**UNIVERSITATEA
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# HABILITATION THESIS

## Alina S. Rusu, PhD

Interdisciplinary research of human-animal interactions
(animal assisted therapy) and human behavior
(evolutionary approach)

Domain: Psychology

Panel: Psychology and Behavioral Sciences

2013

## 1. Summary of the thesis

Alina Simona Rusu (ASR) is Associated Professor at the Department of Special Education, Faculty of Psychology and Sciences of Education, Babes-Bolyai University (BBU), Cluj-Napoca. Her teaching and research activity covers several domains (including interdisciplinary ones), such as Animal Psychology, Evolutionary Psychology, Psychobiology of Sexuality and Animal-Assisted Therapy (AAT). ASR has completed her PhD in Natural Sciences in 2004, at University of Zurich (Department of Animal Behavior), Switzerland, with a complete PhD Fellowship from the Swiss National Fond (2000-2004). ASR is the author/co-author of two books in the field of AAT and author of several papers on these areas (e.g., *Anthrozoos*, *Journal of Comparative Psychology*). ASR is supervising scientific research work of undergraduate and master students in Animal Psychology, Evolutionary Psychology and Animal Assisted Therapy. ASR is currently the director of a research grant on the psycho-physiological effects of the human-animal interaction on the social abilities of autistic children (Project PN-II-RU-TE-3-2011-3-0080).

The thesis includes the **scientific, professional and academic achievements of the candidate, as well as the future directions of research in the following areas:** (1) animal-assisted therapy (AAT) and robot-assisted therapy (RAT), and (2) evolutionary psychology.

**1. Animal-assisted therapy (AAT) and robot-assisted therapy (RAT) –** this section of the thesis includes several studies (main-author and co-author), such as: *1.1. Investigation of the effects Animal-Assisted Therapy (AAT) on the social abilities of autistic children* and *1.2. Investigation of the effects of Robot-Assisted Therapy (RAT) on the social abilities of autistic children.* The aim of these studies was to combine an already validated method addressing the social skills of ASD children (i.e., the Social Story procedure; Gray, 2003) with naturally occurring elements (companion animals, such as well-trained dogs) or with stimuli that are attractive to ASD children (social animal-like robot, Probo) that are supposed to be socially relevant to autistic

individuals. The results (which are included in papers published as a main author and co-author) indicate that the combined method (Social Story plus Animal Assisted Therapy) and (Social Story plus Social Robot Probo) was associated with a statistically significant increase in the frequency of the social initiations in the presence of the therapy dog. Based on the promising results presented above, in the next section of this habilitation thesis, the candidate ASR will present the further directions of research on the implementation of animal-assisted therapy procedures in the therapeutic plans of ASD children, in terms of bringing the current line of research to a higher level of investigation, i.e., randomized-clinical trials and new psycho-physiological variables to be measured.

*1.3. Psychological mechanisms behind the positive attitudes and behaviors toward the animals* **-** Another important direction of research is the investigation of the psychological mechanisms behind the attitudes (and behavior) of human individuals toward their companion animals. The candidate presents the results of a study that was published in an ISI-journal, i.e., *Attitudes of Romanian pet owners towards sterilization of their animals: Gender conflict over male, but not over female companion animals*, authors: Cocia, I.R, and Rusu, A.S. (2010). The factors investigated in relation to the attitudes towards pet sterilization were: (1) the level of anthropomorphism towards the companion animals, (2) the level of attachment to the animals, and (3) the interaction between the gender of the caretakers and the sex of the animals.

## 2. Evolutionary Psychology of Couple Formation

### *2.1. Studies on the behavioral correlates of couple formation (mate-choice)*

*2.1.1. Investigation of the mate-choice strategies of single individuals – an evolutionary psychological analysis of the matrimonial market -* The study is a pilot investigation of the Romanian market of personal advertisements using an evolutionary psychological approach. In accordance with previous studies of personal

advertisements performed in other countries, our aims were to investigate: (1) whether the predictions derived from Trivers's theory of parental investment do apply to the Romanian studied sample, and (2) which is the current market value of Romanian advertisers of different age intervals, and whether the male and female Romanian advertisers adjust their mate-search negotiation strategies in the light of their perceived status in the market place.

*2.1. Investigation of the mate-choice strategies of attached individuals (individuals involved in a couple relationship) – an evolutionary psychological analysis of the matrimonial market -* Following the evolutionary psychological approach described in the previous study, in the next study presented here, the candidate has investigated the psycho-social elements used by individuals that are already involved in a couple.

