

Customer perceptions of perceived risk in generic drugs: the Spanish market

Mercedes Rozano Suplet*, Mónica Gómez Suárez** & Ana M.^a Díaz Martín***

abstract

This study examines the relationship between perceived risk dimensions in the generic drug market. This topic has not been sufficiently investigated from a marketing point of view. Its study is thus of great interest from both academic and social points of view. After analysing the relevant literature, the current research work thus proposed a model for analysing the mediating role played by psychological risk in influencing other risk factors regarding overall risk. The model was tested via a field study capturing consumer perceptions of risk when buying generic drugs. The results of structural equation modelling indicated that both psychological and physical risk have a positive, direct effect on perceived risk. The results also showed that psychological risk mediated the effects of performance and economic and social risk on overall risk. Public agents involved in developing the generic drug market should thus try to reduce perceptions of risk amongst consumers, placing special emphasis on physical and psychological risk factors. This would increase consumer trust in generic drugs and encourage patients to playing an active role in asking their physicians and pharmacists for these types of drug.

Key words: generic drug, perceived risk, consumer behaviour, structural equation model.

resumen

Riesgo percibido por el consumidor en medicamentos genéricos: el caso del mercado español

Este trabajo analiza la relación entre las dimensiones de riesgo percibido, en el mercado de medicamentos genéricos. Este tema no ha sido suficientemente estudiado desde el punto de vista de marketing. Por consiguiente, el estudio realizado es de gran interés, tanto desde una perspectiva académica como social. Tras analizar la literatura, se desarrolla un trabajo empírico en el que se propone un modelo que analiza el papel moderador del riesgo psicológico, en la influencia del resto de dimensiones de riesgo y el riesgo percibido total. Para probar dicho modelo, se realiza un trabajo de campo que capta la percepción de riesgo del consumidor cuando compra medicamentos genéricos. Los resultados del modelo de ecuaciones estructurales indican que tanto el riesgo psicológico como el riesgo físico tienen un efecto positivo y directo sobre el riesgo percibido total. También muestran que el riesgo psicológico modera el efecto de las dimensiones de riesgo: funcional, económico y social, sobre el riesgo percibido total. Por consiguiente, los agentes de la administración pública implicados en el desarrollo del mercado de medicamentos genéricos deberían intentar reducir la percepción de riesgo entre los consumidores, poniendo especial énfasis en el riesgo físico y psicológico. Esto aumentará la confianza del consumidor en los medicamentos genéricos y llevará a que adopten un papel activo al solicitar este tipo de medicamentos tanto a médicos como a farmacéuticos.

Palabras clave: Medicamentos genéricos, dimensiones de riesgo percibido, comportamiento del consumidor, modelo de ecuaciones estructurales.

résumé

Le risque perçu par le consommateur de médicaments génériques : le cas du marché espagnol

Ce travail analyse la relation entre les dimensions de risque perçu, dans le marché de médicaments génériques. Ce thème n'a pas été assez étudié du point de vue du marketing.

Par conséquent, l'étude réalisée est intéressante, à partir d'une perspective académique ou sociale. Après analyse de la littérature, un travail empirique propose un modèle qui analyse le rôle modérateur du risque psychologique, dans l'influence sur le reste des dimensions de risque et le risque perçu total. Pour tester ce modèle, un travail réalisé sur le terrain capte la perception de risque du consommateur quand il achète des médicaments génériques. Les résultats du modèle d'équations structurelles indiquent que le risque psychologique tout comme le risque physique ont un effet positif et direct sur le risque total perçu. Par conséquent, les agents de l'administration publique concernés par le développement du marché de médicaments génériques, devraient réduire la perception de risque parmi les consommateurs, en insistant plus spécialement sur le risque physique et psychologique. Ceci augmentera la confiance du consommateur dans les médicaments génériques et leur fera jouer un rôle actif, demandant ces médicaments au médecin tout comme au pharmacien.

Mots-clés: médicaments génériques, dimensions de risque perçu, comportement du consommateur, modèle d'équations structurelles.

resumo

O risco percebido pelo consumidor nos medicamentos genéricos: o caso do mercado espanhol

Este trabalho analisa a relação entre as dimensões de risco percebido, no mercado de medicamentos genéricos. Este tema não tem sido suficientemente estudado desde o ponto de vista de marketing. Por essa razão, o estudo realizado é de grande interesse, tanto desde uma perspectiva acadêmica como social. Depois de analisar a literatura, desenvolve-se um trabalho empírico no qual se propõe um modelo que analisa o papel moderador do risco psicológico, na influência do resto de dimensões de risco e o risco percebido total. Para testar tal modelo, realiza-se um trabalho de campo que capta a percepção de risco do consumidor quando compra medicamentos genéricos. Os resultados do modelo de equações estruturais indicam que tanto o risco psicológico, como o risco físico têm um efeito positivo e direto sobre o risco percebido total. Também mostram que o risco psicológico modera o efeito das dimensões de risco: funcional, econômico e social, sobre o risco percebido total. Por essa razão, os agentes da administração pública implicados no desenvolvimento de mercado de medicamentos genéricos, deveriam tentar reduzir a percepção de risco entre os consumidores, pondo ênfase especial no risco físico e psicológico. Isto aumentará a confiança do consumidor nos medicamentos genéricos e levará a que adotem um papel ativo ao solicitar este tipo de medicamentos tanto a médicos como a farmacêuticos.

