

# A Psycholinguistic Model of Man-Machine Interactions Based on Needs of Human Personality

Adrian Horzyk and Ryszard Tadeusiewicz

**Abstract.** Fast development of internet services together with a need to automate maintains of internet services in order to reduce expenses force to use some artificial intelligence solutions that are able to interact between a man and a machine. Such interactions can be carried out using internet chatbots that are able to communicate with a human in natural language supplemented with voice synthesizers. A main drawback of today systems is that they do not recognize nor understand and weakly react to human needs. A conversation will satisfy a human if some implemented algorithms will be able to passively recognize and classify human needs and adjust a conversation and reactions to these needs. This paper describes a new personality model that can be successfully used by chatbots to achieve this goal. The presented personality model figures out words, phrases and sentence constructions that can be recognized in a conversation, describes personality needs and suitable intelligent reactions to these needs in order to provide a human with satisfaction.

**Keywords:** human personality model, human needs, personality recognition, tuning of chatbot reactions, chatbot, chatterbot, psychology, biopsychology, artificial intelligence, psycholinguistics, computer linguistics.

## 1 Introduction to Chatbot Communication

Chatbot reactions would be more intelligent if it will be able to automatically and passively recognize human needs coming from personality, physiology, intelligence and a spirit and appropriately react to them. Nowadays chatbots can mainly watch

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and analyze only linguistic behaviours of a human. The behaviours can be divided into some actions and reactions. The probably most interesting human reactions comes from personality which can be defined, recognized and used to fulfill human personality needs during chatbot talks to people. Biophysicologists and biopsychologists show up that our personality is probably dependent on our brain construction and various neurotransmitters and their various synaptic receptors which differ quite widely from person to person [11]. There is more than a hundred known types of various neurotransmitters and more than a sixty known various synaptic receptors which various subsets appear in our brains in various configurations and quantities. These physiological features of our brains are hereditary, so we can observe similar personality behaviours in our ancestors and descendants, especially in our children, parents and grandparents.

There are many psychological models of human personality types, traits and models [1, 2, 3, 4, 5, 6, 7, 8, 9, 12, 13, 14] that try to describe it on various points of view and for various applications. This paper introduces a special personality model that can be implemented in various linguistic systems like chatbots in order to automatically and passively recognize personality types and traits of a talking person. This model lets a chatbot to functionally describe and predict most probable personality actions and reactions after words, phrases, an inflection and sentence constructions that are used by an analyzed person. This personality model uses some groups of major personality behaviours that are easy to recognize. If some behaviours of a certain group occur then it is very probable that all other behaviours of these group can occur in human actions and reactions as well. Moreover, these groups of personality behaviours also define which actions and reactions are liked and disliked by a human of a certain personality type. Furthermore, various human personality needs (HPNs) can be recognized using this model. This model lets a chatbot to predict some of human actions and reactions and modify its way of talking to a human using properly tuned words, phrases and sentence construction to fulfill personality needs of an analyzed person. The groups of personality traits will be called Human Personality Types (HPTs). Each HPT can be variously intensive for each person so the HPTs should be characterized using a continuous range of intensities. Each HPT is associated with some personality needs which fulfillment is very important for each person. Many negotiations fail if personality needs are not fulfilled!

This paper describes many various needs of some introduced HPTs, e.g., will to decide and choose, will to harmonize, will to systematize and order, will to find inspiration, will to reveal and discover, will to be assured. HPTs are in various degree intensive and important to satisfy various people.

All HPTs and their needs can be automatically and passively recognized listening to words, phrases, an inflection and sentence constructions of an analyzed chatting person. These needs can be recognized also in some expressions of a body language and behaviours but they are not so easy to watch for chatbots as linguistic expressions of personality. In order to make a use of human personality for a communication of chatbots there is necessary to be able to:

- define useful HPTs,
- define HPNs associated with each HPT,

- define positive and negative actions and reactions for which each HPT is sensitive and reactive,
- find out what actions and reactions each HPT likes and dislikes,
- find out words, phrases, an inflection and sentence constructions that characterize linguistic actions and reactions to each HPT,
- define relationship between HPT intensities and quantity of used words, phrases, an inflection and sentence constructions,
- automatically and passively recognize HPTs and their intensities for a given person after linguistic expressions of HPTs during a talk,
- define predictable human reactions dependently of recognized HPTs, their intensities and various possible combinations,
- define 'magic' words, phrases, an inflection and sentence constructions that have a strong influence for each HPT and aptly act or react to human linguistic statements and questions in order to fulfill HPNs during a talk regardless of a topic of a conversation or talks,
- define chatbot reactions to various HPTs to release prospective profitable, beneficial and positive reactions of a considered person of the known HPTs.

