# Appendix: Personality Expression using Co-speech Gesture

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## A. UNABRIDGED PAIRWISE COMPARISONS

We depict the pairwise differences for all models per personality set and measurement type in Table 1 for the sets focusing on expressing high traits and in Table 2 for the sets focusing on expressing low traits. We expect the corresponding personality measurements to be high for the models expressing high traits and low for those expressing low traits in successful models.

The models expressing high openness are measured most differently for openness and extraversion. Model P is the most successful variation for depicting high openness, followed by Model H. Both human likeness and motion appropriateness for Models F and P are high, showing the importance of personality-based adjustments in depicting realistic agents. Model S, where we utilize the sad style, performs poorly in motion appropriateness. This behavior is likely due to the limited motion range of the sad style; the lack of motion can appear inappropriate when the dialogue and facial expressions of the agent express high openness.

The models expressing high conscientiousness are measured similarly for conscientiousness except for Model H, whose energetic movements are unsuitable for conveying this trait. Consequently, Model H is measured low in human likeness. Models P and H are measured high in openness and extraversion for this set; using Model F helps convey high conscientiousness without increasing the perceived openness and extraversion. This behavior is beneficial when the application requires distinguishing the individual personality factors. In some instances, models achieve higher differences by increasing or decreasing the perception of all the factors; ultimately, we aim for the difference only for the factor the model aims to express.

The models expressing high extraversion have the most significant difference for openness and extraversion. The correlation between perceived extraversion and openness is similar for all models. The highest extraversion mean is achieved by Model P, followed by Models H and F. The active movements of Model H are suitable for expressing high openness; similarly, when the co-speech gesture generation system is inactive, the influence of the personality-based adjustments becomes dominant, which explains why Model P outperforms the others for this set. All models perform similarly well for motion appropriateness and have slightly lower but similar results for human likeness.

Models F and P perform similarly well for expressing high agreeableness. For this set, even Model S, which utilizes the sad style, achieves a positive agreeableness mean, which could signal perceived agreeableness less influenced by the motion differences. This factor was previously found to be highly related to facial expressions [4]. Additionally, using polite speech for the generated co-speech gestures may cause the movement to appear friendly, dominating any differences due to the style input. Model H performs poorly for human likeness and motion appropriateness when utilizing the high agreeableness dialogue.

The models expressing high neuroticism have no significant personality difference; however, Model S has significantly better human likeness and motion appropriateness for this set. This behavior shows that using the sad style gestures achieves the desired neuroticism appearance without disturbing the realism of the agent. At the same time, personality-based adjustments influence realism negatively to achieve a similar apparent neuroticism score. Since high neuroticism is associated with negative traits, the models in this set achieve an inverse trend for the remaining personality measurements.

