COMMUNICATION & SOCIETY
COMUNICACIÓN Y SOCIEDAD

How to cite this article:
SOTO-SANFIEL, M.T., AYMERICH-FRANCH, L. & ROMERO, E.,
"Personality in interaction: how the Big Five relate to interactive narratives reception", *Communication & Society / Comunicación y Sociedad,* Vol. 27, n. 3, 2014, pp. 151-186.

Personality in interaction: how the Big Five relate to the reception of interactive narratives

Personalidad en interacción: como los Cinco Grandes se relacionan con la recepción de narrativas interactivas

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ABSTRACT: In this study, we explore how users' personalities affect their responses to interactive narratives. In particular, we analyze the relationship between personality traits and relevant variables in narrative reception: identification with characters, enjoyment, self-perceived physiological sensations, emotional

experience and content. Experimental participants (N=310) answered the NEO-FFI personality questionnaire and watched a movie in one of four experimental conditions that combined modality (interactive vs. linear) and content (happy vs. tragic end). Results suggest that personality traits influence users' responses to fiction and interactivity.

RESUMEN: En este trabajo, exploramos como la personalidad de los usuarios afecta su respuesta a las narrativas interactivas. En particular, analizamos la relación entre los rasgos de personalidad y variables relevantes en recepción de narrativas: identificación con los personajes, disfrute, sensaciones fisiológicas, emociones y contenido. Los participantes (N=310) respondieron el inventario NEO-FFI de la personalidad y vieron una película en una de las cuatro condiciones experimentales en las que se combinó modalidad (interactiva vs. no interactiva) y contenido (final feliz vs. trágico). Los resultados sugieren que la personalidad influye las respuestas de los usuarios a las ficciones y a la interactividad.

Keywords: Personality, Interactivity, Narratives, Identification with characters, Enjoyment.

Palabras clave: personalidad, interactividad, narrativas, identificación con los personajes, disfrute.

1. *Introduction*

The term 'interactivity' has been widely used in association with media products and processes, although it has been described heterogeneously or under-defined[1]. Researchers have sought to define interactivity by examining the concept in relation to

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[1] Cfr. BUCY, E.P. "Interactivity in society: Locating an elusive concept", *The Information Society*, vol. XX, 2004, pp. 373–383; HANSSEN, L., JANKOWSKI, N.W. & ETIENNE, R., "Interactivity from the perspective of communication studies", In N.W. JANKOWSKI & L. HANSSEN (Eds.), *Contours of Multimedia: Recent Technological Theoretical and Empirical Developments*, University of Luton Press Luton, 1996, pp.61–73; HEETER, C., "Implications of new interactive technologies for conceptualizing Communication", In J.L. SALVAGGIO & J. BRYANT (Eds.), *Media Use in the Information Age: Emerging Patterns of Adoption and Computer Use*, Lawrence Erlbaum Associates, Hillsdale, 1989, pp.217–235; HEETER, C., "Interactivity in the context of designed experiences", *Journal of Advertising*, vol. I, 2000, http://jiad.org/article2.html; HUHTAMO, E., "From cybernation to interaction: a contribution to an archeology of interactivity", In P. LUNENFELD (Ed.), *The Digital Dialectic: New Essays on New Media*, MIT Press, Cambridge, 1999, pp.96–110; MCMILLAN, S., "Exploring models of interactivity from multiple research traditions: Users, documents, and systems", In L.A. LIEVROUW & S. LIVINGSTONE (Eds.), *The handbook of new media. Updated student edition*. Sage, London, 2006, pp. 205-229; SCHULTZ, T. "Mass media and the concept of interactivity: an exploratory study of online forums and reader e-mail", *Media, Culture & Society*, vol. XXII, 2000, pp.205–221; SOHN, D. & LEE, B., "Dimensions of interactivity: differential effects of social and psychological factors", *Journal of Computer-Mediated Communication*, vol. XX, 2005, http://jcmc.indiana.edu/vol10/issue3/sohn.html.

diverse characteristics of the new media environment[2], but giving priority to descriptions and the building of typologies rather than to empirical examination[3]. This circumstance has led some researchers to suggest that there is a need to test the impact of interactive communication on user experiences and to shift from speculative assumptions about interactivity to verifiable results. Empirical studies are needed to inform and shape theory-building[4].

The available studies of interactivity has been mainly divided into three categories, which reflex the heterogeneity of theoretical approaches to its definition: [5][6] those that consider interactivity to be a process based on the notions of exchange and responses, those that emphasize the technological properties associated to interactivity, and those that consider interactivity to be a perceptual characteristic of the receiver. To them, McMillan has added a fourth category that includes those studies that define interactivity as a multi-dimensional construct[7].

In addition to the aforesaid lack of homogeneity in the definitions of interactivity, and to the requirement for empirical tests, there is another criticism. It has been stated that one of the problems with current approaches to the study of the concept of interactivity is that scholars either tend to mix the structural properties of technological systems, exchanges of messages and the users' perceptions into a single multidimensional construct, or to consider one of those factors to be the central focus of interactivity. This has been considered to be the reason why empirical research into interactivity has been incapable of obtaining consistent patterns of effects on users[8]. Indeed, after around thirty years of research, we barely know what interactivity really is, or in what conditions interactive processes have effects on individual technology users[9].

To overcome this problem, scholars have suggested that investigation of interactivity considers four types of variable: predictors (e.g. technological properties of the system), mediators (e.g. user perceptions), moderators (e.g. individual differences) and outcomes (e.g. media effects)[10]. In this exploratory study, we follow those recommendations and build a model that takes into account media stimuli, user perceptions, individual differences and media effects when determining the individual-level consequences of consuming a specific interactive application. Particularly, we consider the possibility of interaction with the content to be the predictor variable, the evaluation of content by the user to be the mediator, and the personality to be the moderator. Likewise, we consider that the perceived physical sensations, self-perceived emotions during consumption, enjoyment and identification with characters are the outcomes. The ultimate purpose of this model is to help identify the conditions in which interaction (with fiction) could be influential, which could help with theory building. This study explores the effects of interaction with fiction on audience responses and the role of personality in the equation.

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[2] Cfr. McMILLAN, S., *op. cit.*

[3] Cfr. BUCY, E.P., *op. cit.*

[4] Cfr. *Ibíd.*

[5] MCMILLAN, S. & HWANG, J.S., "Measures of perceived interactivity: An exploration of the role of direction of communication, user control, and time in shaping perceptions of interactivity", *Journal of Advertising*, vol. XXXI, 2002, 29-42.

[6] QUIRING, O. & SCHWEIGER, W., "Interactivity: a review of the concept and a framework for analysis", Communications, vol. XXXIII, 2008, nº 2, pp. 147-167.

[7] Cfr. MCMILLAN., S., *op. cit.*

[8] Cfr. BUCY, E.P. & TAO, C-C.,"The mediated moderation model of interactivity", *Media Psychology*, vol. IX, 2007, pp. 647-672.

[9] Cfr. BUCY, E.P., *op. cit.*

[10] Cfr. BUCY, E.P. & TAO, C-C, *op. cit.*

However, despite the major need for it to be explored from the perceptual experience perspective,[11] some evidence has been obtained through empirical examinations. It is known, for example, that interaction with the content produces greater excitement about consumption,[12] better positive evaluations and gratification,[13] and cognitive involvement experiences in audiences.[14] In addition, interactivity affects cognitive and emotional processing[15] and increases motivation for information processing and the use of cognitive resources.[16] The inclusion of interactivity in entertaining contents modifies the links between receivers and audiovisual pieces and it is therefore important to explore its role in reception.[17]

1.1 *Interactive narratives*

Interactive fiction has attracted the attention of scholars and creators[18]. In fact, the earliest studies of interaction with new media used interactive fiction to examine such aspects as the function of playfulness in content, and their linearity and structure[19]. Because interactive fiction possesses a series of characteristics, it is a suitable product for exploring the effect of interactivity on the consumption of audiovisual entertainment. Interactive fiction lies halfway between conventional passive consumption (such as television) and more active consumption (such as videogames)[20]. It is considered that interactivity in fiction redefines the traditional author-text-audience

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[11] Cfr. SOHN, D., "Anatomy of interaction experience: Distinguishing sensory, semantic, and behavioral dimensions of interactivity", *New Media & Society,* vol. XIII, nº 8, 2011, pp.1320–1335.

[12] Cfr. FORTIN, D.R & DHOLOAKIA, R.R., "Interactivity and vividness effects on social presence and involvement with website-based advertisement", *Journal of Business Research,* vol. LVIII, 2005, pp.387-396.

[13] Cfr. KO, H., CHO, C.H & ROBERTS, M., "Internet uses and gratifications. A structural equation model of interactive advertising", *Journal of Advertising Research,* vol. XXXVII, 2005, pp.41-55; MCMILLAN, S., HWANG, J.S & LEE, G., "Effects of structural and perceptual factors on attitudes toward the website", *Journal of Advertising Research,* vol. XLIII, 2003, pp.400-409; SICILIA, M., RUIZ, S. & MUNUERA, J.L., "Effects of interactivity in a website. The moderating effect of need for cognition", *Journal of Advertising,* vol. XXXIV, 2005, pp.31-45.

[14] Cfr. LIU, Y. & SHRUM, L.J., "What is interactivity and is it always such a good thing? Implications of definition, person and situation for the influence of interactivity on advertising effectiveness", *Journal of Advertising,* vol. XXXI, 2003, pp.53-64.

[15] Cfr. WISE, K., REEVES, B., "The effect of user control on the cognitive and emotional processing of pictures", *Media Psychology,* vol. IX, 2007, pp.549-566.

[16] Cfr. HUPFER, M.E. & GREY, A., "Getting something for nothing: The impact of sample offer and user mode on banner ad response", *Journal of Interactive Advertising,* vol. XVI, 2005; TREMAYNE, M. & DUNWOODY, S., "Interactivity, information processing, and learning on the world wide web", *Science Communication,* vol. XXIII, 2001, pp.111-134.

[17] Cfr. COVER, R., "Audience inter/active: Interactive media, narrative control and reconceiving audience history", *New Media & Society,* vol. VIII, nº1, 2006, pp.139–158; KLIMMT, C., HEFNER, D. & VORDERER, P., "The video game experience as "true" identification: A theory of enjoyable alterations of players' self perceptions", *Communication Theory,* vol. XIX, 2009, pp. 351-373.

[18] Cfr. McMILLAN, S., *op.cit.*

[19] Cfr. FREDIN, E.S., "Interactive communication systems, values, and the requirement of self-reflection, In J.A. Anderson (Ed.), *Communication Yearbook*, vol. XII, Sage, Newbury Park, 1989, pp. 553-581; HUNT, P., "Futures for children's literature: Evolution of radical break", *Cambridge Journal of Education*, vol. XXX, 2000, pp. 111-119; ISER, W., Interaction between text and reader, In J. CORNER& J. HAWTHORN (Eds.), *Communication Studies: An Introductory Reader*, Edward Arnold, London, 1989, pp. 160-164. 1989; MURRAY, J.H., *Hamlet on the Holodeck: The future of narrative in cyberspace*. The Free Press, New York, 1997.

[20] Cfr. HEETER, C., *op.cit.*

relationship as it not only increases the audience's interest in modifying contents but also the need for co-authorship[21]. By allowing readers to have some level of control over the outcomes of narratives, interactive fiction is said to "blur the boundaries between reader and writer"[22].

Interactivity in narratives is not a spontaneous process that offers the user absolute freedom in his/her participation during the consumption of a story. Instead, the author of the story decides what information is provided and how that information must be managed by the user. From this repertoire of pre-designed options, the creator offers freedom of action[23]. Aarseth[24] identifies three types of action that an interactive narrative could offer the user for interaction: 1) *exploratory*, where the user must decide what path to take; 2) *role representation*, where the user assumes strategic responsibility for the character or the text, and 3) *poetic*, where actions are only aesthetically motivated.

