



5HVHDFK \$UWLFOH

2SHQ \$!

\$IJME "EPMFTDFOU BOE :PVOH "EVMU 4VJDJEF 2VFFOTMBOE 4VJDJEF 3FHJTUSZ

.DLUL .)OYHV DQG 'LHJR 'H /HR

\$XVWUDOLDQ ,QVWLWXWH IRU 6XLFLGH 5HVHDFK DQG 3UHYHQWLRQ 1DWLRQDO &HQWUH RI ([FHOOHQFH
6XLFLGH 3UHYHQWLRQ *ULIILWK 8QLYHULVW\ \$XVWUDOLD

&RUUHVSRQGLQJ DXWKRU 'LHJR 'H /HR \$XVWUDOLDQ ,QVWLWXWH IRU 6XLFLGH 5HVHDFK DQG 3UHYHQW
&HQWUH IRU 5HVHDFK DQG 7UDLQLQJ LQ 6XLFLGH 3UHYHQWLRQ *ULIILWK 8QLYHULVW\ \$XVWUDOLD
5HFHLYHG GDWH 0DU \$FFHSWHG GDWH 0D\ 3XEOLVKHG GDWH 0D\

&RSULJKW < .ROYHV . HW DO 7KLW LV DQ RSHQ DFFHVV DUWLFOH GLVWULEXWHG XQGHU WKH WHU
XVH GLVWULEXWLRQ DQG UHSURGXFWRQ LQ DQ\ PHGLXP SURYLGHG WKH RULJLQDO DXWKRU DQG VRXU

\$EVWUDFW

2EMHFWLYH 7KH LQFLGHQFH RI VXLFLGHV LQFUHDVHV UDSLGO\ XS WR WKH DJH
FKDQJHV RQO\ D OLPLWHG QXPEHU RI VWXGLHV KDV FRPSDUHG FKDUDFWHULVW
VXLFLGHV 7KH DLP RI WKH FXUUHQW VWXG\ ZDV WR FRPSDUH GHPRJUDSKLF SV\F
VXLFLGHV LQ WKUHH \RXQJHVW DJH JURXS \HDUV \HDUV DQG \H
EHWZHHQ DQG

0HWKRGV 7KH 4XHHQVODQG 6XLFLGH 5HJLVWHU 465 FRQWDLQV LQIRUPDWLRQ
SROLFH UHSRUW RI GHDWK WR D &RURQHU SRVW PRUWHP DXWRSV UHSRUW WR
VXLFLGH UDWHV ZHUH FDOFXODWHG E\ JHQGHU DQG DJH JURXS 2GGV 5DWLRV 25
&KL WHVW DUH SUHVHQWHG

5HVXOWV
DJHG \HDUV DQG DJHG \HDUV 7KH SURSRUWLRQ RI PDOHV LQFUHDV
+RZHYHU WKH SURSRUWLRQ RI ,QGLJHQRXV SHRSOH GHFUHDVHG VLJQLILFD
+DQJLQJ ZDV WKH PRVW IUHTXHQW VXLFLGH PHWKRG IRU DOO DJH JURXS DQG IRU
DJH IRU ERWK JHQGHUV 3UHYDOHQFH RI D GLDJQRVHG SV\FKLDWULF GLVRUGHU
LQFUHDVHG ZLWK DJH (YLGHQFH RI XQWUHDWHG PHQWDO KHDOWK SUREOHPV Z
EHWZHHQ DJH JURXS 6LPLODUO\ WKUHH ZHUH QR VLJQLILFDQW GLIIHUHQFHV L
FRPPXQLFDWLRQ RI VXLFLGH LQWHQW 6XLFLGH LQ VRFLDO JURXS DQG DWWHQW
ZRUN UHODWHG SUREOHPV DQG FKLOGKRRG WUDXPD GHFUHDVHG VLJQLILFDQWO\ Z