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| Set | Pair | O | | C | | E | | A | | N | | L | | M | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | $\Delta_O$ | $\rho_O$ | $\Delta_C$ | $\rho_C$ | $\Delta_E$ | $\rho_E$ | $\Delta_A$ | $\rho_A$ | $\Delta_N$ | $\rho_N$ | $\Delta_L$ | $\rho_L$ | $\Delta_M$ | $\rho_M$ |
| O+ | G – F | -.265 | .012 | -.116 | .607 | -.272 | .016 | -.211 | .100 | .142 | .498 | -.257 | .069 | -.186 | .266 |
| | P – F | .236 | .036 | -.046 | .980 | .353 | .001 | .069 | .926 | .069 | .937 | -.004 | .000 | -.024 | .999 |
| | H – F | .067 | .926 | -.093 | .779 | .164 | .327 | -.046 | .983 | .154 | .419 | -.163 | .458 | -.139 | .568 |
| | S – F | -.280 | .007 | -.039 | .989 | -.326 | .002 | -.258 | .023 | .103 | .777 | -.233 | .124 | -.264 | .038 |
| | P – G | .501 | .000 | .070 | .908 | .625 | .000 | .281 | .010 | -.073 | .923 | .253 | .076 | .163 | .403 |
| | H – G | .332 | .001 | .023 | .999 | .436 | .000 | .165 | .303 | .011 | .000 | .094 | .873 | .048 | .986 |
| | S – G | -.015 | .000 | .077 | .878 | -.053 | .973 | -.047 | .981 | -.040 | .992 | .024 | .999 | -.078 | .918 |
| | H – P | -.169 | .244 | -.048 | .977 | -.189 | .193 | -.115 | .659 | .085 | .877 | -.159 | .484 | -.115 | .728 |
| | S – P | -.516 | .000 | .006 | .000 | -.678 | .000 | -.328 | .001 | .034 | .996 | -.229 | .136 | -.241 | .074 |
| | S – H | -.347 | .000 | .054 | .964 | -.490 | .000 | -.212 | .096 | -.051 | .979 | -.070 | .953 | -.126 | .657 |
| C+ | G – F | -.036 | .993 | -.035 | .992 | -.036 | .996 | .006 | .000 | .086 | .855 | -.076 | .942 | -.041 | .992 |
| | P – F | .292 | .007 | .056 | .954 | .374 | .001 | .268 | .010 | .021 | .999 | .112 | .798 | .004 | .000 |
| | H – F | .240 | .042 | -.203 | .077 | .309 | .011 | .051 | .972 | .248 | .033 | -.288 | .036 | -.225 | .114 |
| | S – F | -.133 | .529 | -.005 | .000 | -.124 | .693 | -.113 | .638 | .084 | .865 | -.143 | .613 | -.100 | .820 |
| | P – G | .328 | .001 | .091 | .774 | .410 | .000 | .261 | .013 | -.064 | .944 | .189 | .334 | .045 | .989 |
| | H – G | .277 | .012 | -.168 | .209 | .345 | .003 | .044 | .983 | .162 | .323 | -.212 | .222 | -.184 | .282 |
| | S – G | -.096 | .792 | .031 | .995 | -.088 | .888 | -.119 | .587 | -.002 | .000 | -.067 | .964 | -.059 | .970 |
| | H – P | -.051 | .975 | -.259 | .010 | -.065 | .961 | -.217 | .063 | .226 | .065 | -.400 | .001 | -.229 | .104 |
| | S – P | -.425 | .000 | -.061 | .939 | -.498 | .000 | -.381 | .000 | .062 | .950 | -.256 | .085 | -.104 | .798 |
| | S – H | -.373 | .000 | .199 | .089 | -.433 | .000 | -.164 | .266 | -.164 | .311 | .145 | .605 | .125 | .666 |
| E+ | G – F | -.318 | .002 | .032 | .997 | -.199 | .190 | -.121 | .639 | .123 | .670 | .059 | .976 | -.035 | .996 |
| | P – F | .194 | .142 | .010 | .000 | .312 | .006 | .129 | .578 | .098 | .827 | .174 | .406 | -.052 | .981 |
| | H – F | .066 | .933 | -.051 | .978 | .155 | .437 | .046 | .984 | .120 | .690 | .115 | .779 | .012 | .000 |
| | S – F | -.402 | .000 | -.051 | .978 | -.336 | .002 | -.213 | .109 | .133 | .598 | .078 | .934 | -.059 | .969 |
| | P – G | .512 | .000 | -.022 | .999 | .511 | .000 | .250 | .037 | -.025 | .999 | .115 | .775 | -.017 | .000 |
| | H – G | .384 | .000 | -.083 | .884 | .354 | .001 | .168 | .312 | -.003 | .000 | .056 | .981 | .047 | .987 |
| | S – G | -.084 | .854 | -.083 | .884 | -.138 | .558 | -.092 | .831 | .010 | .000 | .019 | .000 | -.024 | .999 |
| | H – P | -.128 | .546 | -.062 | .958 | -.157 | .420 | -.083 | .879 | .022 | .999 | -.059 | .975 | .064 | .961 |
| | S – P | -.595 | .000 | -.062 | .958 | -.649 | .000 | -.342 | .001 | .036 | .995 | -.096 | .872 | -.007 | .000 |
| | S – H | -.468 | .000 | -.000 | .999 | -.491 | .000 | -.260 | .027 | .013 | .000 | -.036 | .996 | -.071 | .942 |
| A+ | G – F | -.188 | .225 | -.181 | .209 | -.230 | .068 | -.194 | .159 | .114 | .688 | -.195 | .295 | -.168 | .395 |
| | P – F | .144 | .492 | -.147 | .412 | .311 | .004 | .132 | .534 | .066 | .940 | -.144 | .599 | -.047 | .988 |
| | H – F | -.046 | .986 | -.327 | .001 | .178 | .253 | -.110 | .702 | .346 | .001 | -.417 | .000 | -.299 | .016 |
| | S – F | -.263 | .029 | -.082 | .871 | -.202 | .143 | -.105 | .738 | .009 | .000 | -.124 | .729 | -.128 | .667 |
| | P – G | .332 | .002 | .033 | .995 | .540 | .000 | .326 | .002 | -.047 | .983 | .050 | .987 | .121 | .710 |
| | H – G | .142 | .510 | -.146 | .422 | .407 | .000 | .084 | .863 | .233 | .060 | -.222 | .174 | -.131 | .647 |
| | S – G | -.075 | .918 | .099 | .770 | .027 | .998 | .089 | .835 | -.104 | .751 | .071 | .954 | .041 | .993 |
| | H – P | -.190 | .213 | -.179 | .216 | -.133 | .549 | -.242 | .040 | .280 | .013 | -.272 | .053 | -.251 | .066 |
| | S – P | -.407 | .000 | .066 | .938 | -.513 | .000 | -.237 | .047 | -.057 | .965 | .021 | .000 | -.080 | .917 |
| | S – H | -.217 | .112 | .245 | .034 | -.380 | .000 | .005 | .000 | -.337 | .001 | .293 | .030 | .171 | .377 |
| N+ | G – F | .043 | .989 | -.014 | .000 | -.034 | .995 | -.090 | .796 | .024 | .999 | -.007 | .000 | -.001 | .000 |
| | P – F | .165 | .352 | -.156 | .470 | .160 | .382 | .017 | .000 | .079 | .925 | -.176 | .363 | -.150 | .403 |
| | H – F | .119 | .676 | -.158 | .459 | .178 | .276 | -.017 | .000 | .173 | .376 | -.241 | .095 | -.197 | .144 |
| | S – F | .096 | .825 | .113 | .759 | .029 | .998 | .011 | .000 | -.048 | .988 | .094 | .867 | .038 | .992 |
| | P – G | .122 | .653 | -.142 | .567 | .194 | .193 | .108 | .669 | .055 | .980 | -.169 | .408 | -.148 | .413 |
| | H – G | .076 | .917 | -.144 | .555 | .212 | .127 | .073 | .895 | .149 | .532 | -.234 | .114 | -.196 | .150 |
| | S – G | .052 | .977 | .127 | .668 | .063 | .955 | .101 | .722 | -.072 | .946 | .101 | .832 | .039 | .991 |
| | H – P | -.046 | .986 | -.002 | .000 | .018 | .000 | -.035 | .993 | .095 | .863 | -.065 | .962 | -.048 | .981 |
| | S – P | -.070 | .937 | .269 | .040 | -.131 | .586 | -.007 | .000 | -.126 | .685 | .270 | .044 | .187 | .184 |
| | S – H | -.023 | .999 | .270 | .038 | -.149 | .459 | .028 | .997 | -.221 | .150 | .335 | .005 | .235 | .049 |