Following Herrera[25] interactive stories are also defined according to the ease of navigation through their structure. In that sense, they are: a) *accessible*, when the structure of the story provides clear indications of options to move forward; b) *misleading*, when the structure intends to get the user lost and for him/her to seek the right path to continue with the content, and c) *obstructing*, when the structure constantly tests or proves the users' qualities for continuing the story. Likewise, Ryan categorizes eight different types of interactivity in interactive stories, ranging from changing the perspective of following the story to solving problems in order to continue (Annex 1)[26]. However, one of the most common types is the one whereby viewers must choose how the story will continue by selecting between different options presented onscreen at given points of the film. In such interactive fiction, the receptors are able to decide the plot and the characters' fate.

Very few previous studies have dealt with the reception of interactive narratives, most likely because they are so difficult to produce. Soto[27] reports on a qualitative study that observes the efficacy in the design, production and consumption of interactive pieces in television and concludes that these interactive narratives generate interest, expectation and a high level of gratification, and also that there is a link between emotional-affective or cognitive aspects and the satisfactory experience of consumption. Among the affective aspects, the author identifies the ability of the audience to: experience someone else's life, establish affective relationships with the characters, project their feelings onto the characters and decide what happens to them. Among the cognitive aspects, she recognizes the power of these narratives to: stimulate intellectual and imaginative thinking, do interesting and fun mental exercises, change from a passive to

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[21] Cfr. COVER, R., *op. cit.*

[22] Cfr. LANDOW, G.P., *Hypertext: The convergence of contemporary critical theory and technology*, John Hopkins University Press, Baltimore, 1992, p. 5.

[23] Cfr. HERRERA, R. *Tempus fugit. El relat interactiu*. Fundació espais d´art contemporani, Girona, 2003.

[24] Cfr. AARSETH, E. J., "No linealidad y teoría literaria", In G.P. Landow (Comp.), *Teoría del hipertexto*, Paidós, Barcelona, 1997, pp. 71-108.

[25] Cfr. HERRERA, R., *op.cit.*

[26] Cfr. LAUREL, B., *Computers as theatre,* Addison-Wesley, Massachusetts, 1993; MEADOWS, M.S., *Pause & Effect. The art of interactive narrative,* New Riders, Indianapolis, 2003; MURRAY, J. H., 1997, *op. cit.*

[27] Cfr. SOTO, M.T., "La creación y percepción de ficciones interactivas televisivas", *Anuario Ininco. Investigaciones de la Comunicación*, vol. XIII, nº 2, 2001, p. 203-231. Available at: http://www.griss.org/curriculums/soto/publicaciones/soto2001.pdf, Last visit: April 22, 2014.

an active attitude, experience other people's feelings without the need to suffer emotional experiences, focus the plot on certain aspects and master the system.

Vorderer, Knobloch & Schramm[28] explore the perception of entertainment according to the level of interactivity and the cognitive capacity of the audience in interactive movies. They find that individuals with less cognitive capacity feel more entertained (i.e., they feel more empathy for the protagonist, experience more suspense, and evaluate the movie more positively) when they watch the movie in the traditional passive manner, whereas individuals with greater cognitive capacity feel more entertained when they are able to influence the plot. Lee, Heeter & Larose[29] compare dyadic *vs.* solitary emotional reactions to watching either a linear or an interactive version of a video narrative. Participants who watched the interactive version report higher enjoyment than those who watched the linear version. However, story involvement, arousal and connection do not differ across conditions.

Soto-Sanfiel, Aymerich-Franch & Ribes[30] explore the relationship between content (happy or tragic), the possibility of interacting with the message, and enjoyment, entertainment or gratification. They find, in agreement with other studies,[31] that interactivity, in itself, is not a factor that affects the enjoyment of fiction. They also report that the combination of fiction modality (interactive vs. linear) with content affects enjoyment: the interactive version with a happy ending elicits more enjoyment, likeability and gratification than that with a tragic ending. They conclude that being responsible for selecting a plot with a happy ending for the characters makes the evaluation of consumption more positive.

In another text, Soto-Sanfiel, Aymerich-Franch & Ribes[32] explore identification with characters in interactive and non-interactive narratives. They observe that interactive versions produce higher identification, and also that interactivity produces higher cognitive-emotional empathy with characters and a feeling of merging with them. These researchers conclude that interactively deciding the plot causes emotional and cognitive effects, so interactivity may result in a change of attitudes, values or beliefs to a greater extent than traditional passive consumption. Finally, they state that interactivity redefines the relationship between the audience and the message because it encourages self-projection and self-awareness.

Lastly, Soto-Sanfiel, Aymerich-Franch, Ribes & Martinez-Fernandez[33] observe emotional experience by modality of reception (interactive vs. non interactive) and

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[28] Cfr. VORDERER, P., KNOBLOCH, S. & SCHRAMM, H., "Does entertainment suffer from interactivity? The impact of watching an interactive TV movie on viewers' experience of entertainment", *Media Psychology,* vol. III, 2001, pp.343-363.

[29] Cfr. LEE, M. S., HEETER, C. & LAROSE, R., "A modern Cinderella story: a comparison of viewer responses to interactive vs. linear narrative in solitary and co-viewing settings", *New Media & Society,* vol. XII, nº 5, 2010, pp. 779-795.

[30] Cfr. SOTO-SANFIEL, M.T., AYMERICH-FRANCH, L. & RIBES, X., "Interactividad y contenido como factores de disfrute en las ficciones interactivas", *Revista Latina de Comunicación Social*, vol. LXIV,   2009,   p.   668-681,   Available   at: http://www.revistalatinacs.org/09/art/853_UAB/RLCS_art853.pdf, Last visit: April 22, 2014.

[31] Cfr. LEE, M. S., HEETER, C. & LAROSE, R., 2010, *op.cit.*; VORDERER, P., KNOBLOCH, S. & SCHRAMM, H, 2001, *op.cit.*

[32] Cfr. SOTO-SANFIEL, M.T.; AYMERICH-FRANCH, L.; RIBES, F.X.,"Impacto de la interactividad en la identificación con los personajes de ficciones", *Psicothema*, vol. XXII, nº 4, 2010, pp. 822-827, Available   at: http://redined.mecd.gob.es/xmlui/bitstream/handle/11162/5158/01720103011494.pdf?sequence=1,   Last visit: April 22, 2014.

[33] Cfr. SOTO-SANFIEL, M.T., AYMERICH-FRANCH, L., RIBES-GUÁRDIA, R., MARTÍNEZ-FERNÁNDEZ, J.R., "Influence of interactivity on emotions and enjoyment during consumption of

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content. They find that interacting with the content can affect certain emotions: participants in the interactive version experience higher interest, curiosity, surprise, fear and blame than those watching the passive version. They therefore conclude that interactivity does not affect the direction of the emotional experience produced by the content, but it can affect its intensity. This study also finds a relationship between emotional experience and the outcome of the interactive movie. Interactive versions with either a happy or a tragic ending produce more happiness and sadness, respectively, than their non-interactive counterparts. Moreover, they also find the emotional response to interactive movies with a sad outcome to be stronger than for versions with happy outcomes. Finally, they observe that an increase in such emotions as sadness or blame in interactive versions gratifies receivers, but this is not the case with emotions such as shame or grief, which decrease enjoyment.[34]

These studies suggest that psychological traits might be an influential factor in determining the relationship that receivers establish with the characters. However, there is a lack of studies that have explored both the relationship between personality traits and essential factors in the reception of narratives.

On the other hand, scholars discussing the effects of interaction have precisely claimed that orientation to interactivity is a characteristic of personality, i.e. the general characteristics of the receivers help to define the overall disposition to interactive contents[35]. Nevertheless, as in the previous case, there is a lack of studies that have explored the relationship between personality traits and interaction with the content. This study intends to help fill these gaps.

1.2 *Personality traits and media consumption*

Although the study of personality traits has been surrounded by intense controversy[36][37] in recent years, *trait theory* has been consolidated as a central field in understanding personality and its implications for human behavior.

Trait theory assumes that individuals can be characterized in terms of relatively enduring patterns of thoughts, feelings and actions. These patterns (traits) can be assessed quantitatively. They also show some degree of time stability and cross-sectional consistence, and are therefore able to influence interests, preferences, values, emotions and decisions. Through these aspects, traits exert their impact on behavior[38].

Multiple taxonomies of traits have been proposed, but the Five Factor Model (FFM) has been shown to be the most comprehensive and productive in personality research. The five dimensions in McCrae and Costa's NEO model represent personality traits at their

audiovisual fictions", *International Journal of Arts and Technologies*, vol. IV, nº 1, 2011, p. 111-129, Available at: http://www.inderscience.com/info/inarticle.php?artid=37774, Last visit: April 22, 2014.

[34] Cfr. Cfr. SOTO-SANFIEL, M.T., AYMERICH-FRANCH, L., RIBES-GUÁRDIA, R., MARTÍNEZ-FERNÁNDEZ, J.R., 2011, *op. cit*

[35] Cfr. HEETER, C, 2000, *op. cit*.

[36] Cfr. MISCHEL, W. & SHODA, Y., "Reconciling processing dynamics and personality dispositions. Annual Review of Psychology", *Annual Review of Psychology,* vol. IX, 1998, pp. 229-258.

[37] Cfr. PERVIN, L.A. "A critical analysis of current trait theory". *Psychological Inquiry*, vol. V, 1994, pp. 169-178,

[38] Cfr. McCRAE, R.R. & COSTA, P.T. "A five-factor theory of personality." In L.A. PERVIN & O.P. JOHN (Eds.), *Handbook of personality. Theory and research*. Guilford, New York, 1999, pp. 139-152; ROMERO, E., VILLAR, P., LUENGO, M.A. & GÓMEZ, J.A. "Traits, strivings and well-being", *Journal of Research in Personality*, vol. 43, 2009, p. 535-546.

highest level of generality: Extraversion, Agreeableness, Conscientiousness, Neuroticism and Openness to experience[39].

Although the specific psychological mechanisms that channel the influence of these traits are not yet fully known, McCrae and Costa assume them to be "basic tendencies" that represent the universal raw material of personality; they are endogenous, biologically determined trends that produce so called "characteristic adaptations" (e.g. attitudes, preferences, motivations, interests). The Big Five have been shown to be relevant in a broad range of behavioral fields[40] (Romero, 2002), and have sometimes been studied precisely in the field of Communication.

Regarding the characteristics of each trait, it has been shown that low scores for Neuroticism are associated to emotionally stable individuals, whereas high levels of the same are related to individuals that experience negative feelings, are likely to have irrational ideas, be less capable to control impulses and cope worse with stress[41]. In Communication studies, a high score for Neuroticism has been related to: 1.- the consumption of TV to pass the time, have company and relax;[42] 2.- low levels of concentration when consuming television;[43] 3.- avoidance of contents that stimulate anxiety and emotional tendencies;[44] 4.- preference for programs that provide entertainment or adjust one's mood;[45] 5.- liking of romantic narratives and soap operas that offer the opportunity to escape daily life and give comfort;[46] 6.- higher attention to contents with negative stimuli when feeling depressed;[47] 7.- better recall of nonviolent television stories and negative recall of violent stories;[48] 8.- dislike of dynamic and danceable music;[49] 9.- use of internet to socialize[50] and avoidance of loneliness[51] and

[39] Cfr. McCRAE, R.R. & COSTA, P.T., *op. cit.*

[40] Cfr. ROMERO, E., "Investigación en psicología de la personalidad: Líneas de evolución y situación actual", *Boletín de Psicología*, vol. CXXIV, 2002, pp. 39-78.

[41] Cfr. COSTA, P. T. Jr. & MCCRAE, R. R., *Inventario de personalidad NEO revisado (NEO PI-R). Inventario NEO reducido de cinco factores (NEO-FFI). Manual professional* (second edition), TEA Ediciones, Madrid, 2002.

[42] Cfr. WEAVER, J.B. III, "Individual differences in television viewing motives", *Personality and Individual Differences,* vol. XII, 2003, pp.1293-1299.

[43] Cfr.KUBEY, R. & CSIKSZENTMIHALYI, M., *Television and the quality of life: How viewing shapes everyday experiences*, Lawrence Erlbaum Associates, Hillsdale, 1990.