This paper focuses and systematizes only the most representative features, needs, actions, reactions, words, phrases, an inflection, sentence constructions of the introduced HPTs that are interesting for chatbots and their psycholinguistic engines. The sets of words and phrases can be expanded after the idea of each HPT presented in this paper.

## 2 Description of a Personality Model

A psycholinguistic model of human personality described in this paper consists of 11 human personality types (HPTs) that represent special groups of human behaviours and human personality needs (HPNs) [10]. The HPTs and their intensities are hereditary and usually strongly control human behaviour from the whole beginning of a human life and determine directions of human development, actions and aspirations. They influence on personal criterions and decide against something that is inconsistent to personal HPTs. The ability to recognize HPTs and their needs allows a chatbot engine constructor to formulate and use appropriate algorithms to conduct negotiations, talks or more probably persuade or ask somebody to do something. The HPTs can be treated as a special kind of a human psychological operating system that makes a human to head in certain directions. The HPNs together with human physiological needs are the main reasons and motivators for a human in an early stage of life. Human intelligence gradually develops during a whole life and takes control of human behaviour. Intelligence can develop faster or slower dependent on an ability of an individual hereditary brain structure and its development and on a individual will and a human aspiration. Intelligence is closely related to ability to associate various actions, objects and their features. The associations can be more or less extended and enable people to elaborate sentences in different ways.

**Table 1** The needs and likes for the HPTs

<b>DOM</b>	decide, choose, boss [sb] around, dominate, manage, speak and decide on behalf of himself and other people, select, rule, govern, order, make sb to do sth, determine, restrain, have got own opinion, control sb or sth, steer, drive, manipulate, conduct, handle, lead, influence, operate, persuade, teach, advise, instruct, regulate, designate, appoint, recommend, force, want, will, convince sb of his point of view; have assets, original, intact, virgin and untouched sth/sb; be kindly asked, thanked, bowed, curtsied, given way, yielded by sb
<b>MAX</b>	have, get, own, possess, win, obtain, observe, watch, read, imagine, create, focus, make known, do sth extreme, e.g.: unique, rare, unusual, enormous, huge, super, great, maximal or the best
<b>INS</b>	seek for inspiration and inspire sb with sth; look for some new associations, things, features and parameters of things, arrangements, layouts, systems, relations, feelings, experiences, behaviours, ideas, conceptions; speak about with what is he inspired, at what is he surprised or by what is he enthralled; surprises and to spring a surprise on sb; act spontaneously, differently from others and by intuition; create sth new because it supplies him with inspiration; watch, listen, touch, sniff and taste in order to observe, hear, feel or smell new things and people that can supply him with a new portion of inspiration
<b>DIS</b>	discover, examine, penetrate, integrate various associations and understand unknown things, actions, reactions, behaviours, relations; ask frequently himself and other people about things, actions and behaviours that he does not know nor understand; watch, listen, touch, sniff and taste in order to discover, get known and understand; research, think about sth, ponder over sth and associate facts with other facts; when something unusual, new, unknown and unordinary happens all the time; news, new technologies and their products
<b>VER</b>	watch, observe, listen, feel and smell in order to compare and distinguish sth from other things, actions, behaviours, differentiate between things, features of things, people, actions, relations, behaviours and discriminate them; look for distinguish marks, even the smallest differences and he watches, checks and verifies all things and people around in order to find differences; speak, talk and write about noticed differences; precise, exact and accurate description of things, actions and tasks
<b>SYS</b>	organize, systematize, order, sort, arrange, classify, cluster, form a sequence or chronology, enumerate, list schedule everything, act only after planned actions or reactions; create plans, models, standards, norms, schedules, rules, regulations and to act in accordance with them; everything have its right place and time; do everything in some order; enumerate or list tasks and calculate time necessary to perform them; enumerate things, features, actions etc. emphasizing their order and sequence
<b>ASS</b>	protect, assure, warrant, guarantee, insure, safeguard, prevent, warn others, limit risks and threats and make precautions against them and avoid them; purchase proven and reliable products; expects and demands guarantees from others; insures himself and other people against risks and threats; safeguard and protect himself and other people; use preventive, protective and precautionary measures and recommends them to others; be prepared and know what to do when difficulties or troubles occur; have some reserves, provisions and stores
<b>HAR</b>	harmonize, conciliate and reconcile people, appease disputes and conflicts, resolves and tones down conflicts, make peace with others, make symbiosis between things, adapt, accommodate, adjust, tune, fit and match things together; avoids quarrels with sb, disagreements among sb, rows, brawls, fights, conflicts; alleviate stress and nervous situations, relieves, reduces, calms, appeases, assuage, eases and moderates all situations
<b>EMP</b>	empathy, compassionate, understand other people and their emotions, be understood by other people, be sensitive, tender, affectionate, give himself to know, bringing himself closer to somebody else, grow closer together and degrade a distance, personal conflicts; listen to secrets and intentions of other people
<b>TAO</b>	be subjective, practical, sensible, businesslike and matter-of-fact, quick execution and solution of tasks, come straight to the point, get to the heart of the matter or hit the nail on the head; like completed tasks, examinations and work
<b>BAL</b>	look after balance, counterbalance, compensation for sth, exact measuring, assessing, weighting, weighting out, leveling, calibrating, sizing, grading according to size and to keep things in balance; arbitrate, adjudicate and work out or decide which is right; act appropriately and proportionately to sth, looks for appropriately balanced solutions; when things fit each other and are appropriate to sth; measured and balanced judgments; expect balance, reciprocity and mutual concessions