Table 1. Pairwise comparison of the models for the positive personality sets. We report each sample pair's mean difference ($\Delta_X$) and Tukey HSD adjusted $\rho$ values. Highlighted values indicate $\rho < 0.05$ with $\Delta > 0.5$, $0.5 > \Delta > 0.3$, and $0.3 > \Delta$. For a pair $A - B$, the mean difference of the corresponding measurement $x$ is calculated as $mean(A_X) - mean(B_X)$.

| Set | Pair | O | | C | | E | | A | | N | | L | | M | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | $\Delta_O$ | $\rho_O$ | $\Delta_C$ | $\rho_C$ | $\Delta_E$ | $\rho_E$ | $\Delta_A$ | $\rho_A$ | $\Delta_N$ | $\rho_N$ | $\Delta_L$ | $\rho_L$ | $\Delta_M$ | $\rho_M$ |
| O- | G – F | .005 | .000 | .059 | .963 | .025 | .998 | .033 | .996 | -.085 | .877 | .054 | .985 | .086 | .880 |
| | P – F | .228 | .089 | -.055 | .973 | .278 | .009 | .155 | .410 | -.066 | .946 | .005 | .000 | .025 | .999 |
| | H – F | .215 | .126 | -.104 | .769 | .258 | .020 | .080 | .898 | .004 | .000 | .011 | .000 | -.002 | .000 |
| | S – F | .001 | .000 | .095 | .825 | -.035 | .993 | .025 | .999 | -.117 | .683 | .077 | .943 | .083 | .894 |
| | P – G | .223 | .101 | -.114 | .704 | .254 | .024 | .122 | .644 | .018 | .000 | -.049 | .989 | -.061 | .964 |
| | H – G | .210 | .142 | -.163 | .355 | .234 | .047 | .047 | .984 | .089 | .856 | -.042 | .994 | -.088 | .870 |
| | S – G | -.004 | .000 | .035 | .995 | -.060 | .953 | -.008 | .000 | -.032 | .996 | .023 | .999 | -.003 | .000 |
| | H – P | -.014 | .000 | -.049 | .981 | -.020 | .999 | -.075 | .917 | .071 | .933 | .006 | .000 | -.028 | .998 |
| | S – P | -.228 | .090 | .149 | .450 | -.314 | .002 | -.130 | .587 | -.051 | .979 | .072 | .955 | .058 | .970 |
| | S – H | -.214 | .128 | .199 | .171 | -.294 | .005 | -.055 | .972 | -.122 | .652 | .066 | .968 | .085 | .884 |
| C- | G – F | .122 | .581 | .042 | .989 | .139 | .479 | .106 | .721 | -.162 | .495 | .144 | .563 | .052 | .979 |
| | P – F | .390 | .000 | -.048 | .981 | .430 | .000 | .143 | .441 | .059 | .977 | .185 | .304 | .023 | .999 |
| | H – F | .271 | .010 | -.093 | .820 | .388 | .000 | .117 | .638 | -.014 | .000 | .077 | .928 | -.015 | .000 |
| | S – F | .026 | .998 | .068 | .935 | .095 | .794 | .073 | .910 | -.138 | .651 | .195 | .252 | -.025 | .999 |
| | P – G | .268 | .011 | -.090 | .840 | .291 | .006 | .037 | .992 | .221 | .185 | .041 | .993 | -.029 | .998 |
| | H – G | .150 | .370 | -.135 | .529 | .249 | .030 | .011 | .000 | .148 | .585 | -.066 | .958 | -.067 | .947 |
| | S – G | -.096 | .772 | .027 | .998 | -.043 | .987 | -.033 | .995 | .024 | .999 | .051 | .984 | -.077 | .915 |
| | H – P | -.119 | .604 | -.045 | .985 | -.042 | .988 | -.026 | .998 | -.074 | .950 | -.107 | .795 | -.037 | .994 |
| | S – P | -.365 | .000 | .116 | .667 | -.335 | .001 | -.070 | .922 | -.197 | .292 | .010 | .000 | -.047 | .985 |
| | S – H | -.246 | .026 | .162 | .342 | -.292 | .006 | -.044 | .985 | -.124 | .737 | .117 | .737 | -.010 | .000 |
| E- | G – F | .312 | .008 | .183 | .280 | .254 | .075 | .247 | .059 | -.306 | .012 | .243 | .131 | .228 | .156 |
| | P – F | .310 | .009 | .009 | .000 | .299 | .021 | .051 | .981 | -.007 | .000 | .125 | .742 | .073 | .949 |
