al., 2014; SOY-MASSONI et al., 2016; TANG et al., 2014), may influence landscape preferences. Howley (2011) and Tang et al. (2014) reported that the age was important regarding the sense of security, i.e. respondents with higher age preferred places they considered safer. Soy-Massoni et al. (2016) showed differences regarding age and the visual preference for rural landscapes, with younger people preferring landscapes with forests and the older ones preferring cultural landscapes. Regarding the gender, Santos and Longhi (2012) stated that the highest values attributed by women to the landscape corresponded to the summer, a period marked by leaves and flowers.

Several studies conducted on landscape preference showed a higher preference for natural environments over constructed (ARRIAZA et al., 2004; HOWLEY, 2011; TANG et al., 2014; VAN DEN BERG et al., 2003). Of the natural elements, water increases the preference (ARRIAZA et al., 2004; BURMIL et al., 1999; LE LAY et al., 2013), because it is associated with different aesthetic and recreational values, with symbolic significance related to cultural, spiritual and religious aspects (BURMIL et al., 1999). The presence of irregular topography and vegetation also increases the preference for the landscape (ARRIAZA et al., 2004).

Different studies described the perception of rural landscapes, revealing interests and concerns of local populations with land management, agricultural changes, development in rural areas, social changes and access to the land (HALL, 2008; HARTEL et al., 2014; SHUIB; HASHIM, 2011). The rural landscape also features social and cultural values for farmers, such as a sense of identity, leisure resources and economical livelihood (SHUIB; HASHIM, 2011). It also represents the daily life of many rural populations, who perceive the changes in the landscape and the consequences in its visual appearance (DRAMSTAD et al., 2006).

Interpreting human perceptions and landscape preference is important for the management of rural and urban spaces in order to ensure the maintenance of the ecological functions of natural environments in such a way compatible with public use (FUENTE DE VAL et al., 2004). We carried out this study with farmers in the western region of Santa Catarina, southern Brazil, aiming to analyze landscape preference and to assess the influence of age and gender on this preference. In order to analyze the visual preference for a landscape, photographs that represent common landscapes in the study region were used to answer the following questions: 1) What regional landscapes farmers prefer? 2) What are the landscape elements that are most related to this preference? 3) Do the age and

gender variables have a significant role in the visual preference for the landscape?

METHODS

Study Area

We conducted our study with resident farmers from the rural areas of the municipalities of Arvoredo, Chapecó, Cordilheira Alta, Nova Itaberaba and Guatambu, belonging to the West Region of Santa Catarina, southern Brazil. The region's climate is Subtropical (NIMER, 1989), the average rainfall is 2000mm, with rains well distributed throughout the year, and the temperature averages varies between 22°C in summer and 14°C in winter (http://www.inmet.gov.br). The relief is very rugged and only 20% of its soil can be used for agricultural activities (DENARDIN; SULZBACH, 2005).

The region belongs to the Atlantic Forest Domain (MYERS et al., 2000). The native vegetation is composed of: Seasonal Forest in river-side regions and in low-altitude ones; Araucaria forest in regions of higher altitude; and transition zones (IBGE, 2012; KLEIN, 1978; OVERBECK et al., 2007). Currently, a small part of the territory (29%) of Santa Catarina state is occupied by native forest, which is reduced to small fragments of secondary vegetation, in various stages of succession, intercalated with other land uses (VIBRANS et al., 2012).

The population of the western region of Santa Catarina was estimated in 1,200,712 inhabitants, of which 28% lived in rural areas (IBGE, 2010). Most of the inhabitants of rural areas are European descendants (Italians, Germans and Poles), who practice farming and cattle raising based on family labor in small properties. The agricultural matrix is composed of small rural properties, with the predominance of agricultural areas, pastures and Eucalyptus forestry (DORIGON; RENK, 2011; VIEBRANTZ, 2009). Agriculture and cattle raising are the basis of the Region's economy, with emphasis on the cultivation of soybean, corn and beans, the raising of poultry and pigs and the marketing of milk (DORIGON; RENK, 2011).

Data collection

We collected the data in 2016. Interviews were carried out with 90 farmers who had to meet the following criteria: (i) being a farmer or son/daughter of farmers, and being at least 18 years old; and (ii) living in the studied region. The sample was stratified by gender and age, and comprised: 15 women and 15 men between 18 and 30 years old; 15 women and 15 men between 31 and 50 years old; and 15 women and 15 men above 51 years old.