Palavras chave: medicamentos genéricos, dimensões de risco percebido, comportamento do consumidor, modelo de equações estruturais.

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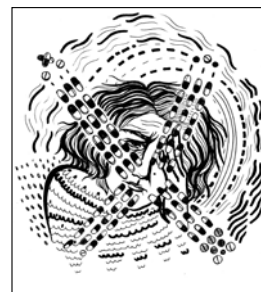
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Introduction¹

Ever since Bauer (1960) (quoted in Bettman, 1973; Stem, Lamb & Maclachlan, 1977; Pras & Summers, 1978; Dowling, 1986; Havlena & DeSarbo, 1990; Mitchell, 1992; Stone & Grønhaug, 1993; Oglethorpe & Monroe, 1994; Dohlakia, 2001) introduced the notion of “perceived risk” in the area of marketing, a large number of empirical studies have centered around different areas of research: categories of mass market (Kaplan, Szybillo & Jacoby, 1974; Stone & Grønhaug, 1993; Ho & Ng, 1994; Madhu, 1995; Moulins, 2004;), store brand versus national brand (Yelkur, 2000; González, Díaz & Trespalacios, 2006), financial services (Ho & Ng, 1994; Chen, Chang, & Chang, 2005), purchase system (Miyazaki & Fernández, 2001; Huang, Schrank & Dubinsky, 2003; Gallent & Cases, 2007) and purchase establishment (Hisrich, Dornoff & Kernan, 1972; Mitchell, 1998), among others.

Considerable attention has been devoted to this research topic especially since the 1990's, when the first studies using multidimensional scales to measure the different dimensions of risk began to be published. The aim of this work is to evaluate the risk perceived by consumers when buying generics drugs, a type of product which is highly important not only for the user itself, but also for the entire society. Based on previous studies on perceived risk in mass markets, which is the subject of the majority of published research works, the current study seeks to extend the existing literature analyzing the mediating role played by psychological risk in the influence of other risk factors on overall risk. Researchers dealing with this subject tend to consider that all risk dimensions precede the evaluation of overall risk and to date the authors are aware of only one work analyzing the indirect effect of risk dimensions via psychological risk (Stone & Grønhaug, 1993). Besides the lack of studies, according to Stone & Grønhaug (1993), their model could be applied to all types of markets but first it needs to be adapted to each specific context since, depending on the context of the purchase, certain dimensions could have a stronger effect than others.

Therefore, understanding the relationship between the factors that determine perceived risk in the generics drugs market is of great interest. And an investigation of this issue in the Spanish market is particularly relevant, since this is a young market and most of the studies that have been carried out so far are in mature markets.

The structure of this document is as follows: first, a review of the literature dealing with perceived risk, which will allow us to establish a conceptual model and a research hypothesis. Afterwards, the methodology applied is explained. Then the principal results obtained are addressed. The final section includes conclusions, limitations and future lines of research.

Literature review and conceptual proposal

Perceived risk evaluation and dimensions [T3]

Upon reviewing the literature on perceived risk, one of the first conclusions that can be derived is that there is no consensus on the nature, components or measurement of perceived risk. The reason for this lack of unanimity is that the concept of risk originates from disciplines other than marketing (Bernoulli, 1954; Stone & Grønhaug, 1993; Dowling & Staeling, 1994; Dohlakia, 2001) and, therefore, its definition has been adapted by different researchers to the area of study of consumer behavior.

Stone & Grønhaug (1993, p. 42) were the first authors to define perceived risk as “subjective expectations of loss; the more certain one is of this loss, the greater the risk perceived by the individual”. This definition is later used in the majority of marketing discipline studies. Stone & Grønhaug (1993) propose multiple measures for each dimension of risk because “it is unlikely that a single indicator alone will capture the domain of a given risk dimension properly”. The single indicator method was proposed by Jacoby & Kaplan (1972) and later used by Peter & Tarpey (1975), Peter & Ryan (1976), Bearden & Mason (1978) and Carroll, Siridhara & Fincham (1986). Additionally, the use of multiple indicators also allows the researcher to test the discriminant validity of the various risk dimensions.

Besides, past research primarily capture “probabilities” of the potential negative consequences and frequently apply a multiplicative model (probability of perceived consequences multiplied per importance of those consequences). Stone & Grønhaug (1993) use only one component: The subjective expectations of loss.