| | H – F | .499 | .000 | -.024 | .999 | .590 | .000 | .226 | .105 | -.120 | .712 | .032 | .998 | -.052 | .986 |
| | S – F | .217 | .142 | .175 | .324 | .268 | .052 | .174 | .324 | -.229 | .117 | .222 | .201 | .168 | .446 |
| | P – G | -.002 | .000 | -.174 | .331 | .046 | .990 | -.196 | .211 | .299 | .016 | -.117 | .786 | -.154 | .535 |
| | H – G | .188 | .265 | -.206 | .171 | .336 | .006 | -.022 | .999 | .186 | .290 | -.211 | .249 | -.279 | .044 |
| | S – G | -.095 | .847 | -.008 | .000 | .014 | .000 | -.073 | .933 | .078 | .925 | -.021 | .000 | -.059 | .976 |
| | H – P | .189 | .256 | -.033 | .997 | .290 | .027 | .174 | .324 | -.113 | .757 | -.093 | .895 | -.125 | .723 |
| | S – P | -.093 | .856 | .166 | .380 | -.032 | .998 | .123 | .670 | -.221 | .139 | .096 | .883 | .095 | .876 |
| | S – H | -.283 | .023 | .198 | .204 | -.322 | .010 | -.051 | .981 | -.108 | .785 | .190 | .353 | .220 | .182 |
| A- | G – F | .128 | .665 | .098 | .828 | .078 | .925 | .124 | .599 | -.099 | .795 | .059 | .979 | -.024 | .999 |
| | P – F | .236 | .098 | -.016 | .000 | .258 | .057 | .008 | .000 | .045 | .986 | -.035 | .997 | -.143 | .601 |
| | H – F | .218 | .149 | -.037 | .994 | .231 | .112 | -.011 | .000 | .101 | .779 | -.191 | .348 | -.190 | .315 |
| | S – F | .035 | .996 | .118 | .704 | .029 | .998 | .062 | .952 | -.148 | .443 | .065 | .970 | .036 | .996 |
| | P – G | .108 | .786 | -.114 | .734 | .180 | .330 | -.115 | .661 | .143 | .479 | -.095 | .890 | -.119 | .753 |
| | H – G | .091 | .876 | -.135 | .588 | .153 | .495 | -.135 | .513 | .200 | .157 | -.250 | .112 | -.165 | .458 |
| | S – G | -.092 | .869 | .021 | .999 | -.049 | .986 | -.062 | .950 | -.050 | .980 | .006 | .000 | .061 | .974 |
| | H – P | -.018 | .000 | -.021 | .999 | -.026 | .999 | -.020 | .999 | .056 | .968 | -.155 | .560 | -.046 | .990 |
| | S – P | -.200 | .220 | .134 | .594 | -.228 | .121 | .053 | .971 | -.193 | .184 | .100 | .868 | .179 | .372 |
| | S – H | -.183 | .307 | .156 | .446 | -.202 | .217 | .073 | .914 | -.250 | .039 | .255 | .099 | .226 | .157 |
| N- | G – F | -.094 | .842 | -.088 | .863 | -.083 | .869 | -.179 | .225 | .094 | .818 | -.067 | .967 | -.063 | .951 |
| | P – F | .354 | .001 | -.072 | .928 | .514 | .000 | .162 | .319 | .106 | .742 | .068 | .965 | -.018 | .000 |
| | H – F | .158 | .425 | -.208 | .141 | .355 | .000 | -.047 | .982 | .260 | .026 | -.222 | .204 | -.298 | .006 |
| | S – F | -.169 | .354 | -.037 | .994 | -.250 | .031 | -.269 | .015 | .162 | .346 | -.086 | .921 | -.215 | .101 |
| | P – G | .448 | .000 | .016 | .000 | .596 | .000 | .341 | .001 | .012 | .000 | .135 | .687 | .045 | .986 |
| | H – G | .252 | .050 | -.120 | .668 | .438 | .000 | .132 | .534 | .166 | .320 | -.155 | .566 | -.235 | .056 |
| | S – G | -.074 | .928 | .051 | .980 | -.167 | .293 | -.091 | .826 | .068 | .938 | -.019 | .000 | -.152 | .407 |
| | H – P | -.196 | .206 | -.136 | .554 | -.159 | .344 | -.209 | .105 | .154 | .399 | -.291 | .043 | -.280 | .012 |
| | S – P | -.522 | .000 | .035 | .995 | -.764 | .000 | -.431 | .000 | .055 | .969 | -.154 | .570 | -.196 | .161 |
| | S – H | -.326 | .004 | .171 | .317 | -.605 | .000 | -.222 | .072 | -.098 | .793 | .136 | .683 | .083 | .873 |