*2.2. Investigation of the cognitive and emotional factors associated to the individual reproductive value (high K-strategy) -* The next study is an investigation of the cognitive and emotional factors (i.e., maladaptive schemas, relationship satisfaction) associated to the individual reproductive values, i.e., the abilities of an individual to pass on his/her genes onto the new generation of descendants.

**Plans of career development and evolution**

In terms of **research**, the candidate Alina S. Rusu is planning to further develop the following directions:

*(1) Psycho-physiological effects of human-animal and human-robot interactions – future directions on children diagnosed with Autism Spectrum Disorders -* The short-term objectives for this line of research could be defined as the following: (1) investigation of the behavioral effects of AAT on enhancing the efficiency of Social Story method on the social abilities of ASD children at level of randomized-clinical trials, in collaboration with Autism Transylvania Association, and (2) investigation of the physiological mechanisms (i.e. salivary cortisol and heart rate, as indicators of the activation of the oxytocin system) behind the therapeutic effects of AAT on the

psycho-social and emotional abilities of autistic children. The objective (1) and (2) are feasible within the National Project PN-II-RU-TE-3-2011-3-0080 (2011-2013), *Psycho-social and physiological mechanisms of the effects of human-animal interactions on the socio-emotional abilities of autistic children* (Alina S. Rusu – Director).

*(2) Incorporating Animal-Assisted Therapy and Robot-Assisted Therapy in the design of a multilevel platform for Successful Aging – application for elderly people* **-** Another direction of research intended to be developed by the candidate Alina S. Rusu consists of incorporating the procedures of Animal-Assisted Therapy (AAT) and Robot-Assisted Therapy (RAT) into the standardized therapeutic programs for increasing the quality of life of elderly people, following the *successful aging* approach.

*(3) Investigation of the individual mate value (High K-strategy) in relation to the concept of mating intelligence – an evolutionary psychological approach -* Mating Intelligence (MI) is a new concept derived from the field of Evolutionary Psychology (i.e., Evolutionarily Informed Construct), introduced by Geher, Miller and Murphy (2008). Mating Intelligence concerns cognitive structures and processes that apply to the domain of mate-choice, reproduction, and sexuality (Geher, Miller, & Murphy, 2008). MI refers to both psychological adaptations that are species-specific, such as the perceptual, cognitive and decision-making processes for evaluating an individual's potential as a long-term mate), as well as individual characteristics related to differences in efficiencies, parameters and design details of those traits. Even though a lot of research has been done on human intelligence and on human mating behavior, little is known about the potential relationship between intelligence and the mating abilities (ability to attract mates, to form and maintain a relationship, ability to cope with infidelity etc.) of human beings. In the future, the candidate Alina S. Rusu aims to investigate the relationship between the intellectual abilities of human individuals and the individual reproductive value (measured by High-K Strategy Scale; Giosan, 2006), taking into account several variables such as: sexual orientation (heterosexual versus homosexual orientation), gender, marital status (single versus

attached individuals), level of relationship satisfaction, and the length of the relationship. As already stated in the studies presented on the first section of the habilitation thesis, the high-K strategy in humans is expressed through the following dimensions that involve the emotional, cognitive and behavioral characteristics of an individual: (1) preserving or increasing health of self, offspring and kin; (2) achieving upward mobility, which may translate into better access to healthcare and educational and career opportunities for the offspring; (3) social capital (i.e., ability of receiving help from others when in need), and (4) careful consideration of risks (Giosan, 2006). In line with the current trend in the field of evolutionary psychology regarding the understanding of the impact of psychological factors on individual fitness, the candidate aims to incorporate the newly developed construct of Mating Intelligence in the future line of research regarding the association between cognitive factors (e.g., maladaptive schemas), emotional factors (e.g., the emotional expressivity of a partner, the level of empathy toward the partner etc.), the level of couple satisfaction and the individual mate value (high-K reproductive strategy).