[44] Cfr. WEAVER, J.B. III, WALKER, J.R., MCCORD, L.L. & BELLAMY, R.V., "Exploring the links between personality and television remote control device use", *Personality and Individual Differences,* vol. XX, 1996, pp.483-489.

[45] Cfr. ZILLMANN, D. & BRYANT, J. "Entertainment as media effect", in J. BRYANT & D. ZILLMANN (Eds.), *Media effects: Advances in theory and research,* Lawrence Erlbaum Associates, Hillsdale, 1994, pp. 437-461.

[46] Cfr. KRAAYKAMP, K. & VAN EIJCK, K., *op.cit.*

[47] Cfr. GOTLIB, I.H. & MCCABE, S.B., "An information-processing approach to the study of cognitive functioning in depression", In E.F. WALKER, B.A. CORNBLATT & R.H. DWORKIN (Eds.), *Progress in experimental personality and psychopathology research,* Springer, New York, 1992, vol. XV, pp. 131-161.

[48] Cfr. GUNTER, B. & FURNHAM, A., "Sex and personality differences in recall of violent and non-violent news from three presentation modalities", *Personality and Individual Differences,* vol. VII, 1986, pp. 829-837.

[49] Cfr. WEAVER, J.B. III., "Personality and entertainment preferences", in D. ZILLMANN and P. VORDERER (Eds.), *Media entertainment: The psychology of its appeal,* Lawrence Erlbaum Associates, Mahwah, 2000, pp. 235-248.

[50] Cfr. AMICHAI-HAMBURGER, Y. & BEN-ARTZI, E., "Loneliness and Internet use", *Computers in Human Interaction,* vol. XIX, 2003, pp. 71-80; HAMBURGER, Y.A., BEN-HARTZI, E., "The relationship between extraversion and neuroticism and the different uses of the Internet", *Computers in Human Behavior,* vol. XVI, 2000, pp. 441-449.

10.- higher tendency to write *blogs*.[52] Neuroticism has also been related to technophobia.[53]

High ratings for *Extraversion* are linked to sociable individuals that show a preference for groups, enjoy having people around, and who are assertive, active and talkative. These individuals also like excitement and tend to be happy. At the opposite end of the spectrum, introverts are more reserved, independent and constant.[54] In Communication studies, it has been found that individuals with high ratings for extroversion: 1.- watch less television, listen to the radio or read less for pleasure;[55] 2.- seek to consume media that meet their need for interpersonal relationships;[56] 3.- prefer social activities to mediated communication;[57] 4.- reject media as a replacement for interpersonal communication;[58] 5.- pay more attention to reality shows;[59] 6.- listen to urban and pop music;[60] 7.- show interest in contents that allow them to interact with others[61] and 8.- consider interactivity to be suitable for fiction.[62] A relationship has also been found between Extraversion and where subjects perceive themselves to be in online media. Whereas introverts tend to see themselves as they perform online, extraverts perceive that their true identity is shown offline.[63]

People with high Openness to experience are interested both in the outside and inside world, in new ideas and in unconventional values. This factor is especially related with intellectual interests. On the contrary, low ratings for Openness show a tendency to be conventional, to have a conservative appearance and to prefer aspects that are familiar rather than new.[64] In Communication studies, it has been found that individuals with high levels of Openness: 1.- prefer other activities to conventional television because of its low level of interactivity and commitment;[65] 2.- select artistic, informative or erotic contents, i.e. that do not imply intellectual challenges;[66] 3.- dislike soap operas;[67] 4.-

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[51] Cfr. BUTT, S. & PHILLIPS, J. G., "Personality and self reported mobile phone use", *Computers in Human Behavior,* vol. XXIV, nº 2, 2008, pp. 346–360.

[52] Cfr. GUADAGNO, R.E., ODIE, B.M. & ENO, C.E., "Who blogs? Personality predictors of blogging", *Computers in Human Behavior,* vol. XXIV, nº5, 2008, pp. 1993-2004.

[53] Cfr. ANTHONY, L.M., CLARKE, M.C. & ANDERSON, S.J., "Technophobia and personality subtypes in a sample of South African university students", *Computers in Human Behavior,* vol. XVI, 2000, pp. 31-44.

[54] Cfr. COSTA, P. T. Jr. & MCCRAE, R. R., *op.cit.*

[55] Cfr. FINN, S., *op.cit.*

[56] Cfr. CRMAR, M. & KEAN, L.G., *op.cit.*

[57] Cfr. ARGYLE, M. & LU, L., "The happiness of extraverts", *Personality and Individual Differences,* vol. XI, 1990, pp. 1011-1017.

[58] Cfr. FINN, S., *op.cit.*

[59] Cfr. REISS, S. & WILTZ, J., "Why people match reality TV", *Media Psychology,* vol. VI, nº 4, 2004, pp. 363-378.

[60] Cfr. HALL, A., "Audience personality and the selection of media and media genres", *Media Psychology,* vol. VII, 2005, pp. 377-398.

[61] Cfr. HALL, A., 2005, *op.cit.;* WEAVER, J.B. III., BROSIUS, H.B. & MUNDORF, N., "Personality and movie preferences: A comparison of American and German audiences", *Personality and Individual Differences,* vol. XIV, 1993, pp. 307-315.

[62] Cfr. SOTO-SANFIEL, M.T., AYMERICH-FRANCH, L., RIBES, F.X., *op.cit.*

[63] Cfr. AMICHAI-HAMBURGER, Y., WAINAPEL, G. & FOX, S., "On Internet no one knows I'm introvert: Extroversion, neuroticism and internet interaction", *Cyberpsychology and Behavior,* vol.V, 2002, pp. 125-128.

[64] Cfr. COSTA, P. T. Jr. & MCCRAE, R. R., *op. cit.*

[65] Cfr. KUBEY, R. & CSIKSZENTMIHALYI, M., *op. cit.*

[66] Cfr. KRAAYKAMP, K. & VAN EIJCK, K., *op.cit.*

[67] Cfr. *Ibíd.*

appreciate violent contents if they make an aesthetic contribution;[68] 5.- are more interested in new than in conventional media;[69] 6.- like movies because they are a varied source of entertainment and involve openness to new experiences;[70] 7.- like aesthetic challenges,[71] and 8.- are prone to write blogs,[72] socialise by means of Facebook[73] and use the web for entertainment.[74] This factor is the one that best relates to trying new forms of communication and inversely correlates with technophobia.[75]

Individuals with high scores for Agreeableness are fundamentally altruist, show empathy, are willing to help others and believe others are also happy to do the same. On the other hand, people with low levels of Agreeableness are egocentric, suspicious of other people's intentions and reluctant to cooperate.[76] In Communication research, it has been found that individuals with high scores for Agreeableness: 1.- prefer face-to-face contact to media consumption;[77] 2.- like television with popular contents;[78] 3.- react negatively to programs with sensationalist or disturbing elements;[79] 4.- like soap operas and cultural programs with unconventional topics;[80] 5.- prefer simple activities and reject elitist ones;[81] 6.- dislike violent contents,[82] and 7.- consider interactive narratives appropriate for television and would be willing to pay to watch them[83].

Lastly, individuals with high scores for Conscientiousness are wilful, efficient, conscientious, punctual, organized, reliable and decisive.[84] Communication research has not found a clear argument to predict the relationship between Conscientiousness and conventional media use.[85] In fact, some scholars state that the effect of this characteristic is not decisive in television consumption[86] and sometimes it is not even measured.[87]

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[68] Cfr. KCRMAR, M. & KEAN, L.G., *op.cit.*

[69] Cfr. FINN, S., *op.cit.*

[70] Cfr. PALMGREEN, P., WENNER, L. & ROSENGREN, K., "Uses and gratifications research: The past ten years", In K. ROSENGREN, L. WENNER& P. PALMGREEN (Eds.), *Media gratifications research: Current perspectives*, Sage, Beverly Hills, 1985, pp. 11-40.

[71] Cfr. KCRMAR, M. & KEAN, L.G., *op.cit.*

[72] Cfr. GUADAGNO, R.E., ODIE, B.M. & ENO, C.E., *op.cit.*

[73] Cfr. ROSS, C., ORR, E.S., SISIC, M., ARSENEAULT, J.M., SIMMERING, M. G. & ORR, R.R., "Personality and motivations associated with Facebook use", *Computers in Human Behavior,* vol. XXV, 2009, pp. 578–586.

[74] Cfr. TUTEN, T.L. & BOSNJAK, M., "Understanding differences in web usage: The role of need for cognition and the Five Factor Model of Personality", *Social Behavior & Personality,* vol. XXIX, nº 4, 2001, pp. 391-398.

[75] Cfr. ANTHONY, L.M., CLARKE, M.C. & ANDERSON, S.J., *op.cit.*; BUTT, S. & PHILLIPS, J. G, *op.cit..*

[76] Cfr. COSTA, P. T. Jr. & MCCRAE, R. R., *op.cit.*

[77] Cfr. FINN, S., *op.cit.*

[78] Cfr. KRAAYKAMP, K. & VAN EIJCK, K., *op.cit.*

[79] Cfr. *Ibíd.*

[80] Cfr. *Ibíd.*

[81] Cfr. *Ibíd.*

[82] Cfr. KCRMAR, M. & KEAN, L.G., *op.cit.*

[83] Cfr. SOTO-SANFIEL, M.T., AYMERICH-FRANCH, L., RIBES, F.X., *op. cit.*

[84] Cfr. COSTA, P. T. Jr. & MCCRAE, R. R., *op.cit.*

[85] Cfr. FINN, S., *op.cit.*

[86] Cfr. KRAAYKAMP, K. & VAN EIJCK, K., *op.cit.*

[87] Cfr. KCRMAR, M. & KEAN, L.G., *op.cit.*

2. *Aim and Hypotheses*

The present study explores whether users' personality determines their responses to conventional and interactive narratives and different outcomes (tragic vs. happy ending). In particular, it explores the variables of identification with characters, enjoyment, self-perceived physiological sensations, emotional experience and content.
Despite the centrality of those variables in the explanation of entertainment as a response, there is lack of information about their relationship with personality traits. In addition, personality is a relevant source of influence in understanding audience behavior in traditional narratives. Its recent use in studies that have explored new technologies and communication and its results[88] recommend its exploration as a relevant construct to explain the consumption of these products.
Finally, there is an academic need to understand the effects of interactivity on attitudes, motivations and gratifications and to clarify the concept and its dimensions.[89] This study also aims to contribute to the theoretical comprehension of this complex phenomenon.

Previous literature leads us to expect the Big Five to relate to receivers' responses to fiction in accordance with the nature of each trait. Therefore, we expect the following:
- High Neuroticism will relate to more intense emotional reactions (especially to negative emotions) and more negative evaluation of movies;
- Extraversion will relate to higher enjoyment of narratives;
- Openness, a trait characterized by emotional and imaginative vividness, will relate to higher identification with characters and stronger emotional reactions;
- Agreeableness will relate to higher identification with characters, and
- Conscientiousness, a trait associated to self-control and being highly demanding, will relate to lower emotional responses and poorer evaluation of narratives.

Having reached this point, it must be also noted that the main research question of this study is:
- How does interactivity affect the responses of receivers depending on their personality?