The use of a multi-item scale makes up for the shortcomings of the model described above, namely, 1) a minimal predictive capacity, 2) the limited cognitive

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capacity of the consumer (not an expert) to evaluate the probability that a particular event will occur and 3) the difficulty of a single indicator collecting that which comprises each risk dimension (Stone & Grønhaug, 1993). For all these reasons, this multi-item scale has been applied by several authors in different field studies since its publication in 1993 (Stone & Mason, 1995; Dholakia, 2001; González, González & Díaz, 2003; Laroche, MCDougall, Bergeron & Yang, 2004).

The process analyzed by Stone & Grønhaug (1993) was the purchase of a personal computer. They identified six risk dimensions: performance, physical, social, time, psychological and economic. They also found that two of these factors, the financial and the psychological risk, directly affect perceived risk and that the psychological dimension played an important mediating role for the other types of risk.

Perceived Risk in the Generic Drug Market

The use, consumption and prescription of generic drugs can be influenced by the belief that they are less effective than their brand name equivalents (Hellerstein, 1988) and by the inherent risk associated with each type of drug (Tootelian, Gaedeke & Schlacter, 1988; Carroll & Wolfgang, 1989).

The weight of each risk dimension depends partly on the nature of the product, meaning that the inherent or latent risk that the category “drug” carries for the consumer adds to the specific risk that comes with selecting a “generic” product within the category. In the study by Bearden & Mason (1978) within the American market, it was determined that consumers perceive more risk in all of the dimensions if they are confronted with the substitution of a brand drug by a generic drug. Performance and financial risks are the

TABLE 1. Studies of generic drug: objective, agents and authors.

SUBJECT	STUDY OBJECTIVE	STUDY SUBJECT	AUTHORS
General studies: Attitudes, influences and perceptions	Evaluate the difference in attitude towards generic drugs between physicians at private practices and hospitals.	Physician	Turnbull & Parson (1993)
	The influence of physicians in the decision to prescribe brand name or generic drug.		Hellerstein (1998)
	Learn physicians' opinions of generic drugs and the variables that influence said opinions.		García <i>et al.</i> (2003)
	Perception of original and generic drugs and factors that affect the decision to prescribe them.		Cyrill & Ng, (2006)
	Learn about elderly consumers' predisposition toward substitution of brand name drugs for generic drugs on the part of the pharmacist.	Consumer	Lambert <i>et al.</i> (1980)
	Learn about the perception of efficacy, side effects and safety of brand name and generic drugs.		Tootelian <i>et al.</i> (1988)
	Learn about the perception of prescribers in the role of disseminators of information on generic drug.	Physician, pharmacist, consumer	Mason & Bearden, (1980)
	Learn the attitude and behavior toward generic drugs.	Pharmacist	Gupta (1996)
	Analyze the perception and the amount of knowledge about generic drugs.		Hassali <i>et al.</i> (2007)
Studies of perceived risk	Determine whether or not the perception of risk associated with generic drugs is related to their substitution behavior.	Pharmacist	Carroll <i>et al.</i> (1986)
	Learn whether there is a relationship between perception of risk, the benefits of generic drug and substitution behavior.		Carroll & Wolfgang (1991)
	Learn about perceived risk and their attitude toward the prescription of generic drugs.	Consumer	Bearden & Mason, (1978)
	Learn the perception of risk associated with the use of generic drugs and the factors that influence requesting them from physicians or pharmacists.		González <i>et al.</i> (2003)

Source: Produced by the study's authors (2008)

dimensions that most influence the decision to purchase generics drugs. Because of differences in the social security system and the role played by pharmacies in the North American market and the Spanish markets, it can be expected to find significant differences between them regarding the weight of each dimension and their influence on overall risk.

Table 1 shows a synthesis of the empirical generic drug studies found in the literature. The first six works refer to more general studies: they are mainly focused on attitudes towards generic drugs (Lambert, Doering, Goldstein & McCormick, 1980; Turnbull & Parson, 1993; Gupta, 1996; García *et al.*, 2003) and the perception of these drugs when compared to brand name drugs (Mason & Bearden, 1980; Tootelian *et al.*, 1988; Hellerstein, 1998; Cyrill & Ng, 2006; Hassali, Kong & Steward, 2007).

We have only found four studies that deal with the analysis of perceived risk associated with generic drugs, which have specifically analyzed the consumer's perception of risk as user and buyer (Bearden & Mason, 1978; González *et al.*, 2003) and on the pharmacist and his role as prescriber (Carroll *et al.*, 1986; Carroll & Wolfgang, 1991). With the exception of the González *et al.* (2003) work, no other study measures perceived risk applying the multi-attribute scale used by Stone &

Grønhaug (1993). The utilization of this scale resolves the problems associated with employing low predictive capacity multiplicative mathematical models utilized by other authors. However, although this is a pioneering study, its authors only attempt to prove the validity and reliability of the scale via a confirmatory factorial analysis in which all of the dimensions are equally important. Our conceptual proposal's contribution consists of keeping in mind the mediating role of psychological risk.