## 1. Rezumat al tezei de abilitare

Alina Simona Rusu (ASR) este conferențiar la Departamentul de Psihopedagogie Speciala, Facultatea de Psihologie și Științe ale Educației, Universitatea Babeș-Bolyai, Cluj-Napoca. Activitățile sale de predare și cercetare sunt încadrate în câteva domenii (cu deschidere interdisciplinară), cum ar fi: Psihologia Animală, Psihologia Evoluționistă, Psihobiologia Sexualității și Terapia asistată de animale (TAA). ASR a obținut titlul de doctor in Științe Naturale în 2004, la Univeristatea din Zurich, Elveția (Departamentul de Studiul al Comportamentului Animal), cu o bursa completă oferită de Fondul Național Elvețian (2000-2004). ASR este autor si co-autor a unor cărți și articole în domeniul TAA (ex. *Anthrozoos*, *Journal of Comparative Psychology*). Alina Rusu supervizează lucrări de cercetare la nivel licență și masterat în domeniile de interes, fiind de asemenea membră în comisii de îndrumare și referent științific în domeniile de doctorat psihologie și arii conexe (ex. genetică umană). ASR este în prezent director al unui proiect de cercetare privind efectele psiho-fiziologice ale interacțiunii om-animal asupra abilităților sociale ale copiilor diagnosticați cu autism (Proiect PN-II-RU-TE-3-2011-3-0080).

Teza de abilitare include **realizările științifice, profesionale și academice ale candidatei, precum și direcțiile viitoare de cercetare în următoarele arii:** (1) terapie asistată de animale (TAA) și terapie asistată de roboți sociali (robot-assisted therapyș RAT) și (2) psihologia evoluționistă a formării cuplurilor.

**1. Terapia asistată de animale (TAA) și terapia asistată de roboți sociali (RAT) –** această secțiune a tezei include o serie de studii (ASR ca și autor principal și/sau co-autor), cum ar fi: *1.1. Investigarea efectelor terapiei asistate de animale (TAA) asupra abilităților sociale ale copiilor cu autism* și *1.2. Investigarea efectelor terapiei asistate de roboți sociali (RAT) asupra abilităților sociale ale copiilor cu autism.* Scopul acestor studii a fost de a combina metode standard validate științific care se adresează dezvoltării abilităților sociale ale copiilor cu autism (ex. Povești Sociale; Gray, 2003), cu elemente naturale (animale de companie – câini), sau cu stimuli atractivi pentru copiii cu tulburări din spectrul autist (ex. robotul social Probo). Rezultatele acestor

investigații (incluse în publicații ca prim autor sau ca și co-autor) indică faptul că metoda combinată (Povești Sociale cu TAA și Povești Sociale cu Robot Social Probo) a fost asociată cu o frecvență crescută a inițierilor sociale și o scădere semnificativă a nivelului de promt necesar atingerii comportamentului țintă. Bazat pe aceste rezultate promițătoare, în următoarea secțiune a tezei, candidata prezintă direcțiile viitoare de cercetare privind implementarea activităților asistate de animale în programele terapeutice ale copiilor cu nevoi speciale, în special ale copiilor cu autism. Aceste direcții de cercetare vor fi realizate într-un cadru avansat de invetigație: design de tip experiment clinic controlat și luarea în considerare a unor variabile psiho-fiziologice de impact asupra identificării mecanismului schimbării.

*1.3. Mecanisme psiho-fiziologice de la baza atitudinilor și comportamentelor positive față de animale –* **O** altă direcție de investigație se referă la mecanismele psiho-fiziologice aflate la baza interacțiunii om-animal cu valoare terapeutică. Candidata prezintă rezultatele unui studiu publicat într-un jurnal internațional de tip ISI - *Attitudes of Romanian pet owners towards sterilization of their animals: Gender conflict over male, but not over female companion animals*, authors (Cocia & Rusu, 2010). Factorii investigați în relație cu decizia de sterilizare a animalelor de companie au fost: (1) nivelul de antropomorfizare a animalelor de companie; (2) nivelul de atașament față de animalele de companie și (3) interacțiuea dintre genul posesorilor de animale de companie și sexul animalului deținut.

## 2. Psihologia Evoluționistă a formării cuplurilor

### *2.1. Studii ale corelatelor comportamentale ale formarii cuplurilor (eng. Mate-choice*

*2.1.1. Investigarea strategiilor de formare a cuplurilor la indivizii necasatoriti – analiza evolutionista a pietei matrimoniale –* Acest studiu reprezinta o investigatie pilot a pietei matrimoniale din Romania (analiza reclamelor matrimoniale), din perspectiva teoriilor evolutioniste (teoria istoriei de viata si teoria investitiei parentale). In linie cu

investigatiile similare din literatura de specialitate, acest studiu are ca scopuri: (1) testarea predictiilor derivate din teoria investitiei parentale (Trivers, 1972) pe populatie romaneasca si (2) identificarea valorii pe piata matrimoniala din Romania a persoanelor din diferite categorii de varsta, precum si a diferentelor de gen in asociere cu grupuri specifice de varsta si atribute matrimoniale (auto-descriptive si cerute de la potentialii parteneri).