Data collection was conducted through individual interviews, applied at the residences of research participants. The interview comprised: (i) a semi-structured interview aiming to collect social and cultural data; and (ii) a landscape preferences test that used photographs and the Q methodology, following Zabala (2014).

In the concourse step, 300 photographs (taken during daylight with a digital camera) of different common landscapes in the study region were taken. Of these photographs, sixteen (16) were selected to make up the Q sample, representing the following categories: natural landscape (2), rural landscape (6 photographs), urban landscape (2), landscape as aesthetics (2), landscape as leisure (3) and degraded landscape (1). The photographs selected have the same perspective, size (10x15cm) and similar color intensity and tone (Figure 1).

Each photograph comprising the Q sample was divided into a grid with 900 squares (0.4 x 0.4 cm). In each square, the predominant element was identified to obtain the percentage of the component elements of the landscape. The elements were divided into natural or anthropic (Table 1). In the interviews, the farmers were invited to order the photographs according to their preference in a Q sort matrix (+3, +2, +1, 0, -1, -2, -3), with +3 representing higher preference, -3 for lower preference, and 0 for neutral preference. Therefore, we obtained the individual Q sort of each informant.

Figure 1 – Q sample for the assessment of landscape preference by farmers in the western region of Santa Catarina, south of Brazil, including the code, category and description of the image.

Org.: by the Author, 2018.

Data analysis

The analysis of the Q method correlates people (Q sort of each interviewee), presenting points of views or common perceptions among them called factors. These factors were generated through the correlation of 90 Q sorts in a matrix and the subsequent Principal Components Analysis (PCA). The first three factors were selected because they had an eigenvalue higher than 1, thus being considered significant. The Varimax Rotation was generated and was followed by the factorial analysis. As a result, the interviewees were found to be significantly related to one of the factors (standard deviation from 2 to 2.5) through factor loading. For each factor, significantly distinct statements ($p<0.01$) and consensual statements were indicated (BROWN, 1980). Consensual statements are important in order to interpret the common viewpoints between respondents. For this analysis, the PQ Method Software was used.

Table 1. Elements comprising the landscapes of the Q sample and that were used in the interviews with the farmers of the western region of Santa Catarina, south of Brazil, containing the landscape code and each element's percentage presence (%). Landscape codes are described in Figure 1.

Elements	PNL	DNL	RLA	RLB	RLC	RLD	RLP	RLF	ULA	ULR	LEH	LEW	LLR	LLF	LLN	DL
Natural	100	95	32	98	34	74	97	57	43	31	76	100	80	50	9	50
Water	22	13	-	-	-	-	-	-	-	-	9	51	5	-	-	-
Sky	24	17	-	27	33	34	34	28	18	29	30	-	-	6	-	20
Native Forest	54	65	-	-	1	-	20	-	-	-	37	49	53	-	-	-
Field	-	-	-	33	-	40	37	10	-	-	-	-	22	-	-	-
Isolated trees	-	-	32	38	-	-	6	19	25	2	-	-	-	44	9	30
Anthropic	-	5	68	2	66	26	3	43	57	69	24	-	20	50	91	50
Urban infrastructure	-	-	8	-	-	-	-	-	56	66	21	-	-	47	90	-
Rural infrastructure	-	-	-	-	-	-	3	1	-	-	-	-	20	-	-	-
Conventional agriculture	-	-	-	-	63	-	-	-	-	-	-	-	-	-	-	-
Forestry	-	-	-	-	3	26	-	24	-	-	-	-	-	-	-	-
Agroecological farming	-	-	60	-	-	-	-	-	-	-	-	-	-	-	-	-
Mobile elements	-	-	-	2	-	-	-	-	1	3	3	-	-	3	1	-
Bare soil	-	5	-	-	-	-	-	18	-	-	-	-	-	-	-	40
Waste	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	10

Org.: by the Author, 2018.