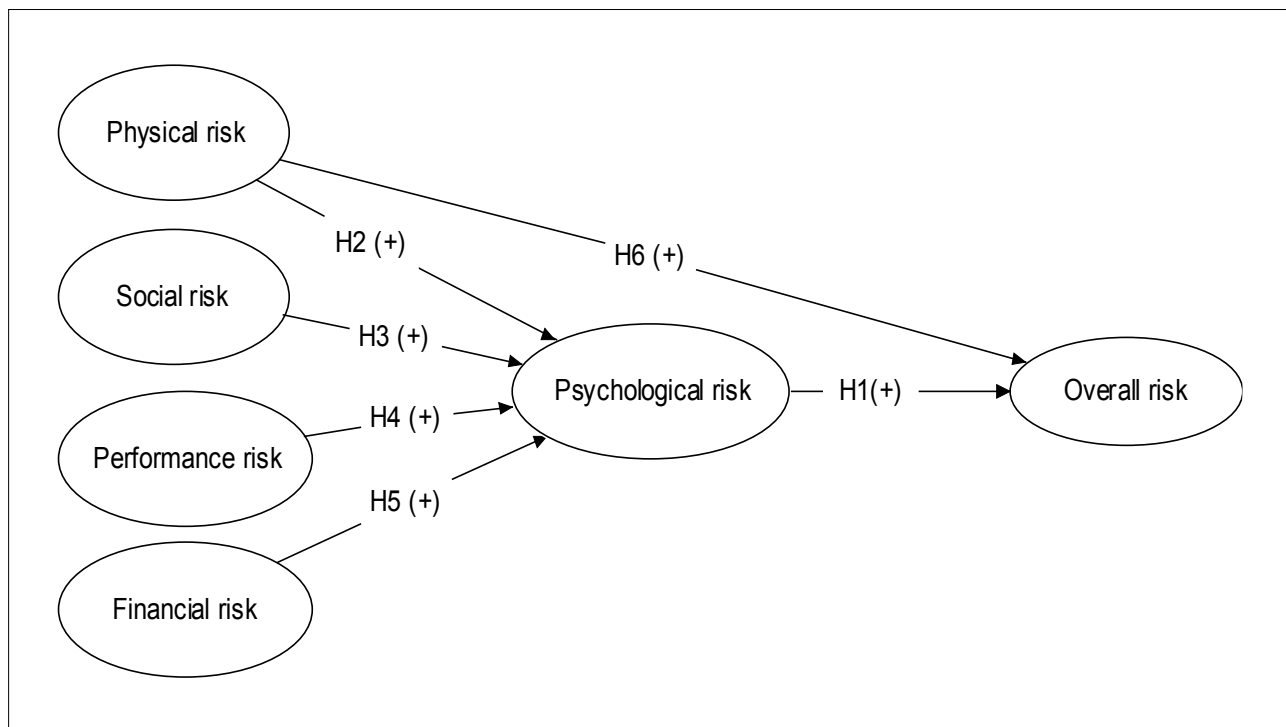
Model and hypotheses proposed [T3]

Our model is based on the six dimensions of risk identified by Stone & Grønhaug (1993). However, given the particular nature of the products considered in the present study—drugs—and the special relevance of physical risk in this context, we propose a change in the relationships specified by the aforementioned authors. In our work, physical risk will also have a direct influence on the overall risk. Besides, since most of drugs are largely financed by the Government in Spain, we believe that financial risk does not direct affect overall risk but rather its effect is mediated by psychological risk. Table 2 includes a summary of the hypotheses specified in the model, which appears in Figure 1.

TABLE 2. Study hypotheses.

HYPOTHESIS	FORMULATION	INFLUENCE
H1	Psychological risk has a positive and direct influence on overall perceived risk. The greater the psychological risk associated with the purchase of generic drug, the greater the overall perceived risk.	PSYCHOLOGICAL RISK ON OVERALL RISK (+)
H2	Physical risk has a positive influence on psychological risk. The greater the physical risk associated with the purchase of generic drug, the greater the psychological risk associated with said purchase.	PHYSICAL RISK ON PSYCHOLOGICAL RISK (+)
H3	Social risk has a positive influence on psychological risk. The greater the social risk associated with the purchase of generic drug, the greater the psychological risk associated with said purchase.	SOCIAL RISK ON PSYCHOLOGICAL RISK (+)
H4	Performance risk has a positive influence on psychological risk. The greater the performance risk associated with the purchase of generic drug, the greater the psychological risk associated with said purchase.	PERFORMANCE RISK ON PSYCHOLOGICAL RISK (+)
H5	Financial risk has a positive influence on psychological risk. The greater the financial risk associated with the purchase of a generic drug, the greater the psychological risk associated with said purchase.	FINANCIAL RISK ON PSYCHOLOGICAL RISK (+)
H6	Physical risk has a positive and direct influence on overall perceived risk. The greater the physical risk associated with the purchase of generic drug, the greater the overall perceived risk.	PHYSICAL RISK ON OVERALL RISK (+)

FIGURE 1. Proposed model



Methodology

Data from a personal survey administered at health centers and pharmacies to 560 individuals over the age of 18, that were familiar with generic drugs, were used to tackle the proposed objective. Prior to the surveying, a qualitative study was conducted. It allowed broaching the initial problem with the subject of study from the perspective of the different agents involved in the sector. The qualitative study consisted of four extensive interviews with professionals from the Public Health System and a Delphi study

conducted among pharmaceutical retailers. This information then facilitated the design of the personal survey used to collect the data for the quantitative analysis.