Intelligence can support and reinforce or suppress and temper HPT actions and reactions and lets a human to much more efficiently and easily fulfill needs, avoid increase of their intensities or decrease of their fulfillment. Intelligence can also

**Table 2** The dislikes for the HPTs

<b>DOM</b>	be dominated, managed, determined, restrained, controlled, forced, ordered, steered, manipulated, persuaded, admonished, advised, instructed, when somebody decides or chooses something on behalf of him, when somebody criticizes his opinion, choices, decisions, things, thought, ideas and proposals; admit to defeats, failures, mistakes, lost, inability, incapacity, powerlessness, helplessness and everything else what debases or demeans him before others
<b>MAX</b>	minor, lesser, small or insignificant things, goals, aims, targets, actions, features, parameters, experiences or feelings; when somebody discourages him or tries to persuade him that his goals are impossible to achieve
<b>INS</b>	simple, normal, usual and ordinary things, features, actions; established procedures, actions, behaviours and schedules and to act according to them; repetition of uninspiring actions; stereotypes, stiff regulations, plans, procedures, sequences
<b>DIS</b>	simple, normal, usual and ordinary things, actions; unsolved or unexplained questions; repetitions and established procedures, actions, behaviours and schedules if he cannot get known something new
<b>VER</b>	inconsistence, mistakes, errors, bugs, lacks, a negligence, oversights, shortcomings, faults, flaws, vices, lies, contradictions, conflicts, misreadings, miscalculations, misconceptions, carelessness, imprecise or inaccurate things and actions; underestimation or underration of his notices and remarks
<b>SYS</b>	act without planning and scheduling things and actions; act in a hurry because he needs time for planning and scheduling; when somebody is late or unorganized
<b>ASS</b>	ignoring or disregarding his warnings, rules, steps and means of caution, safety and security or when people do not want to see or think about threats
<b>HAR</b>	conflicts, quarrels with sb, disagreements among sb, rows, brawls, fights, wars, stress, stress out, nervous situations, be under pressure from sb
<b>EMP</b>	when somebody does not tell about his intentions and reasons of doing something to him; when somebody escapes personal contact; when somebody cut his personal reflections
<b>TAO</b>	handle him with kid glove, pull wool over his eyes, beat about the bush, mince one's words; unfinished tasks, examinations or work; digressions, talking about personal reasons and intentions
<b>BAL</b>	unbalanced things or judgments; inconsistent acting or when something is inconsistent with something else; when somebody disregards, violates or breaks the law or when somebody neither observe nor follow rules and regulations nor does something contrary to the regulations

make a human to behave independently of personality and physiology. Consciously modified intelligent behaviour becomes automatic after some time. Each need can be fulfilled in some level so a person usually opposes to lose an achieved level and tries to achieve a higher level of its fulfillment (Fig. 2). Each HPT triggers a will to behave as specified in Table 1. Each HPT does not like, refuses or escapes things or actions described in Table 2. The HPTs can be recognized using words, phrases, an inflection and sentence construction described in Tables 3–4 and should be treated in the way described in Table 5 to trigger positive personality reactions. This paper focuses on actions and reactions coming from personality and on its linguistic expressions and constructions. These paper introduces 11 Human Personality Types (HPTs):