Data analysis

The analysis of the Q method correlates people (Q sort of each interviewee), presenting points of views or common perceptions among them called factors. These factors were generated through the correlation of 90 Q sorts in a matrix and the subsequent Principal Components Analysis (PCA). The first three factors were selected because they had an eigenvalue higher than 1, thus being considered significant. The Varimax Rotation was generated and was followed by the factorial analysis. As a result, the interviewees were found to be significantly related to one of the factors (standard deviation from 2 to 2.5) through factor loading. For each factor, significantly distinct statements ($p<0.01$) and consensual statements were indicated (BROWN, 1980). Consensual statements are important in order to interpret the common viewpoints between respondents. For this analysis, the PQ Method Software was used.

To analyze the landscape preference gradient, a matrix was created with the individual Q sorts, with the respondents corresponding to the rows and the Q sample to the columns. This matrix was submitted to a multivariate analysis of Principal Components Analysis (PCA). In order to check the landscape preference of the total sample of farmers and among variables, the sum of the scores attributed by the respondents for each landscape in the ordering of the Q methodology was calculated. The preferred landscapes were analyzed according to the different elements (Table 1). To compare the perception between the generations of farmers (age variable), the Kruskal-Wallis test was used (with *post hoc* paired Mann-Whitney test) and to verify the influence of gender, the Mann-Whitney U test was used. Both tests considered a significance

level of 5% ($p<0.05$). The multivariate analysis and the statistical significance were calculated using the software BioEstat.

RESULTS

Visual preference for landscapes

The three factors identified in the analysis explained 60% of the total variance of the data and represented the perception of farmers about the visual preference for landscapes. The significantly distinct statements ($p<0.01$) for each discourse are presented in Table 2.

Natural landscape for appreciation and recreation (factor A): explained 27% of the total data variation and has an eigenvalue of 37.98; 33 respondents (36.6%) were significantly related to this factor. The highest stated preference was for natural landscapes (PNL, DNL) and for aesthetics and leisure (LEW, LLR). These interviewees mainly valued elements of native forest (55.2%) and water (22.7%). They demonstrated a lower preference for urban landscapes (ULA and ULR), mainly with urban infrastructure elements (61%) and isolated trees (13.5%).

Rural landscape as familiarity (factor B): explained 24% of the total data variation and has an eigenvalue of 9.19; 31 respondents (34.4%) were significantly related to this factor. This discourse shows the preference for rural landscapes associated with residences and cattle raising activities (RLP, RLB and RLF). The respondents mainly valued elements of fields (26.6%) and isolated trees (21%). They showed no preference for landscapes such as leisure (LLR and LLF) and rural landscape, with an agroecological farming (RLA), with elements of isolated trees (25.3%), agroecological farming (20%), urban infrastructure (18.3%), native forest (17.6%), field (7.3%) and rural infrastructure (6.6%). The respondents were neutral about natural landscapes (PNL and DNL) and landscape as aesthetics, with human presence (LEW), which mainly contains elements of native forest (52%) and water (14%).

Table 2 - Representative Q-sorting of each factor (A: Natural landscape for appreciation and recreation; B: Rural landscape as familiarity; C: Cultural landscape) about the visual preference for landscapes by farmers in the western region of Santa Catarina, south of Brazil. The score goes from +3 ("higher preference") to -3 ("lower preference") and 0 represents "indifference". The * marks the significantly distinct statements of each factor ($p<0.01$).

Landscape code	A	B	C
PNL: Preserved natural landscape	2*	1*	-2*
DNL: Degraded natural landscape	1*	0*	-2*
RLA: Rural landscape - agroecological farming	0	-2*	0
RLB: Rural landscape - farming and cattle raising	1*	2*	3*
RLC: Rural landscape – conventional agriculture	0*	1*	2*
RLD: Rural landscape – cattle raising and forestry system	-1	0*	-1
RLP: Rural Landscape - rural property	0*	2*	-1*
RLF: Rural landscape - rural property, and cattle raising and forestry	-1	1*	0
ULA: Urban landscape – urban afforestation	-1*	0	1
ULR: Urban landscape - road	-2*	-1*	0*
LEH: Landscape as aesthetics – human presence	1	0*	2*
LEW: Landscape as aesthetics - waterfall	3	3	1*
LLR: Landscape as leisure - rural recreation	2*	-2 *	0*
LLF: Landscape as leisure - forested urban recreation	0*	-1*	1
LLN: Landscape as leisure - non-forested urban recreation	-2	-1	-1
DL: Degraded landscape	-3	-3	-3

Org.: by the Author, 2018.