&RQFOXVLRQ VXLFLGHV LQ HDUO\ DGROHVFHQFH ZHUH FKDUDFWHULVHG E\ KLJKHU SU
UHODWHG SUREOHPV DQG VXLFLGHV LQ VRFLDO JURXS 6XLFLGHV LQ \RXQJ DJH
SV\FKLDWULF GLVRUGHUV DQG ZHUH PRUH LPSDFWHG E\ UHODWLRQV KLJK SUR
4XHHQVODQG \$XVWUDOLD EHWZHHQ

.HIZRUG 6XLFLGH &KLOGUHQ \$GROHVFHQFH QHWKRRG DGXOWV 3V\FKLDWULF
GLVRUGHUV /LIH HYHQWV

,QWURGXFWRQ

H 4XHHQVODQG VXLFLGH UHJLVWHU 4

H LQFLGHQFH RI VXLFLGH LQFUHDVHV UDSLGO\ WR WKH DJH (YDULHW\ RI IDFWRUV
&KLOGUHQ \$GROHVFHQFH QHWKRRG DGXOWV 3V\FKLDWULF GLVRUGHUV /LIH HYHQWV
:KLOH JOREDOO\ VXLFLGH UDWHV DUH DSKR [465] DWLQV SHRQH RI WKUHH FDWHJR
VWDELOLJH LQ HDUO\ DGXOWKRRG > @

6XLFLGHV LQ DGROHVFHQWV DUH LPSDFWHG E\ D YDULHW\ RI IDFWRUV
LQFOXGLQJ SV\FKRORJLFDO SV\FKLDWULF JHQHWLF VRFLDO DQG FXOWUD
IDFWRUV > @ \$OWKRJK WKUHH DUH VHYHUDO VWXGLHV IRFXVLQJ RQ DGROHVF
VXLFLGH DQG VXLFLGDO EHKDYLRXUV RQO\ D OLPLWHG QXPEHU FRPSDUH
FKDUDFWHULVWLFV RI FKLOG DQG DGROHVFHQW VXLFLGHV RU DGROHVFHQW D
\RXQJ DGXOW VXLFLGHV > @ &RQFOXVLRQ VXLFLGHV LQ VRFLDO JURXS DQG
EHWZHHQ WKHVH JURXS WKH DLP RI WKH FXUUHQW DQDO\VLV ZDV WR H[DPLQH
GHPRJUDSKLF SV\FKRORJLFDO SV\FKLDWULF GLVRUGHUV LQ WKUHH DJH
WKUHH \RXQJHVW DJH JURXS a FKLOGUHQ HDUO\ DGROHVFHQW \HDUV

'RXEW 3UREDEOH RU 3RVVLEOH > @)RU WKH SUHVHQW DQDO\VHV RQO\ WKRVL
FDVHV IDOOLQJ LQWR WKH FDWHJRULHV RI HLWKHU %H\RQG 5HDVRQDEOH 'RXEW
3UREDEOH DUH LQFOXGHG

6WDWLVLWLFDO DQDO\VLV

\$QQXDO VXLFLGH UDWHV ZHUH FDOFXODWHG E\ JHQGHU DQG DJH JURXS
3RLVVRQ UHJUHVVLQRQ ZDV XVHG WR DQDO\WH ,Q RUGHU WR FRPSDUH WKUHH DJH
JURXSV &KL VTXDUH WHVW ZDV XVHG

,Q RUGHU WR FRPSDUH WZR DJH JURXSV 2GGV 5DWLRV 25 ZLWK
FRQ}GHQW HUYDOV &, ZHUH FDOFXODWHG \$JH JURXS \HDUV
ZDV XVHG DV UHIHUHQFH JURXS ZKHQ FDOFXODWLQJ 25 :LWK VPDOO QXPEHUV
OHVV WKDQ)LVKHUdV H[DFW WHVW ZDV XVHG 6366 ZDV HPSOR\HG IRU
DOO GDWD DQDO\WHV