Table 2. Pairwise comparison of the models for the negative personality sets. We report each sample pair's mean difference ($\Delta_X$) and Tukey HSD adjusted $\rho$ values. Highlighted values indicate $\rho < 0.05$ with $\Delta > 0.5$, $0.5 > \Delta > 0.3$, and $0.3 > \Delta$. For a pair $A - B$, the mean difference of the corresponding measurement $x$ is calculated as $mean(A_X) - mean(B_X)$.

Perceived openness is similarly low for all models expressing low openness, with Models P and H achieving slightly worse performance. For this set, the human likeness of all models is below the overall average. Models P and H are measured higher than other models for extraversion, which is expected for Model H due to the active movements of the happy style. When we inspect the general extraversion trend for Model P, we observe that it is well distinguished for the opposite polarities for all sets; however, the positive traits have high extraversion means, while the traits with negative associations have neutral extraversion means. This behavior can be due to the base animation used for the repeated motions of Model P; the range of personality-based motion adjustments may fail to deliver negative extraversion if the base animation is too active.

Models achieve similar performance for the low conscientiousness set, with Model S slightly worse than others. The perceived conscientiousness is not significantly different for any model pair among the low personality sets. Model F is found to be slightly lower in human likeness. The motion appropriateness of Model G is slightly higher than the others, suggesting that using Model G would be a better choice for applications that aim to express conscientiousness.

Model F performs best for the low extraversion set, while Model H performs poorly. Models P and G perform very similarly, suggesting an additive influence on the perceived extraversion when personality-based modifications combine with co-speech gestures. For expressing low extraversion, using a neutral style input for co-speech generation is slightly better than using the sad style. Utilizing an expressive style input for co-speech gesture synthesis may weaken the relationship between the words and gestures to realize the characteristics of the target style; consequently, the same voice input can result in slightly worse performance in expressing low extraversion. We observe motion adjustments negatively influencing the human likeness in Model F, and Models G and S achieve the best human likeness in this set. Motion appropriateness of Model G is the highest for expressing low extraversion. A similar relationship is visible for the perceived neuroticism; neuroticism for Model F is neutral, while Model G has a low neuroticism mean, which could explain why the gestures of Model G appear more human-like.

The models expressing low agreeableness are measured similarly for all personality factors, human likeness, and motion appropriateness. In this set, the most significant difference is for Model G, which performs slightly worse. On the other hand, even the active movements of Model H are measured low in agreeableness, suggesting that facial expressions and speech are more dominant for this factor. Angry facial expressions with active gesturing could promote low agreeableness. At the same time, the gestures of Model G with the neutral style lack such enhancement, which can explain why Model S performs slightly worse in expressing low agreeableness with its less active movements. The human likeness and motion appropriateness of Model H are slightly lower than those of the others, with Model S being the best-performing one in terms of these two measurements.