Out of the 560 surveys carried out, 542 were valid. Convenience sampling was employed, with a proportional distribution amongst the population of three urban centers in northern Spain. In order to obtain an aleatory sample of respondents, surveying was held at different times of the day and different days of the week at each health center and pharmacy.

The sample was made up of 43.17% men and 56.83% women. Almost 50% of the group is under the age of 40. 82% of the respondents had a household income under 2,400 € per month. Of the respondents, 52.12% did not take part in any kind of remunerated activity, the majority of who were students (18.48%) and housewives (16.82%). Among those respondents that had a job, the largest percentage worked for a second or third party (29.02%) as opposed to being self-employed. Finally, with regard to the level of education, nearly 30% had a university degree, while 70% only had a primary or secondary education or less.

As for the variables that measure perceived risk, multi-attribute scales described in the literature section were used. All respondents stated their degree of agreement according to a seven-point Likert type scale for all the items that are shown in Table 3. Three items have been used for each of the variables to measure every dimension of risk and the overall perceived risk. Initially, the time dimension was included in the survey. However, the pretest results advised eliminating that dimension. In order to do so, we took into account Stone & Grønhaug's (1993, pp. 42) statement that "although risk dimensions should account for a substantial fraction of the criterion variable, a particular dimension, however, may or not may a statistically significant contribution".

Results

In order to observe the importance of each dimension and the connections between the different types of risk that precede psychological and overall risk, we conducted various types of analysis. With regard to the interrelationships between risk dimensions, a confirmatory factor analysis (CFA) was conducted with the 12 items that represent the four dimensions of risk (physical, performance, financial and social). However, before using this method, it was necessary to conduct several previous analyses.

First, we checked for the existence of homogeneity in the standard deviations of the variables because it is advisable not to use variables with a lot of variability or others with very little variability within a model. In this case, the conditions are fulfilled, as can be seen in Table 3. Next, we carried out a test of normality and the existing correlations between the variables were revised, demonstrating that the variables in the model fulfil the necessary requirements for their use.

The last three columns of Table 3 present the means, standard deviations and variation coefficients assigned by the respondents to each of the items of all types of risk, including overall risk. Although all scor-

ing was low (no score was greater than the measurement scale's midpoint, which is 4), the highest levels of perceived risk correspond to the safety and dependability of generics drugs (items that measure performance risk), which obtained a mean of 2.67 for the three items. They are followed by the side-effects of the drug and the possible physical harm caused by consumption (items that measure physical risk), with a mean of 2.70. However, these components present a greater standard deviation and greater variation coefficient, since there is a greater degree of disagreement amongst respondents.

The three items that correspond to social risk received very low scores (an overall mean of 1.42 for the three items corresponding to this dimension). These results coincided with those obtained in previous studies (Bearden & Mason, 1978; Carroll et al., 1986; 1991; González et al., 2003). Physical and performance risk reflect a preoccupation with possible side-effects and the possibility that generics drugs may be less efficacious and safe than their brand name equivalent (Bearden & Mason, 1978; Carroll et al., 1986; 1991; Agrawal, 1995). Psychological and financial risk had means of 2.00 and 2.20 respectively for the three items that measure them, just slightly less than performance and physical risk but higher than social risk. Finally, overall risk also received very low scores (the mean for the three items was 1.77).

With regard to the exploratory factor analysis, the extraction procedure was that of principal components analysis (PCA). Table 4 shows the results. A study of the communalities indicated that one of the items related to financial risk ("*Think it's not a good way to spend money*") could present problems, as its value is 0.539. However, the model's goodness of fit did not increase too much and the measurement of the sampling adequacy (KMO) only varied by one tenth when this item was excluded. Therefore, the analysis was applied with the 12 items representing each of the four dimensions preceding psychological risk. Previous measurements (KMO and Bartlett's sphericity test) were all adequate. Four factors, whose eigen-value is included at the bottom of Table 4, were extracted. The accumulated overall variance is 78%, which indicates a good fit. With regard to the load of each item and factor, the first aspect to emphasize is the exact fulfillment of the expected relations structure. The first factor is physical risk, the second, performance risk, the third, social risk, and the last is financial risk. Prior to the confirmatory analysis, we conducted a reliability test (Cronbach's alpha). Its results appear at the bottom of the table, being the scale reliable, as all the items surpass the value of 0.6.

TABLE 3. Valuation of perceived risk.