5HVXOWV

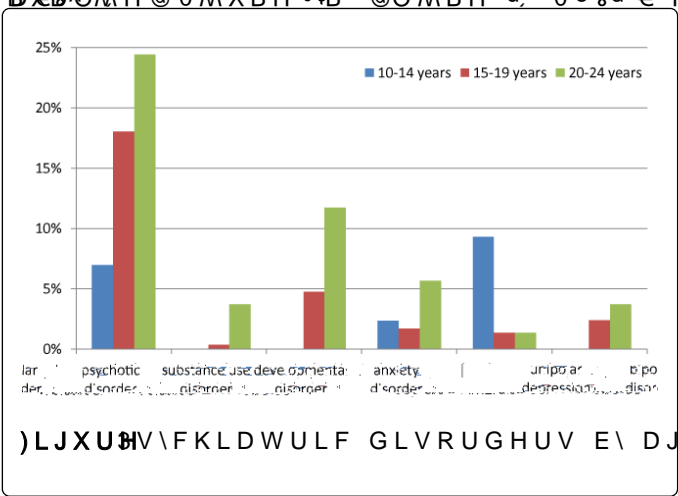
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)LJXUH VKRZV WKDW VXLFLGH QXPEHUV JURZ UDSLGO\ ZLWK DJH XQWLO WKH
DJH RI \HDUV DQG VWDELOL]H LQ HDUO\ V

H SURSRUWLRQ RI PDOHV LQFUHDVHG ZLWK DJH DQG
UHVSHFWLYHO\ G&KL S +RZHYHU WKH
SURSRUWLRQ RI \$ERULJLQDO DQG 7RUUHV 6WUDLW ,VODQGHU SHRSOHV GHFUHDV
VLJQL}FDQWO\

LQFUHDVHG ZLWK DJH 7DEOH &RPSDULVRQLEFOMZWHQQLDQJFKLORGLSHQ DJHG
\HDUV DQG \HDUVLWKLWZKWD SUHYDQHRQFHHR17DEOH)LJXUH SUHVHQWV V
GLDJQRVHG SV\FKLDWULF GLVRUGHU SMVRKLGHWUWLF8QMLSHRQDPRHGWSUFRQVLRQWZDWL
ZLWK D PHQWDO KHDOWK SURIHVVLRQDO LQHDWK DQG WKUHBUVRQDQGLSHRO
GHDWK DQG LOOLFLW GUXJ XVH LQ DUXQURXS DJH JURXS, QPSDULVRQRI DQ
EHWZHHQ WKH WZR \RXQJHU DJH JURXS DUVV KRSRG WWDQWLLWKLWZKWD SUHYDQHRQFHHR J
FRQVXOWDWLRQ ZLWK D PHQWDO KHDOWK SURMHVWHLQDO LQ WKHQGDVW WKLWZKWD

	\HDUV D	\HDUV E	\HDUV	\HDUV&RPSDULVRQRI D	D&RPSDULVRQRI F	DQG E
	1	1	1	25	&	25 &

\$ GLDJQRVHG SV\FKLDWULF GLVRUGHU
\$Q\W\SHRI SV\FKLDWULF WUHDWPHQW



MFGG L FROZHO SUHYDOHQFH RI PHQWDO KH
 RWKHU \$XVWUDOLDQV > @ ,Q OLQH ZLV
 VWXG\ VKRZHG WKDW FORVH WR KDOI RI \
 ZHUH E\ \$ERULJLQDO DQG 7RUUHV 6WUDLW
 LQ DJH JURXS \HUV DQG LQ DJH
 5HVWULFWLQJ DFFHVV WR PHDGVHFWLYS
 DFWLYLW\ WR UHGXFH VXLFLGH QXPEHUV >
 SUHYDOHQFH RI KDQJLQJ ZLWK RYHU RI
 RI VXLFLGH \$OWKXJK FOHQGHG LQ ZLV
 UHPDLQH RYHU IRU ERWK JHQGHUV L
 LPSRUWDQW WR QRWH WKDW KDQJLQJ VHH
 LQ 4XHHQVODQG DJH JURXS \HUV
 VXLFLGHV LQ HUH > @