Models expressing low neuroticism perform very similarly for the perceived neuroticism but are significantly different for the perceived extraversion. Model F is the most successful in expressing low neuroticism while having high human likeness and motion appropriateness. We observe that personality-based motion adjustments also increase the perceived extraversion and agreeableness in Models F and P to express low neuroticism, while using co-speech gestures with the neutral style helps better isolate the expressed neuroticism. The perceived openness of Model P is very high for this set, without a significant difference in perceived neuroticism.

## B. VISUAL OVERVIEW

We illustrate the box plots for the participants' ratings of each model for different measurements and personality sets in Figure 1. In this figure, each row shows the plot for a measurement type, and the values for that measurement type for each model are grouped by the personality set. The visual overview of the results can help identify specific correlations, such as the similarity between the high extraversion set's measured openness, extraversion, and agreeableness.

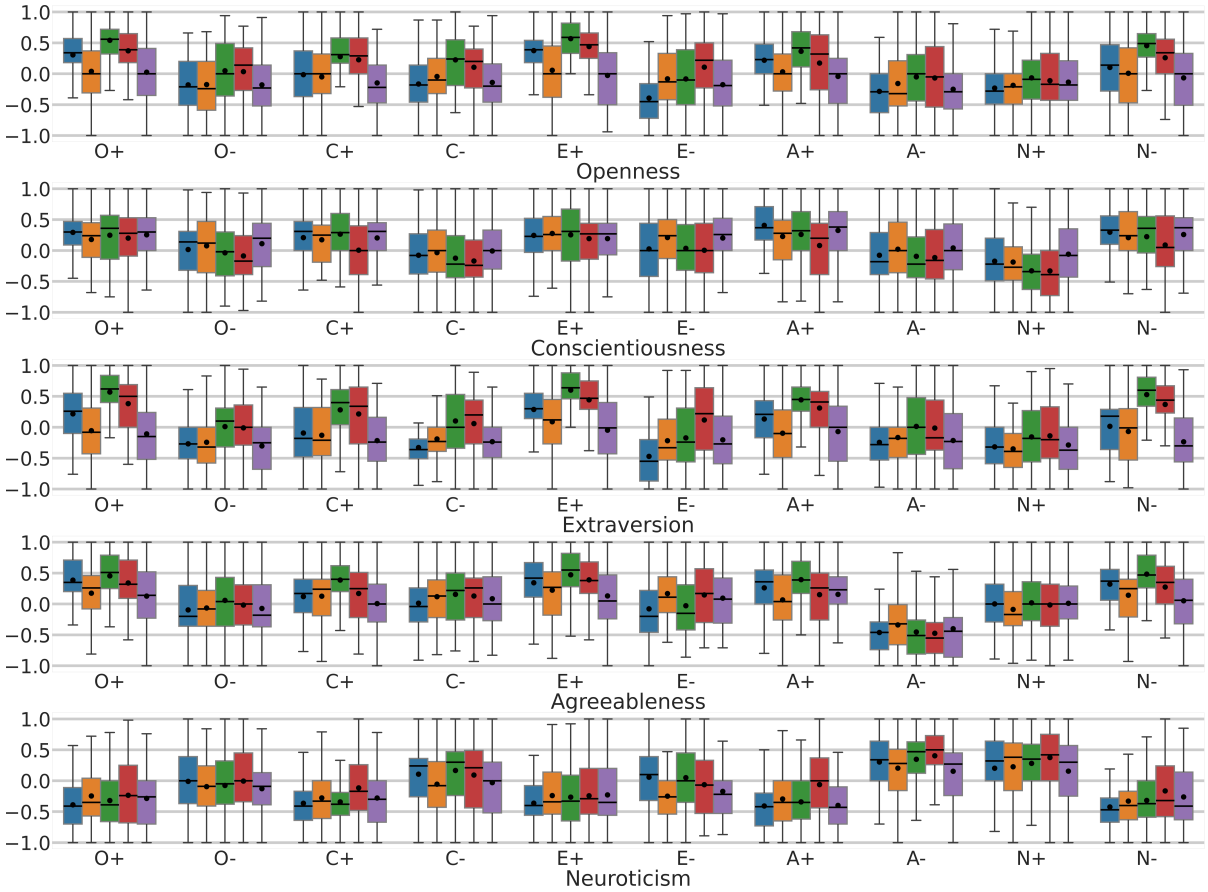


Fig. 1. Box-plot of each measurement in the range [-1,1] per personality set and model. Lines depict the median, and the dots show the mean. In each group, the models are ordered from left to right: F, G, P, H, S.

## C. CORRELATION ANALYSIS

Principal Component Analysis (PCA) of the results, shown in Table 3, reveals that three components can capture at least 80% of the cumulative variance for all models. We apply the Kaiser-Meyer-Olkin (KMO) test [1] to show that PCA applies to the results, following the consensus that $KMO > 0.6$ is suitable for PCA.