TYPES OF RISK	ITEM	DESCRIPTION	Attributes		
			Average	Typ. Dev.	VC
Performance	ac121	1. Worried that the generic drug isn't safe or trustworthy	3.103	2.146	1.446
	ac122	2. Think it is very probable that the results are not those expected (of the drug)	2.551	1.713	1.489
	ac123	3. Worried it won't provide the benefits promised	2.648	1.806	1.466
Financial	ac124	4. Think it's not a good way to spend money	2.292	1.721	1.331
	ac125	5. Worried that it is not a good purchase because it is more expensive than the other brands available	1.971	1.565	1.259
	ac126	6. Worried that the generic drug won't be worth the money spent on the purchase	2.350	1.731	1.358
Physical	ac127	7. Worried about the side-effects that the drug can cause in you or a member of your family	3.035	2.182	1.391
	ac128	8. Believe that consumption can endanger health	2.253	1.642	1.372
	ac129	9. Worried about the possible physical harm that can come from consumption	2.811	1.959	1.435
Psychological	ac1210	10. Feel uncomfortable purchasing these products	2.115	1.631	1.297
	ac1211	11. Feel worry caused by doubts about purchasing the product	2.054	1.466	1.401
	ac1212	12. Believe it is imprudent to buy generic drug	1.839	1.382	1.330
Social	ac1213	13. Worried that family members and friends think you skimp on drugs	1.436	1.117	1.285
	ac1214	14. Think that it will worsen the way family members and friends think of you	1.374	0.931	1.476
	qc1215	15. Worried that people whose opinion you value will consider you irresponsible	1.459	1.067	1.368
Overall	ac126	16. You will experience a general or overall loss	1.809	1.369	1.322
	ac1217	17. Think you will make a mistake	1.805	1.370	1.318
	qc1218	18. Think this purchase will cause you problems	1.722	1.300	1.324

TABLE 4. Results of the PCA for the four dimensions of risk.

ITEMS	COMMUNAL.	PHYSICAL	PERFORM.	SOCIAL	FINAN.
Worried that it can cause you or a member of your family harm	0.829	0.816			
Believe that consumption can be harmful to your health	0.756	0.782			
Worried by possible physical harm associated with consumption	0.889	0.862			
Worried that it is not a safe and trustworthy drug	0.735		0.775		
Think it is very probable that the results are not those that you expect of the drug	0.846		0.822		
Worried that it will not provide the promised benefits	0.847		0.841		
Worried that family members and friends will think you skimp on drug	0.829			0,895	
Think that it will worsen the way family members and friends think of you	0.766			0,852	
Worried that people whose opinion you value will consider you imprudent	0.781			0,846	
Think it's not a good way to spend money	0.539				0,508
Worried that it is not a good purchase because it is more expensive than the other brands available	0.813				0,858
Worried that the drug won't be worth the money spent on the purchase	0.770				0,741
Eigen Value after Varimax Rotation		2.559	2.552	2.427	1,862
Explained Variance		21.32%	21.26%	20.22%	15,51%
Cronbach's Alpha		0.887	0.874	0.862	0,759
Overall Accumulated Variance		78.33%			
KMO and Barlett's sphericity test		KMO = 0.867 ; CHI-SQUARE: 4092.81; P-VALUE=0.000			

The confirmatory factor analysis (CFA) was conducted with the statistical program Amos 7.0. The amplitude of the sample obtained in this study allows us to work with enough cases per estimated parameter, as this sample with no missing values has a size of 514, on top of the five cases for each variable mentioned in the literature (Joreskog & Sorbom, 1984). Previously, we should question whether we are dealing with reflective or formative constructs. Based on the previous studies mentioned in the literature, each of the risk dimensions are reflective constructs that configure the different items, making the items manifestations of the construct.

The procedure was conducted in the two phases proposed by Anderson & Gerbin (1988). First, we analyzed the goodness of the psychometric properties of the measurement instrument used through the CFA. Second, when the measurement instrument's goodness was accepted, the instrument was modified to include the structural relationships proposed theoretically, us-

ing a Structural Equations or Covariance Structure Model (MEC) to analyze it.

The evaluation of the model fit involved several steps. First, we verified that there were no parameter estimations that could be considered contradictory, such as negative error or insignificant variances, nor standardized parameters greater than 0.95 (Hair, Anderson, Tatham & Black, 1998). Second, we carried out successive estimations with which we attempted to increase the goodness of fit upon incorporating correlations among detected errors, while observing the modification index (MI). Finally, the CMIN/DF ratio, indicated by the relationship between Chi-square and the degrees of freedom, had a value of 1.57. This value is between 1.5 and 2, within the accepted limits. Table 6 includes the results obtained upon applying the CFA.

The parameters of the standardized lambda coefficients (Li), which measure the relationship between

TABLE 5. Results of the Confirmatory Factor Analysis (CFA).