)LJXUHV\FKLDWULF GLVRUGHUV E\ DJH JURXS

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 PDGH D SUHYLRXV VXLFLGH DWWHPSW DQG PRUH WKDQ D WKLUG FRPPXQLFDWHG
 WKHLU VXLFLGH LQWHQW LQ WKH SUHYDOHQFH PRQWKV ZLWK QR
 GLVHUHQFHV WKH WKUHH DJH JURXS 7DEOH 6XLFLGH LQ VRFLDO
 JURXS DQG DWWHQWLRQ WR VXLFLGH LQ PHGLD ZHUH ERWK KLJKHVW LQ WKH
 \RXQJHVW DJH JURXS DQG GHFUHDVHG ZLWK DJH 7DEOH

H SUHYDOHQFH RI PHQWDO GI S
 VFKRRO ZRUN UHODWHG SUREOHPV & KDQG
 FKLOGKRRG WUDXPD & SL GHFOLHFDQW\
 ZLWK DJH SUHYDOHQFH RI UHODWLRQV KLS SUREOHPV LQFUHDVHG
 VLJQL}FDWKDJH & GI S FRDPZDW
 WKH PRVW IUHTXHQW HYHQW LQ DJH JURXS \HUV DQG UHODWLRQV KLS
 SUREOHPV LQ DJH JURXS DQG \HUV

'LVFXVVLQR

6XLFLGH QXPEHUV DQG UDWHV LQFUHDVHG UDSLGO\ ZLWK DJH HVSHFLDOO\ IRU
 PDOHV FRQWULEXWLQJ WR WKH JURZLQJ JHQGHU FDS 6LPLODUO\ UDSLQJ JURZWH
 IRU PDOHV XQWLO DJH \HUV ZDV SUHVHQWHG LQ D UHFHQW DQDO\VLV RI 8.
 DQG ,UHOHQG > RQ WKH FXUUHQW LQWHQW WR DQDO\H
 LQ WKH FKDUDFWHULVWLFV RI VXLFLGH E\ \RXQJ SHRSOH EHORZ WKH DJH RI
 \HUV E\ FRPSDULQJ WKUHH DJH JURXS \HUV FKLOGUHQ HDUO\
 DGROHVFHQWV \HUV ODWH DGROHVFHQWV DQG \HUV \RXQJ
 DGXOWFXW\ LQWV PLJKW QRW EH LGHDO FRQVLGHULQJ PDMRU
 GHYHORSFHQWDO HPRWLRQDO DQG FRJQLWLYH FKDQJHV RFFXUULQJ EHWZHHQ
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 KDV EHHQ HQGRUVHG E\ WKH \$PHULFDQ \$FDGHP\ RI &KLOG DQG \$GROHVFHQW
 3V\FKLDWU\ > @

(DUOLHU UHVHDFK KDV LQGLFDWHG WKDW VXLFLGH ULVN LV SDUWLFXODUO\ KL
 \RXQJ \$ERULJLQDO DQG 7RUUHV 6WUDLW ,VODQGHU SHRSOH > @ 3RWHQWLDO
 H[SODQDWRQV KDYH LQFOXGHG ORVV RI FXOWXUDO LGHQWLW\ LQWHUJHQHUDW
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 XQGHUWDQGLQJ RI PHQWDO KHDOWK SUREOHPV LQ \$ERULJLQDO DQG 7RUUHV
 6WUDLW ,VODQGHU SHRSOH H[FOXVLRQV LQ FUHDWV @
 FRPSDUHG ZLWK RWKHU \$XVWUDOLDQV DUH SDUWLFXODUO\ GHHS IRU HDUO\
 DGROHVFHQWV DJHG \HUV ZLWK ,QGLJHQRXV \$XVWUDOLDQV KDYLQJ RYHU
 WLPHV KLJKHU VXLFLGH UDWHV > @ &RPSDULVRQ RI ,QGLJHQRXV DQG
 RWKHU \$XVWUDOLDQ FKDUDFWHULVWLFV RI VXLFLGH LQ DJH JURXS \HUV GL
 QRW SURYLGH FOHDU UHODWHV RPLWLRQ WR ROGHU
 JURXS \$ERULJLQDO DQG 7RUUHV 6WUDLW ,VODQGHU HDUO\ DGROHVFHQWV KD

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