PC1, in all models, captures the general positiveness aspect of personality, with neuroticism being inverted as high neuroticism has negative connotations. PC2 captures the inverse relationship of conscientiousness with extraversion, neuroticism, and openness. The active and frequent gesturing of high extraversion and high neuroticism can be perceived as low conscientiousness. Creative behavior is stereotypically associated with low conscientiousness and high openness [2], which could be why PC2 captures an inverse relationship between these two factors. PC3 captures the inverse relationship between conscientiousness and agreeableness in models that utilize personality-based adjustments. Organized and responsible individuals often appear more strict, which could be perceived as less friendly, especially when the participants are exposed to the subject for a short period. PC3 in Model H also captures the same relationship, but this time, agreeableness is more dominant, likely as the

| Model: | F | | | G | | | P | | | H | | | S | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Comp. | PC1 | PC2 | PC3 | PC1 | PC2 | PC3 | PC1 | PC2 | PC3 | PC1 | PC2 | PC3 | PC1 | PC2 | PC3 |
| O | .80 | .35 | – | .75 | .31 | -.31 | -.78 | .43 | – | -.77 | .38 | – | .76 | .33 | – |
| C | .71 | -.43 | -.52 | .64 | -.55 | -.46 | -.71 | -.44 | .50 | -.71 | -.42 | .49 | .59 | -.64 | -.40 |
| E | .74 | .52 | – | .69 | .51 | – | -.76 | .44 | – | -.66 | .60 | – | .73 | .40 | – |
| A | .78 | – | .48 | .75 | – | .46 | -.81 | – | -.44 | -.78 | – | -.52 | .74 | – | .49 |
| N | -.76 | .39 | – | -.69 | .46 | -.35 | .72 | .55 | – | .73 | .50 | – | -.71 | .43 | -.37 |
| C. Var. | 0.57 | 0.72 | 0.83 | 0.50 | 0.67 | 0.80 | 0.57 | 0.75 | 0.85 | 0.54 | 0.72 | 0.84 | 0.50 | 0.68 | 0.82 |
| KMO | .811 | | | .758 | | | .761 | | | .746 | | | .737 | | |

Table 3. PCA results for the models. KMO shows the Kaiser-Meyer-Olkin test results. We suppress coefficients less than 0.3 and display components that capture at least .80 of the cumulative variance (C. Var.). Highlights depict coefficients c where $c > 0.75$, $0.75 > c > 0.6$, $0.6 > c > 0.5$, and $0.5 > c > 0.4$.

happy style is associated with being friendly. PC3 in Model S adds neuroticism to this correlation, suggesting that friendly behavior of high agreeableness is also perceived as emotionally stable (low neuroticism) and less strict (low conscientiousness). PC3 in Model G also adds openness to this relation, suggesting such agreeable individuals appear not very open to new experiences, likely as they are easily distracted (low conscientiousness) but not anxious (low neuroticism). In general, PC3 suggests strong gesturing of high conscientiousness can lower agreeableness perception [3]; strict and conscientious motion can cause an aggressive appearance.

We show the Pearson and Kendall correlation between the measurements for each model in Table 4 to observe the relationships in more detail. The correlation of human likeness and motion appropriateness with personality factors can help identify which personality factors' realism is disturbed. The correlation between human likeness and motion appropriateness is moderate for all the models, suggesting participants mostly perceive them together. In Model F, high openness and agreeableness favor human likeness, while high agreeableness and low neuroticism favor motion appropriateness. In Model G, where we do not apply personality-specific motion adjustment, the human likeness of the samples is only weakly correlated with personality factors. Still, high agreeableness and low neuroticism favor motion appropriateness. A similar relationship is also prominent in the remaining models.