- *Dominant* (DOM) – He likes to dominate, choose and act after his own opinion. The ways of linguistic expressions of domination are partially dependent on an individual intelligence. More intelligent individuals will try to encourage or ask somebody to do something etc. Less intelligent individuals will force, order or

**Table 3** The words and phrases which enable to recognize the HPTs

<b>DOM</b>	I, my, we, us, our, want, need, decide, choose, select, elect, control, steer, drive, conduct, program, order, book, recommend, independent, original, intact, untouched, virgin, have sth, own sth, owner, possess sth; [on] my own, unaided; I/we [would] like, my/our opinion, my/our choice, from my/our point of view, to my mind, I/we think, I/we wish; you right, I/we have decided to/on, not to be dependent on sb/sth, believe me, do what I say, I/we recommend, I/we agree with, I/we disagree with/on/about, I/we concur with
<b>MAX</b>	great, large, huge, extreme, super, hiper, enormous, maximal, fast, rapid, speedy, quick, nice, wonderful, exceptional, remarkable, unique, rare, better, the best, more, the most, higher, the highest, big, bigger, the biggest, an extreme size, weight or height of physical or intellectual features or parameters, no problem; I/we manage to do sth, I/we cope with sth; I/we get by/along
<b>INS</b>	idea, surprise, unexpected, unknown, new, revolution, inspiring, inspirational, inspired, remarkable, fantastic, mysterious, magic, super, muse, mood, art, artistic, imaginatively, create, creative, fashion; I have thought about, I have invented/devised/concoct, I have been inspired/enthralled by something, I have been surprised
<b>DIS</b>	why, ask, explanation, discover, reveal, discern, check, check-up, compare, recognize, reconnoitre, examine, penetrate, integrate, understand, new, news, unknown, unusual, unordinary, relation, explore, classify, associate, think over/about, ponder over, make out
<b>VER</b>	not, mis-, in-, im-, dis-, -less, disagree, incorrect, mistake, fault, error, inaccurate, imprecise, inconsistent, misplaced, careless, omitted, dirty, spoiled, risk, show, look at, attention, note, control, quality, details, detailed, precise, inexact, improve, correct, repair, mend, fix, remedy, rectify, redress, neatness, remark, notice, watch, observe, point out, thorough, painstaking, meticulous, punctilious; to be meticulous in sth/in doing sth; put the emphasis on sth
<b>SYS</b>	first, second, third, fourth, fifth, next, last, at last, now, earlier, later, at the beginning, start, start with, at the end, mess, tidiness, untidy, gradually, step, in steps, one by one, one after the other, in order, order, sort, sequence, rank, systematize, level, stage, arrange, classify, cluster, chronology, enumerate, list, map, schedule, appointment, diary, timetable, layout, compose, composition, group, structure, model, organization, organize, think, lay out, plan out, unfold, divide, spread out, time, on time, date, deadline, count
<b>ASS</b>	but, problem, doubt, misgivings, careful, be careful, danger, cautious, reliable, sure, confident, certain, secure, warrant, sure, protect, provisions, stores, stock, prevent, precaution, be assured, guaranteed, warranted, insured, prudent, risk, threat, safeguard, precautionary measure against something, alarm, alert, warn, limit, precaution against risks, just in case, can be necessary, put away something for a rainy day
<b>HAR</b>	O.K., yes, good, no problem, agree, confirm, bit, little, a bit, a little, not so much, not many, small, slight, minor, almost, let off, peace, quiet, it is interesting, I ponder over this, I think about this; I ask my; do you mind if I; excuse me
<b>EMP</b>	nice, I am, children, family, hurt, wound, distress, unpleasantness, tribulation, understand, tell me about your problem/situation, how about you, for you, with you, intend, intention, with a view to doing something, with the purpose of doing something, that is why, because, why, as, since, for, in order to, mean, what for, sympathy, sympathize with somebody, compassion, compassionate, condolence, pity somebody, regret, help, reciprocate, feel sorry for somebody; I am going to do something, what are you going to do, how are you?
<b>TAO</b>	performance, efficient, fast, concrete facts, specifics, hurry, hurry up, hasten, quickly, subject, task, practical, sensible, businesslike, precisely, accurately, exactly, finished, completed, concise, succinct, matter-of-fact, heart of the matter, hit the nail of the head, get on somebody with one's work, let's get down to facts/business/specifics, get down to brass tacks, talk sense, bring something to a conclusion; to get to the bottom of a matter
<b>BAL</b>	balance, balancing, counterbalance, compensation for sth, exact, accurate, precise, measure, measuring, assess, assessing, weight, weighting, weight out, level, calibrate, sizing, sort, grade, according to size, to keep things in balance, compare, compensate for, equal, be consistent, just, justice, fair, fairness, unfair, unfairly, judge, principle, rule, reciprocate, repay, be consistent, compensate, settle a debt, equalize, make something up to somebody

make somebody to do something etc. If a DOM individual is appropriately asked, there is a bigger probability to achieve a positive response or reaction when e.g. conducting negotiation. There is necessary a lot of intelligence, will and