Cultural landscape (factor C): explained 9% of the total data variation and has an eigenvalue of 6.56; 9 respondents (10%) were significantly related to this factor. This discourse considered the preference for landscapes with presence of rural activity in

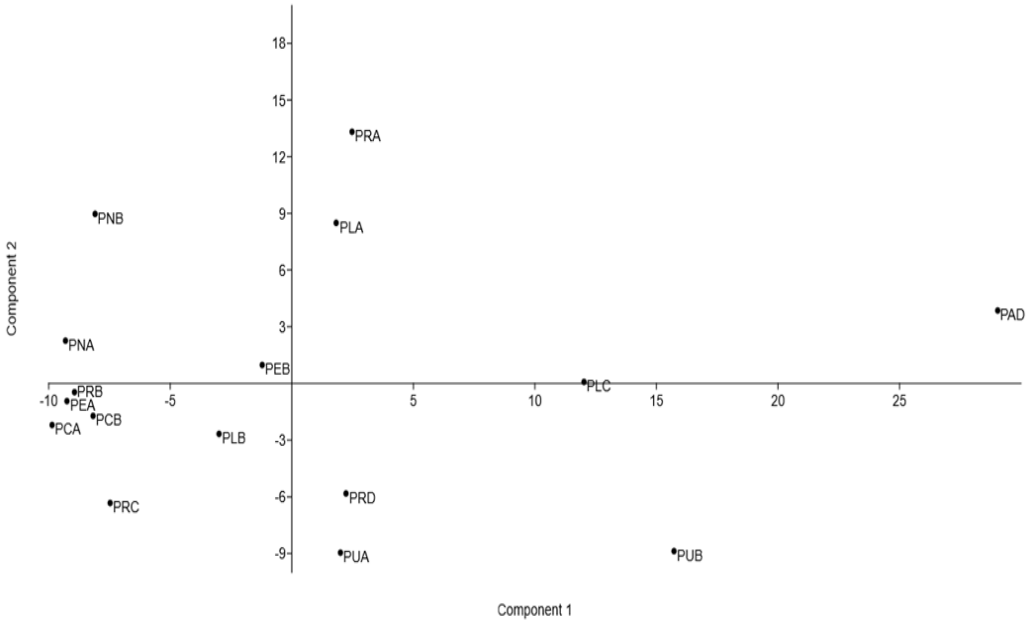
the landscape (RLB and RLC) and landscape as aesthetics, with human presence (LEH). They valued the landscapes shaped by people, especially with elements of conventional agriculture (21%), native forest (12.6%), isolated trees (12.6%), field (11%) and urban infrastructure (7%). Landscapes that do not represent human activities, only with elements of native forest (56%) and water (28.6%) were less valued (PNL, DNL and LEW).

Consensus landscapes, which were not preferred by any of the respondents, are related to non-forested urban recreation (LLN) and degraded environment (DL). These landscapes mainly presented elements of urban infrastructure (45%), bare soil due to human activity (20%), isolated trees (19.5%) and waste (5%).

The PCA resulted in a landscape preference gradient on the first axis of ordination, following the preference for natural landscapes, rural and aesthetic, forested urban landscapes, non-forested landscapes and those landscapes considered by informants as degraded (Figure 2). In the perception of farmers, these landscapes with lower preference had in common the degradation and disorganization of the environment, provoked by human activities, such as deforestation and waste (LLR and DL), the removal of trees (LLN) and the perception of disorganization (RLA).

The landscape preferred by farmers was the one with the largest percentage of water (51%) and native forest (49%) (LEW, +164 points); followed by the rural landscape with farming and cattle raising, mainly with elements of fields (33%) and isolated trees (38%) (RLB, +86 points); and the rural landscape with rural property, mainly with elements of fields (37%) and native forest (20%) (RLP, +70 points). The least valued landscape was the one that represented environmental degradation, with elements of bare soil (40%), isolated trees (30%) and waste (10%) (DL, -218 points); followed by the urban landscape with roads, mainly containing urban infrastructure (66%) (ULR, -108 points); and then, the landscape for leisure (non-forested urban recreation), containing primarily urban infrastructure (90%) (LLN, -98 points) (Table 3).

Figure 2 - Principal Components Analysis (PCA) of the landscape preference by farmers in the western region of Santa Catarina, south of Brazil. Axis 1 represents 14.33% and axis 2 represents 12.17% of the data variation. Landscape codes are described in Figure 1.