| Model | Meas. | Pearson Correlation | | | | | | | Kendall Correlation | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | O | C | E | A | N | L | M | O | C | E | A | N | L | M |
| F | O | — | .433 | .585 | .521 | -.445 | .322 | .298 | — | .303 | .418 | .389 | -.314 | .233 | .202 |
| | C | .433 | — | .368 | .418 | -.501 | .284 | .305 | .303 | — | .244 | .312 | -.375 | .196 | .223 |
| | E | .585 | .368 | — | .443 | -.392 | .293 | .241 | .418 | .244 | — | .338 | -.273 | .209 | .157 |
| | A | .521 | .418 | .443 | — | -.540 | .305 | .425 | .389 | .312 | .338 | — | -.417 | .224 | .307 |
| | N | -.445 | -.501 | -.392 | -.540 | — | -.279 | -.403 | -.314 | -.375 | -.273 | -.417 | — | -.217 | -.318 |
| | L | .322 | .284 | .293 | .305 | -.279 | — | .429 | .233 | .196 | .209 | .224 | -.217 | — | .318 |
| | M | .298 | .305 | .241 | .425 | -.403 | .429 | — | .202 | .223 | .157 | .307 | -.318 | .318 | — |
| G | O | — | .346 | .490 | .431 | -.318 | .223 | .279 | — | .244 | .368 | .314 | -.223 | .156 | .175 |
| | C | .346 | — | .237 | .297 | -.425 | .273 | .258 | .244 | — | .156 | .216 | -.309 | .184 | .204 |
| | E | .490 | .237 | — | .421 | -.282 | .216 | .228 | .368 | .156 | — | .322 | -.194 | .145 | .138 |
| | A | .431 | .297 | .421 | — | -.432 | .243 | .389 | .314 | .216 | .322 | — | -.339 | .157 | .266 |
| | N | -.318 | -.425 | -.282 | -.432 | — | -.196 | -.380 | -.223 | -.309 | -.194 | -.339 | — | -.144 | -.290 |
| | L | .223 | .273 | .216 | .243 | -.196 | — | .393 | .156 | .184 | .145 | .157 | -.144 | — | .286 |
| | M | .279 | .258 | .228 | .389 | -.380 | .393 | — | .175 | .204 | .138 | .266 | -.290 | .286 | — |
| P | O | — | .411 | .625 | .563 | -.318 | .326 | .287 | — | .290 | .468 | .434 | -.221 | .228 | .200 |
| | C | .411 | — | .365 | .422 | -.550 | .335 | .360 | .290 | — | .271 | .315 | -.420 | .242 | .271 |
| | E | .625 | .365 | — | .525 | -.343 | .361 | .249 | .468 | .271 | — | .428 | -.252 | .274 | .200 |
| | A | .563 | .422 | .525 | — | -.531 | .323 | .469 | .434 | .315 | .428 | — | -.396 | .245 | .352 |
| | N | -.318 | -.550 | -.343 | -.531 | — | -.303 | -.444 | -.221 | -.420 | -.252 | -.396 | — | -.232 | -.334 |
| | L | .326 | .335 | .361 | .323 | -.303 | — | .450 | .228 | .242 | .274 | .245 | -.232 | — | .339 |
| | M | .287 | .360 | .249 | .469 | -.444 | .450 | — | .200 | .271 | .200 | .352 | -.334 | .339 | — |
| H | O | — | .409 | .550 | .485 | -.341 | .198 | .269 | — | .287 | .405 | .343 | -.223 | .131 | .189 |
| | C | .409 | — | .262 | .397 | -.540 | .312 | .396 | .287 | — | .183 | .293 | -.399 | .218 | .293 |
| | E | .550 | .262 | — | .410 | -.255 | .203 | .115 | .405 | .183 | — | .316 | -.176 | .134 | .088 |
| | A | .485 | .397 | .410 | — | -.524 | .234 | .424 | .343 | .293 | .316 | — | -.389 | .177 | .316 |
| | N | -.341 | -.540 | -.255 | -.524 | — | -.248 | -.403 | -.223 | -.399 | -.176 | -.389 | — | -.185 | -.294 |
| | L | .198 | .312 | .203 | .234 | -.248 | — | .410 | .131 | .218 | .134 | .177 | -.185 | — | .303 |
| | M | .269 | .396 | .115 | .424 | -.403 | .410 | — | .189 | .293 | .088 | .316 | -.294 | .303 | — |
| S | O | — | .308 | .537 | .456 | -.315 | .256 | .299 | — | .206 | .388 | .320 | -.212 | .174 | .189 |
| | C | .308 | — | .246 | .233 | -.431 | .225 | .231 | .206 | — | .157 | .166 | -.317 | .156 | .165 |
| | E | .537 | .246 | — | .424 | -.324 | .237 | .260 | .388 | .157 | — | .306 | -.216 | .156 | .162 |
| | A | .456 | .233 | .424 | — | -.447 | .253 | .348 | .320 | .166 | .306 | — | -.340 | .163 | .232 |
| | N | -.315 | -.431 | -.324 | -.447 | — | -.148 | -.304 | -.212 | -.317 | -.216 | -.340 | — | -.109 | -.228 |
| | L | .256 | .225 | .237 | .253 | -.148 | — | .411 | .174 | .156 | .156 | .163 | -.109 | — | .291 |
| | M | .299 | .231 | .260 | .348 | -.304 | .411 | — | .189 | .165 | .162 | .232 | -.228 | .291 | — |

Table 4. Correlation coefficients of each measurement for different models. We report Pearson and Kendall correlation coefficients for each correlation $\rho < 0.05$. Highlights depict coefficients $c$ where $c > 0.5$, $0.5 > c > 0.4$, $0.4 > c > 0.3$, and $0.3 > c > 0.2$.

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