According to the evidence referred to previously, it might, for example, be expected that high scores for Neuroticism, which is characterized by high emotional chronic activity, will be associated with more intense reactions in both interactive and non-interactive

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[88] E.g. CORREA, T., WILLARD HINSELY, A. & GIL DE ZÚÑIGA, H., "Who interacts on the Web? The intersection of user's personality and social media use", *Computers in Human Behavior,* vol. XXVI, nº2, 2010, pp. 247-253; GUADAGNO, R.E., ODIE, B.M. & ENO, C.E., *op.cit.*; MOORE, K. & MCELROY, J.C., "The influence of personality on Facebook usage, wall postings, and regret", *Computers in Human Behavior,* vol. XXVIII, nº1, 2012, pp. 267–274; RYAN, T. & XENOS, S., "Who uses Facebook? An investigation into the relationship between the Big Five, shyness, narcissism, loneliness, and Facebook usage", *Computers in Human Behavior,* vol. XXVII, nº 2, 2011, pp. 609-621; SKUES, J.L., WILLIAMS, B. & WISE, L., "The effects of personality traits, self-esteem, loneliness, and narcissism on Facebook use among university students", *Computers in Human Behavior*, vol. XXVIII, nº 6, 2012, pp. 2414–2419; TUTEN, T.L & BOSNJAK, M., *op.cit.;* WOSZCYNSKI, A.B., ROTH, P.L. & SEGARS, A.H., "Exploring the theoretical foundations of playfulness in computer interactions", *Computers in Human Behavior,* vol. XVIII, nº 4, 2002, pp. 369-388.
[89] Cfr. YOO, C.C., "Modeling audience interactivity as the gratification-seeking process in online newspapers", *Communication Theory*, vol. XXI, 2011, pp. 67-89.

conditions. On the contrary, low scores for Neuroticism will be more reactivated by fiction when viewers can exert more control over the story, i.e. interactive fiction.

Nevertheless, this research has another research question:
- Are there different reactions to happy or tragic endings depending on personality traits?

According to the contributions of previous research into the Big Five, we might expect, for example, the Extraverted, who are characterized by being more sensitive to gratifying experiences than to aversive ones, to show more intense reactions to happy content than to tragic content. It might be also expected that individuals with high scores for Agreeableness, who are empathic, altruist and sensitive to the plight of others, will have more intense reactions to tragic content than happy content.
Apart from these two research questions, we expect to answer other questions that might emerge during the course of the study.

3. *Method*

3.1. *Sample*

Three hundred and ten undergraduate Communication Sciences students from a Spanish university voluntarily took part in the experiment. Of the total, 228 were women. Their ages ranged from 18 to 37 (*M*= 20.08, SD= 2.34).

3.2. *Design*

We carried out a quasi-experimental investigation with a two by two between-subject factorial design. Independent variables were content (happy vs. tragic end) and viewing modality (interactive vs. no interactive) (Table 1).

Table 1
Number of participants per experimental condition

Content	Modality	
	Interactive	No interactive
Happy end	97	49
Tragic end	108	56

3.3. *Materials*

We created four versions of a movie to test our hypothesis: interactive with happy ending, interactive with tragic ending, linear with happy ending, and linear with tragic ending. The movie was an adaptation of *Lola Rennt*, by Tom Tykwer (1998), a German movie dubbed into Spanish and which narrates the adventures of a young couple. In the happy ending version, the protagonist managed to get the money that she needed to save her boyfriend's life (she actually got more money than needed), while in the sad ending,

she did not manage to get the money and could not prevent her boyfriend from dying when he was run over by an ambulance. Each movie lasted 15 minutes and the total length of the experiment was 40 minutes. According to the available classifications, the interactive fiction that we created requested role representation[90], was accessible[91], and the user participated by selecting the plot[92].

3.4. *Procedure*

The participants were randomly assigned to experimental conditions. They were each assigned an 18'' screen computer with a mouse and headphones and watched the movie individually. A researcher was in the room at all times.

First, the participants filled in a computer-based survey that included demographic, media consumption habits and personality variables. Afterwards, a set of instructions appeared onscreen as follows: "personality test is over, thanks for your answers. Now, you will be able to watch a movie. Please, pay attention to your emotions and feelings while you watch it". In the interactive versions, the following was added: "In this film you will decide between several options to continue the story. The options you choose will allow you to build your own version of the story. You decide the plot". After watching the film, the participants filled in another computer-based survey to evaluate the dependent variables through self-reported scales.

The participants in the interactive condition selected the plot on six occasions. Each time the participant was able to choose from two options that appeared onscreen (e.g. "How do you want this guy to find happiness? Short term/Long term"). The film automatically paused at each decision point until the participant selected an option using the mouse. To ensure that the content was the same for all participants and that the effect on their responses was attributed to the plot selection, the outcomes of the decisions regarding the story were the same for both options. The participants were induced to believe that each option led to different content, which was possible through carefully designing the movie script. For the final choice, for example, the participants were presented with this question: "Do you want the ambulance to stop?" The two options were "Yes" and "No". Whatever their choice, the outcome was the same, but made sense for both: the ambulance continued moving forward but was stopped by the sudden appearance of some people crossing the street while carrying a huge pane of glass. The ambulance tried to stop but hit the glass, which shattered into pieces. The protagonist, who was running to meet her boyfriend, also stopped to watch all this, which detained her and meant she was unable to prevent his death. As stated earlier, the simulated selection of the plot was the same for all six choices.

The participants in the linear version watched the movie in the passive conventional manner. The content was exactly the same in both the interactive and the non-interactive conditions.

We pre-tested the study with 20 subjects. Besides making sure that the whole process worked properly, we pre-tested the "illusion of decision" in the interactive version to make sure the subjects believed that they really were deciding how the narrative would continue. We also pre-tested comprehension of the movies and whether they were long enough to produce the observed psychological processes, as we were able to confirm by interviewing these subjects afterwards.

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[90] Cfr. AARSETH, E. , *op. cit*.

[91] Cfr. HERRERA, C., *op. cit*.

[92] Cfr. RYAN, M.L. *Narrative as virtual reality*. The John Hopkins University, Baltimore, 2001.

3.5. *Measures*

We measured personality, identification with characters, content evaluation, self-perceived physical sensations, self-perceived emotions during the consumption and enjoyment.

Personality was measured using the short version of the revised NEO Personality Inventory (NEO-FFI) by Costa & McCrae (Spanish adaptation of 2002).[93] The questionnaire contained 60 items with five point scale responses (ranging from totally disagree to totally agree). Previous research has widely used the NEO-FFI. The instrument has been proven to be reliable and valid in the Spanish population.[94]

Identification with the characters was measured using the EDI scale,[95] validated for interactive fiction by Soto-Sanfiel *et al*.[96] This scale contains 16 items with five-point scale responses (1=nothing / 5=a great deal) and includes the following announcement: "Now, we will ask you some questions about the characters in the movie". We created an index composed of identification with characters by adding the values obtained for all items (α=.92, M = 50.68, SD = 10.76). Furthermore, for this study, we created two sub-scales by grouping the items that defined the two main factors of the scale as found in Soto-Sanfiel *et al*.[97]: *Cognitive-emotional empathy* (α=.76, M =18.21, SD=3.25) and *Merging with the character* (α=.76, M=32.46, SD=8.43).

For *Content evaluation,* the participants evaluated the movie ("what do you think about the movie?") on a 12-item five-point semantic differential scale with pairs such as pleasant-unpleasant, good-bad, short-long and funny-boring.[98] An index was created by adding all scores for each item. Internal consistency was acceptable (α=.75, M=42.75, SD=6.41).

Self-perceived physiological sensations during the movie were evaluated for 14 different sensations (increase in breathing rate, sweaty hands, etc.). Five-point scales were created ranging from "I did not feel the sensation at all" to "I experienced the sensation with high intensity". Following Igartua & Paez[99] we used the Pennebaker Inventory of Limbic Languidness (PILL)[100] as a reference. An index of self-perceived physiological sensations was created by adding the scores for each sensation. Internal consistency was acceptable (α=.84, M=24.30, SD=7.81).

Self-perceived emotions were evaluated using a modified version of the Differential Emotions Scale by Izard[101] following Igartua & Páez.[102] The participants evaluated the extent to which they experienced 11 emotions (e.g. interest, curiosity, happiness, distress). Five-point scales ranging from "I did not experience the emotion at all" to "I experienced the emotion with high intensity" were used. Principal component analysis

[93] Cfr. COSTA, P. T. Jr. & MCCRAE, R. R., "Four ways five factors are basic", *Personality and Individual Differences,* vol. XIII, n º6, 1992, pp. 653-665; COSTA, P. T. Jr. & MCCRAE, R. R., *op.cit.*
[94] Cfr. COSTA, P. T. Jr. & MCCRAE, R. R., *op.cit.*
[95] Cfr. IGARTUA, J.J. & PÁEZ, D., "Validez y fiabilidad de una escala de empatía e identificación con los personajes". *Psicothema,* vol. X, nº 2, 1998, pp. 423-436; IGARTUA, J. & MUÑIZ, C., "Identificación con los personajes y disfrute ante largometrajes de ficción. Una investigación empírica", *Communication and Society/Comunicación y Sociedad,* vol. XXI, nº 1, 2008, pp. 25-52.
[96] Cfr. SOTO-SANFIEL, M.T., AYMERICH-FRANCH, L. & RIBES, F.X., *op. cit.*
[97] Cfr. *Ibíd.*
[98] Cfr. IGARTUA, J.J. & PÁEZ, D., *op.cit.*
[99] Cfr. *Ibíd.*
[100] Cfr. PENNEBAKER, J.W., *The psychology of physical symptoms*. Springer-Verlag, New York, 1982.
[101] Cfr. IZARD, C., *Patterns of emotions,* Academic Press, New York, 1972.
[102] Cfr. IGARTUA, J.J. & PÁEZ, D., *op.cit.*

(with Varimax rotation) showed two factors that explained 51.14% of variance. This enabled the creation of two indexes. The first, called *Rejection*, included the emotions: disgust, anger, embarrassment / shame, contempt and guilt (α=.70; *M*=8.57, *SD*=3.31). The second, called Attraction/Excitement, grouped interest/curiosity, surprise, distress, happiness, fear and sadness (α=.71; *M*=17.54, *SD*=4.10).

Enjoyment was measured by creating a 4-item 5-point scale ranging from *not at all* to *very much*: "I liked the movie", "I enjoyed the movie", "I felt entertained by the movie", and "I felt gratified by the movie". An index of enjoyment was created by adding all items. Internal consistency was acceptable (α=.91, M=13.84, SD=4.10).

4. *Results*

4.1. *Descriptive analyses: Personality traits in the studied sample*

Table 2 shows a descriptive analysis of the Big Five assessed on participants using NEO-FFI. It also shows comparatives between participants that took part in the interactive vs. the linear version.

Table 2
Descriptive analysis of Big Five on the sample of the study and comparatives between interactive and linear conditions

	Whole sample	Interactive modality	Linear modality	*F*(*df*)
	M (SD)	*M (SD)*	*M (SD)*	
Neuroticism	37.24 (8.28)	37.38(8.27)	36.97(8.31)	.16(1/308)
Extraversion	44.68(7.36)	44.23(7.87)	46.57(7.43)	2.09(1/308)
Openness	37.11(6.34)	37.27(6.24)	36.79(6.56)	.393(1/308)
Agreeableness	33.39(5.39)	33.38(5.40)	33.42(5.40)	.004 (1/308)
Conscientiousness	41.68(7.84)	41.21(7.89)	42.59(7.71)	2.15 (1/308)

Note. None of *F* tests was significant with p<.05

The results show that both groups (interactive and linear) present similar personality profiles. There are no significant differences for any of the evaluated personality traits. Therefore, both groups are equivalent in individual characteristics and members.

4.2. *Analyses of correlation: Do personality traits relate to narrative reception?*

In order to find out how personality relates to the reception of fiction, we performed a correlation analysis of the whole sample between the Big Five and the reception indicators used in this study (identification, enjoyment, Emotions, Self-perceived physiological sensations and content evaluation). The results (zero-order coefficients) are presented in Table 3.

Table 3

Correlations among the Big Five Personality traits and fiction reception variables

	N	E	O	A	C
Identif. characters (Global scale)	.10	.15**	.27***	.27***	-.04
Cognitive-emotional empathy	.06	.22***	.29***	.22***	.09
Merging with the character	.10	.10	.23***	.26***	-.09
Enjoyment	-.00	.12*	.11	.25**	-.14*
Emotions (Global score)	.22***	.00	.15**	.09	-12*
Rejection	.21***	-.09	.09	-.04	-.06
Attraction	.17**	.08	.16**	.18**	-.12*
Self-perceived physiol. sensations	.18**	.07	.19**	.11*	-.08
Movie evaluation	-.01	.12*	.12*	.24***	-.13*

*Note. * p<.05; ** p<.01; ***; p<.001*

Although the correlation coefficients show a moderate effect, Table 4 indicates that there are significant relationships between the Big Five and the reception of narrative variables.