**Table 4** The inflection, sentence constructions and topics which enable to recognize the HPTs

DOM	recommendation, commands and orders; speaking on behalf of a group of people; expressions of selections, choices and decisions; giving own opinions and points of view; various expressions of a refuse, a perverse, contrary, revolt, rebel or mutiny
MAX	asking for something more extreme (bigger, taller, faster etc.); describing extreme goals, aims, targets or dreams; using adjectives and adverbs in comparative and superlative forms
ISN	talking about invention, projects, conceptions, style, fashion, inspiration, surprise
DIS	lot's of various questions, asks and requests for explanations of something he would like to know or understand, asks for options and points of view, I would like to know/understand
VER	point out various differences, impreciseness, faults, mistakes, inaccuracy, carelessness
SYS	use various expressions of time and date; enumeration or list something; show temporal or spatial relations and order
ASS	raise doubts, something but something; suspicious and mistrustful tasks, questions and statements
HAR	white lies, lies, telling to seek advice from somebody, diminutives and weaken words; handle somebody with kid glove; pull wool over somebody's eyes; beat about the bush; minces his words, excusing oneself, asking for permission
EMP	white lies to avoid unpleasant situation, diminutives, telling about intentions, reciprocate, weaken words, digressions, intentions, reasons and motivations behind behaviour and decisions
TAO	rare or no intention and a little explanation, short matter-of-fact speech, talk without beating about the bush
BAL	balancing, comparison, weighting, measuring, calibrating

understanding of other people personality to eliminate conflicts between DOM individuals. When a DOM individual is incorrectly treated he usually refuses, cancels, declines, denies, opposes or goes against somebody's orders or is perverse, contrary or revolt against somebody or something. He can come in conflicts with DOM and VER individuals. He prefers cooperation with HAR, EMP, weakly DOM, weakly VER individuals.

- *Maximalist* (MAX) – He focuses and looks for extreme goals, aims, targets, actions, features, parameters of things, experiences or feelings and he aspires to them. Intelligence can facilitate him to achieve his goals. Moreover, this HPT reinforces and heightens all other HPTs. When a MAX individual is simultaneously DOM he likes to challenge somebody and compete for something extreme in order to come into a possession of it. He can come in conflicts with ASS and VER individuals. He complements well with MAX and INS individuals.
- *Inspiring* (INS) – He is rarely consistent because he can suddenly change plans under the influence of a new idea, spur, impression or inspiration. He is usually very creative. He sometimes prefers even disarray, disorder or an artistic chaos to a well-organized orders, systems or arrangements because they can inspire him somehow better. Intelligence can greatly support and reinforce him to create new things and actions or to hit on new ideas and conceptions. He likes to be accompanied by INS, DIS and MAX individuals. He can come in conflicts with SYS, ASS, VER and BAL individuals.