*2.1. Investigarea strategiilor de reclama sexual a pe piata matrimoniala la indivizii implicati in relatie stabila de cuplu – analiza din perspectiva evolutionista* – Urmand abordarea din psihologia evolutionista utilizata in studiul anterior, candidata a investigat comparativ elementele psiho-sociale utilizate in reclamele matrimoniale de catre indivizii aflati deja intr-o relatie de cuplu.

*2.2. Investigarea factorilor cognitive si emotionali asociati cu potentialul biologic adaptativ (fitness - high K-strategy) – analiza evolutionista* Studiile prezentate in aceasta sectiune includ investigatii ale factorilor cognitivi si emotionali (ex. schemele dezadaptative ale lui Young, satisfactia in cuplu) asociati cu valoarea reproductiva individuala, masurata cu instrumente derivate din psihologia evolutionista (scala HKSS, Giosan, 2006).

## 2.2. Planuri de dezvoltare in cariera si evolutie

La nivel de **cercetare**, candidata Alina S. Rusu isi propune sa dezvolte urmatoarele directii de investigatie:

*(1) Efectele psiho-fiziologice (asociate mecanismului schimbarii) ale interactiunii om-animal si ale robotilor sociali la copii diagnosticati cu spectrul autism* Obiectivele pentru aceasta linie de cercetare sunt: (1) investigarea efectelor comportamentale ale activitatilor de tip TAA care s-au dovedit a fi eficiente la nivel de studii de caz – testarea metodei Povesti Sociale imbunatatite de activitati TAA la nivel de studiu clinic controlat, in colaborare cu Asociatia Autism Transilvania si (2) investigarea mecanismelor fiziologice (ex. cortizol salivar si modificare frecventa cardiaca –

indicatori ai activarii sistemului de oxitocina) ale interactiunii om-animal asupra abilitatilor sociale la copiii cu autism. Aceste doua obiective vor fi realizate in cadrul proiectului PN-II-RU-TE-3-2011-3-0080 (2011-2013), *Psycho-social and physiological mechanisms of the effects of human-animal interactions on the socio-emotional abilities of autistic children* (Alina S. Rusu – Director).

*(2) Incorporarea terapiei asistate de animale in realizarea si implementarea unei platforme de stimulare multisenzoriala pentru Imbatranirea de Succes (Successful Aging)* **–** Alta directie de interes o reprezinta posibilitatea incorporarii activitatilor asistate de animale si de roboti sociali (animal-like robots) in programele cu valoare terapeutica de stimulare multisenzoriala (cognitiva, comportamentala, emotionala, sociala) pentru persoanele varstnice, in cadrul paradigmei Successful Aging.

*(3) Investigarea valorii reproductive individuale (strategie de tip high K) in relatie cu conceptul de inteligenta a reproducerii – abordare evolutionista –* Inteligenta reproducerii (mating intelligence; MI) este un concept nou derivate din psihologia evolutionista (Evolutionarily Informed Construct; Geher, Miller & Murphy, 2008). Inteligenta reproducerii se refera la structurile cognitive si procesele din domeniul formarii cuplurilor, reproducerii si sexualitatii. MI include atat adaptarile specifice de specie, cum ar fi procesele perceptuale, cognitive si luare de decizie in evaluarea potentialului reproductiv pe termen lung al unui individ, cat si caracteristicile individuale asociate cu diferentele la nivel de eficienta, parametrii si detalii de design si functionare ale acestor trasaturi. In linie cu aceste abordari recente, Alina S. Rusu isi propune sa investigheze relatia dintre abilitatile intelectuale ale indivizilor, satisfactia in cuplu si valoarea reproductiva individuala, masurata cu instrumente derivate din psihologia evolutionista (High-K Strategy Scale; Giosan, 2006). Se vor lua in considerare si o serie de variabile cum ar fi: orientarea sexuala, statutul marital, trasaturile percepute ale partenerului si lungimea relatiei.