The results show that identification with characters tends to be higher in individuals that score high for Extraversion, Openness and Agreeableness. The same pattern appears for Cognitive-emotional empathy. The factor *merging with the character* positively correlates with Openness and Agreeableness.

Likewise, enjoyment shows small but significant correlations with Extraversion, Agreeableness and Conscientiousness. The sign of correlations shows that enjoyment tends to be higher in individuals that score high for Extraversion and Agreeableness, but lower in individuals that score high for Conscientiousness.

Regarding emotions, we found that more intense emotional reactions were linked to higher scores for Neuroticism and Openness, and lower scores for Conscientiousness. We got the same results for the Attraction variable. Rejection is only associated with high Neuroticism.

Intensity in self-perceived physiological sensations is also related with high Neuroticism, high Openness and Agreeableness.

Finally, content evaluation tends to be more positive in individuals who score high for Extraversion, Openness and Agreeableness, and more negative in individuals that score high for Conscientiousness.

4.3. *Moderator effects between personality and modality: Does interactivity have a different effect depending on personality?*

In order to observe whether interactivity has a different impact depending on personality, we carried out a moderation effects analysis, following the well-known

analysis scheme by Baron and Kenny,[103] which involved performing hierarchical regression analyses by introducing the following variables as predictors: 1) personality traits (variables were previously centered to minimize problems associated with multicollinearity) and fiction modality (interactive/linear) and 2) multiplicative personality per modality terms. According to Baron and Kenny,[104] a significant multiplicative effect indicates substantial moderator effects between predictor variables. We analyzed all possible interactions between factors and modality, with a regression analysis for each indicator of fiction reception. The final results of the regression equations are presented in Table 4.

Table 4

Regression analyses to study moderator effects between personality traits and narrative modality (interactive-linear)

	Identif. (Glob.)	Empat.	Merg. charact.	Enjoy ment	Emoti. (Glob.)	Rejecti on	Attracti on	Physio. Sens.	Film evaluat.
N	-.03	-.22	.03	.06	.46**	.40*	.37*	.47**	.03
E	-.10	-.16	-.07	.04	.19	.06	.23	.29	-.09
O	.06	.04	.06	-.06	-.16	.00	-.25	-.12	.01
A	.27	.13	.30	.18	.13	-.02	.23	.12	.29
C	.11	.19	.07	.02	-.10	-.16	-.02	.04	.01
Modal.	-.11*	-.12*	-.09	-.04	-.12*	-.06	-.14**	.01	-.03
N x Modal.	.20	.39*	.10	-.06	-.24	-.23	-.17	-.29	-.01
E x Modal.	.28	.41*	.20	.08	-.12	-.10	-.10	-.19	.23
O x Modal.	.15	.18	.12	.14	.29	.08	.38*	.29	.08
A x Modal.	-.01	.05	-.04	.07	-.01	.01	-.03	.00	-.05
C x Modal.	-.21	-.14	-.21	-.22	.00	.14	-.11	-.14	-.29
R	.45	.47	.41	.35	.35	.20	.39	.33	.34
R square	.20	.22	.17	.12	.12	.06	.15	.11	.12
Corrected R square	.17	.19	.14	.09	.09	.03	.12	.07	.09

Note. In the columns, for each predictor variable, beta with their significance levels are presented:

*p<.05; ** p<.01; ***; p<.001

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[103] Cfr. BARON, R.M. & KENNY, D.A., "The moderator-mediator variable distinction in social psychological research: Conceptual, strategic and statistical considerations", *Journal of Personality and Social Psychology,* vol. LI, 1986, pp. 1173-1182.
[104] Cfr. BARON, R.M. & KENNY, D.A., *op.cit.*

The personalities per modality interactions show significant moderator results for Cognitive-emotional empathy and attraction/excitement. Particularly for Cognitive-emotional empathy, we found significant multiplicative effects for Neuroticism and Extraversion. In Attraction/Excitement, we found significant multiplicative effects in Openness.

In order to further examine the nature of these three interactive effects, Figures 1 to 3 depict regression slopes corresponding to participants in the interactive and linear conditions[105].

Figure 1. Moderator effects of Neuroticism and modality (interactive-linear) on cognitive-emotional empathy.
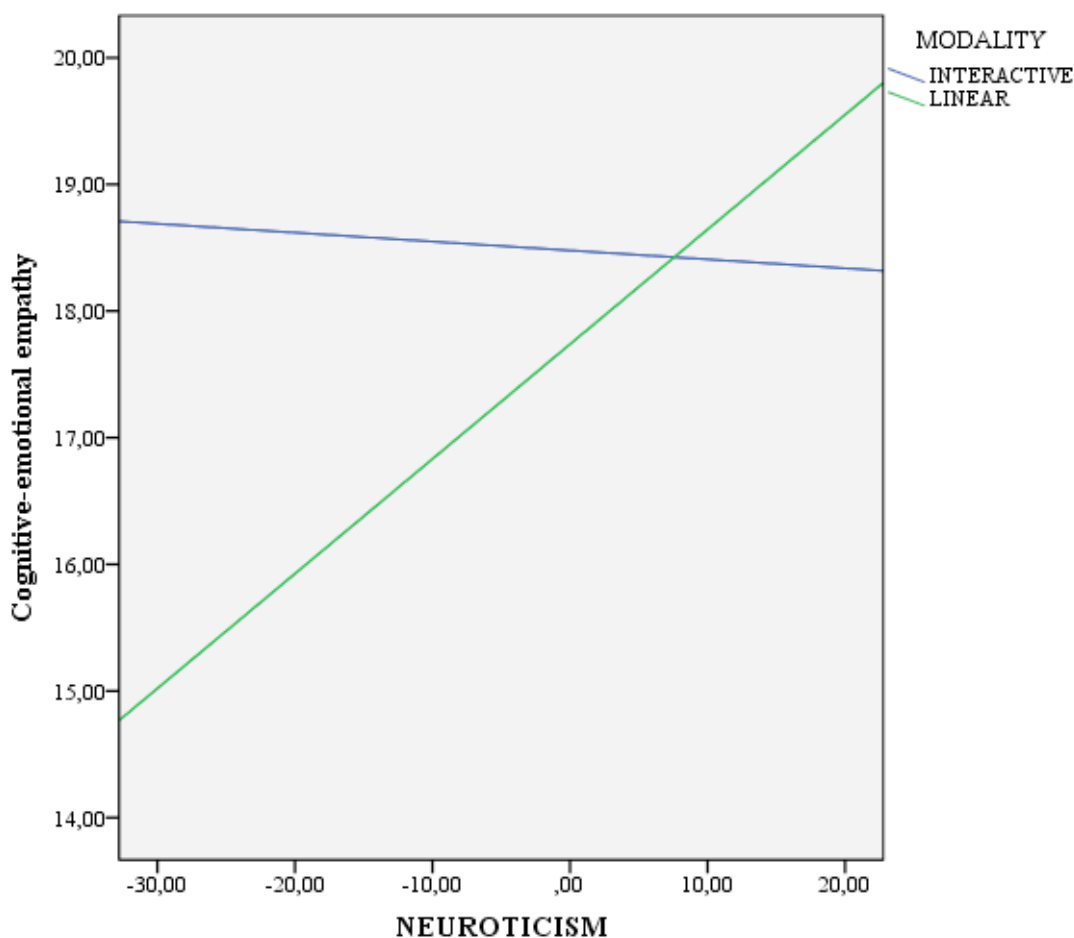
Figure 1, which shows the moderating effects of Neuroticism x modality, reveals that high scores for Neuroticism get similar scores for empathy in both modalities (interactive and linear). However, differences appear for individuals that score low for Neuroticism, whereby there is higher empathy in the interactive condition. These results suggest that the interactive modality activates cognitive-emotional empathy, regardless of Neuroticism. In the linear condition, the differences between high and low scores for Neuroticism become more evident.

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[105] Note that, as mentioned above, scores on the Big Five were centered with a mean equal to 0. This is the reason why there are negative and positive scores in the figures.

Figure 2. Moderator effects of Extraversion and modality (interactive-linear)
on cognitive-emotional empathy.
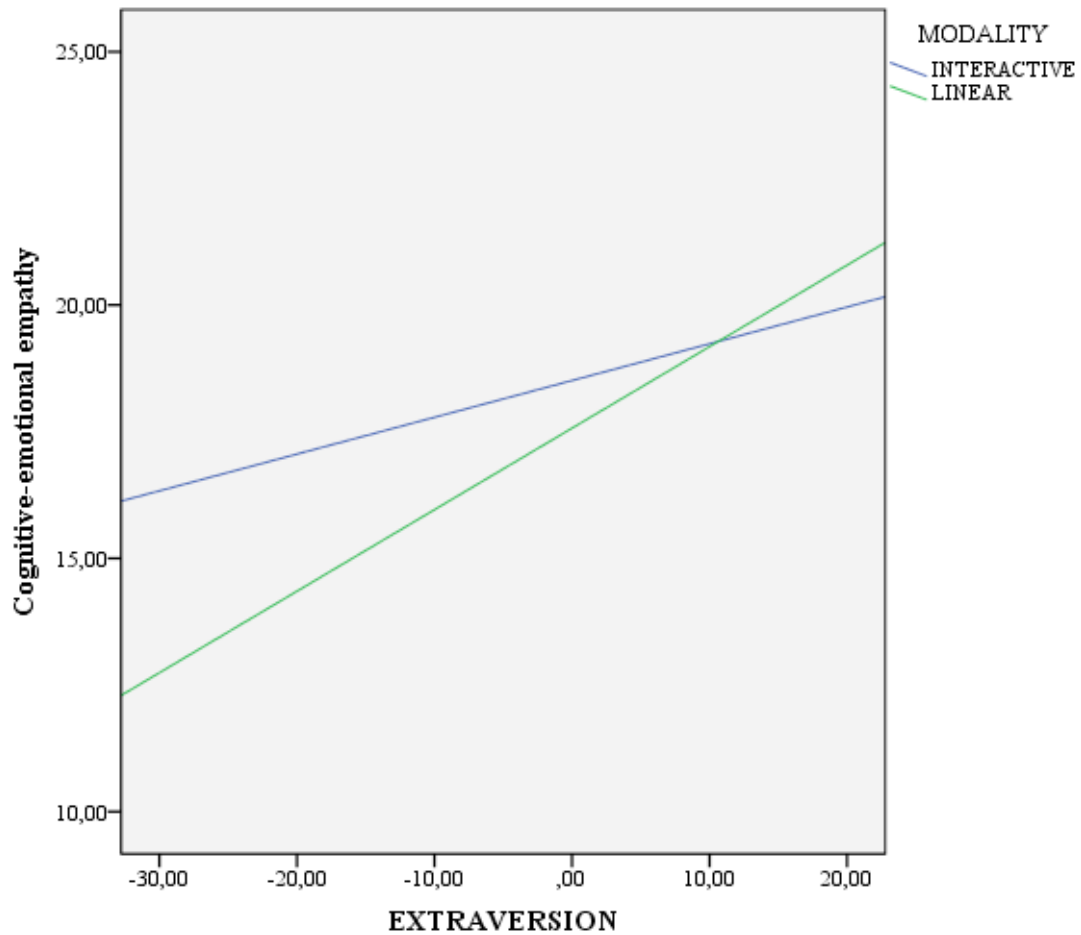
On the other hand, the representation of the effects of Extraversion x modality (depicted in Figure 2) shows that in both conditions (interactive and linear) extraverts tend to show greater empathy. However, the slope is more pronounced in the linear condition, i.e. Extraversion effects are more intense in the non-interactive condition than in the interactive.

A similar pattern is found when the effects of Openness x modality on empathy are observed. Although, according to the correlation analysis, high Openness tends to be associated with high empathy, these effects are stronger in the linear condition than in the interactive condition.