**Table 5** The profitable and beneficial treatment of the HPTs that value them

<b>DOM</b>	kindly or obsequious ask him for something (things, actions or opinions), thank him; leave him alternatives, possibilities, a choice, if possible carry out his selection and a choice; do not take him away consciousness of independence; neither make, push, force, drive, persuade, recommend, order, command him nor decide on behalf of him, neither narrow nor limit a selection or alternatives too much; neither admonish nor instruct him; sensitively advise or offer him solutions, products, propositions if he asks for it but leave him to make a final choice or make a final decision; do not show disrespect to his opinion or point of view; neither ignore nor disregard him
<b>MAX</b>	neither discourage him nor try to persuade him that his goals are impossible to achieve, try to show a will to help him to achieve his goals and help him to eliminate dangers, risks and threats on his way; express, reflect and illustrate extremes and splendid goals; demonstrate or offer ideas, ways, actions or things that can make him closer to these goals
<b>INS</b>	talk about inspiring, unknown, mysterious, fantastic things, actions, feelings, behaviours and people; surprise him and do some unexpected things or actions; do not plan nor schedule with him
<b>DIS</b>	talk about discoveries, news and other new or interesting things, ideas, associations, opinions, facts, relations, actions, reactions, behaviours, topics; conduct conversations and discussions on discovering topics; bring something undiscovered up for discussion
<b>VER</b>	listen to his remarks and comments, neither quarrel nor argue over what he said but you can tell him your opinion and substantiate it if you disagree with him; do not underestimate or underrate his notices and treat them as criticism or reject his notices; if possible and profitable use these notices to improve things or actions; weigh your words, choose your words carefully; let him to reveal mistakes, errors, bugs, lacks, a negligence, oversights, shortcomings, inconsistencies, faults, flaws, vices, lies, contradictions, conflicts, misreadings, miscalculations, misconceptions for free, thank him for them and ask for more and more notices, remarks, suggestions and comments until he finishes; let him be sure that you value his remarks and notices
<b>SYS</b>	map, reproduce and copy his order; enumerate or list things and actions; keep things in order and chronology; avoid doing digressions; do not change his plans too often; give him extra time for planning and scheduling before he starts to act or answer; do not hurry him
<b>ASS</b>	assure him that his words of caution and warning and against what he says are taken into consideration; ask for more notices and his recommendation; neither ignore nor shrug off his criticism or warnings; tell him what to do if/when in doubt or in case of doubt; all his doubts should be dispelled
<b>HAR</b>	do not come into conflict; make him sure he can tell what he means and his opinion, ask or suggestions do not cause a conflict; neither push nor drive him if you would like to know his opinion; do everything in peace, quiet and understanding; ask him about his opinion and show him that his answers will not lead to conflicts, quarrels etc.; be sensitive to his opinions; help him to harmonize all situations and people; take into consideration that he probably can change his decision in case of somebody's disagreement or in view of having a quarrel with somebody
<b>EMP</b>	tell him about own intentions, reasons, be empathic and let him to understand your intentions, make personal digressions, do not cut his personal reflections, do not come straight to the point
<b>TAO</b>	talk to him in concrete terms, do not mince words; do not beat about the bush; immediately go straight down to business, facts, specifics or brass tacks; get immediately down to facts, business or specifics
<b>BAL</b>	keep balance in everything and be fair, just and self-critical

- *Discovering* (DIS) – He is very inquisitive, inquiring, incisive, very prying, curious about explanations of all mysteries, secrets, incomprehensible, obscure and undiscovered things, features and properties of things, actions, behaviours and relations. Intelligence can help him a lot to explore, penetrate, discern, check-up, recognize, reconnoitre, examine and finally associate facts with other facts and understand them. He is usually very interested in scientific and other



discoveries and keen on them. He likes to be accompanied especially by DIS and INS individuals.

- *Verifying* (VER) – He is precise, exact and consistent. He has a great talent for checking, verifying and noticing some important details that other people cannot notice or do not want to notice. Intelligence can also help him to recognize, associate, differentiate and compare more complicated and intricate mechanisms, relationships, things, actions, behaviours etc. He compares when associating facts with other facts. He can reveal many mistakes, errors, bugs, lacks, a negligence, oversights, shortcomings, inconsistencies, faults, flaws, vices, lies, contradictions, conflicts, misreadings, miscalculations, misconceptions etc. He likes when other people appreciate and value his notices and remarks and thank him for them. It is neither necessary nor obligatory to agree with everything he says. If somebody underestimates or underrates his notices, does not take them into account or rejects his notices he usually moves his focus on this person and starts to check and verify this person and looks for his or her shortcomings and vices. It can transform into a personal criticism and a heated exchange. He is often confrontational and contentious. He can come into conflicts especially with DOM, MAX, INS, HAR, EMP individuals.
- *Systematic* (SYS) – He acts only after he has planned everything. He lives confined in his own plans, systems and schedules. When something changes he has to change his plans before he will continue. This is the reason why he does not like when somebody or something makes him to reschedule or change plans. He focuses on ordering, sorting, arranging, classifying and clustering everything around. He has a tendency to pigeonhole somebody as somebody else from his model after a standard classification of his or her behaviour. An order and a tidiness have a special value for him. Intelligence can help him to associate everything and create a very intricate and sophisticated ordered model of the world. He likes to be accompanied by SYS, ASS, VER and TAO individuals. He can come into conflicts with INS, MAX, DOM and TAO individuals.
- *Assurant* (ASS) – He always expects some troubles, problems and difficulties and talks about them. He pick holes in almost everything. He has many doubts and misgivings about various people, things, procedures etc. He can come into conflicts especially with INS, MAX, weakly SYS, weakly ASS and DOM individuals. He complements other ASS and VER individuals.
- *Harmonious* (HAR) – He can seemingly do what other people want and behave towards others like adapting, adjusting or conforming to them but later he usually does something else if there is no threat of further conflicts. He smiles a lot, reassures and behave as being compliant. A HAR individual rarely says what he means, he can even lie, suppress, withdraw, cancel, reverse, ease off, let off, give something a miss, skip something or hold something back in order to neither lead nor bring about conflict. He usually handles somebody with kid glove, pulls wool over somebody's eyes, beats about the bush and minces his words. He uses many soothing, softening and weaken words, diminutives in order to make sensitive or difficult situations more agreeable, accommodating, friendly, amicable, soft, gentle or harmonious. He intentionally does not come to conflicts with anybody.