CONSTRUCT	ITEM	Stand. loading Li	Error Variance	Reliability				Converg. Validity
		Standard weight	1-R2	Indicator reliab. R2	Composite reliab.	Alpha Cronbach	Variance Extracted (AVE)	Student-t
Performance	ac122	0.914	0.165	0.835	0.884	0.874	0.719	-
	ac121	0.739	0.454	0.546				21.096***
	ac123	0.881	0.224	0.776				28.652***
Financial	ac124	0.745	0.445	0.555	0.717	0.759	0.729	15.088***
	ac125	0.55	0.698	0.303				13.258***
	ac126	0.728	0.470	0.530				-
Physical	ac127	0.87	0.243	0.757	0.897	0.877	0.848	28.695***
	ac128	0.749	0.439	0.561				22.688***
	ac129	0.96	0.078	0.922				-
Social	ac1213	0.862	0.257	0.743	0.862	0.862	0.827	-
	ac1214	0.789	0.377	0.623				19.738***
	ac1215	0.813	0.339	0.661				20.527***
Psychological	ac1210	0.859	0.262	0.738	0.901	0.810	0.753	-
	ac1211	0.89	0.208	0.792				26.323***
	ac1212	0.854	0.271	0.729				24.437***
Overall	ac1216	0.903	0.185	0.815	0.932	0.932	0.820	-
	ac1217	0.929	0.137	0.863				34.270***
	ac1218	0.884	0.219	0.781				30.457***
							Average Weights	0.829

Note: *** p< 0.001 significant level.

Global Goodness of Fit							Discrim. Validity			
Chi-Sq.	D.F.	P-value	Ratio	GFI	AGFI	RMSEA	Conf. Interval		Chi RM	
108.754	94	0.142	1.157	0.977	0.958	0.017	(Li+SE^2. Li-SE^2)		Chi=550	gl=95
							0.378	0.833	p=	0.00
									Ratio =	5.78

latent variables and factors, fulfilled the criteria of being significant (Bagozzi & Yi, 1988) and are structured as explained in the exploratory factor analysis (PCA). Correlations also existed between the latent factors, all of which are significant. The model satisfactorily fit the data. The p-value was not significant with a value of 0.142. The Chi-square had a value of 108.754 and 94 degrees of freedom. The sensitivity of Chi-square to sample size for the evaluation of a measurement model was determined through structural equations, and in this case we had a fairly large sample, so obtaining an insignificant statistic bodes well for the model's fit. As for the rest of the fit indicators used, all of the typical fit indices surpassed the recommended values. The GFI and the AGFI surpassed the 0.9 value recommended by Jöreskog & Sörbom (1993) and the RMSEA was 0.017, signaling a good fit (Hair et al., 1998).

Table 5 includes reliability measurements and scale validity. The composite reliability coefficients were above the 0.7 recommended value (Bagozzi & Yi, 1988), Cronbach's alpha was above the 0.7 value recommended by Nunnally & Bernstein (1995) in every case, and the AVE (average variance extracted) was higher than 0.5 (Corner & Lacker, 1981).

The convergent validity was cross-referenced by determining that all of the standardized lambda parameters were positive, significant and higher than 0.6 (Anderson & Gerbing, 1988). Therefore the variance and the t-student were significant for each of the parameters. For the discriminant validity, the item/dimension cor-

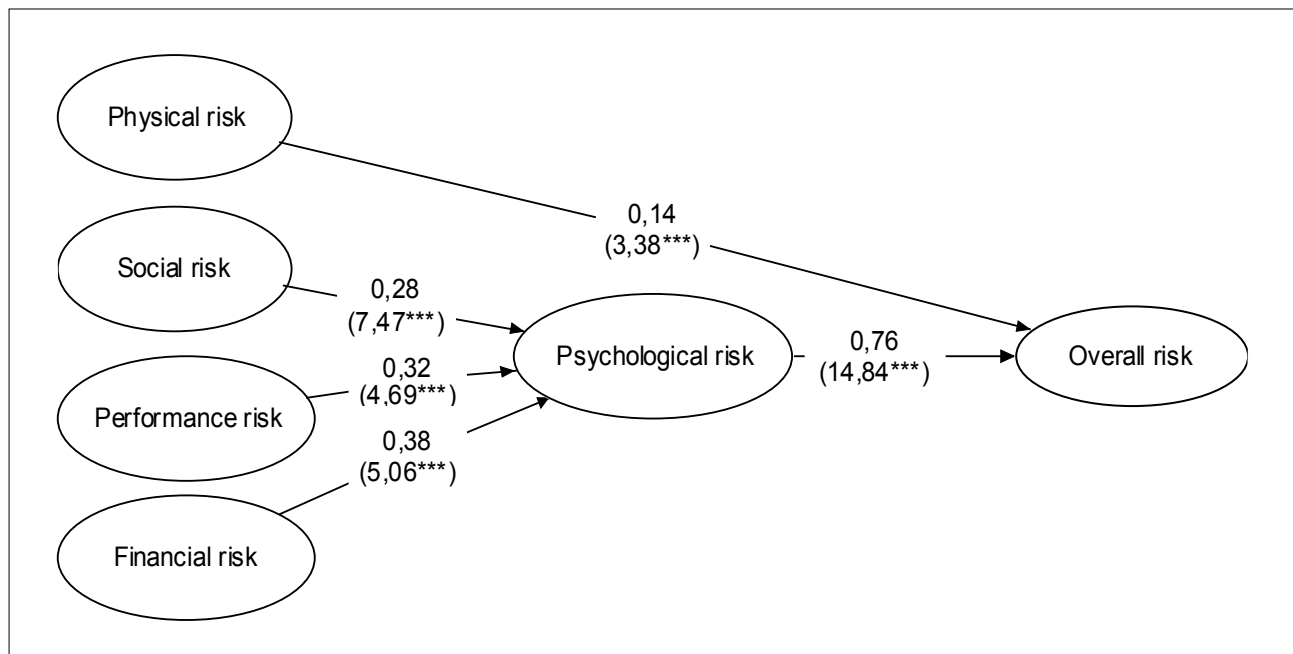
relations matrix did not exceed the unit. Therefore, we continued with the method proposed by Anderson & Gerbing (1988), which consisted of estimating the trust interval of the correlation coefficients between the six dimensions of risk, in order to prove that it did not include the unit. Chi-Square differences between the whole model and a restricted model (RM, assigning 1 to the covariance between the two constructs with the greatest correlation) were also tested. The model fits is significantly worse for the RM.