Figure 3. Moderator effects of Openness and modality (interactive-linear) on Attraction.
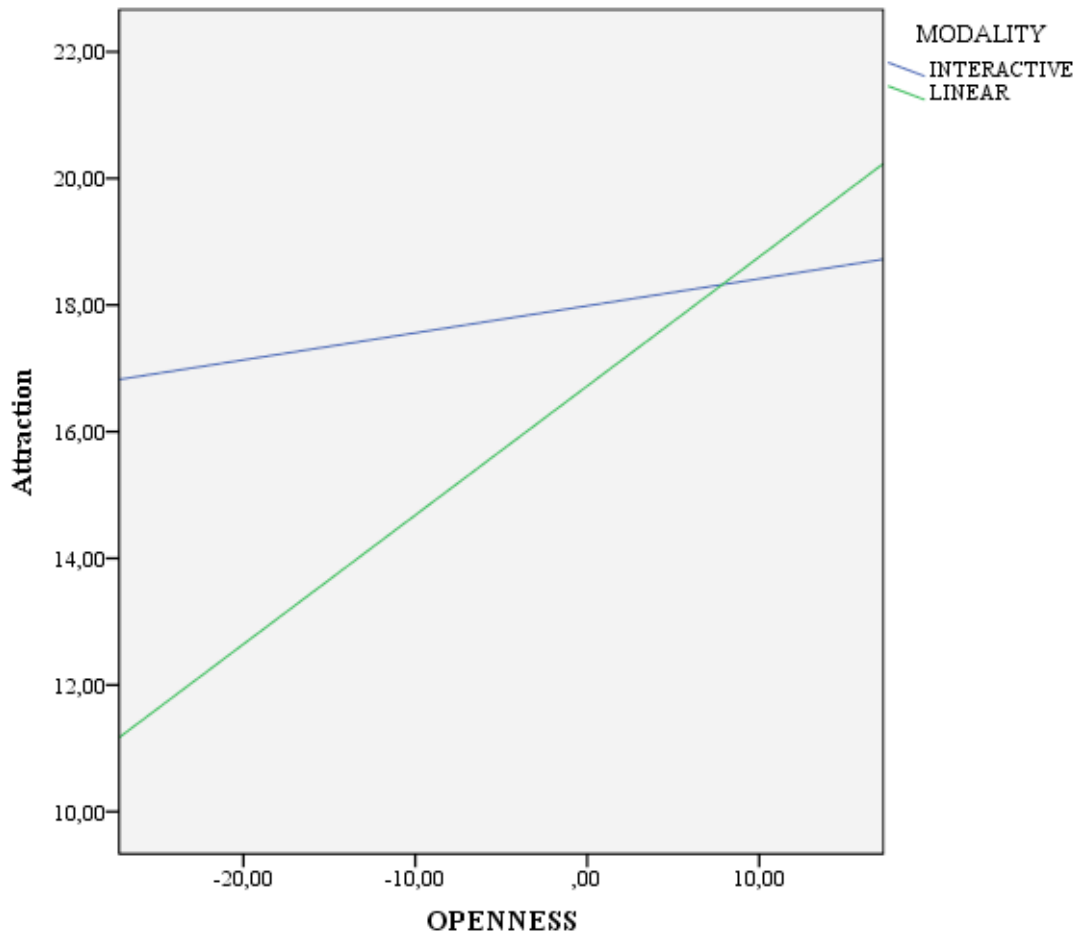
The results for the effects of Openness x Modality considering the emotional factor of attraction/excitement as a criterion are shown in Figure 3. This figure shows that the intensity of emotional attraction is similar in the interactive and linear conditions for those individuals that score high for Openness. However, individuals that score low for Openness are the most affected by interactivity: intensity of their emotional reactions is higher in the interactive condition than in the linear condition.

4.4. *The role of content in interactive fiction: Do different effects occur depending on personality traits?*

In order to examine whether the content of interactive fiction (happy – tragic) affects users differently depending on personality, we carried out new moderation analyses. Considering the data of the participants in the interactive modality, we introduced personality traits, content and the multiplicative terms personality x content to our regression analyses. The results are presented in Table 5.

Table 5

Regression analysis to study moderator effects between personality traits and content (happy-tragic) in the interactive condition

	Identif. (Glob.)	Empat.	Merg. charact.	Enjoy ment	Emoti. (Glob.)	Rejecti on	Attracti on	Physio. Sens.	Film evaluat.
N	-.14	-.06	-.16	-.24	.01	.06	.07	.08	-.28
E	.08	.00	.10	-.39	-.17	-.15	-.13	-.09	-.47*
O	.61**	.61**	.54*	.53*	.20	.07	.26	.12	.36
A	.43*	.46*	.38	.32	.35	.11	.46*	.64*	.30
C	.09	.05	.09	-.02	-.16	-.38	.01	-.12	-.05
Content	.04	.02	.05	.15	-.12	-.17*	-.05	.03	.10
N xCont.	.27	.12	.29	.28	.31	.20	.20	.19	.31
E xCont.	.00	.14	-.04	.52*	.28	.31	.31	.28	.57*
O xCont.	-.45*	-.43*	-.40	-.52*	.26	-.24	-.24	-.02	-.30
A xCont.	-.16	-.27	-.11	-.11	-.23	.26	-.26	-.45*	-.06
C xCont.	-.68	.14	-.19	-.00	.04	-.12	-.12	.05	-.06
R	.41	.39	.39	.39	.37	.34	.37	.36	.36
R square	.17	.15	.15	.15	.14	.11	.14	.13	.13
Corrected R square	.12	.10	.11	.10	.09	.06	.09	.08	.08

Note. In the columns, for each predictor variable, beta with their significance levels are presented: $p<.05$; ** $p<.01$; ***; $p<.001$

We found significant moderator effects between personality and content in Openness, Extraversion and Agreeableness. In particular, content interacts with Openness in the prediction of identification with characters and, within its components, with cognitive-emotional empathy. Figure 4 shows the moderator effects of Openness and content on identification with characters in the interactive condition. A similar pattern is obtained for cognitive-emotional empathy. The results show that while happy content elicits greater identification with characters in individuals with low scores for Openness, the tragic ending elicits greater identification among those with high scores for Openness.

We also find moderator effects for the enjoyment variable. Specifically, Extraversion and Openness show significant multiplicative effects. Figures 4 and 5 show these effects.

Figure 4. Moderator effects of Openness and content (tragic-happy)
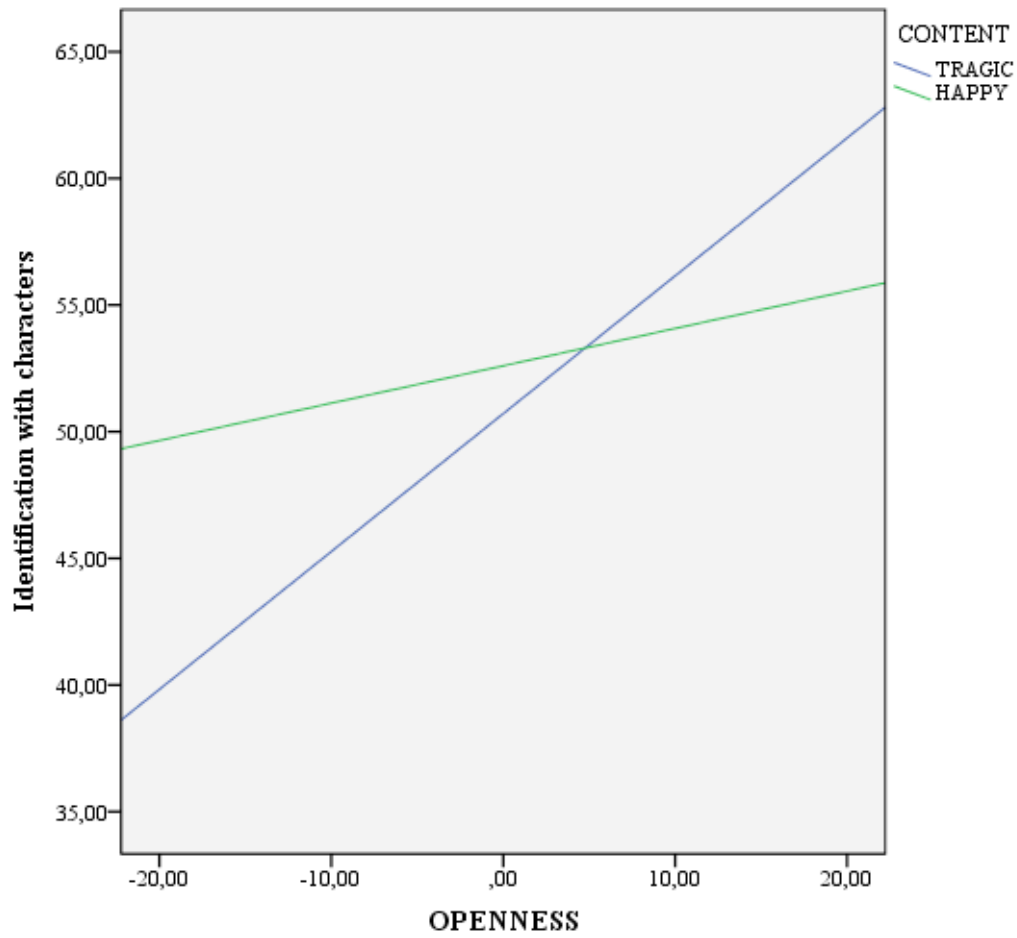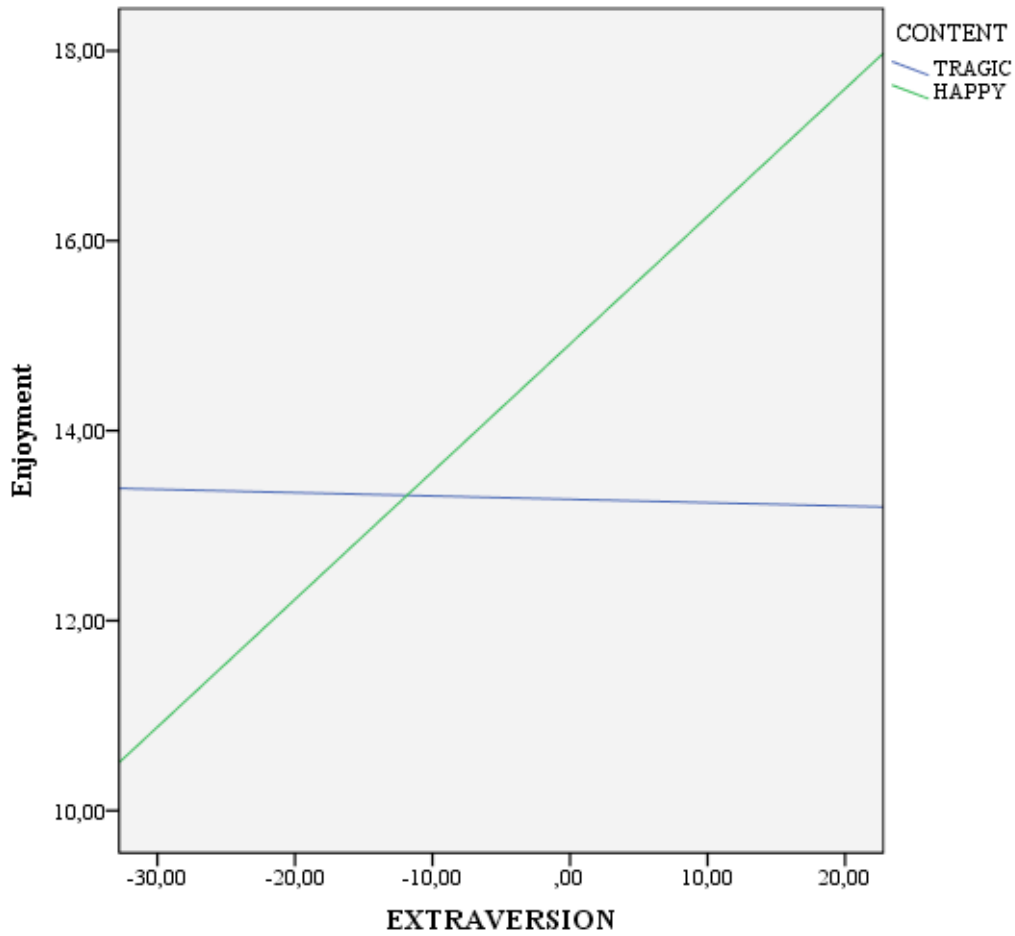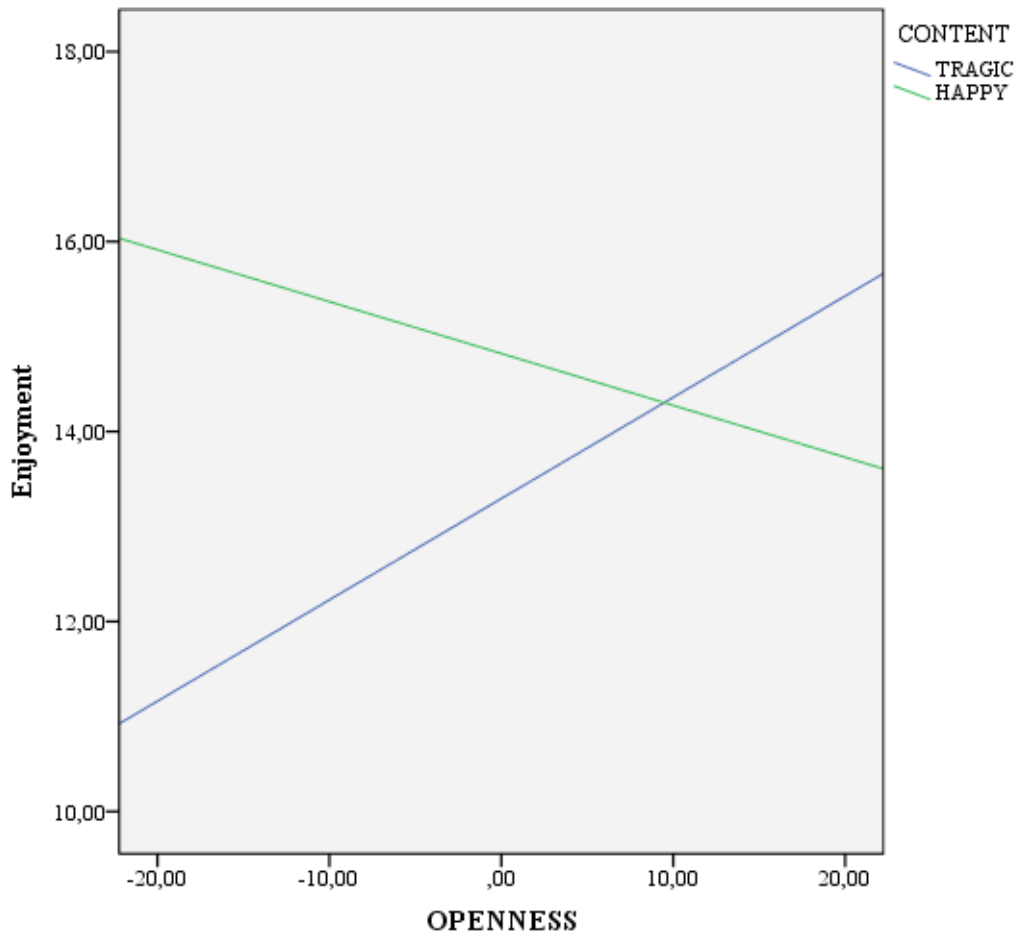on identification with characters in the interactive condition.