He is especially exposed to DOM and DIF individuals who can create confrontational and contentious situations which he tries to avoid. He prefers contacts with HAR, EMP and BAL people.

- *Emphatic* (EMP) – He is usually very communicative and forthcoming especially about private life, things and experiences. He lets other people in on his intentions of doing something. In his talks, he puts in many private words and digressions. He uses many soothing, softening and weaken words in order to degrade a distance to other people. He feels strange in company of TAO and weakly EMP individuals. He prefers a company of EMP individuals.
- *Task-Oriented* (TAO) – He passes information on to somebody rather short without telling about his intentions or private digressions. He neither fraternizes with somebody fast nor opens up to somebody nor confides in somebody rapidly. He often harries other people and gets on other people with their work. He harries others to get down to facts, business or specifics and asks about them. He does not like to talk to EMP and HAR individuals because they usually mince their words and speak not in concrete terms. He can go well with TAO, SYS and VER individuals because they are meticulous and concrete.
- *Balancing* (BAL) – He is very balanced, fair and consistent. He persuades others to apply and observe rules, regulations and principles that are balanced, just and fair. He makes things on principle. He is capable of being very exact in criticism and self-criticism. He can come well with BAL and VER individuals. Conflicts are possible with INS, MAX, DOM, HAR and weakly BAL individuals.

On account of a huge number of words and phrases in English the description in Tables 3–4 cannot contain all words and phrases for each HPT. It describes only the general and major features of each introduced HPT and presents the main idea of their recognition and beneficial uses. Each person has got a different mixture of HPTs and their intensities (Fig. 1). The most intensive HPTs have usually a major role in giving a person satisfaction and fulfillment. Many times two groups of HPTs pull a person in opposite directions in accordance with the intensities of their needs, e.g., let us assume that a DOM (intensity 70%) and DIS (intensity 40%) individual did not understand a statement. The cognitive part of his personality (with lower