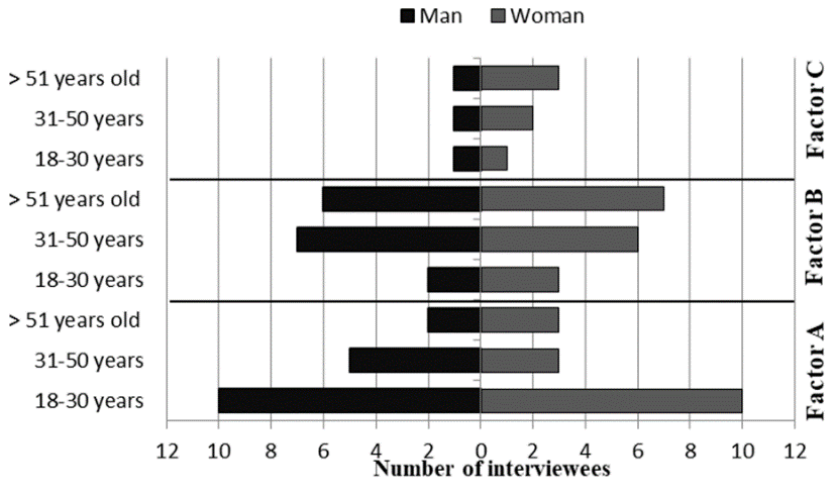


Org.: by the Author, 2018.

Influence of gender and age on the visual preference of the landscape

As for the factors generated in the analysis of the Q methodology, of the 33 interviewees that were significantly related to factor A (natural landscape for appreciation and recreation), most of them (60.6%) are between 18 and 30 years old, without gender distinction. Among the 31 respondents who presented discourse B (rural landscape as familiarity), most of them (83.88%) is above 31 years old, also without gender distinction. Of the nine respondents significantly related to factor C (cultural landscape), 66.6% are female, with a lower distinction of age ranges (Figure 3).

Figure 3 - Graphical farmers in the western region of Santa Catarina, south of Brazil, by gender and age group, according to each discourse (factor) generated with the Q methodology (A: Natural landscape for appreciation and recreation; B: Rural landscape as familiarity; C: Cultural landscape).



Org.: by the Author, 2018.

The younger the interviewees, the higher the preference for natural (PNL and DNL) and aesthetics and leisure landscapes (LEH, LEW and LLR). These are more homogeneous landscapes, with presence of native vegetation (51.6%) and water (20%). The older the respondents, the higher the preference for urban landscapes (ULA and ULR), primarily composed of urban infrastructure elements (61%) and isolated trees (13.5%) (Table 3). However, significant differences were found for the age variable only for the landscape with conserved natural vegetation (PNL, $p=0.04$); the landscape for leisure with rural recreation (LLR, $p<0.001$); and the urban landscapes, with afforestation (ULA, $p<0.001$) and with roads (ULR, $p=0.05$).

The difference for the PNL landscape was among the younger farmers (18-30 years old) and those above 51 years old ($p=0.01$); and for LLR among the younger and middle-aged farmers - between 31 and 50 years old - ($p=0.002$) and those above 51 years old ($p<0.001$). For urban landscapes, ULA was significantly distinct between older and younger farmers ($p<0.001$) and for middle-aged farmers ($p=0.02$); and ULR was significantly distinct between the younger and the older ones ($p=0.02$).

As for the preference for the rural landscape, we only detected significant differences between genders for the rural landscape with forestry (RLD) ($p=0.04$). No significant differences were observed regarding preferences for rural landscapes primarily composed of elements of conventional agriculture (21%) and fields (15.7%) and a lower percentage of a forestry (8.3%), isolated trees (8.3%) and native forest (8%) (Tables 1 and 3).

Table 3 - Landscape preference by farmers in the western region of Santa Catarina, south of Brazil, containing the code of each photograph and the sum of the Q sort scores corresponding to each group (gender and age group - in years). Positive score: higher preference; Negative score: lower preference; 0: indifference. Landscape codes are described in Figure 1. M: man; W: woman.