Figure 5. Moderator effects of Extraversion and content (tragic-happy)
on enjoyment in the interactive condition.

The results for Extraversion x content (Figure 5) indicate that the happy condition evokes greater attraction among more extraverted participants, while the tragic condition has a similar effect both on high and low scorers for Extraversion. The results for Openness x Content (Figure 6) show that individuals with low scores for Openness enjoy the happy version more, whereas the opposite occurs for those with high scores for Openness: they enjoy the tragic version more.

Figure 6. Moderator effects of Openness and content (tragic-happy)
on enjoyment in the interactive condition.

Regarding self-perceived physiological sensations, the regression analysis reveals a moderator effect between content and Agreeableness (Figure 7). Specifically, it is noted that while low Agreeableness implies more intense physiological sensations in the happy condition, less agreeable subjects experience more intense physiological sensations when watching the negative content.

Figure 7. Moderator effects of Agreeableness and content (tragic-happy)
on physiological sensations in the interactive condition.
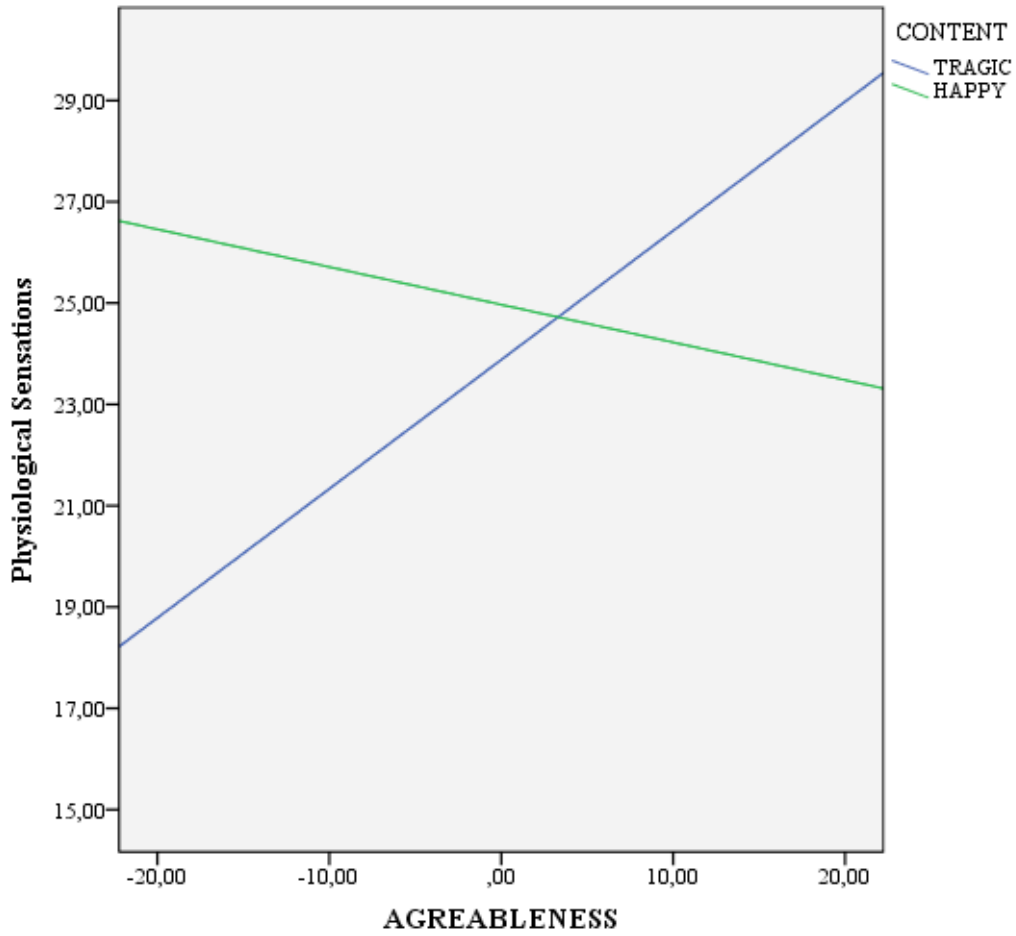
Finally, Figure 8 presents the results of the moderator effects between Extraversion and Content considering content evaluation as a variable.

Figure 8. Moderator effects of Extraversion and content (tragic-happy) on film evaluation in the interactive condition.
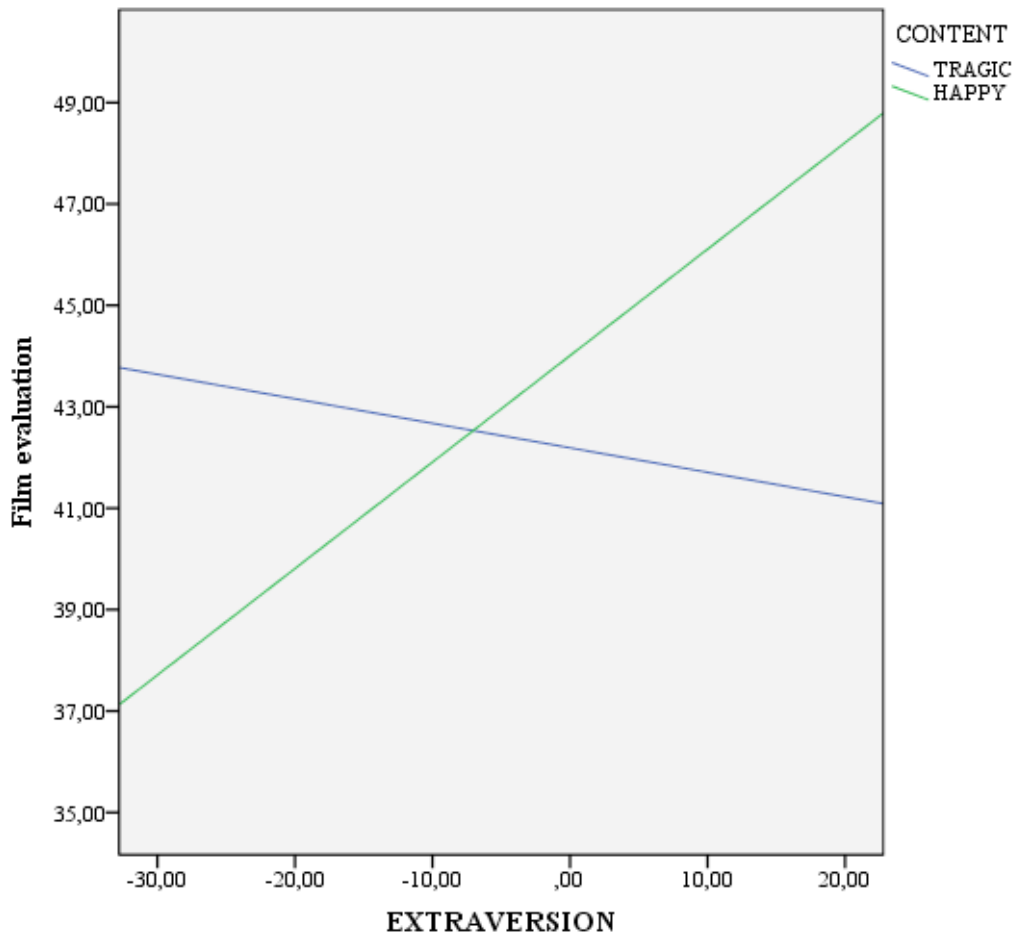
The results show that extraverts evaluate the movie with a happy ending more positively than the tragic ending. This pattern does not appear for those with low Extraversion, who tend to evaluate the movie with tragic content more positively. We also carried out a regression analysis to detect the moderator effects of Content x Personality in the linear condition. The results do not show differential effects of content depending on personality in the non-interactive condition (Table 6). Therefore, the content only has a different effect depending on personality traits in the interactive condition.

Table 6
Types of interactivity in storytelling according to Ryan (2001)

Type	Description
Changing the perspective	It allows playing with different layers of the story, to change the character, to listen to another version of events, or to follow another plot line.
Evaluation of content	The system asks users about their opinion about the content by means of chat or forums in order to promote participation.
Exploring possibilities	The user has the possibility to try all alternatives and choose one. The purpose of the interaction is not to change the plot, but to observe all the offered possibilities.
Keep on moving	The system constantly invites the user to click to allow the story to continue, but the user cannot see beyond the offered part or links.
Participating in the creation	The system asks participants to write fragments that complement the content, to participate as a character in a game, or to engage in a chat conversation to build a collective story.
Retrieving documents	The interactivity is similar to that offered by search engines. An option is written by the user and the software answers with all the possibilities. The system works as a tutorial.
Selection of the plot	The system offers several options for the user to continue with his/her participation. The user will select from among the offered possibilities to follow the hero.
Solving problems	The system presents challenges and tests to be solved in order to advance in the story.