We believe that the measurement scale for perceived risk in the purchase of generics drugs has gone beyond the dimensionality, validity and reliability requirements, which means that it can be used to compare the influence of the four dimensions on psychological and overall risk.

Figure 2 includes the results of the structural model. Each indicator shaped by each of the risk dimensions was significant. The same occurs with all of the relationships between constructs except in the case of the relationship between physical and psychological risk. The indicators of goodness of fit, which indicate that the model is appropriate, appear at the bottom of the figure.

The social risk shapes the following items: skipping on the purchase of drug, a worse opinion of me and the appearance of being imprudent. It was also a part of psychological risk, generating a significant, positive and direct relationship (lambda = 0.28). The same re-

FIGURE 2. Results of the Structural Equations Model



Note: *** p < 0.001 significant level.

GOODNESS OF FIT: Chi-square: 118,909; GL: 98; p-value = 0,074; Chi-square/gl = 1,213. GFI = 0,975; AGFI = 0,957; RMSA = 0,020

relationship arose between performance risk (an unexpected, unsafe and dependable result, not obtaining the promised results) and psychological risk ($\lambda = 0.32$) and between financial risk (by means of the items: not a good way to spend money, it's expensive, it's not worth the money spent) and psychological risk ($\lambda = 0.38$). Overall risk is made up of psychological and physical risk. The first acts as a moderator between social, performance and financial risk, having a significant, positive and direct effect on overall risk ($\lambda = 0.76$). This same type of relationship arose between physical and overall risk ($\lambda = 0.14$), by means of the items: harm to myself or my family, negatively affects health and side-effects. In conclusion, these results indicate that psychological risk is an important mediator between overall risk and the other three dimensions of risk (performance, financial and social), obtaining a much higher parameter with this factor than with physical risk (0.76 versus 0.14).

Therefore, of all of the proposed hypotheses, only H2, referring to the relationship between physical and psychological risk, does not apply. This probably occurs because there is a direct relationship between physical and overall risk. This model verifies the rest of the formulated hypotheses.

Conclusions, limitations of the study and future research lines [T2]

Taking into account that very little research has been conducted on the influence of perceived risk in the use and consumption of generics drugs (Mason & Bearden, 1980) and that the studies in young markets, such as the Spanish market in which the market share is less than 10%, are practically non-existent (EGA, 2006), our study makes an interesting contribution to the understanding of the relationships between risk factors in this area. Upon cross-referencing the pro-

posed hypotheses of our conceptual proposal, we have confirmed that psychological risk has a direct influence on the risk perceived by the consumer when evaluating a generic drug, while the rest of the dimensions, with the exception of physical risk, indirectly influence overall perceived risk, proving psychological risk's mediating role. As patients have an ever more active role in choosing the drugs they purchase, the government must develop actions that address consumers directly. In order to do so, information regarding the safety and efficacy of generic drugs must be provided, thereby increasing confidence in choosing this type of drug.

The main limitation of this work is that we have only analyzed the consumers' point of view. A large percentage of the drugs are prescribed by physicians, who play a key role in the decision-making process, and their opinion, level of understanding and prescription behavior should, therefore, be included in future studies. It would also be interesting to study the role of pharmacists in influencing the purchase process. It would also be desirable to extend the geographical area of study. In future works, other variables that may influence generics drugs perceived risk and consumption, such as sources of information and previous experience of the user, should be included in the analysis.

This study has great social interest, as the consumption of generic drugs is beneficial to both the patient interested in paying less for a drug and to the government when it comes to cutting public spending on pharmaceuticals. Although generics drugs offer savings of 25% and 50% in drugs expenditure, in 2008 the generics drugs market in Spain made up only 7.2% of the overall pharmaceutical market value and 16.3% in volume, a much lower share than the European average, which is about 30% and 35% respectively (AEGSEG, 2008; Nielsen, 2008). Therefore, it is important to continue conducting studies on this market that promote the advantages of generic drugs and increase consumer and patient consumption.



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