	Code															
Gender Age group	PNL	DNL	RLA	RLB	RLC	RLD	RLP	RLF	ULA	ULR	LEH	LEW	LLR	LLF	LLN	DL
M: > 50	8	-1	-8	14	14	-10	13	9	4	-3	7	20	-9	-10	-17	-31
W: > 50	0	-5	-12	13	7	-3	17	11	11	-19	8	21	-8	1	-12	-36
Total	8	-6	-20	27	21	-13	30	20	15	-22	15	41	-17	-9	-29	-67
M: 31-50	11	3	-6	14	11	-11	18	-1	-7	-25	12	34	-5	3	-14	-37
W: 31-50	11	-2	-3	13	7	0	14	8	0	-16	4	26	-7	-6	-16	-39
Total	22	1	-9	27	18	-11	32	7	-7	-41	16	60	-12	-3	-30	-76
M: 18-30	20	9	-1	13	7	-11	0	4	-8	-24	9	33	14	-2	-20	-43
W: 18-30	11	1	2	19	1	-6	8	-4	-15	-21	21	30	9	-4	-19	-32
Total	31	10	1	32	8	-17	8	0	-23	-45	30	63	23	-6	-39	-75
Man	30	11	-15	41	32	-32	31	12	-11	-52	28	87	0	-9	-51	-111
Woman	22	-6	-13	45	15	-9	39	15	-4	-56	33	77	-6	-9	-47	-107
Total	52	5	-28	86	47	-41	70	27	-15	-108	61	164	-6	-18	-98	-218

Org.: by the Author, 2018.

DISCUSSION

The discourses (factors) presented in this study were similar to the factors observed by Milcu et al. (2014) in Romania, Europe, with different people, including farmers. Discourse A, natural landscape as appreciation and recreation, is related to the connection of the informants with the environment, as highlighted in the studies of Tang et al. (2014). These authors stated that people who prefer natural landscapes are those that have a greater connection to natural vegetation. This connection depicts the profound appreciation of the individual for the natural environment, representing a possible motivation to be in resonance with that kind of environment and to seek positive perceptual experiences. Milcu et al. (2014) presented this discourse as "landscape to nature", with emphasis on the appreciation of the forest, with little influence of the people on the landscape.

Factor B, rural landscape as familiarity, is related to the fact that the rural landscape represents the key element of construction of the rural social identity, reaffirming the feeling of belonging to the place (CARNEIRO, 2012). This discourse gives meaning to the rural place, which influences the way people interact with the landscape (SHUIB; HASHIM, 2011). Milcu et al. (2014) described the "landscape for agriculture" discourse, highlighting the preference, especially by farmers, for landscapes with an agricultural system and other practical uses of the land, with little preference for leisure and native vegetation landscapes, as found in this study.

Factor C, cultural landscape, was the least representative factor among the informants and it shows the preference for landscapes that directly or indirectly have human presence and the disregard for landscapes with the predominance of natural elements. Milcu et al. (2014) also described the preference for landscapes that present people in different configurations, mainly during leisure activities and cultural events, mainly related to informants who practice subsistence agriculture and have low income. Howley (2011) described the lower preference by farmers for natural landscapes without human traces, pointing out that it may be related to the lack of economic productivity of landscape, making it unattractive in terms of agricultural productivity.

According to Hunziker et al. (2007), these different discourses of landscape preference may be associated with two modes of landscape perception: the landscape as space and the

landscape as a place. Under the first, as noted in factors B and C, people perceive the landscape in terms of their needs, focusing on the instrumental use of the landscape. Under the latter, people perceive the landscape as self-reflection (experiences and accomplishments) and social integration (values, norms, symbols and meanings), as seen in factor A.

It was observed that the farmers' preference followed this gradient: natural > rural > urban to degraded landscapes. Kaplan et al. (1989) showed people's preference for natural environments over constructed ones, and Soy-Massoni et al. (2006) observed a preference gradient from rural to urban, similar to what we identified in this study. The landscape preferred by farmers was one of natural environment for aesthetics and contemplation, with water and waterfalls, which are classic elements in the preference for landscapes, also evidenced by other authors (ARRIAZA et al., 2004; HOWLEY, 2011; LE LAY et al., 2013; LÓPEZ-MARTÍNEZ, 2017). Water, when associated with native vegetation, assumes different meanings and values for individuals, and may symbolize purity, holiness and rebirth, or even a source of aesthetic attraction, leisure, recreation and a resting place (SCHWARZ et al., 2008).