5. *Discussion*

This research makes progress in the identification of the conditions in which interaction with the content is influential on users' perceptions by providing empirical results that inform and enhance theory building regarding interactivity, which has been one of the demands in the field of interactivity, where there is a lack of consistent empirical data on the effects of interaction with content but a great deal of theoretical discussion about the concept and its implications[106].

This study explores the reception of interactive contents, and the effect of interactivity, through a model that takes into account the properties of the content, the perceptions of the users, the individual differences and the outcomes. The study observes interactivity by taking into account predictors, mediators, moderators and outcomes, as has been also claimed by interactivity scholars[107]. Although the results of this study are also of interest to researchers in the general domain of narrative reception, as they provide

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[106] Cfr. BUCY, E.P. & TAO, C-C., *op cit.*

[107] Cfr. BUCY, E.P. & TAO, C-C., *op.cit.*

much-needed information about the relationship between personality traits and specific fundamental aspects of the enjoyment of narratives[108], they are also useful for our comprehension of the extent to which orientation to interactivity is a characteristic of personality, as has been theoretically proposed[109].

Specifically, this study helps to improve our understanding of the psychological reactions of the receptors of audiovisual entertainment and the effects of new interactive manifestations depending on their personality. In particular, it observes the relationship between personality traits and receivers' responses to interactive fiction and helps to better understand the effect of interactivity on audiovisual consumption as well as critical aspects that explain media entertainment that have been absent from previous studies, specifically, identification with characters, enjoyment, content evaluation and the nature of sensitive and emotional consumption experiences. Furthermore, the study also helps to expand the scope of Personality Psychology as it analyzes the influence of personality traits on specific aspects of behavior in relation to communication technologies. The results are of interest both to scholars and the audiovisual industry. In particular, they will help the latter to optimize the creation and diffusion of audiovisual messages. User personality might be considered a variable for offering the audience personalized media products that are more suited to their preferences.

Although the effects are moderate, this study supports the hypothesis that the Big Five relate receivers' responses to narratives according to the nature of each factor as described by the previous literature. Specifically, this investigation confirms the hypothesis that Neuroticism is linked to more intense emotional reactions among receivers of fiction. Our results show that individuals scoring high for this trait experience more intense emotions during the consumption of the narrative (attraction and rejection; especially the latter) as well as more intense self-perceived physiological sensations. These results are consistent with the emotional, dissatisfied and negative vision that defines this personality dimension.[110]

On the other hand, this study confirms the hypothesis that Extraversion is related to higher narrative enjoyment, as it was predicted in this work. Other results of this study show that Extraversion is related to identification with characters and with cognitive-emotional empathy. Although the latter findings were not specifically predicted by this study, they are consistent with the basic ingredients of Extraversion, which include sociability and interpersonal sensitivity[111].

This study also confirms the hypothesis that Openness shows a pattern of results consistent with the emotional vividness, curiosity and exploration that defines subjects scoring high for this trait[112]. In this investigation, we found a relationship between this factor and positive content evaluation, identification with characters, emotional reaction and intensity of self-perceived physiological sensations.

Furthermore, this study confirms the hypothesis that Agreeableness is related to higher identification with characters, as expected. It is also found that Agreeableness is related with higher enjoyment, more intensity in self-perceived physiological reactions and better movie evaluations. Again, although these results were not hypothesized, they are consistent with the characteristics of receptivity and empathy of individuals scoring high in this dimension[113].

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[108] Cfr. IGARTUA, J.J. & MUNIZ, C., *op.cit.*

[109] Cfr. HEETER, C., *op.cit.*

[110] Cfr. COSTA, P. T. Jr. & MCCRAE, R. R., *op. cit.*

[111] Cfr. *Ibíd.*

[112] Cfr. *Ibíd.*

[113] Cfr. *Ibíd.*

Finally, this study confirms the hypothesis that Conscientiousness, consistent with its characteristics of high self-control, perfectionism and demand[114], is related with less emotions, enjoyment and positive evaluations during the consumption of audiovisual narratives.

Regarding the role of interactivity in the consumption of narratives, this study finds that interactivity induces different responses depending on personality traits. This result challenges studies regarding the effects of interaction with narratives that do not consider interpersonal variability. In particular, as expected, the study finds that interactivity generates higher cognitive-emotional empathy with characters in individuals with low Neuroticism (defined as less anxious, vulnerable and emotional), in contrast with individuals with high Neuroticism. As noted in the introduction, individuals with high Neuroticism are highly emotionally active. Therefore, they may be less affected by intense situational conditions, such as interactivity. Although not hypothesized, this pattern also appears in Extraversion and Openness, which shows that interpersonal differences are more highlighted in the linear condition than in the interactive one.

In the light of classic Personality Psychology, these results support the idea that interaction with the narrative is a strong or activating situation that attenuates the effects of personality[115] i.e., linear traditional consumption should be described as a "weak" situation in which personality traits are manifested as they have been characterized. Interactive consumption standardizes reactions and weakens the effects defined by each personality trait. Our findings provide evidence that the inclusion of interactivity modifies the relationship receivers establish with narratives[116] and challenge the traditional author-message-audience relationship[117]. The results also confirm that using interactive fiction in research even sheds light on the underlying mechanisms of the conventional narrative - audience relationship[118].

However, note that, in general, effects of strong intensity have not been found. Consequently, these results must be replicated by other studies to corroborate whether the findings are robust and consistent. On the other hand, these findings entail other new concerns that future studies should address. First, it is necessary to identify and explore other situations of audiovisual consumption in which the inclusion of interactivity attenuates or alters the effect of personality. Second, it is necessary to observe how the effects of interactivity may be modulated by the specific facets of the Big Five.[119] Finally, it is necessary to consider the broader implications of these results in fields such as education, health and entertainment.

Regarding content, the results of this study support the prediction that there are different reactions to tragic and happy endings depending on personality traits. This study shows differences only in the interactive situation. Choosing a happy or a tragic ending that has consequences for the characters affects users in different ways, depending on their personality traits. This is consistent with what was stated previously: that interactivity modifies how different personality types relate to content. The possibility of selecting the plot has stronger effects on users' responses than passive viewing.

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[114] Cfr. *Ibíd.*

[115] Cfr. MISCHEL, W. "The interaction of person and situation", in D. MAGNUSSON & N.S. ENDLER (Eds.), *Personality at the crossroads: Current issues in interactional psychology*, Lawrence Erlbaum Associates, Hillsdale, 1977, pp. 333-352.

[116] Cfr. COVER, R., *op.cit.*; KLIMMT, C., HEFNER, D. & VORDERER, P., *op.cit.*

[117] Cfr. COVER, R., *op.cit.*

[118] Cfr. HEETER, C., *op.cit.*

[119] Cfr. COSTA, P. T. Jr. & MCCRAE, R. R., *op.cit.*

Also, consonant with previous personality research,[120] this study finds that individuals with high scores for Extraversion show greater enjoyment when they choose the happy ending. Also as expected, individuals with high Agreeableness exhibit greater reactivity to the tragic content.

This study also finds that individuals with high Openness enjoy the experience more and feel more identified with characters when they choose the tragic ending whereas individuals scoring low for Openness enjoy the experience more when they choose the happy ending. To understand this result, we need to explain the content of the tragic version in detail. Although the protagonist tries to get the money in a conventional way, she then needs to rob a bank to get it and save her boyfriend's life. Despite her efforts, her boyfriend dies when accidentally run over by an ambulance. The fact that individuals with high Openness enjoy the interactive version that has a tragic ending more highlights their greater attraction for risky, challenging and complex situations.[121]

Furthermore, this result is consistent with how individuals with high Openness enjoy activities that imply interactivity and dedication[122] or their appreciation for violent contents with an aesthetic contribution.[123]

This study also helps better understand identification with characters, a key variable in explaining enjoyment and entertainment.[124]

Our study provides evidence that specific personality traits facilitate identification with characters. Individuals with high Extraversion, Openness and Agreeableness manifest higher identification. However, the results of this study also offer more in-depth knowledge of identification when they specify that these individuals' cognitive-emotional empathy also rises. Therefore, it is feasible to interpret that individuals with high Openness and Agreeableness feel higher identification due to experiencing major cognitive-emotional empathy and a feeling of merging with the character. Identification with individuals with high Extraversion is explained by cognitive-emotional empathy.

This study additionally expands our knowledge of enjoyment, a variable that has been considered to be the most important for defining the effects of entertainment and of which more research has been encouraged.[125] In particular, it adds that specific personality traits (Extraversion, Agreeableness and Conscientiousness) predict enjoyment of fiction. Specifically, the results show that enjoyment tends to be higher in individuals with high Extraversion and Agreeableness, and lower in individuals with high Conscientiousness. These data are consistent with the literature on personality. They also broaden our knowledge of Conscientiousness, a factor on which research into personality in Media psychology has produced very little data.

We consider our small sample to be a limitation of the study. We believe a larger sample would augment the statistical power of the tests. Also, our sample contains a larger number of subjects in the interactive conditions than in the non-interactive

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[120] Cfr. *Ibíd.*

[121] Cfr. *Ibíd.*

[122] Cfr. KUBEY, R. & CSIKSZENTMIHALYI, M., *op.cit.*

[123] Cfr. KCRMAR, M. & KEAN, L.G., *op.cit.*

[124] Cfr. SOTO-SANFIEL, M.T., AYMERICH-FRANCH, L., RIBES, F.X., *op.cit.*; HEFNER, D., KLIMMT, C. & VORDERER, P., "Identification with the player character as determinant of video game enjoyment", in L. MA, R. NAKATSU & M. RAUTERBERG (Eds.), *International conference on entertainment computing 2007, lecture notes in computer science 4740*, Springer, Berlin, 2007, pp. 39-48; KLIMMT, C., HEFNER, D. & VORDERER, P., *op.cit.*; COHEN, J., "Defining identification: a theoretical look at the identification of audiences with media characters", *Mass Communication & Society,* vol. IV, nº 3, 2001, pp. 245-264.

[125] Cfr. VORDERER, P., KLIMMT, C. & RITTERFELD, U., "Enjoyment: At the heart of media entertainment", *Communication Theory,* vol. XIV, 2004, pp. 388–408.

conditions. This is because we could not find enough volunteers for the experiment when we were running the final round of experiments in the non-interactive condition. Another possible limitation of this study is that it has observed the responses to two different plots, although they were both derived from a common beginning and story. Despite the difficulty of producing interactive narratives, and taking into account the concerns of Reeves & Geiger[126] regarding the inadequacy of single-message experimental designs for observing psychological responses, we consider that future studies should replicate these results by using other stimuli, thus extending them to different media narratives.

Finally, this study adds information on the effects of interactivity on new audiovisual offers. In particular, it complements knowledge of interactive fiction and the effects that participating in the creation of the content has on receivers' responses.[127] Likewise, it presents useful information for comprehending the role of personality in audiovisual media consumption.

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[126] Cfr. REEVES, B. & GEIGER, S., "Designing experiments that assess psychological responses to media messages", in A. LANG (Ed.), *Measuring psychological responses to media,* Lawrence Erlbaum Associates, Hillsdale, 1994, pp. 165-180.

[127] Cfr. LEE, M. S., HEETER, C. & LAROSE, R., *op. cit*; SOTO, M.T., *op.cit*; SOTO-SANFIEL, M.T., AYMERICH-FRANCH, L. & RIBES, F.X., *op.cit.*; SOTO-SANFIEL, M.T., AYMERICH-FRANCH, L., RIBES, F.X. & MARTINEZ-FERNANDEZ, *op.cit.:* VORDERER, P., KNOBLOCH, S. & SCHRAMM, H., *op.cit.*

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