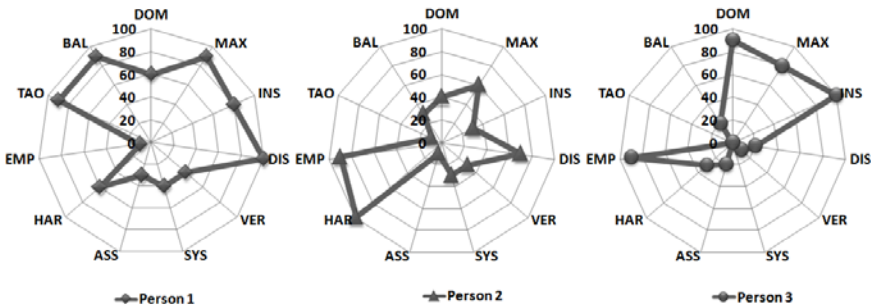


Fig. 1 The personality profiles taking into account intensities of the HPTs

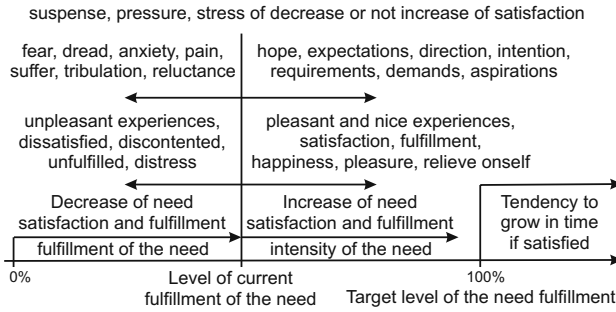
intensity 40%) wants to ask for more details and an explanation, but the dominating part (with higher intensity 70%) of his personality does not want to demean himself before a speaker. This person is torn between asking something or not asking. Usually the stronger sum of intensities of HPTs decides about the final choice if intelligence does not temper this personality natural reaction. If these intensities are reverse, e.g., DOM (intensity 50%) and DIS (intensity 80%) individual will probably ask about more details. The intensities of HPTs can also sum up together, e.g., HAR intensity 60% + EMP intensity 40% can decide for doing something even if SYS intensity 80% (which is stronger than both of them individually) wants something opposite. Intelligence can trigger other reaction that does not result of the stronger sum of intensities of HPTs. Such intelligent reaction, which is incompatible to the needs of recognized HPTs, can be sensible but usually sensed as unpleasant, unnatural or against one's nature.

### 3 Psycholinguistic Recognition of Personality and Needs

Chatbot engine can automatically count up characteristic words, phrases, an inflection, sentence construction during a talk and weight them up properly for each HPT in order to fix intensities of them and choose a profitable actions or reactions that can trigger positive human reactions. The described personality determination and computations are passive and apart from consciousness of a talking person. Some experiments have been performed in construction of chatbots for internet shops. The contents and the way of presentation of information were adjusted to intensities of recognized HPTs. The testing part of customers that talks to a chatbot which recognized their personality and tuned its expressions and forms of a product presentation to them were about 30% more satisfied and want to bought something than the other testing part of customers that were treated in the same manner regardless of their personality. Even simple counting of the characteristic words and phrases (Table 3) for the defined HPTs used in a talk by a human was enough to achieve this result.

Intelligence can associate and conclude that some actions and behaviours are necessary to achieve some goals because it is reasonable about some actions and wise. Intelligence can also temper some unprofitable personality reactions. Intelligence can eliminate all misunderstanding and many conflicts between different HPTs. Intelligence can also substitute some desirable actions that are missing or weak in a certain personality, e.g.:

- NonSYS individual can learn to be sometimes systematic because he needs it in his work or to achieve certain goals that can come from certain needs.
- NonEMP individual can learn to understand other people and examine their needs and feelings because it helps him to talk and communicate to them or negotiate and cooperate with them.
- NonVER MAX individual can learn to pay his attention on some smaller things that can result in some problems that can prevent him from achieving some desirable extreme goals.



**Fig. 2** The directions and relations between fulfillment and intensity of a need, tendency to grow it in time and feelings accompanying them

People try to get and drive more satisfaction from something, take and try to find more pleasure in doing something (Table 1). On the other hand, people try to defend and secure a possessed fulfillment against decrease or lost (Table 2, Fig. 2). The needs make us living creatures that have reasons to live and fulfill needs. The needs affect on us to create and strive for some targets that fulfill them. The needs also affect a development and an increase of intelligence that supports and reinforces our beneficial and profitable actions and reactions through more sophisticated associating of facts, sequences of facts and groups of facts. Intelligence can give us more pleasure of doing something and enables us to express more satisfaction in various ways. The personality needs can be recognized and classified using the described psycholinguistic model of personality (Table 5) and its needs (Table 1). The needs can be used to qualify expected behaviours. The recognized HPTs can give us better understanding of each other and of what differs us and exclude many misunderstanding. The described groups of personal behaviours (HPTs) can be even used to foresee some individual future actions and reactions in a given context or situation what can result in better understanding of each other, in better possibility to conduct negotiations and in easier cooperation. These knowledge can also help to model and understand human needs by a computer and create better algorithms (Table 5) and interfaces for man-machine interactions.

## 4 Conclusions

The paper describes the new philosophy to construct intelligent interfaces for man-machine interactions using psychological knowledge of human personality. It has defined and introduced 11 human personality types (Dominating – DOM, Maximalist – MAX, Inspiring – INS, Discovering – DIS, Verifying – VER, Systematic – SYS, Assurant – ASS, Harmonious – HAR, Emphatic – EMP, Task-Oriented – TAO and Balancing – BAL) and shown the way of their recognition. It points out usual ways of behaviour that are characteristic for them. It also describes likes and dislikes for them that can conclude in formation of appropriate algorithms

for more profitable interaction between them and a chatbot. It describes how to tune to them and use more profitable actions and reactions to various persons individually (Table 5). The presented description supplies our consciousness with understanding of needs coming from personality (Table 1) and can influence the creation of more human interfaces that are able to understand and go along with human natural expectations.

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