Rural landscapes were preferred in our study, because rural communities favor the landscape related to the space where they live. This result was also demonstrated by Fuente de Val et al. (2004) when they compared interviewees from Spain (Europe) and Chile (South America), concluding that landscape preference depends on the interaction of people with the environment they live in. This perception is related to the familiarity with rural landscapes, in balance with the natural elements (ARRIAZA et al., 2004).

Urban and degraded landscapes did not have much preference, results which are consistent with the study of Arriaza et al. (2004), which reported that the preference for the landscape decreases with the presence of anthropic elements such as paved roads, industries and electricity distribution lines, common in urban environments. The least-valued landscape by farmers was the one that shows environmental degradation. This perception may be related to the fact that a degraded and abandoned may not only demonstrate ecological problems but also negative attitudes and social values (SCHWARZ et al., 2008). This result is consistent with the observation made by Hall (2008), according to whom the participants expressed dissatisfaction with landscapes that suggest negligence and lack of management. However, Peron et al. (2002) stated that mixed environments, containing urban infrastructure and natural elements can be accepted by people as natural environments. studies have demonstrated the acceptance and preference for green spaces in cities (BONTHOUX et al. 2019; HUNZIKER et al., 2008). Arriaza et al. (2004) state that urban afforestation is important for the health of both the urban environment and the people.

The present study showed that the lower the age the higher the preference for natural and more homogeneous landscapes of contemplation and recreation, with elements such as water and native forest. On the other hand, older respondents preferred urban landscapes. Other studies reported a similar pattern (SOY-MASSONI et al., 2016; XU et al., 2020). Young people may have a stronger personal connection with the natural environment, providing a greater sense of security, legibility and mystery, with a perception of the natural landscape as attractive and fascinating (TANG et al., 2014). As for the preference for cultural landscapes by the older respondents, it may be related to the physical and psychological vulnerability that natural environments cause in older people, making them more susceptible to the dangers of natural areas (VAN DEN BERG; KOOLE, 2006).

The preference for different rural landscapes showed no significant difference in relation to age groups, which is consistent with what was observed by Hunziker et al. (2008), but is contrary to other studies (SOY-MASSONI et al., 2016; TANG et al., 2014). This result was probably because all informants are familiar with the rural landscape and the age difference is only verified if the non-preference for recreational environments of older informants is also considered, as shown with factor B (rural landscape as familiarity). A non-preference for recreational landscapes among older farmers was also found in the studies of Milcu et al. (2014), with the "landscape for agriculture" factor, where people related to this factor (mostly farmers with an average age of 45 years old) did not enjoy landscapes of forest and landscapes of leisure and recreation, using the lack of time as justification.

Our study showed that women have a lower rejection of the presence of forestry in the landscape. Regarding gender, some studies do

not indicate significant differences in perception responses (CRUZ et al., 2007; GAO et al., 2019; TANG et al., 2014), including the consideration of forestry with exotic species (HEMSTRÖM et al., 2014). The presence of forestry with exotic species was intensified in the western region of Santa Catarina in recent decades (VIEBRANTZ, 2009) and people living in regions that are closer to forestry areas have detected more changes in the landscape, may justify the rejection of this landscape by interviewed farmers (PÜSCHEL-HOENEISEN; SIMONETTI, 2012). In addition, Laroche et al. (2020) demonstrated Canadians have no appreciation of linear arrangement of trees, which can denote artificiality.

CONCLUSION

The preferred landscapes followed the gradient of natural > rural > urban landscapes. There was a consensus regarding the rejection of urban landscapes without the presence of natural elements and of environments with environmental degradation and disorganization. Age was an important factor in the preference for natural landscapes, preferred by the younger, and afforested urban landscapes, preferred by the older farmers. The opinions about the practice of forestry vary with gender, as they are less rejected by women.

These results emphasized the need to consider the perceptions of populations in landscape management plans in order to maintain the landscape with higher acceptance and the identity of these people. In addition, this study highlighted the acceptance by farmers of most rural landscapes, except for the landscapes with eucalyptus forestry, a common practice in the region. An alternative to that is the incentive of sources of income that involve native plants, such as planting of native species for income or rural tourism. These practices, if well planned, cause little change to the landscape. Natural landscapes and urban environments with the presence of natural elements were also well accepted by farmers. This shows that natural elements contribute to human welfare and should be considered in the management of urban spaces, especially for leisure.

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